

Biology Keyword / Picture Dictionary - Living Environment

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abiotic

1. Base your answer to this question on the diagrams given and on your knowledge of biology. The diagrams represent how various populations interact in a forest environment. Which diagram, A or B, most accurately represents interactions between biotic and abiotic factors in a forest environment?

- (1) A
 (2) B
 (3) A and B
 (4) Neither A or B

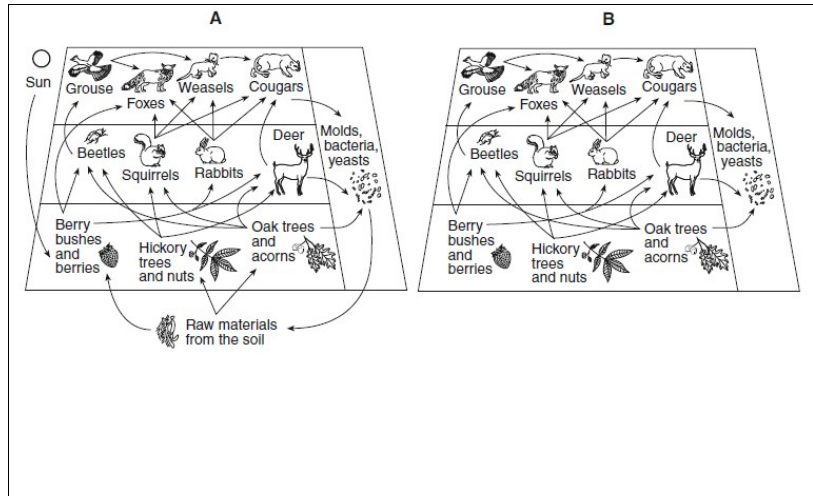
Data Base File Number: 629

Regents Date

Jan2013

65 1/23/2013 S4K6

Answer 1



abiotic

2. Study the diagram shown. Use your knowledge of biology and the diagram to answer this question. Identify one abiotic factor that would directly affect the survival of organism A shown in the diagram.

- (1) oxygen level in the water
 (2) bird feeding on the fish
 (3) the plants growing in the water
 (4) the rocks at the bottom of the water

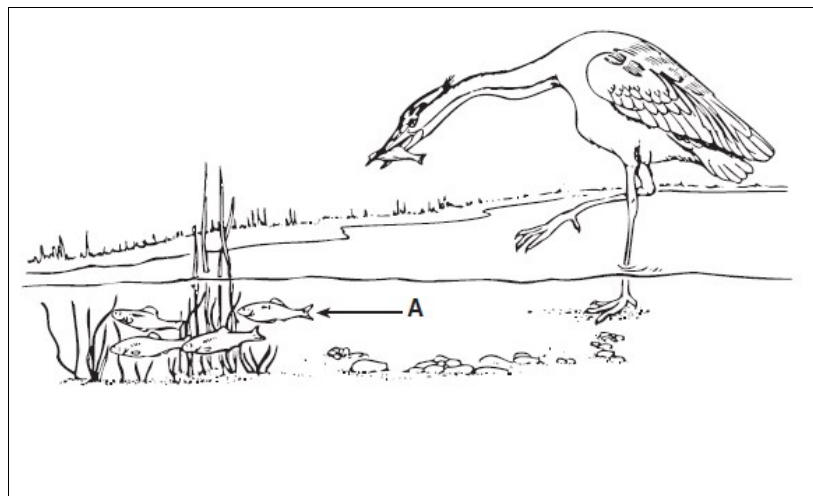
Data Base File Number: 650

Regents Date

Jan2004

54 1/29/2004 S4K1

Answer 1



absorption

3. A glucose-tolerance test was conducted to observe the effect of time on glucose concentration in the blood. An animal was fed 10 milliliters of glucose solution. At five different times after the ingestion of the solution, the blood glucose concentration was determined, and the results were recorded in the data table as shown. The change in glucose concentration in the blood between 0 and 30 minutes was probably due to
- (1) the liver releasing glucose into the small intestine
 - (2) glucose being absorbed from the digestive system
 - (3) the synthesis of glucose from starch
 - (4) glucose being used for cellular respiration

Data Base File Number: 826

Regents Date

Jan2002

6 1/23/2002 S4K1

Answer 2

Time After Glucose Ingestion (minutes)	Glucose Concentration in Blood (mg/100 dL)
0	75
30	125
60	110
90	90
120	80
180	70

acid rain

4. Base your answer to this question on the information below. Acid rain can have a pH between 1.5 and 5.0. The effect of acid rain on the environment depends on the pH of the rain and the characteristics of the environment. It appears that acid rain has a negative effect on plants. The scale shows the pH of normal rain. What is the pH of Normal rain?
- (1) 1.5
 - (2) 2.5
 - (3) 5.5
 - (4) 6.5

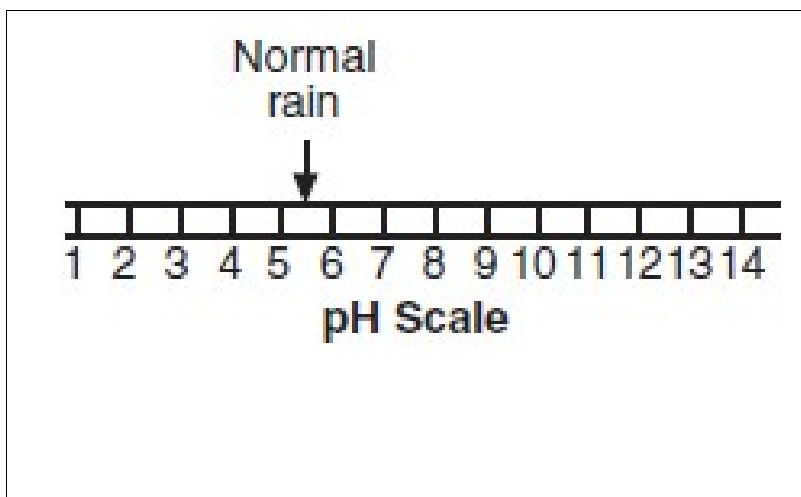
Data Base File Number: 799

Regents Date

Aug2002

73 8/13/2002 LABA

Answer 3



active transport

5. The diagram shown represents movement of a large molecule across a membrane. Which process is best represented in this diagram?

- (1) active transport
- (2) diffusion
- (3) protein building
- (4) gene manipulation

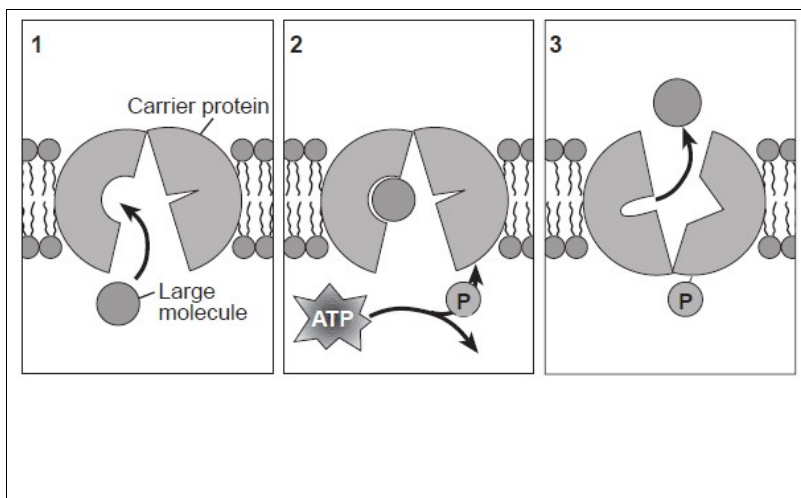
Data Base File Number: 827

Regents Date

Jan2002

7 1/23/2002 S4K1

Answer 1



active transport

6. The graph shows the relative concentrations of different ions inside and outside of an animal cell. Which process is directly responsible for the net movement of K^+ and Mg^{++} into the animal cell?

- (1) electrophoresis
- (2) diffusion
- (3) active transport
- (4) circulation

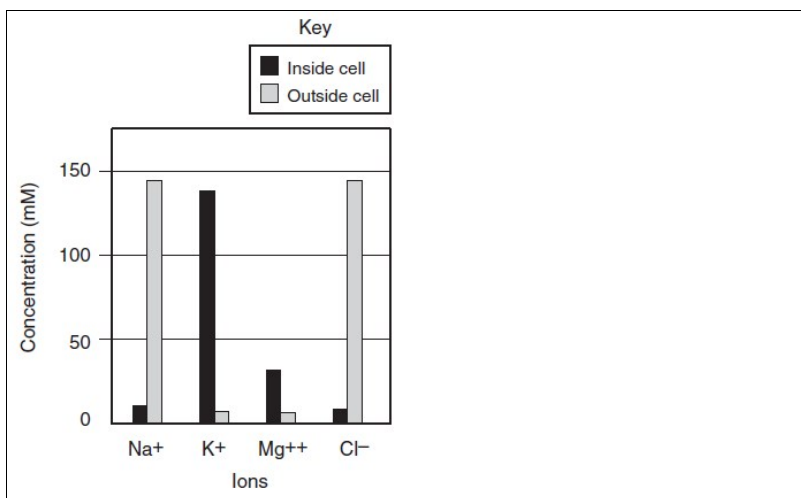
Data Base File Number: 533

Regents Date

Jan2005

3 1/28/2005 S1K1

Answer 3



active transport

7. Which row in the chart best describes the active transport of molecule X through a cell membrane?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 475

Regents Date

June 2006

3 6/21/2006 S4K1

Answer 3

Row	Movement of Molecule X	ATP
(1)	high concentration → low concentration	used
(2)	high concentration → low concentration	not used
(3)	low concentration → high concentration	used
(4)	low concentration → high concentration	not used

active transport

8. The diagram shown represents a cell and several molecules. The number of molecules shown represents the relative concentration of the molecules inside and outside of the cell. Molecule B could enter the cell as a direct result of

- (1) digestion
- (2) diffusion
- (3) active transport
- (4) enzyme production

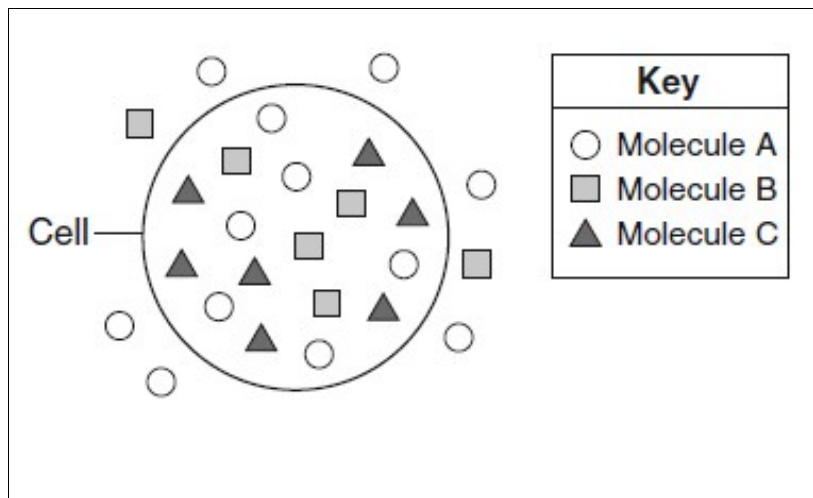
Data Base File Number: 431

Regents Date

Aug 2012

2 8/17/2012 S4K1

Answer 3



active transport

9. Base your answer to this question on the diagram shown, which represents a unicellular organism in a watery environment. The ▲s represent molecules of a specific substance. Arrow A represents active transport. What is one way that active transport is different from diffusion?

- (1) active transport requires the use of energy
- (2) active transport is the same as diffusion
- (3) active transport excretes carbon dioxide
- (4) active transport shows dynamic equilibrium

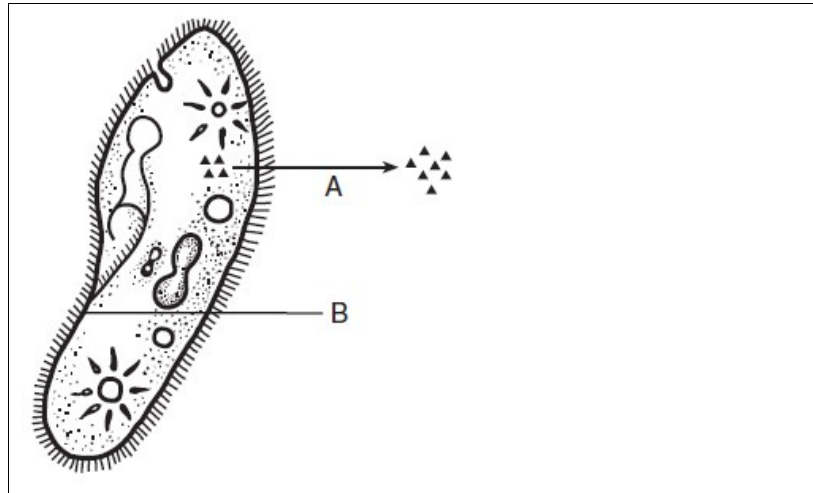
Data Base File Number: 749

Regents Date

June 2003

55 6/19/2003 S4K1

Answer 1



adaptation

10. The diagram shown illustrates the change that occurred in the physical appearance of a rabbit population over a 10-year period. Which condition would explain this change over time?

- (1) a decrease in the mutation rate of the rabbits with black fur
- (2) a decrease in the advantage of having white fur
- (3) an increase in the advantage of having white fur
- (4) an increase in the chromosome number of the rabbits with black fur

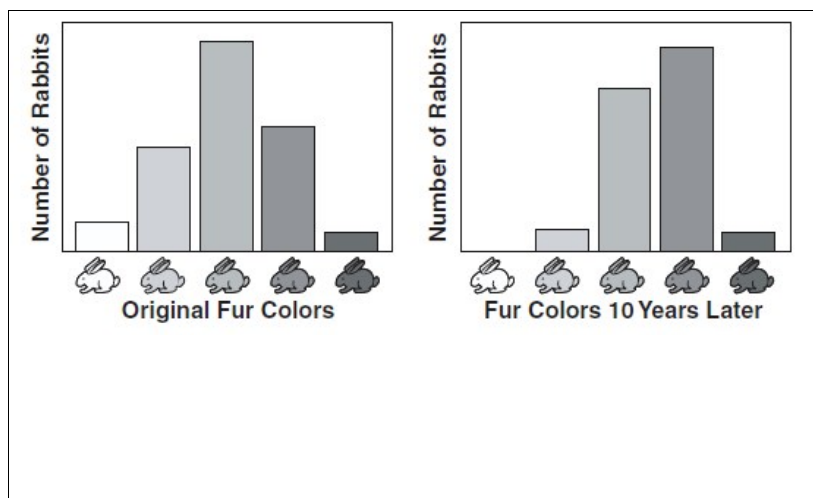
Data Base File Number: 710

Regents Date

Jan 2003

16 1/30/2003 S4K3

Answer 2



adaptation

11. A photograph of a polar bear in its environment is shown. One possible reason why polar bears might not be able to survive if the environment they live in changes is because. (Photo Source: http://www.bbc.co.uk/schools/gcsebitesize/science/ocr_gateway/environment/3_adapt_to_fit1.shtml)
- (1) the species will experience decreased competition for mates
 - (2) the new environment will cause greater variation in the species
 - (3) there will be a larger variety of food sources available
 - (4) they are adapted to the specific environment in which they now live

Data Base 919
File Number:

Regents Date

Jan2014

11 1/27/2014 S4K3

Answer 4



adaptation

12. Note: ROTATE your test paper to the LEFT to properly orient the diagram. QUESTION: Base your answer to this question on the diagram shown and on your knowledge of biology. One possible conclusion that can be drawn regarding ancestral horses A and B is that

- (1) A was better adapted to changes that occurred during the Pliocene Epoch than was B
- (2) the areas that B migrated to contained fewer varieties of producers than did the areas that A migrated to
- (3) competition between A and B led to the extinction of Pliohippus
- (4) the adaptive characteristics present in both A and B were insufficient for survival

Data Base
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77

Regents Date

Jan2008

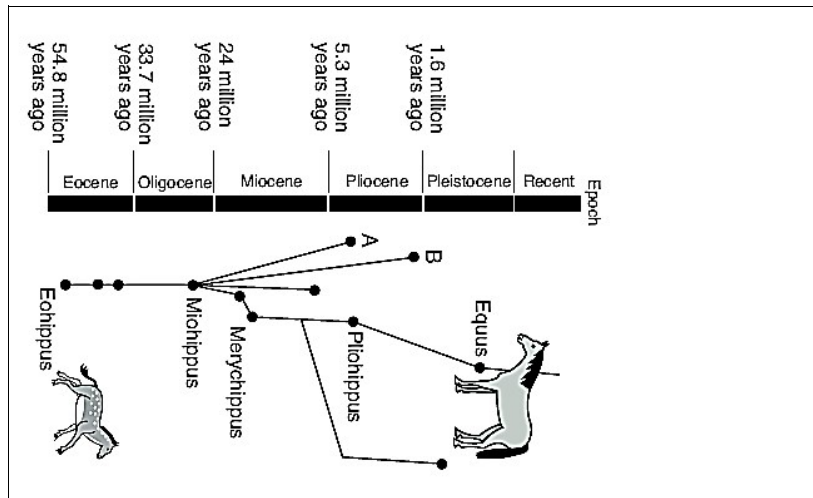
39

1/25/2008

S4K3

Answer

4



adaptation

13. Researchers discovered four different species of finches on one of the Galapagos Islands. DNA analysis showed that these four species, shown in the illustration, are closely related even though they vary in beak shape and size. It is thought that they share a common ancestor. Which factor most likely influenced these differences in beak size and shape?
- (1) Birds with poorly adapted beaks changed their beaks to get food
 - (2) Birds with yellow beaks were able to hide from predators.
 - (3) Birds with successful beak adaptations obtained food and survived to have offspring.
 - (4) Birds with large, sharp beaks become dominant.

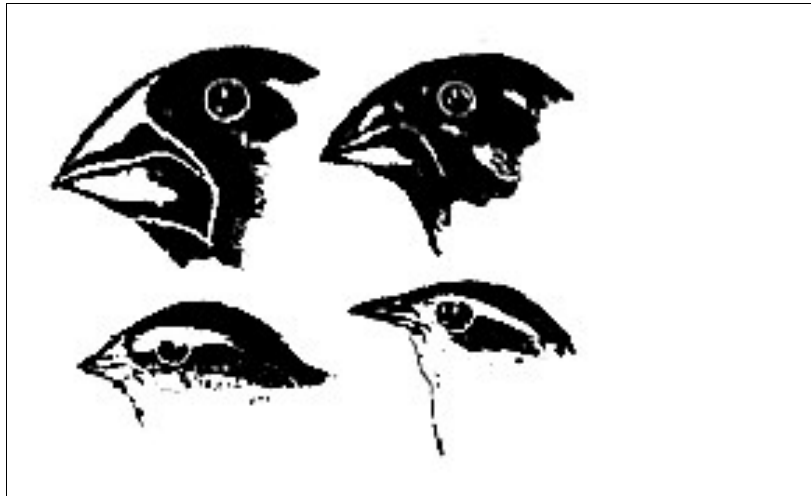
Data Base File Number: 83

Regents Date

Jan2008

66 1/25/2008 LABS

Answer 3



adaptation

14. What is the most probable reason for the increase in the percentage of variety A in the population of the species shown in the graph?
- (1) There is no chance for variety A to mate with variety B.
 - (2) There is no genetic difference between variety A and variety B.
 - (3) Variety A is less fit to survive than variety B is.
 - (4) Variety A has some adaptive advantage that variety B does not have.

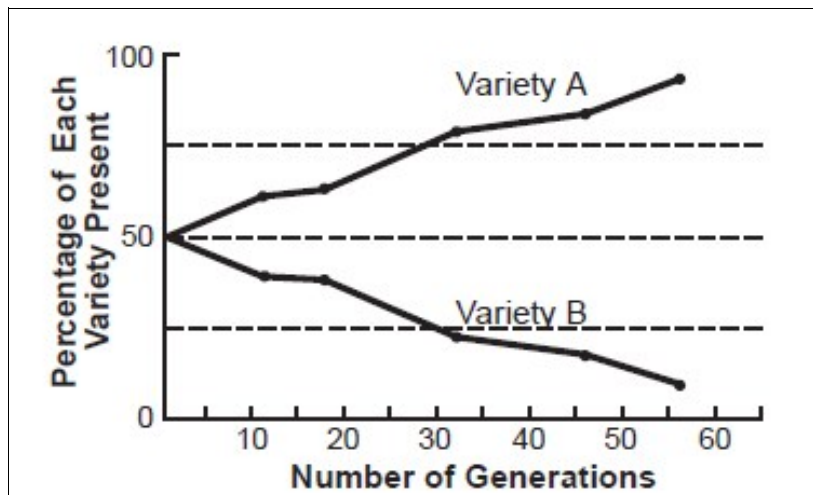
Data Base File Number: 830

Regents Date

Jan2002

12 1/23/2002 S4K3

Answer 4



adaptation

15. Base your answer to this question on the information and diagram shown and on your knowledge of biology. Finches on the Galapagos Islands are thought to have originated from South America and to have evolved into new species over the last 10,000 years. Some of this evolution is represented in the diagram shown. The success of the finches on the Galapagos was most likely due to the

- (1) large numbers of other birds competing for food
- (2) mutations occurring in every offspring
- (3) birds occupying the same island
- (4) birds adapting to different niches

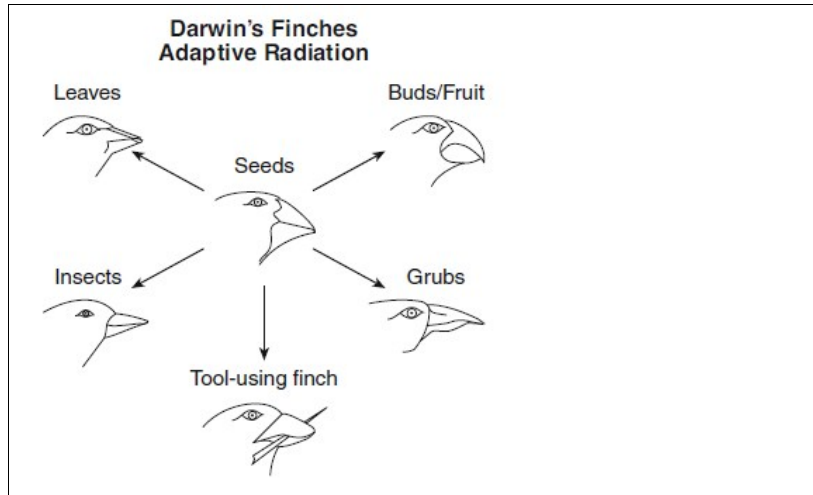
Data Base File Number: 631

Regents Date

Jan2013

73 1/23/2013 LAB3

Answer 4



adaptation

16. The diagram shown represents the bone arrangements in the front limbs of three different species of mammals. The similarities and differences in these limbs suggest that all three species developed from the same ancestor, but

- (1) produced different numbers of offspring
- (2) lived in different time periods
- (3) adapted to different habitats
- (4) migrated to similar habitats

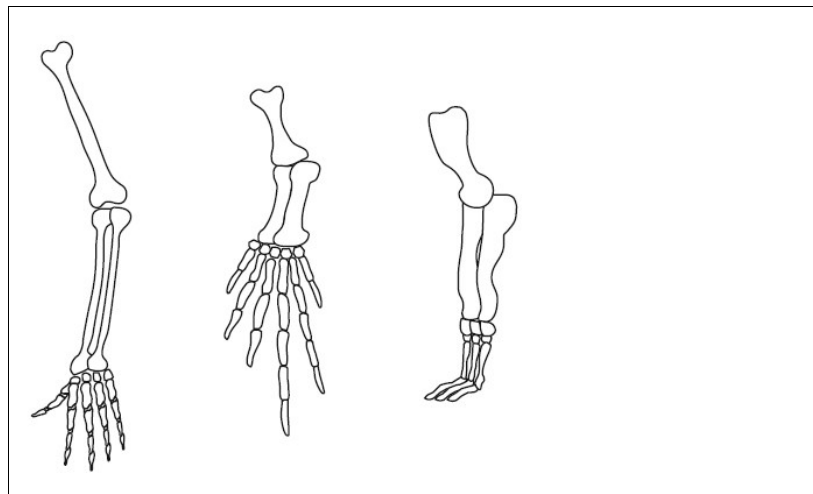
Data Base File Number: 609

Regents Date

Jan2013

14 1/23/2013 S4K3

Answer 3



adaptation

17. Base your answer to this question on the information given and on your knowledge of biology. Yes, This Big Lizard is Pink. A new study from the University of Rome Tor Vergata shows that a rare strawberry-tinted land iguana [rosada iguana] in the Galapagos Islands is genetically distinct from other iguanas there, having diverged from them more than five million years ago as the archipelago [a group of islands] formed. The rosada iguana, which escaped Darwin's notice, was discovered only recently, largely because it lives on the desolate slopes of an active volcano. Source: Smithsonian, March 2009. Which diagram best represents the evolutionary pathway of the strawberry-tinted iguana?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

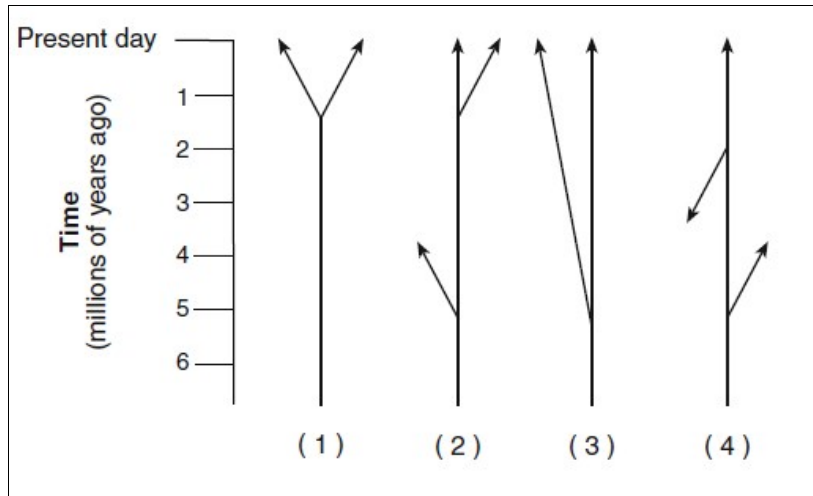
Data Base File Number: 444

Regents Date

Aug2012

42 8/17/2012 S4K6

Answer 3



adaptation

18. The diagrams show the bones in the forelimbs of three different organisms. Differences in the bone arrangements support the hypothesis that these organisms

- (1) are members of the same species
- (2) may have descended from the same ancestor
- (3) have adaptations to survive in different environments
- (4) all contain the same genetic information

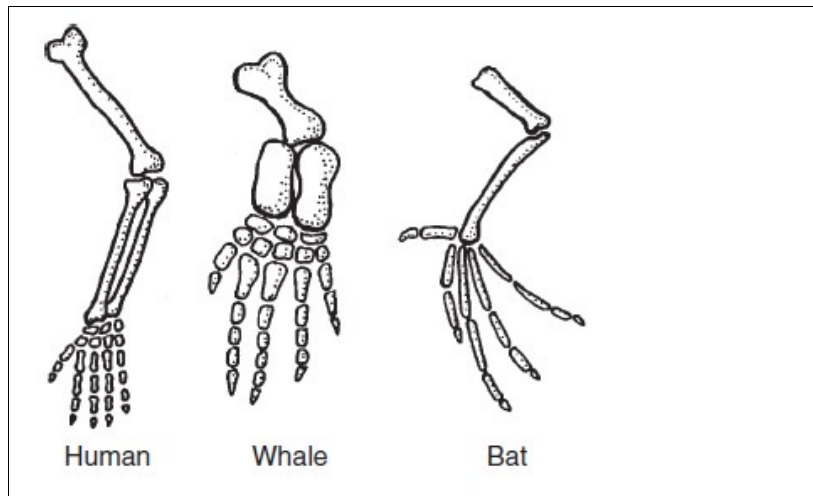
Data Base File Number: 805

Regents Date

June2002

15 6/19/2002 S4K3

Answer 3



adaptation

19. The ranges of the African hunting dog and Arctic wolf are represented in the maps as shown. What hypothesis might explain why these two related animals successfully inhabit different areas of Earth
- (1) The environment caused the two animals to mutate for survival.
 - (2) The two animals adapted to different environments.
 - (3) The two animals were predators.
 - (4) The two animals had no enemies.

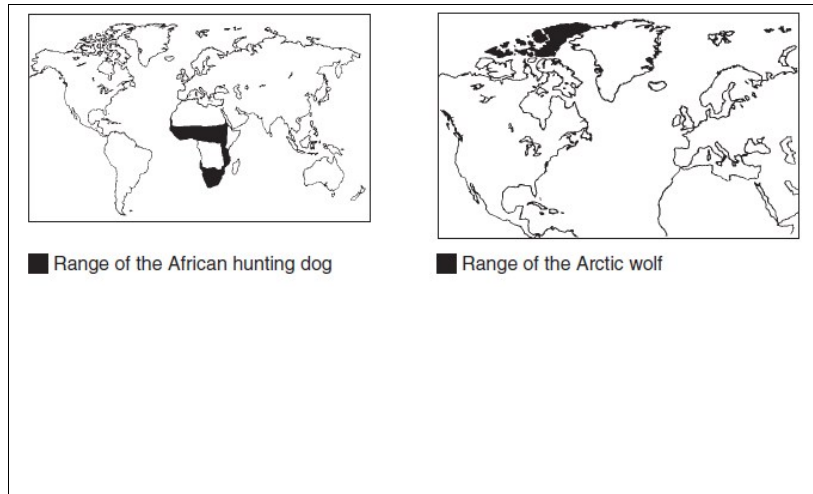
Data Base File Number: 818

Regents Date

June 2002

43 6/19/2002 **S4K3**

Answer 2



adaptation

20. Base your answers to this questions on the information below and on your knowledge of biology. The diagram below represents the relationship between beak structure and food in several species of finches in the Galapagos Islands. Which factor most directly influenced the evolution of the diverse types of beaks of these finches?
- (1) predation by humans
 - (2) available food sources
 - (3) oceanic storms
 - (4) lack of available niches

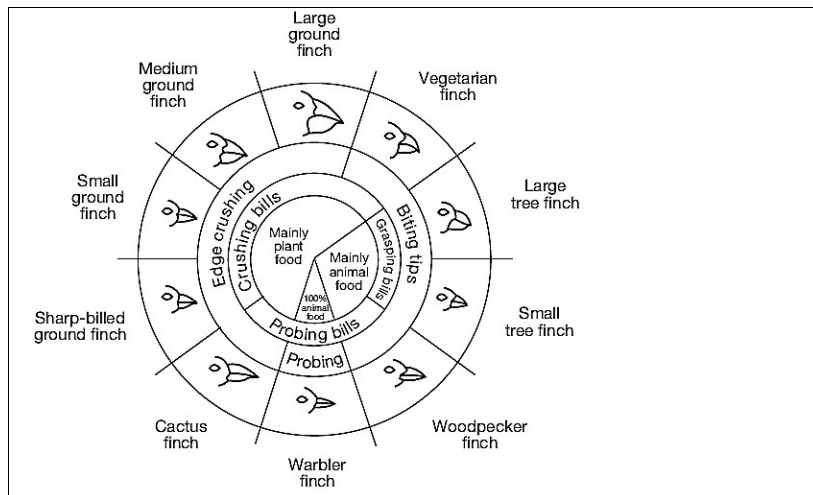
Data Base File Number: 144

Regents Date

Aug 2008

78 8/13/2008 **LABS**

Answer 2



amino acid chains

21. Base your answer to this question on the diagram shown and on your knowledge of biology. Identify the type of building block represented by the letters A, B, and C.

- (1) fatty acids
- (2) simple sugars
- (3) amino acids
- (4) purines

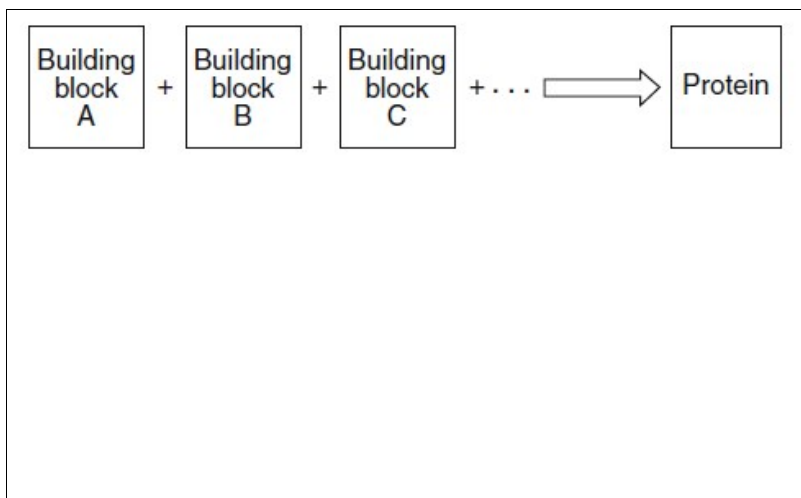
Data Base File Number: 627

Regents Date

Jan2013

54 1/23/2013 S4K2

Answer 3



amino acid sequences

22. The diagram shown provides some information concerning proteins. Which phrase is represented by A?

- (1) sequence of amino acids
- (2) sequence of simple sugars
- (3) sequence of starch molecules
- (4) sequence of ATP molecules

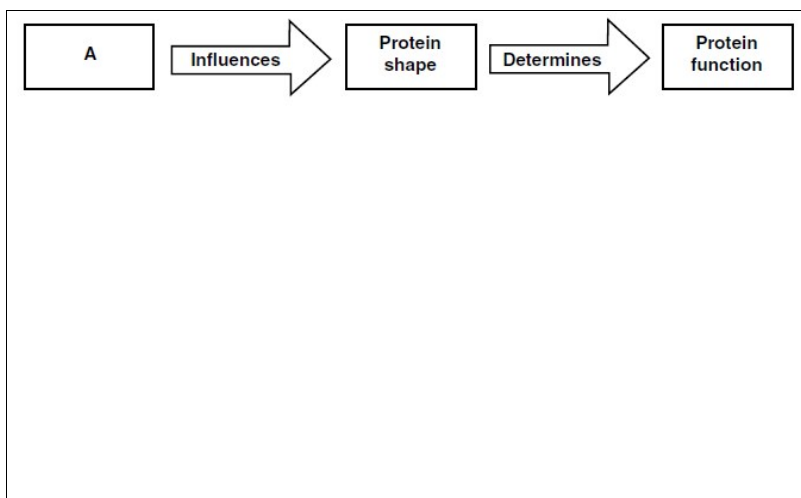
Data Base File Number: 755

Regents Date

Aug2003

6 8/13/2003 S4K2

Answer 1



amino acid sequences

23. The chart shown contains amino acid sequences for part of a protein that is found in the feathers on each of these three species of birds. Which species are MOST closely related?

- (1) A and B
- (2) A and C
- (3) B and A
- (4) B and C

Data Base File Number: 529

Regents Date

Aug2006

63 8/16/2006 LAB1

Answer 2

Species	Amino Acid Sequence
A	Arg-Leu-Glu-Gly-His-His-Pro-Lys-Arg
B	Arg-Gly-Glu-Gly-His-His-Pro-Lys-Arg
C	Arg-Leu-Glu-Gly-His-His-Pro-Lys-Arg

amino acid sequences

24. The amino acid sequences of three species, as shown in the table, were determined in an investigation of evolutionary relationships. Based on these data, which TWO species are most closely related?

- (1) A and C
- (2) A and B
- (3) B and C
- (4) C and A

Data Base File Number: 272

Regents Date

June2010

65 6/16/2010 LABS

Answer 2

Species A:	Val	His	Leu	Ser	Pro	Val	Glu
Species B:	Val	His	Leu	Cys	Pro	Val	Glu
Species C:	Val	His	Thr	Ser	Pro	Glu	Glu

antibiotic

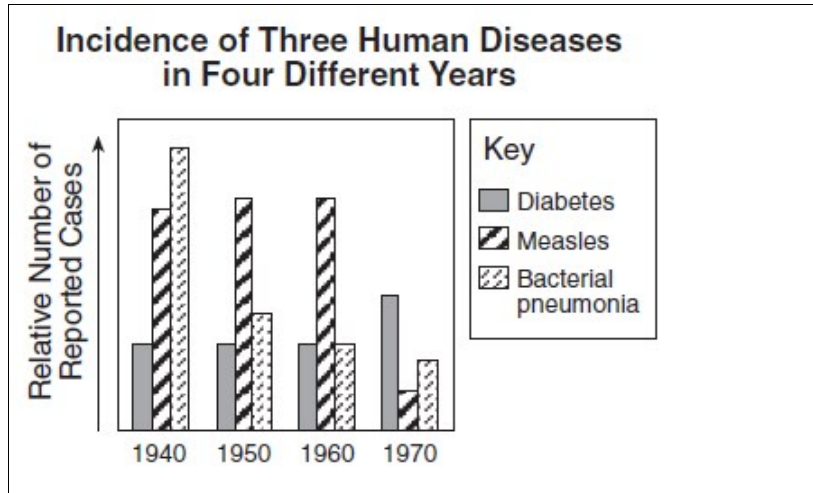
25. Base your answer to this question on the graph shown and on your knowledge of biology. Which statement provides the best possible reason for the decrease in number of cases of bacterial pneumonia from 1940 to 1970?
- (1) As a result of genetic engineering, humans became immune to the bacteria.
 - (2) Antibiotics were made available for the treatment of bacterial infections.
 - (3) The bacteria did not respond to medical treatments.
 - (4) As a result of sexual reproduction, the bacteria evolved into a harmless form.

Data Base File Number: 595

Regents Date

Aug2005
37 8/16/2005 S4K5

Answer 2



antibiotic resistance

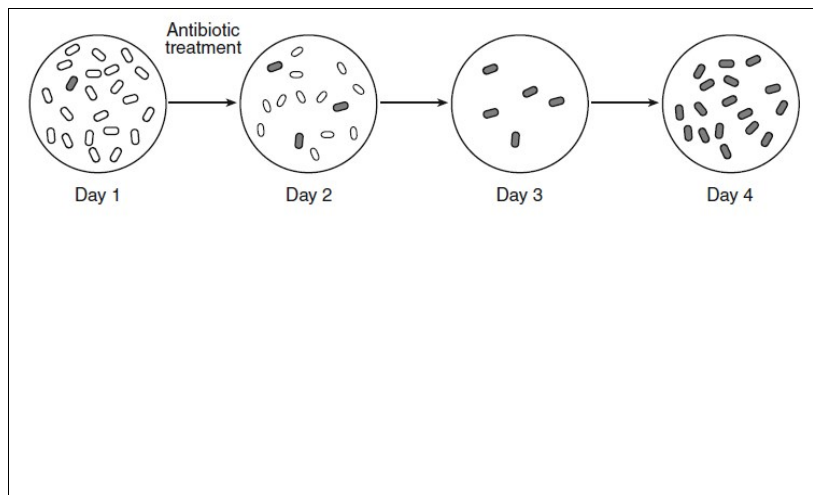
26. The diagram shown represents some changes that took place in a bacterial population recently exposed to an antibiotic. Which statement would best explain the presence of bacteria on day 4?
- (1) A bacterial population cannot survive exposure to antibiotics.
 - (2) This bacterial population cannot survive exposure to this antibiotic.
 - (3) Bacteria can change whenever it is necessary to survive antibiotic treatment.
 - (4) Some of the bacterial population was resistant to this antibiotic.

Data Base File Number: 438

Regents Date

Aug2012
36 8/17/2012 S4K3

Answer 4



antibiotic resistance

27. Base your answer to this question on the scatter-plot graph shown and on your knowledge of biology. The graph shows changes in the percentage of vancomycin-resistant bacteria in a population between the years 1983 and 2001. Why did the percentage of resistant bacteria increase over time?
- (1) The vancomycin caused the resistance.
 - (2) The resistant bacteria survived, reproduced, and passed on the gene for resistance.
 - (3) The vancomycin caused a gene shift in the bacteria.
 - (4) The vancomycin caused a DNA change in the bacteria and this resulted in a resistant mutation.

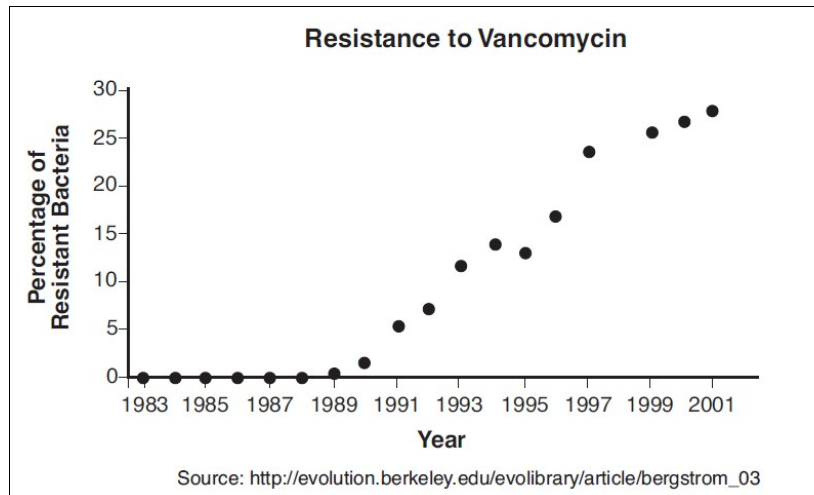
Data Base File Number: 891

Regents Date

June 2013

54 6/11/2013 S4K3

Answer 2



antibiotic resistance

28. Base your answer to this questions on the information given and on your knowledge of biology. In order to determine the effect of a certain antibiotic on a species of microorganism, an investigation was carried out. A sample of a specific species of microorganism was added to 100 mL of a liquid culture medium. One mL of a solution of the antibiotic was then added to that culture medium. Each day at 10 a.m., 1 mL of the experimental culture medium was removed and the number of microorganisms in the 1-mL sample was determined. The 1 mL of experimental culture medium was replaced by 1 mL of new sterile culture medium to maintain a constant volume. The results are shown in the table. The microorganisms present on day 5 were

- (1) newly added from the sterile culture medium
- (2) offspring of antibiotic-resistant individuals
- (3) organisms that were all present on day 1
- (4) offspring with no resistance to the antibiotic

Data Base File Number: 623

Regents Date

Jan2013

44 1/23/2013 LABA

Answer 2

Day	0	1	2	3	4	5	6	7
Number of Microorganisms in Sample	1000	500	100	50	40	200	500	1000

antibiotic resistance

29. The diagram shown represents a petri dish containing nutrient agar. A single bacterial colony is growing on the surface of the agar. A mold, represented by the shaded area, is also growing on the agar surface. Which statement best explains why no mold is growing in the white area next to the bacterial colony?
- (1) The mold cannot use the nutrient agar for food.
 - (2) The bacteria may release a substance that prevents mold growth.
 - (3) The mold is causing the bacterial colony to reproduce faster.
 - (4) The bacteria are scavengers of the growing mold.

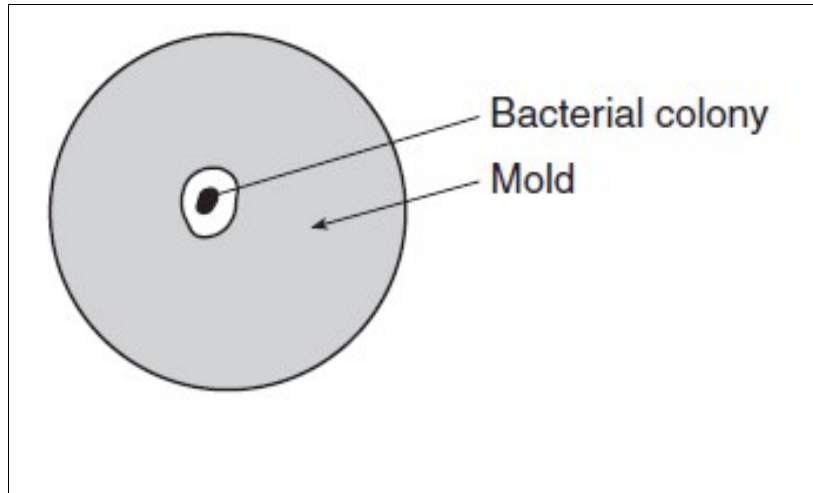
Data Base File Number: 768

Regents Date

Aug2003

42 8/13/2003 S1K3

Answer 2



antigen / antibody

30. An activity that occurs in the human body is shown. This activity helps to
- (1) provide protection against pathogens
 - (2) produce antibiotics to control disease
 - (3) eliminate harmful gene alterations
 - (4) regulate production of ATP by the cell

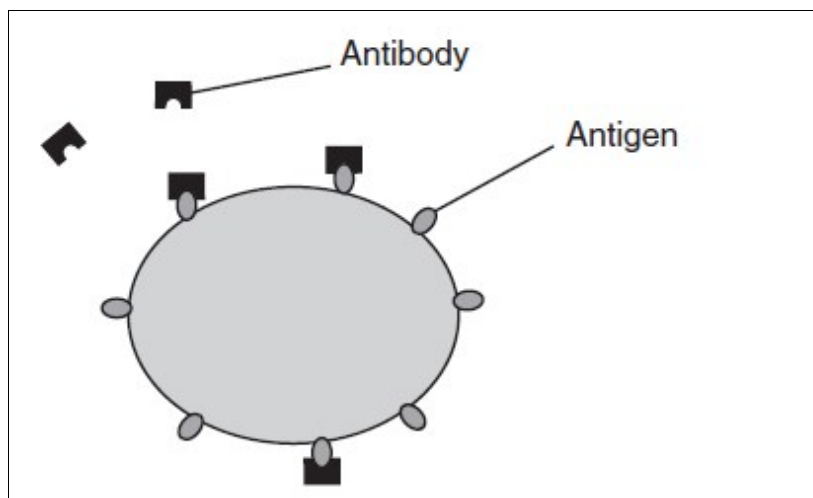
Data Base File Number: 365

Regents Date

Aug2011

21 8/18/2011 S4K5

Answer 1



asexual

31. The number in each circle shown in the diagram represents the chromosome number of the cell. Which diagram represents the production of offspring by an asexually reproducing organism?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

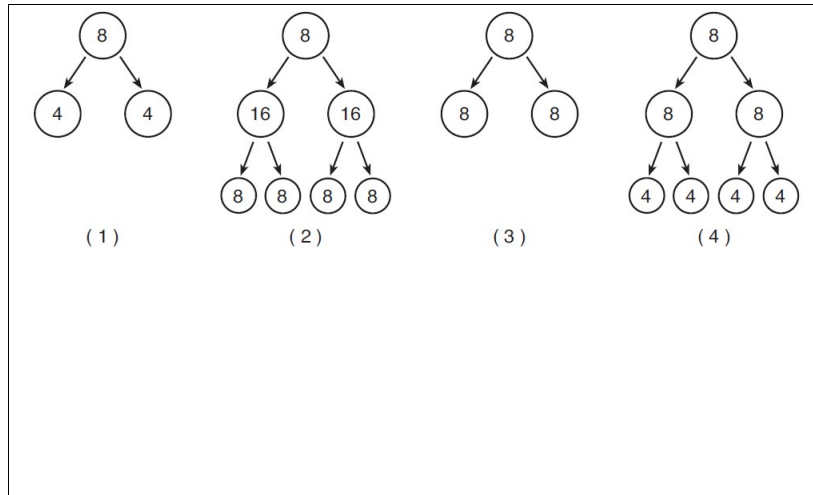
Data Base File Number: 305

Regents Date

Jan2011

13 1/25/2011 **S4K2**

Answer 3



asexual reproduction

32. Base your answer to this question on the diagram shown and on your knowledge of biology. Which process is indicated by letter B?

- (1) natural selection
- (2) asexual reproduction
- (3) sexual reproduction
- (4) gene deletion

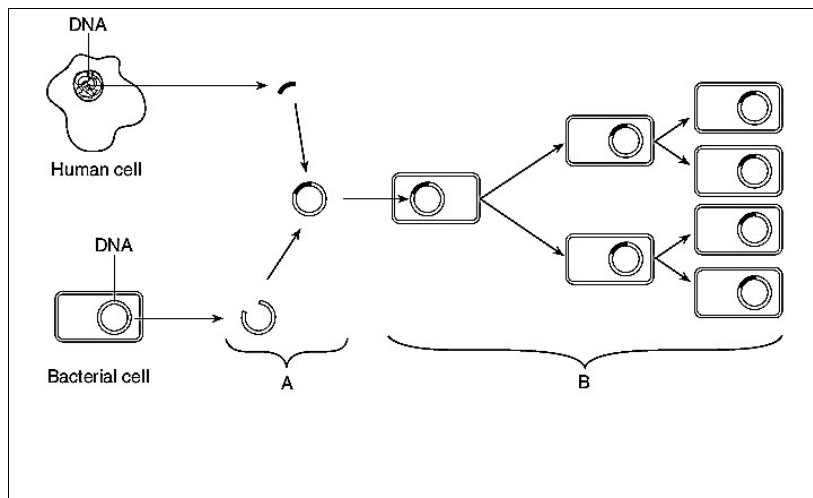
Data Base File Number: 78

Regents Date

Jan2008

41 1/25/2008 **S4K4**

Answer 2



asexual reproduction

33. The diagram shown represents a yeast cell that is in the process of budding, a form of asexual reproduction. Which statement describes the outcome of this process?
- (1) The bud will develop into a zygote.
 - (2) The two cells that result will each contain half the species number of chromosomes.
 - (3) The two cells that result will have identical DNA
 - (4) The bud will start to divide by the process of meiotic cell division.

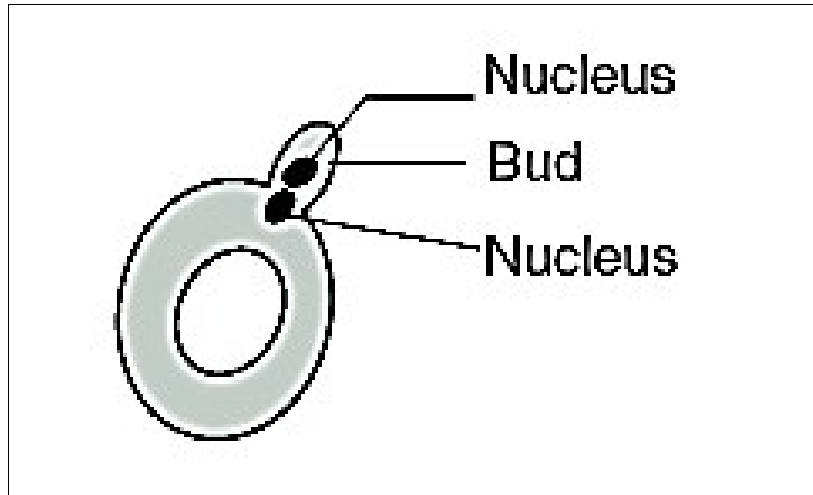
Data Base File Number: 25

Regents Date

June2007

8 6/20/2007 S4K2

Answer 3



asexual reproduction

34. The bud shown in the diagram was produced by asexual reproduction. Which process is responsible for the formation of the bud?
- (1) fertilization
 - (2) recombination
 - (3) mitosis
 - (4) meiosis

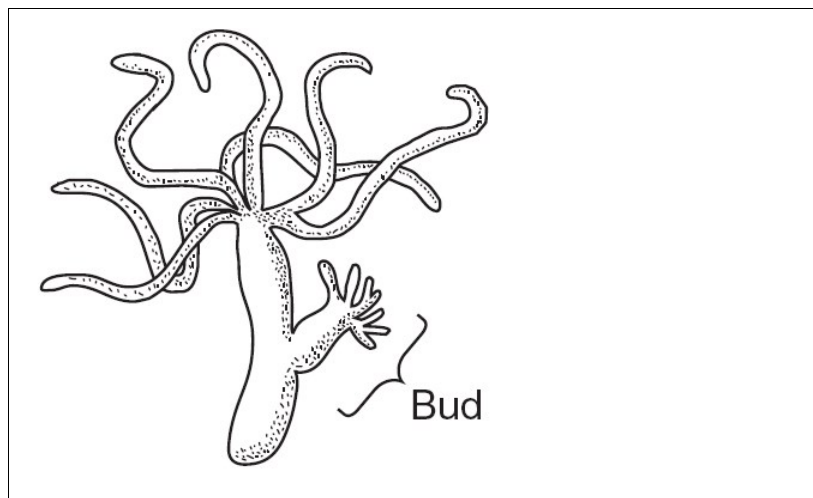
Data Base File Number: 338

Regents Date

June2011

21 6/21/2011 S4K4

Answer 3



asexual reproduction

35. The organism represented in the diagram is multicellular, heterotrophic, and completely aquatic. Which other characteristics could be used to describe this organism?

- (1) carries out photosynthesis and needs oxygen
- (2) deposits cellular wastes on land and decomposes dead organisms
- (3) reproduces asexually and is a consumer
- (4) reproduces in a water habitat and is a producer

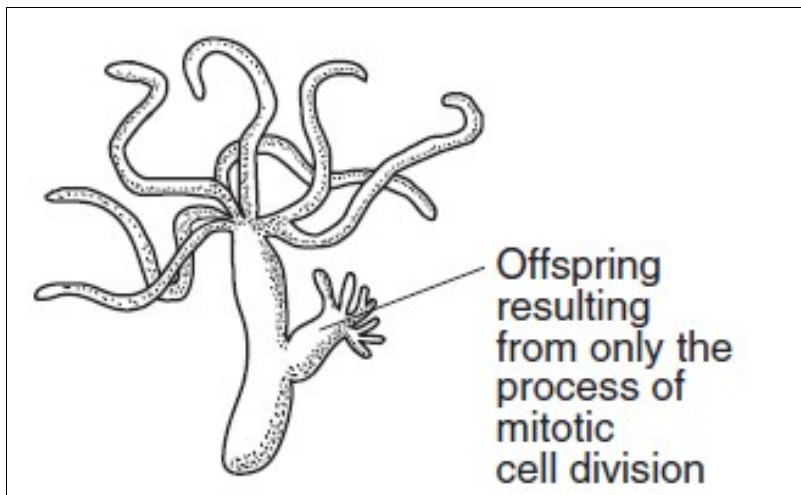
Data Base File Number: 554

Regents Date

June2005

15 6/22/2005 S1K1

Answer 3



asexual reproduction

36. An antibiotic is effective in killing 95% of a population of bacteria that reproduce by the process shown in the diagram. Which statement best describes future generations of these bacteria?

- (1) They will be produced by asexual reproduction and will be more resistant to the antibiotic.
- (2) They will be produced by sexual reproduction and will be more resistant to the antibiotic.
- (3) They will be produced by asexual reproduction and will be just as susceptible to the antibiotic.
- (4) They will be produced by sexual reproduction and will be just as susceptible to the antibiotic.

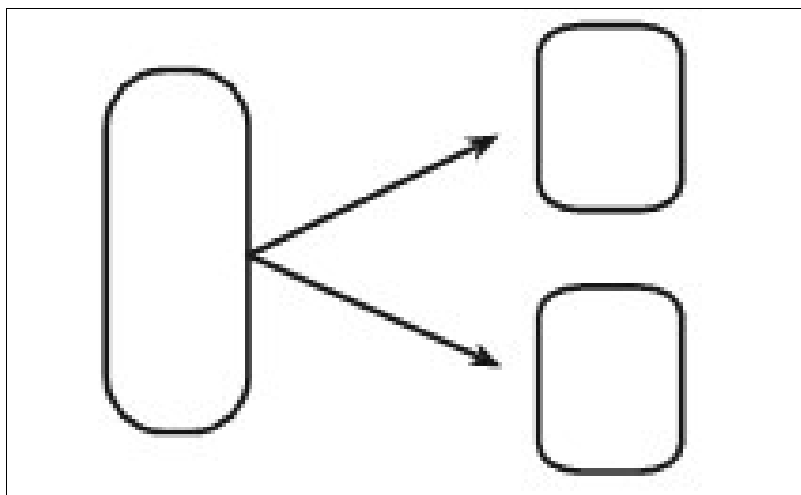
Data Base File Number: 184

Regents Date

June2009

22 6/18/2009 S4K2

Answer 1



asexual reproduction

37. The diagrams shown illustrate types of asexual reproduction. Which statement correctly describes the offspring?
- (1) They vary genetically from the parent.
 - (2) They are produced by the union of gametes.
 - (3) They obtain nourishment from a placenta.
 - (4) They result without the union of gametes.

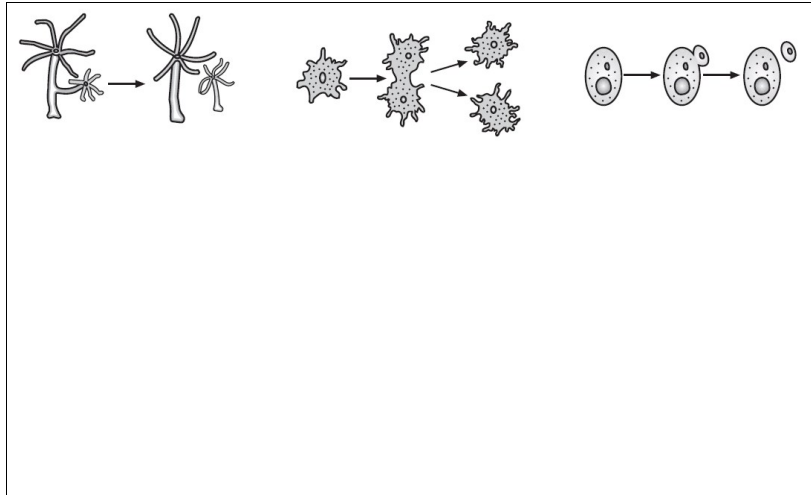
Data Base File Number: 287

Regents Date

Aug2010

37 8/18/2010 S4K4

Answer 4



asexual reproduction

38. Which row in the chart below best describes asexual reproduction?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

Data Base File Number: 580

Regents Date

Aug2005

5 8/16/2005 S4K2

Answer 1

Row	Number of Parents	Comparison of Offspring to Parents
(1)	one	identical
(2)	one	different
(3)	two	identical
(4)	two	different

asexual reproduction

39. A pattern of reproduction and growth in a one-celled organism is shown in the diagram. Which statement best describes this pattern of reproduction?
- (1) All genetic material comes from one parent.
 - (2) Only some of the genetic material comes from one parent.
 - (3) The size of the parent determines the amount of genetic material.
 - (4) The size of the parent determines the source of the genetic material.

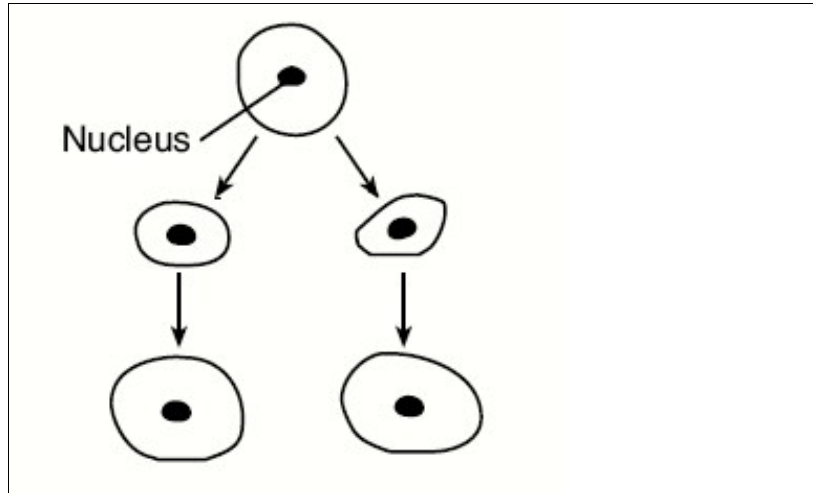
Data Base File Number: 120

Regents Date

Aug2008

18 8/13/2008 S4K2

Answer 1



asexual reproduction

40. A technique used to reproduce plants is shown in the diagram below. This technique is a form of
- (1) sexual reproduction
 - (2) asexual reproduction
 - (3) gamete production
 - (4) gene manipulation

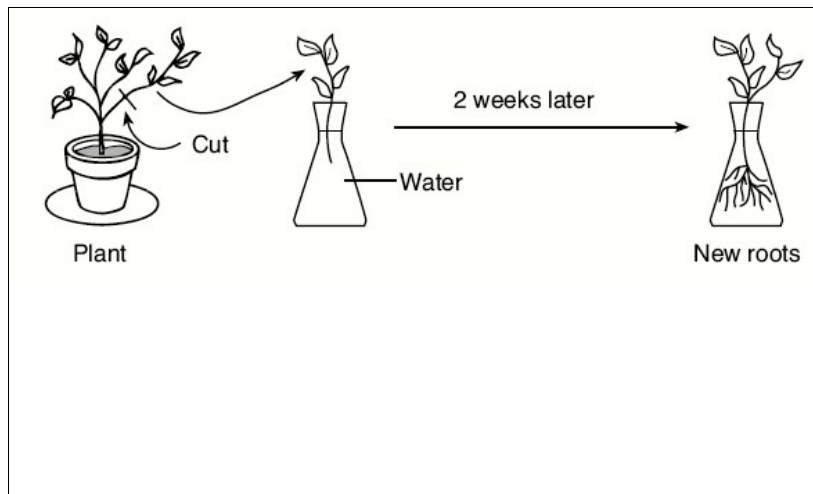
Data Base File Number: 121

Regents Date

Aug2008

19 8/13/2008 S4K2

Answer 2



asexual reproduction

41. The diagram shown illustrates asexual reproduction in bread mold. Reproductive structures known as spores were released from bread mold A. One of these spores developed into bread mold B. How does the genetic information in bread mold B compares to the genetic information in bread mold A?
- (1) they are identical
 - (2) they are not identical
 - (3) they are mutations
 - (4) they are zygotes

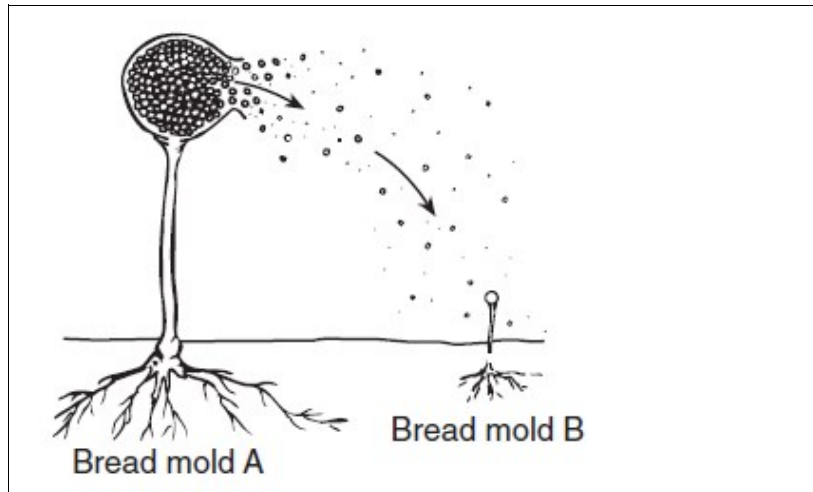
Data Base File Number: 697

Regents Date

Aug2004

52 8/17/2004 S4K2

Answer 1



asexual reproduction

42. The diagram shown represents division of a cell that produces two daughter cells. Which statement most likely describes the daughter cells produced?
- (1) The daughter cells will pass on only half of the genetic information they received from the original cell
 - (2) The daughter cells will each produce offspring that will have the same genetic information as the original cell
 - (3) The daughter cells will each undergo the same mutations as the original cell after reproduction has occurred.
 - (4) The daughter cells will not pass on any of the genes that they received from the original cell.

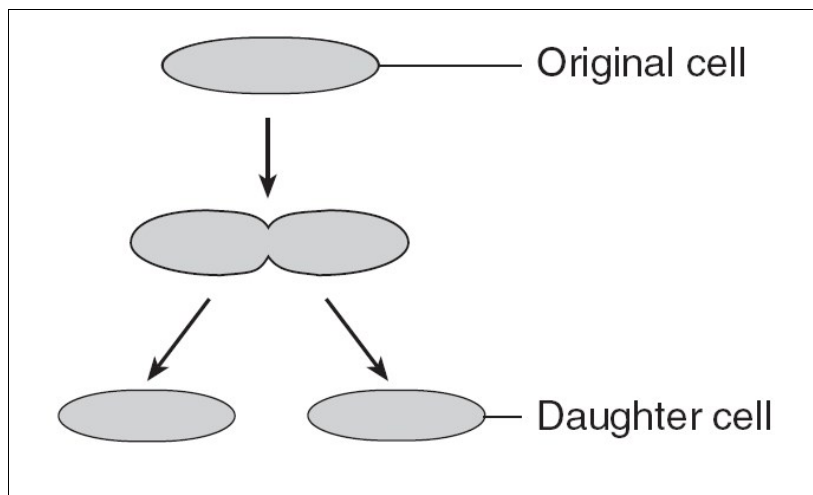
Data Base File Number: 334

Regents Date

June2011

11 6/21/2011 S4K2

Answer 2



asexual reproduction

43. The diagram shown represents a cell process. Which statement regarding this process is correct?

- (1) Cell B contains the same genetic information that cells A and C contain.
- (2) Cell C has DNA that is only 50% identical to cell B.
- (3) Cell A has DNA that is only 75% identical to cell B.
- (4) Cells A, B, and C contain completely different genetic information.

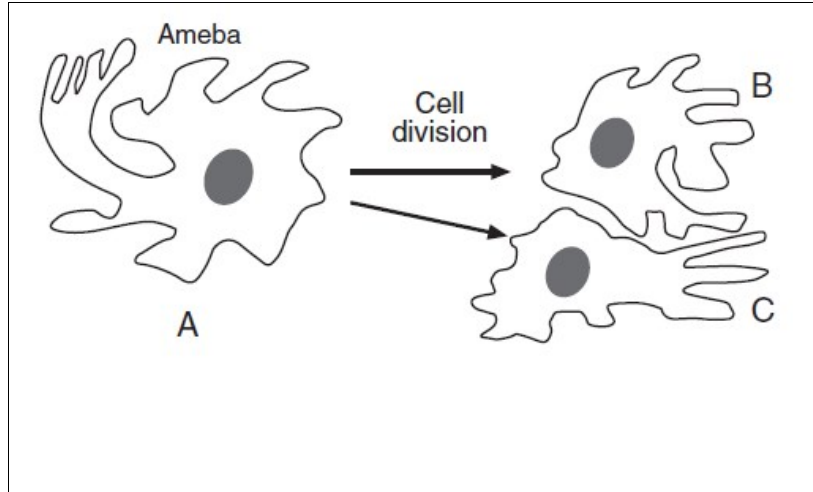
Data Base File Number: 780

Regents Date

Aug2002

17 8/13/2002 **S4K4**

Answer 1



asexual reproduction

44. Base your answer to this questions on the diagram shown and on your knowledge of biology. The diagram represents a single-celled organism, such as an amoeba, undergoing the changes shown. As a result of these processes, the single-celled organism accomplishes

- (1) gamete production
- (2) energy production
- (3) sexual reproduction
- (4) asexual reproduction

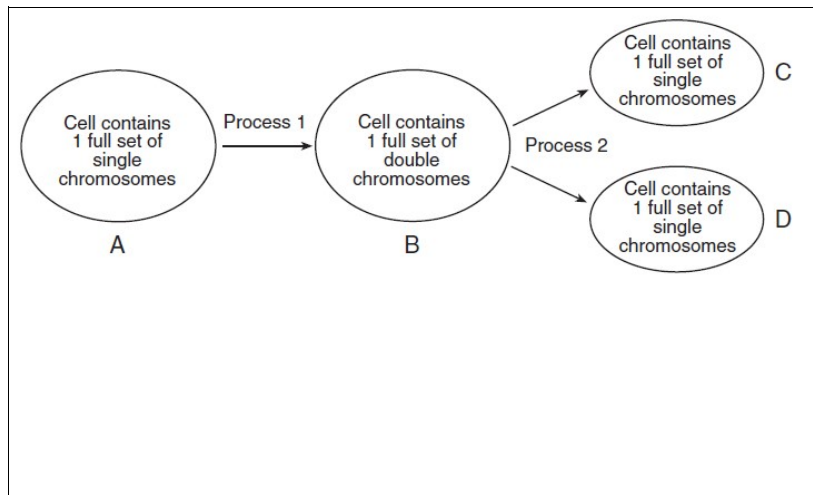
Data Base File Number: 514

Regents Date

Aug2006

31 8/16/2006 **S4K4**

Answer 4



asexual reproduction

45. The diagram illustrates asexual reproduction in yeast. Yeast produce offspring that usually have
- (1) genes that are different from those of the parent
 - (2) genes that are identical to those of the parent
 - (3) half of the genetic information of the parent
 - (4) organelles that are not found in the parent

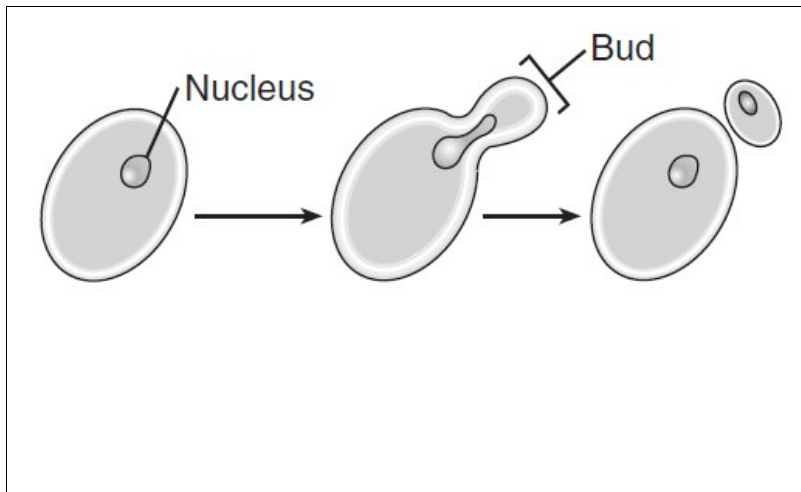
Data Base File Number: 231

Regents Date

Jan2010

9 1/26/2010 S4K2

Answer 2



asexual reproduction

46. A student made the drawing shown in DIAGRAM A of a single-celled organism as he observed it with a compound light microscope under the high-power objective. Several minutes later, he drew the diagram shown in DIAGRAM B of the same organism, using the same magnification. These drawings show that the organism is carrying out the process of
- (1) asexual reproduction
 - (2) sexual reproduction
 - (3) embryo formation
 - (4) genetic alteration

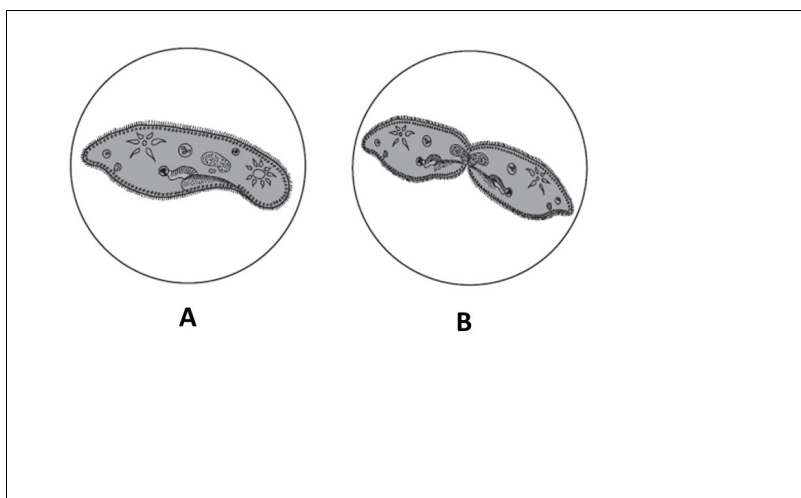
Data Base File Number: 902

Regents Date

Aug2013

16 8/14/2013 S4K4

Answer 1



ATP

47. A single-celled organism is represented in the diagram. An activity is indicated by the arrow. If this activity requires the use of energy, which substance would be the source of this energy?
- (1) DNA
(2) ATP
(3) a hormone
(4) an antibody

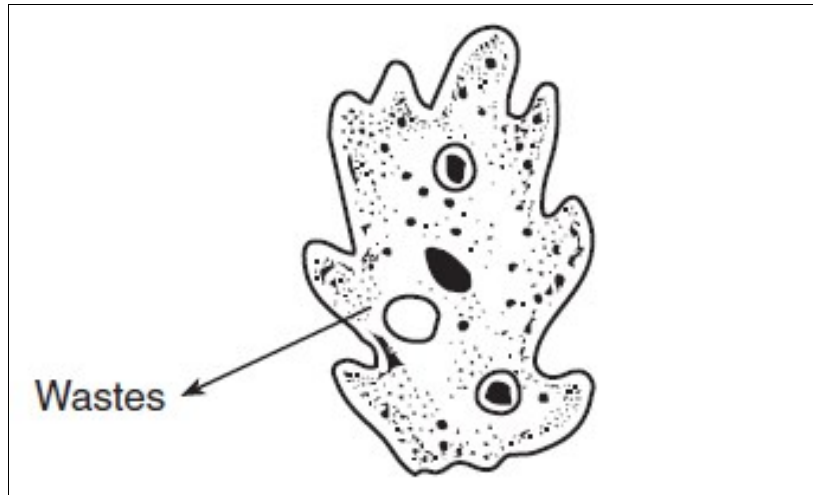
Data Base File Number: 737

Regents Date

June 2003

25 6/19/2003 S4K5

Answer 2



ATP

48. The diagram shows molecules represented by X both outside and inside a cell. A process that would result in the movement of these molecules out of the cell requires the use of
- (1) DNA
(2) ATP
(3) antigens
(4) antibodies

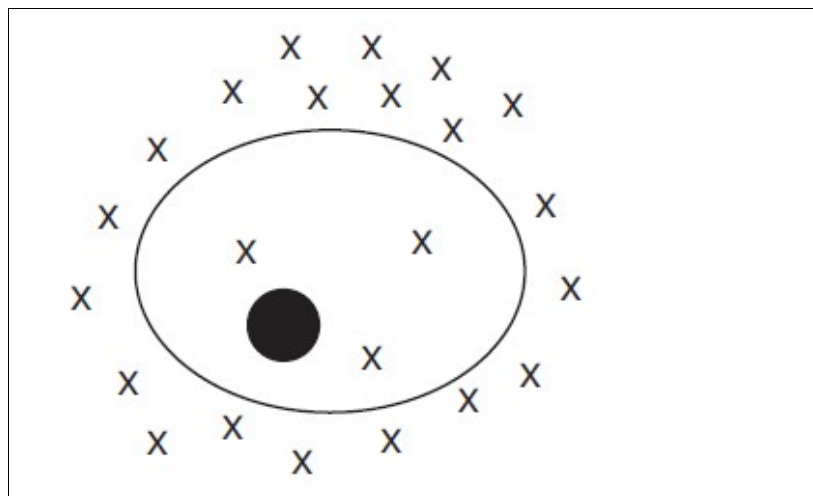
Data Base File Number: 265

Regents Date

June 2010

38 6/16/2010 S4K1

Answer 2



ATP

49. Information concerning a metabolic activity is shown in the diagram. Substance X is most likely

- (1) DNA
- (2) oxygen
- (3) ATP
- (4) chlorophyll

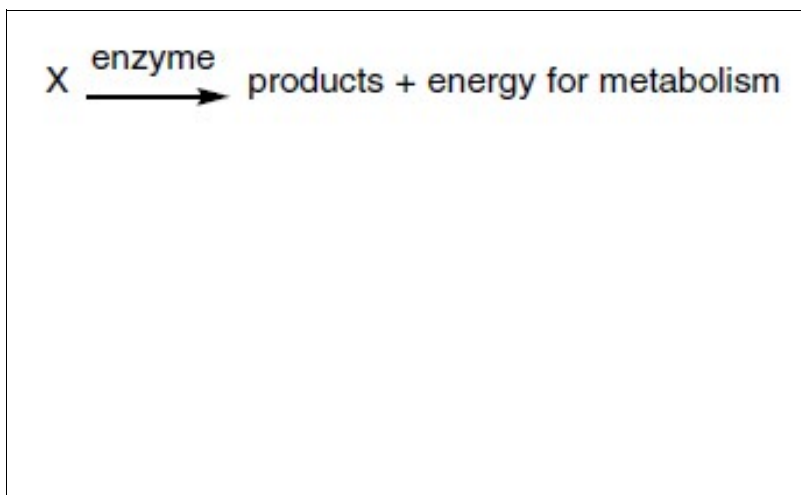
Data Base File Number: 644

Regents Date

Jan2004

27 1/29/2004 S4K5

Answer 3



ATP

50. The diagram shown represents a series of events that occur in living cells. Which molecule is indicated by X?

- (1) glucose
- (2) ATP
- (3) carbon dioxide
- (4) protein

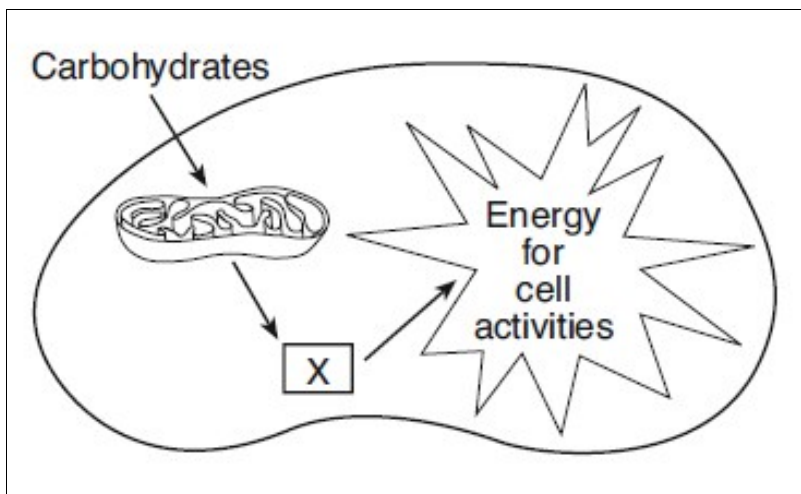
Data Base File Number: 411

Regents Date

June2012

33 6/19/2012 S4K5

Answer 2



ATP

51. In the diagram shown, the dark dots indicate small molecules. These molecules are moving out of the cells, as indicated by the arrows. The number of dots inside and outside of the two cells represents the relative concentrations of the molecules inside and outside of the cells. ATP is being used to move the molecules out of the cell by
- (1) cell A, only
 - (2) cell B, only
 - (3) both cell A and cell B
 - (4) neither cell A nor cell B

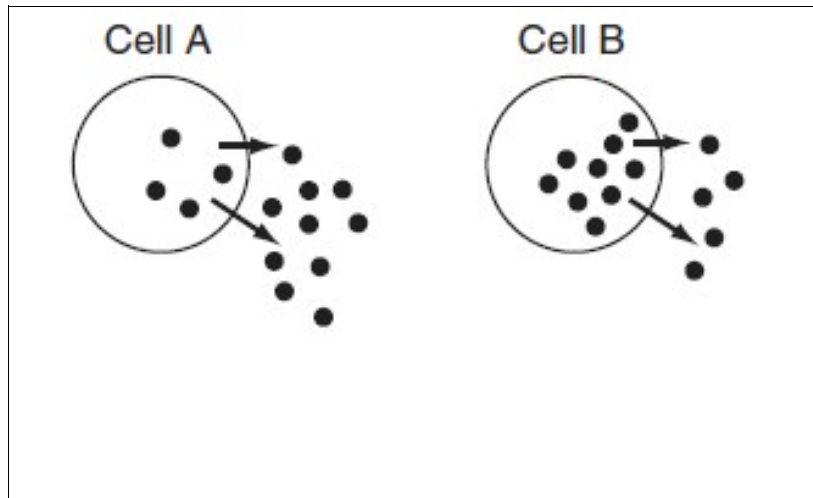
Data Base File Number: 707

Regents Date

Jan2003

11 1/30/2003 S4K5

Answer 1



ATP

52. The diagram below represents a cell. Which statement concerning ATP and activity within the cell is correct?
- (1) The absorption of ATP occurs at structure A.
 - (2) The synthesis of ATP occurs within structure B.
 - (3) ATP is produced most efficiently by structure C.
 - (4) The template for ATP is found in structure D.

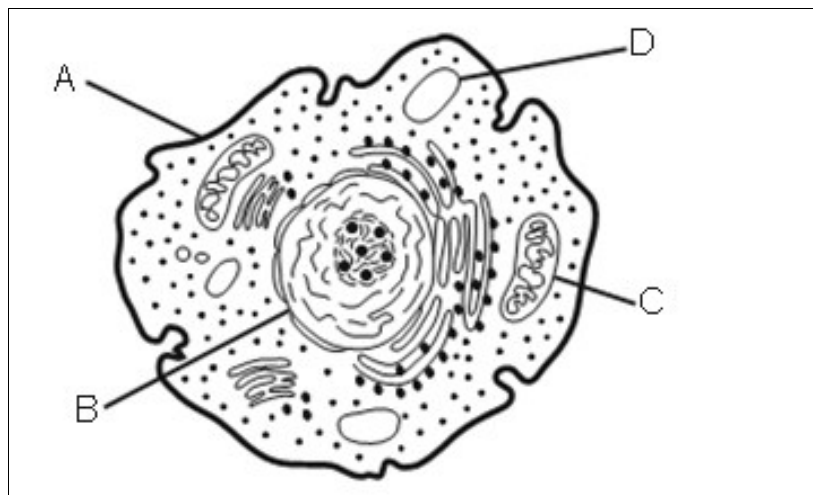
Data Base File Number: 188

Regents Date

June2009

32 6/18/2009 S4K5

Answer 3



ATP

53. The diagram shows two different kinds of substances, A and B, entering a cell. ATP is most likely being used for
- (1) substance A to enter the cell
 - (2) substance B to enter the cell
 - (3) both substances to enter the cell
 - (4) neither substance to enter the cell

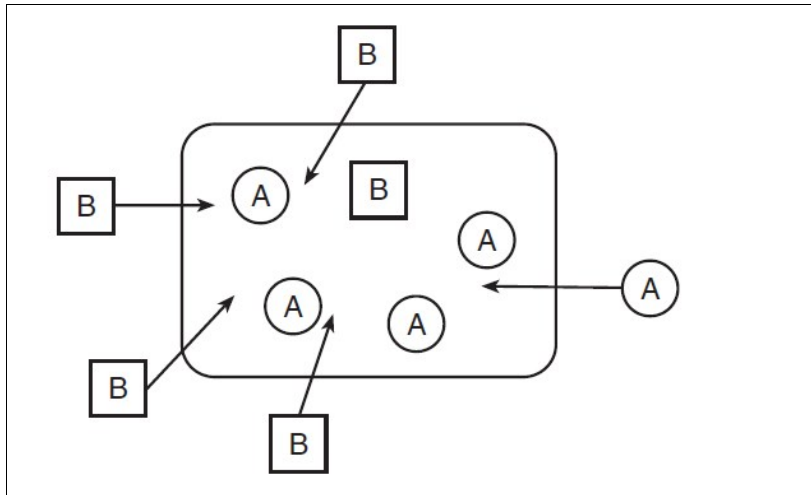
Data Base File Number: 322

Regents Date

Jan2011

44 1/25/2011 S4K1

Answer 1



ATP

54. The diagram below represents a biochemical process. Which molecule is represented by X?
- (1) DNA
 - (2) starch
 - (3) protein
 - (4) ATP

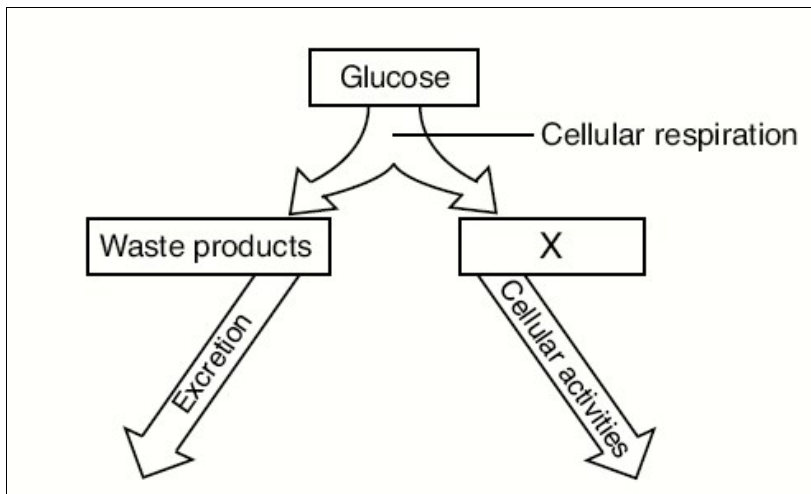
Data Base File Number: 122

Regents Date

Aug2008

20 8/13/2008 S4K5

Answer 4



autotroph

55. Base your answer to this question on the information in the diagram and on your knowledge of biology. In an autotrophic organism, substance B functions as a

- (1) source of energy
- (2) hormone
- (3) vitamin
- (4) biotic resource

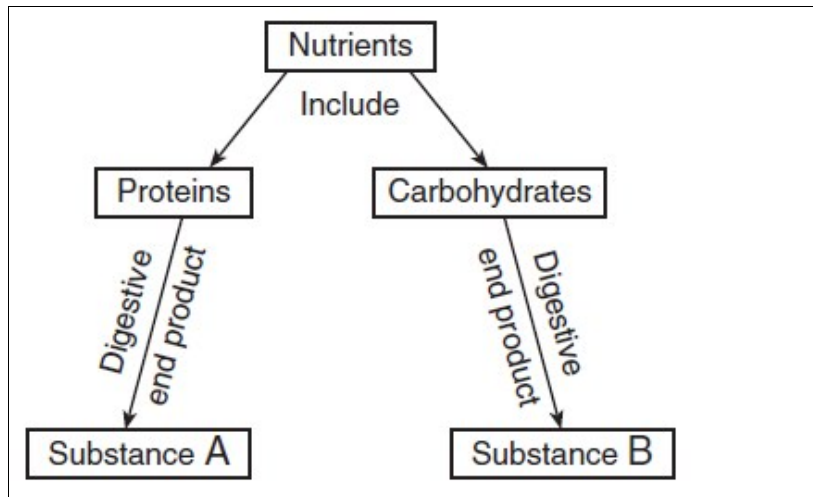
Data Base File Number: 491

Regents Date

June 2006

36 6/21/2006 S4K1

Answer 1



autotroph

56. Base your answer to this question on the diagram and your knowledge of biology. Which organism carries out autotrophic nutrition?

- (1) hawk
- (2) cricket
- (3) grass
- (4) deer

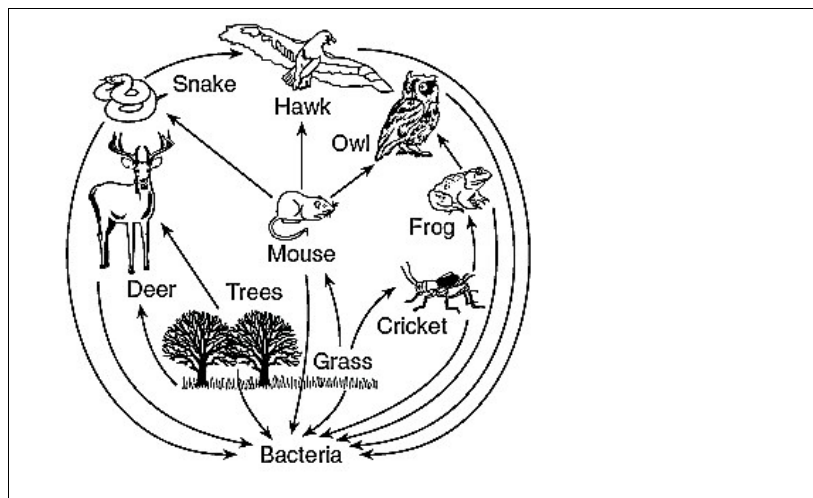
Data Base File Number: 44

Regents Date

June 2007

47 6/20/2007 S4K1

Answer 3



autotroph

57. The diagram shown represents an autotrophic cell. For the process of autotrophic nutrition, the arrow labeled A would most likely represent the direction of movement of
- (1) carbon dioxide, water, and solar energy
 - (2) oxygen, glucose, and solar energy
 - (3) carbon dioxide, oxygen, and heat energy
 - (4) glucose, water, and heat energy

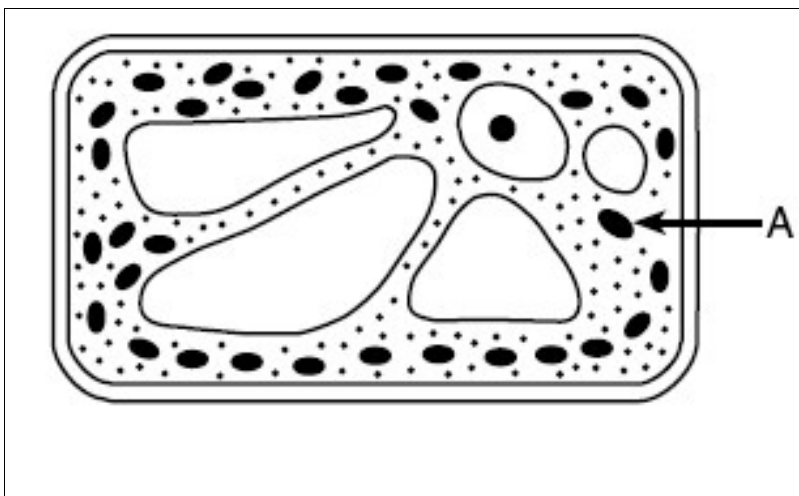
Data Base File Number: 153

Regents Date

Jan2009

20 1/27/2009 S4K5

Answer 1



autotroph

58. The relative amount of oxygen in the atmosphere of Earth is shown in the graph. At what point in the history of Earth did autotrophs most likely first appear?
- (1) 3500 million years ago
 - (2) 2500 million years ago
 - (3) 1500 million years ago
 - (4) 500 million years ago

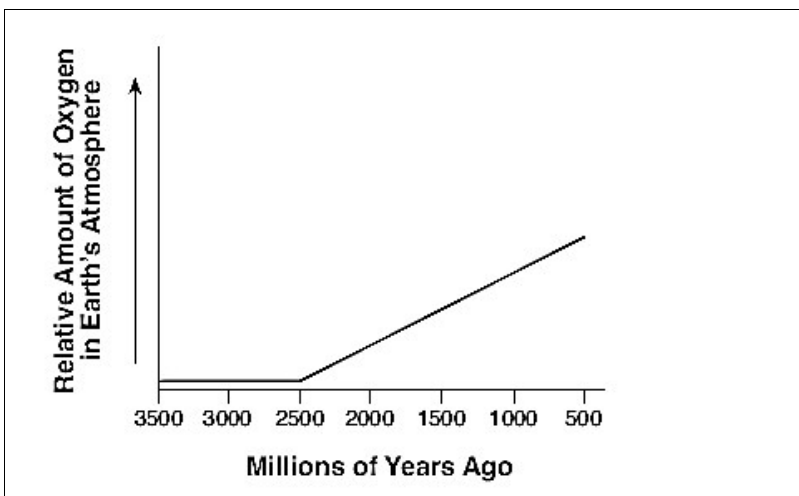
Data Base File Number: 75

Regents Date

Jan2008

37 1/25/2008 S4K3

Answer 2



bacteria

59. An experiment was carried out to determine which mouthwash was most effective against bacteria commonly found in the mouth. Four paper discs were each dipped into a different brand of mouthwash. The discs were then placed onto the surface of a culture plate that contained food, moisture, and bacteria commonly found in the mouth. The diagram shows the growth of bacteria on the plate after 24 hours.

Which change in procedure would have improved the experiment?

- (1) using a smaller plate with less food and moisture
- (2) using bacteria from many habitats other than the mouth
- (3) using the same size paper discs for each mouthwash
- (4) using the same type of mouthwash on each disc

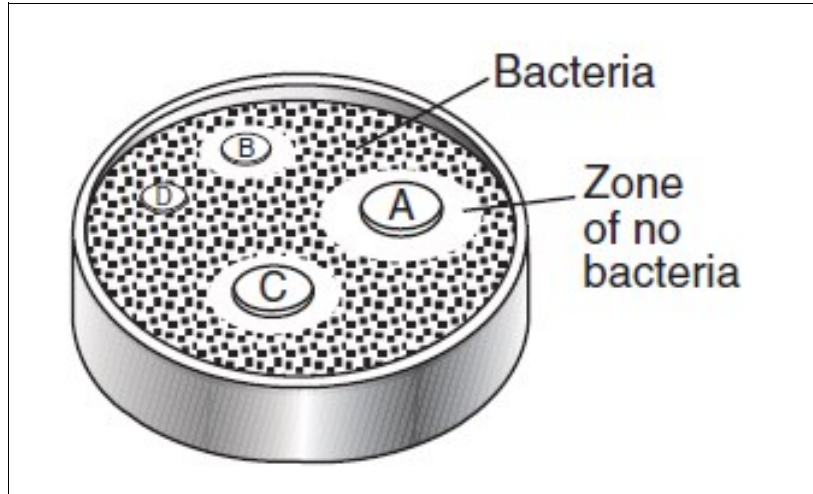
Data Base File Number: 462

Regents Date

Jan2006

33 1/27/2006 S1K3

Answer 3



bacteria

60. Base your answer to this question on the information shown and on your knowledge of biology. Food is often treated to lower the risk of disease and spoilage, as shown in the chart. Name one type of organism that is controlled by these food preservation methods.

- (1) bacteria
- (2) viruses
- (3) antibodies
- (4) chromosomes

Data Base File Number: 166

Regents Date

Jan2009

60 1/27/2009 S4K5

Answer 1

Food Preservation Methods		
Method	Description of Method	Example of Food Treated With This Method
canning	heating at 115°C for 30 minutes	green beans
freezing	storing between -10°C and -18°C for extended time	meat, fish, poultry
salting	soaking in a salt solution for several days or weeks	pickles, sauerkraut

bacterial growth cycle

61. A sample of bacteria was added to a culture dish containing a food supply. The dish was kept in an incubator for two weeks, where temperature and other conditions that favored bacterial growth were kept constant. The graph shows changes that occurred in the bacterial population over the two weeks. Which statement provides the best explanation for some of the changes observed?

- (1) The bacteria were unable to reproduce until day 8.
- (2) The bacteria consumed all of the available food.
- (3) The culture dish contained an antibiotic for the first five days.
- (4) The temperature increased and the bacteria died.

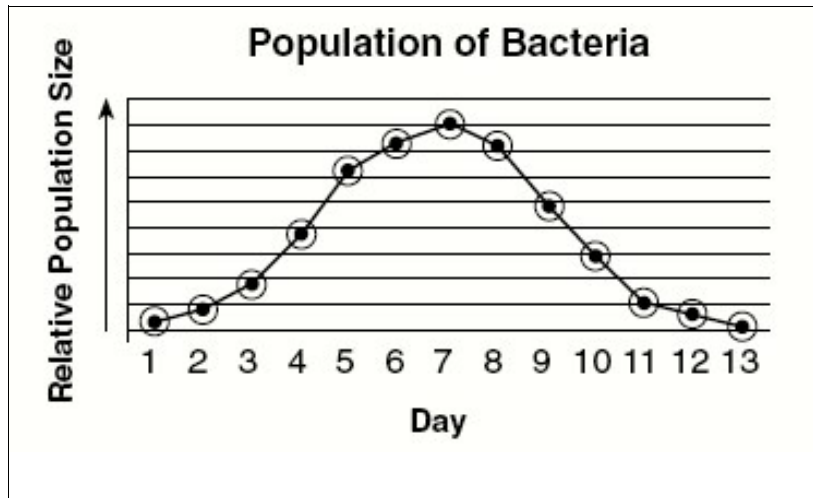
Data Base File Number: 160

Regents Date

Jan2009

40 1/27/2009 S4K6

Answer 2



bacterial growth cycle

62. The graph shown represents the growth of bacteria cultured at three different temperatures over a period of 24 hours. Which statement concerning the rate of cell division in the bacteria culture is correct?

- (1) Cell division is most rapid at 37°C between 6 and 8 hours after it began.
- (2) Cell division is most rapid at 25°C between 20 and 24 hours after it began.
- (3) Cell division is most rapid at 18°C between 4 and 8 hours after it began.
- (4) Cell division occurs at the same rate no matter what the temperature.

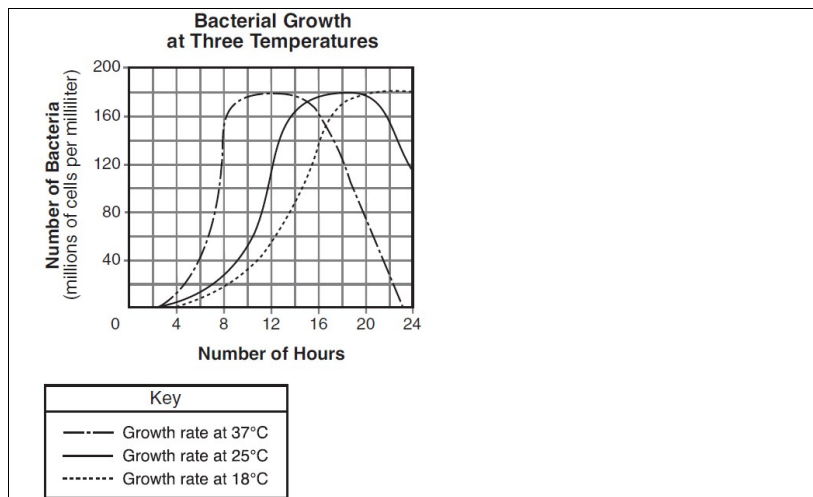
Data Base File Number: 282

Regents Date

Aug2010

31 8/18/2010 S1K3

Answer 1



bacterial reproduction

63. The graph shown provides information about the reproductive rates of four species of bacteria, A, B, C, and D, at different temperatures. Which statement is a valid conclusion based on the information in the graph?

- (1) Changes in temperature cause bacteria to adapt to form new species.
- (2) Increasing temperatures speed up bacterial reproduction.
- (3) Bacteria can survive only at temperatures between 0°C and 100°C.
- (4) Individual species reproduce within a specific range of temperatures.

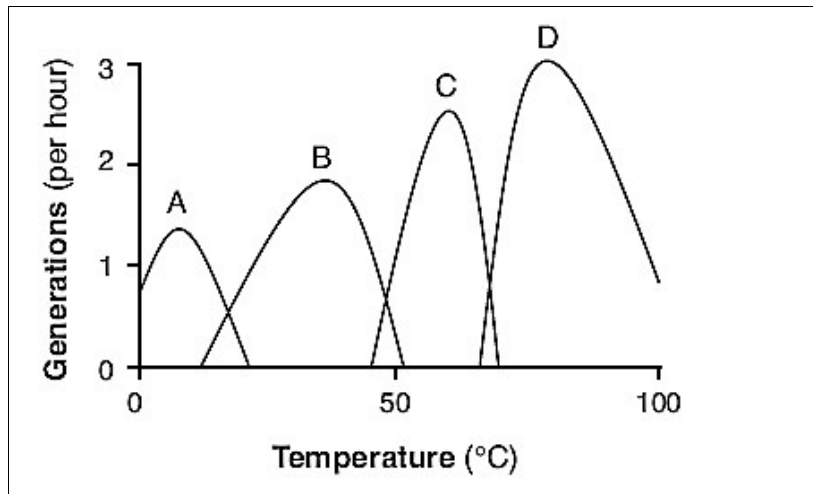
Data Base File Number: 102

Regents Date

June 2008

37 6/24/2008 S4K4

Answer 4



bar graph

64. The bar graph shows the height of a plant at the end of each week of a five-week growth period. Which statement represents a valid conclusion based on the information in the graph?

- (1) The plant was given water during the first three weeks, only.
- (2) The plant will grow faster during the sixth week than it did during the fifth week.
- (3) The plant grew fastest during the first three weeks, and then it grew slower.
- (4) The plant grew slowest during the first three weeks, and then it grew faster.

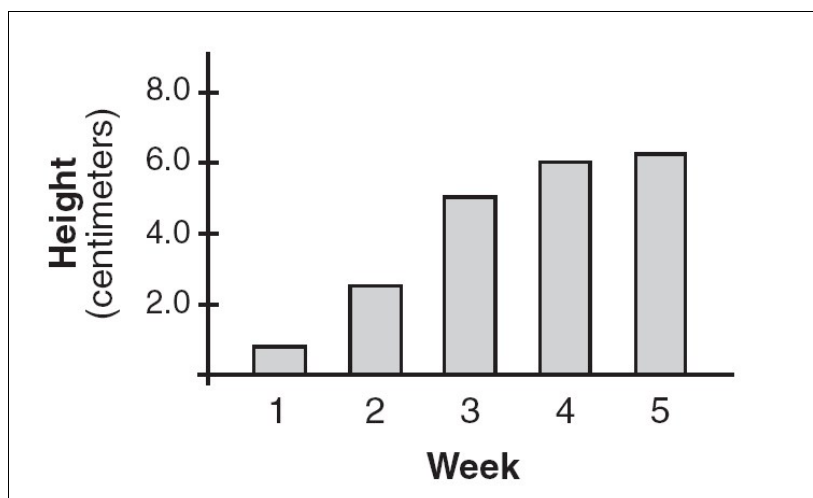
Data Base File Number: 339

Regents Date

June 2011

31 6/21/2011 S1K3

Answer 3



base sequences

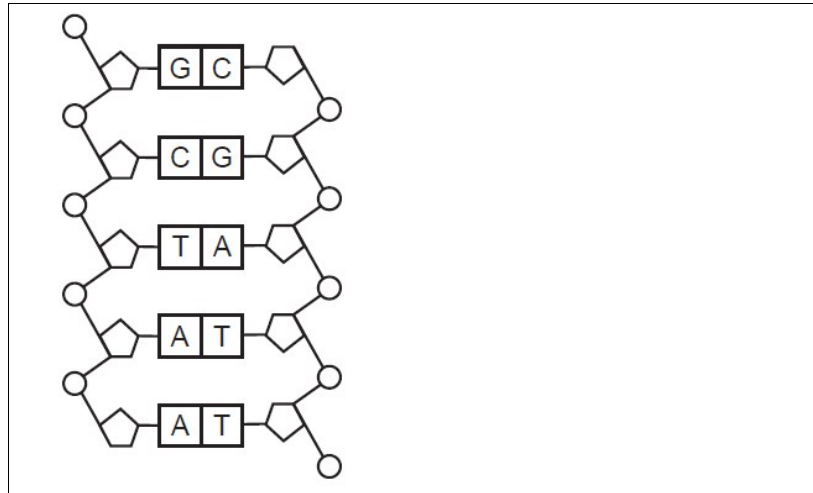
65. The diagram shown represents a portion of a molecule found in cells of the human body. Sequences represented by the letters in this molecule enable human cells to
- (1) alter the method of absorption of material
 - (2) carry out asexual reproduction by meiosis
 - (3) synthesize enzymes from organic molecules
 - (4) modify genetic recombination during mitosis

Data Base File Number: 925

Regents Date

Jan2014
39 1/27/2014 S4K2

Answer 3



biodiversity

66. Some data concerning bird species are shown in the chart. Which statement is a valid inference based on information in the chart?
- (1) The different species in northern Alaska can interbreed.
 - (2) There are conditions in Costa Rica that account for greater biodiversity there.
 - (3) The different species in southwest Texas evolved from those in northern Alaska.
 - (4) The greater number of species in Costa Rica is due to a greater number of predators there.

Data Base File Number: 587

Regents Date

Aug2005
31 8/16/2005 S4K6

Answer 2

Number of Bird Species	Location
26	northern Alaska
153	southwest Texas
600	Costa Rica

biodiversity

67. The diagram shown represents the varying biodiversity in three ecosystems. The level of biodiversity in ecosystem A is high because it has the

- (1) least variety of energy levels
- (2) greatest variety of genetic material
- (3) greatest number of decomposers
- (4) least number of ecological niches

Data Base File Number: 292

Regents Date

Aug2010

43 8/18/2010 **S4K6**

Answer 2

Ecosystem A	Ecosystem B	Ecosystem C
Carnivores 	Carnivores 	Carnivores
Herbivores 	Herbivores 	Herbivores
Autotrophs 	Autotrophs 	Autotrophs
Decomposers 	Decomposers 	Decomposers

biodiversity

68. Which graph best shows the relationship between the amount of biodiversity and the number of different populations in an ecosystem?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

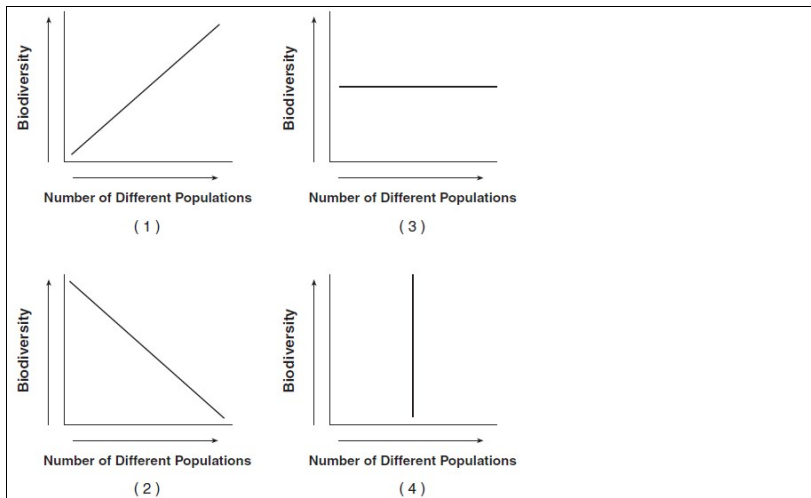
Data Base File Number: 442

Regents Date

Aug2012

40 8/17/2012 **S4K6**

Answer 1



body mass index (BMI)

69. Excess body weight is considered to be a risk factor for diseases such as diabetes and high blood pressure. The Body Mass Index (BMI) chart shown can be used as a guide to determine if a person's body weight puts that person at risk for such diseases. Using the information in the chart provided, the BMI for a person who is 5 feet 9 inches tall and weighs 170 pounds is between

- (1) 24 and 25
- (2) 25 and 26
- (3) 27 and 28
- (4) 29 and 30

Data Base File Number: 913

Regents Date

Aug2013
50 8/14/2013 LABA

Answer 2

BMI	Healthy		Overweight					Obese			
	19	24	25	26	27	28	29	30	35	40	45
Height	Weight in Pounds										
5'0"	97	123	128	133	138	143	148	153	158	164	170
5'1"	100	127	132	137	143	148	153	158	164	170	176
5'2"	104	131	136	142	147	153	158	164	170	176	182
5'3"	107	135	141	146	152	158	163	169	175	181	187
5'4"	110	140	145	151	157	163	169	174	180	186	192
5'5"	114	144	150	156	162	168	174	180	186	192	198
5'6"	118	148	155	161	167	173	179	186	192	198	204
5'7"	121	153	159	166	172	178	185	191	197	204	210
5'8"	125	158	164	171	177	184	190	197	203	210	216
5'9"	128	162	169	176	182	189	196	203	209	216	222
5'10"	132	167	174	181	188	195	202	209	215	222	228
5'11"	136	172	179	186	193	200	208	215	221	228	234
6'0"	140	177	184	191	199	206	213	221	227	234	241
6'1"	144	182	189	197	204	212	219	227	233	240	247
6'2"	148	186	194	202	210	218	225	233	239	246	253
6'3"	152	192	200	208	216	224	232	240	246	253	260

body mass index (BMI)

70. Base your answer to this question on the information and the chart shown and on your knowledge of biology. - Body weight is considered to be a risk factor for diseases such as diabetes and high blood pressure. The Body Mass Index (BMI) chart can be used as a guide to determine if a person's body weight puts them at risk for such diseases. A portion of this chart is shown. The BMI for a person who is 5 feet 9 inches tall and weighs 170 pounds is between

- (1) 24 and 25
- (2) 25 and 26
- (3) 27 and 28
- (4) 29 and 30

Data Base File Number: 347

Regents Date

June2011
47 6/21/2011 S1K3

Answer 2

BMI	Healthy		Overweight					Obese			
	19	24	25	26	27	28	29	30	35	40	45
Height	Weight in Pounds										
5'4"	110	140	145	151	157	163	169	174	180	186	192
5'5"	114	144	150	156	162	168	174	180	186	192	198
5'6"	118	148	155	161	167	173	179	186	192	198	204
5'7"	121	153	159	166	172	178	185	191	197	204	210
5'8"	125	158	164	171	177	184	190	197	203	210	216
5'9"	128	162	169	176	182	189	196	203	209	216	222
5'10"	132	167	174	181	188	195	202	209	215	222	228
5'11"	136	172	179	186	193	200	208	215	221	228	234

camouflage

71. The illustration shows an insect resting on some green leaves. The size, shape, and green color of this insect are adaptations that would most likely help the insect to
- (1) compete successfully with all birds
 - (2) make its own food
 - (3) hide from predators
 - (4) avoid toxic waste materials

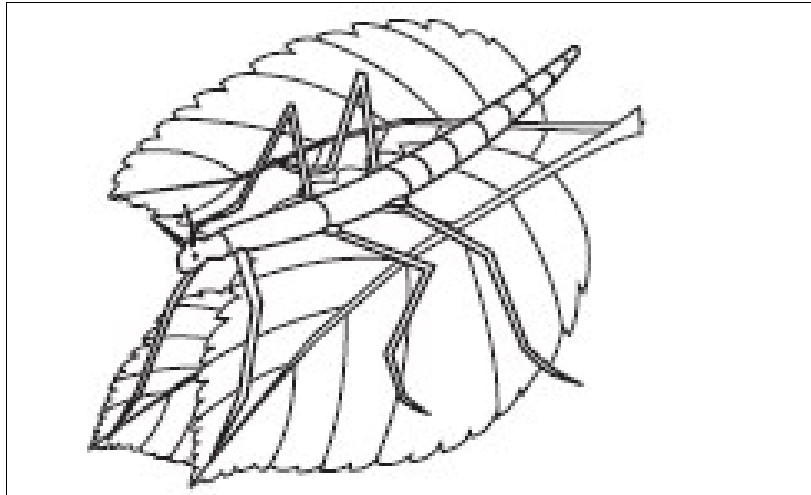
Data Base 476
File Number:

Regents Date

June2006

10 6/21/2006 S4K3

Answer 3



camouflage

72. Base your answer to this question on the information given, the data table shown, and on your knowledge of biology. An investigation was carried out over a five-year period to measure the effect of color on the survival of trout in a stream. The stream contained many brightly colored stones and food was plentiful. At the start of the investigation (year 0), 100 bright-colored trout and 100 drab-colored trout were placed into a section of the stream that had been blocked with netting. Investigators monitored the trout populations for five years and recorded the water condition each time a count was done. The data collected are shown in the table. Which of the following best explains how trout survival is related to the color of trout and the environmental condition of the stream.

- (1) Drab-colored trout survive better in cloudy water because they blend in with water.
- (2) Brightly-colored trout survive better in clear water because they blend in with the brightly colored stones.
- (3) Both choice 1 and choice 2 are correct.
- (4) Both choice 1 and choice 2 are incorrect.

Data Base File Number: 294

Regents Date

Aug2010

52 8/18/2010 S1K3

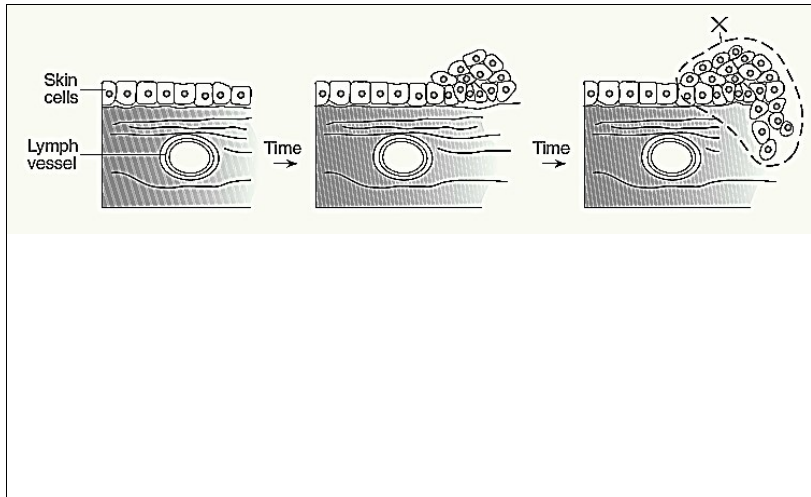
Answer 3

Year	Bright-Colored Trout	Drab-Colored Trout	Condition of Water
0	100	100	clear
1	64	36	clear
2	86	25	clear
3	25	77	cloudy
4	14	86	cloudy
5	90	9	clear

cancer

73. The diagram shows the growth pattern of some skin cells in the human body after they have been exposed to ultraviolet radiation. The cells in area X are most likely

- (1) red blood cells
- (2) cancer cells
- (3) white blood cells
- (4) sex cells



Data Base
File Number:

8

Regents Date

Aug2007

21 8/16/2007 S4K5

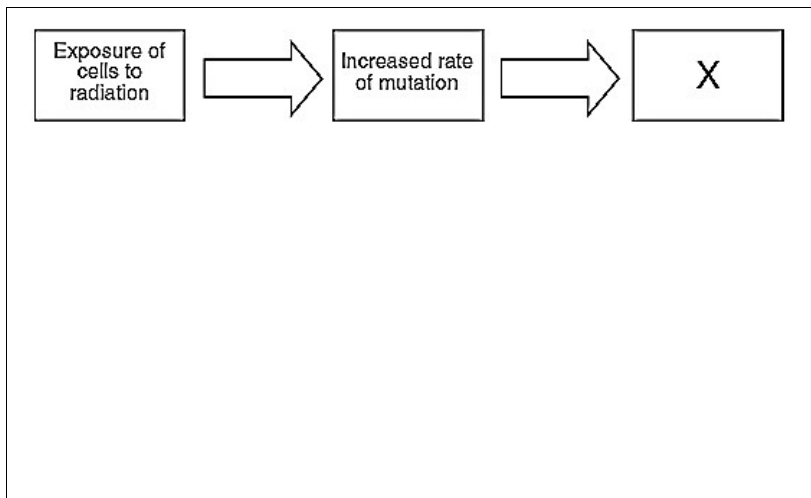
Answer

2

cancer

74. Which phrase belongs in box X of the flowchart shown?

- (1) Increased chance of cancer
- (2) Increase in the production of functional gametes
- (3) Decrease in genetic variability of offspring
- (4) Decreased number of altered genes



Data Base
File Number:

52

Regents Date

Jan2007

29 1/26/2007 S4K5

Answer

1

carbon dioxide / oxygen cycle

75. The diagram shown represents a cycling of materials. Which row in the chart shows the substances represented by X and Y?

- (1) 1 (3) 3
 (2) 2 (4) 4

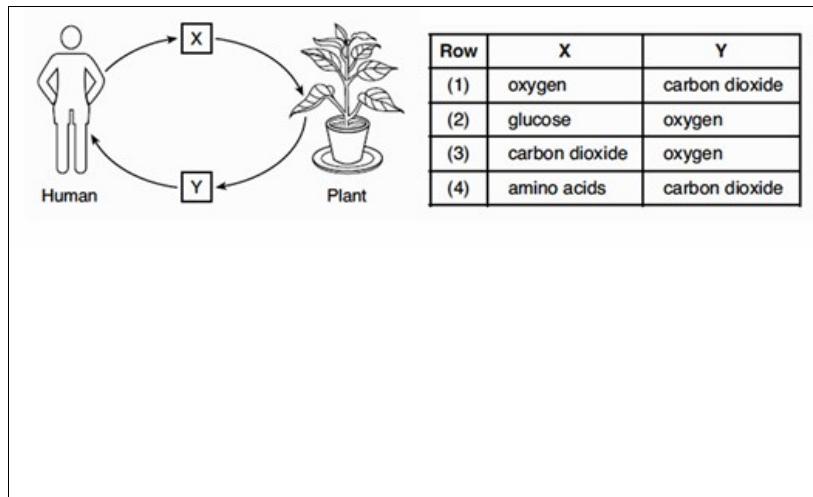
Data Base File Number: 408

Regents Date

June 2012

25 6/19/2012 S4K5

Answer 3



carbon dioxide levels

76. Base your answer to this question on the information and graph shown and on your knowledge of biology. At an observatory in Mauna Loa, Hawaii, scientists have been measuring and collecting data related to changes in the atmosphere since the 1950s. The remote location of the observatory makes it ideal for studying atmospheric conditions that can cause climate change. One specific measurement taken is the amount of atmospheric carbon dioxide. Information for a 7-year period is shown in the graph. Analyze the data shown in the graph. From Jan-95 to Jan-02, what conclusion can be made about Atmospheric Carbon Dioxide in Mauna Loa?

- (1) carbon dioxide levels remained the same (3) carbon dioxide levels increased
 (2) carbon dioxide levels decreased (4) carbon dioxide levels are erratic

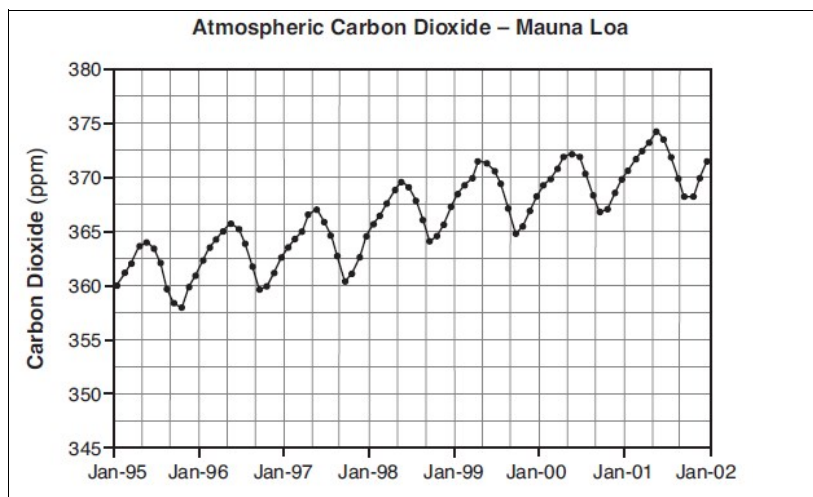
Data Base File Number: 630

Regents Date

Jan 2013

69 1/23/2013 S4K7

Answer 3



carbon dioxide levels

77. Base your answer to this question on the information below and on your knowledge of biology. The average level of carbon dioxide in the atmosphere has been measured for the past several decades. The data collected are shown in the table. From 1960 to 2000, what has happened to the levels of carbon dioxide?

- (1) Carbon dioxide is rising.
- (2) Carbon dioxide is falling.
- (3) The data does not show a change in carbon dioxide.
- (4) Carbon dioxide levels have remained constant.

Data Base File Number: 81

Regents Date

Jan2008

1/25/2008 S1K3

Answer 1

Average CO₂ Levels in the Atmosphere

Year	CO ₂ (in parts per million)
1960	320
1970	332
1980	350
1990	361
2000	370

carnivore

78. Which group contains terms that are all directly associated with one of the organisms shown in the diagram below?

- (1) herbivore, prey, autotroph, host
- (2) predator, scavenger, decomposer, consumer
- (3) carnivore, predator, heterotroph, multicellular
- (4) producer, parasite, fungus, fish

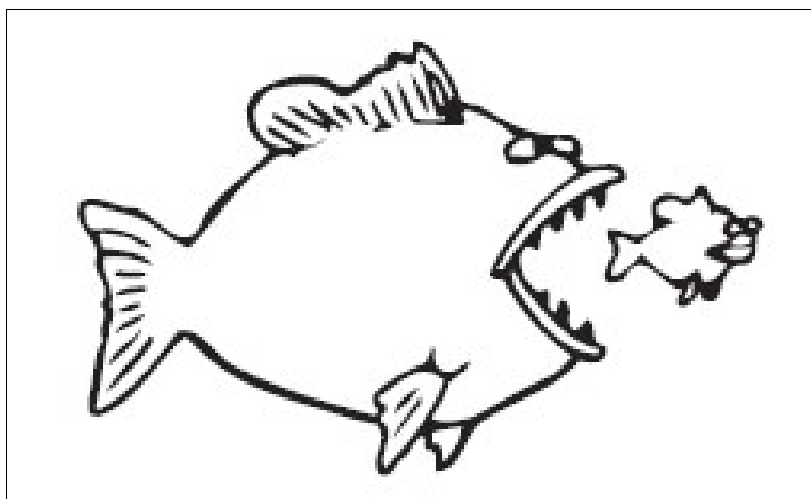
Data Base File Number: 763

Regents Date

Aug2003

32 8/13/2003 S4K6

Answer 3



carnivore

79. Base your answer to this questions on the data table shown and on your knowledge of biology. Based on its preferred food, species B would be classified as a

- (1) decomposer
- (2) procucer
- (3) carnivore
- (4) parasite

Data Base File Number: 112

Regents Date

June2008

74 6/24/2008 LABS

Answer 3

Species of Finch	Preferred Foods
A	nuts and seeds
B	worms and insects
C	fruits and seeds
D	insects and seeds
E	nuts and seeds

carnivore

80. Which ecological term best describes the polar bears in the cartoon?

- (1) herbivores
- (2) parasites
- (3) carnivores
- (4) producers

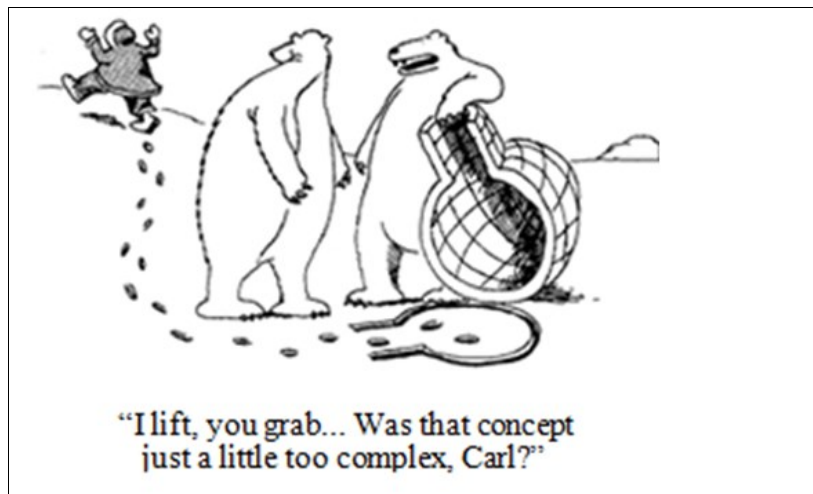
Data Base File Number: 738

Regents Date

June2003

29 6/19/2003 S4K6

Answer 3



carrying capacity

81. Base your answer to this questions on the information and data table given and on your knowledge of biology.

Yellowstone Park Wolf Update

For the first time in nearly 70 years, the howl of the wolf is being echoed throughout Yellowstone National Park. "Canis lupus", the gray wolf, one of the largest and most complex of the canine species, has been successfully reintroduced into the Yellowstone ecosystem.

In mid-January 1995, 14 wolves from many separate packs were captured in Canada and then transported into Yellowstone Park and placed into three one acre pens.

Source: <http://www.yellowstone-bearman.com/w-update.html>

After the wolves were given time to establish a new pack structure, the packs were released into the wild. The number of wolf pups was counted each year for four years. The data are shown in the table. The number of wolves that can be supported in this environment for a long period of time is known as

- (1) ecosystem stability
- (2) carrying capacity
- (3) ecological succession
- (4) biological evolution

Data Base 911
File Number:

Regents Date

Aug2013
47 8/14/2013 S4K6

Answer 2

Year	Number of Pups
1996	11
1997	64
1998	42
1999	61

carrying capacity

82. Base your answer to this question on the data table, which shows the estimated population of wolves in Minnesota from 1995 through 2002. The most likely explanation for the size of the wolf population for the 2000-2002 period is that the population
- (1) reached the carrying capacity of the environment
 - (2) stabilized due to global warming
 - (3) began reproducing at a faster rate
 - (4) was affected by a new pathogen

Data Base File Number: 929

Regents Date

Jan2014

47 1/27/2014 S4K6

Answer 1

Year	Estimated Population
1995	2000
1996	2200
1997	2300
1998	2450
1999	2500
2000	2600
2001	2600
2002	2600

carrying capacity

83. Four environmental factors are shown in the diagram. Which factors limit environmental carrying capacity in a land ecosystem?
- (1) A, only
 - (2) B, C, and D, only
 - (3) A, C, and D, only
 - (4) A, B, C, and D

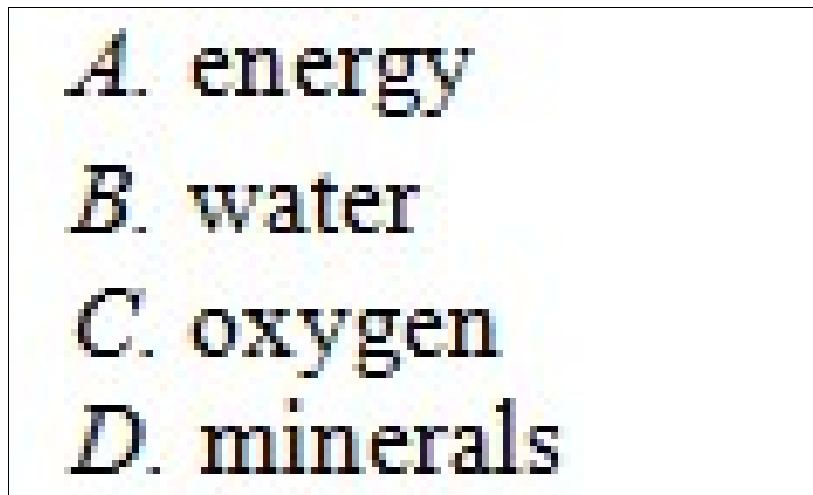
Data Base File Number: 513

Regents Date

Aug2006

29 8/16/2006 S4K6

Answer 4



carrying capacity

84. The graph shown provides information about the population of deer in a given area between 1900 and 1945. Which statement identifies the most likely reason that the carrying capacity of the area to support deer decreased between 1925 and 1930?
- (1) The deer population decreased in 1926.
 - (2) The number of predators increased between 1915 and 1925.
 - (3) The deer population became too large.
 - (4) An unusually cold winter occurred in 1918.

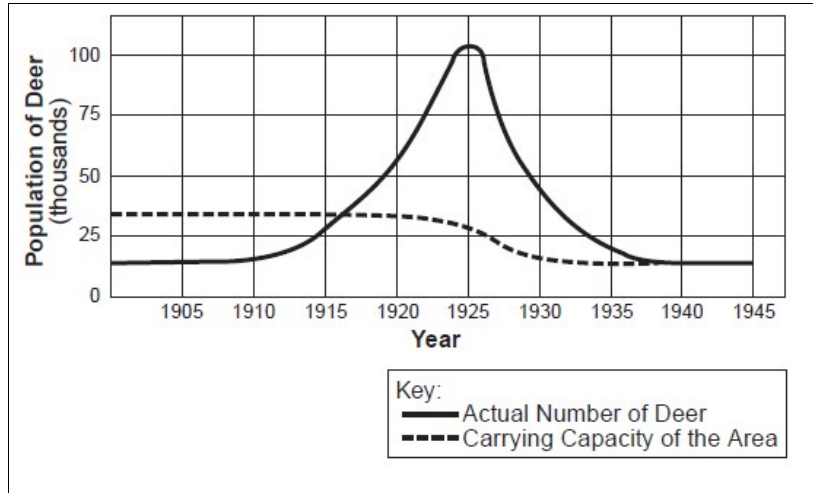
Data Base File Number: 849

Regents Date

June 2001

28 6/15/2001 S4K6

Answer 3



carrying capacity

85. The dotted line on the graph shown represents the potential size of a population based on its reproductive capacity. The solid line on this graph represents the actual size of the population. Which statement best explains why the actual population growth is less than the potential population growth?
- (1) Resources in the environment are limited.
 - (2) More organisms migrated into the population than out of the population.
 - (3) The birthrate gradually became greater than the death rate.
 - (4) The final population size is greater than the carrying capacity.

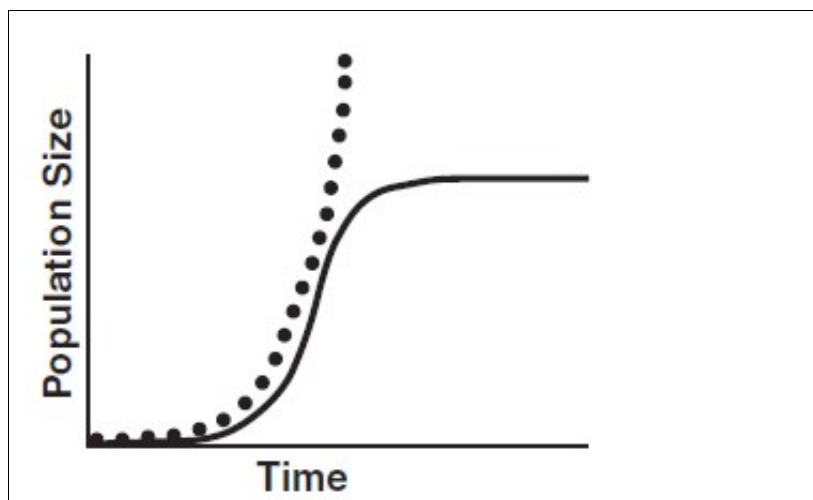
Data Base File Number: 811

Regents Date

June 2002

32 6/19/2002 S4K7

Answer 1



carrying capacity

86. Base your answer to this question on the graph shown and on your knowledge of biology. The graph shows the size of a population over time. Which term best identifies line B in the graph?

- (1) niche of the species in the environment
- (2) biodiversity in the environment
- (3) carrying capacity of the environment
- (4) number of populations in the environment

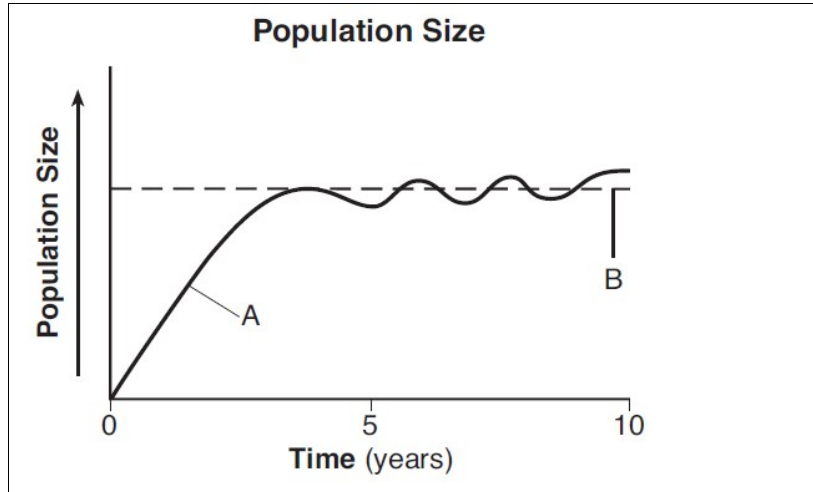
Data Base File Number: 886

Regents Date

June2013

49 6/11/2013 S4K6

Answer 3



carrying capacity

87. A population of chipmunks migrated to an environment where they had little competition. Their population quickly increased but eventually stabilized as shown in the graph. Which statement best explains why the population stabilized?

- (1) Interbreeding between members of the population increased the mutation rate.
- (2) The population size became limited due to factors such as availability of food.
- (3) An increase in the chipmunk population caused an increase in the producer population.
- (4) A predator species came to the area and occupied the same niche as the chipmunks.

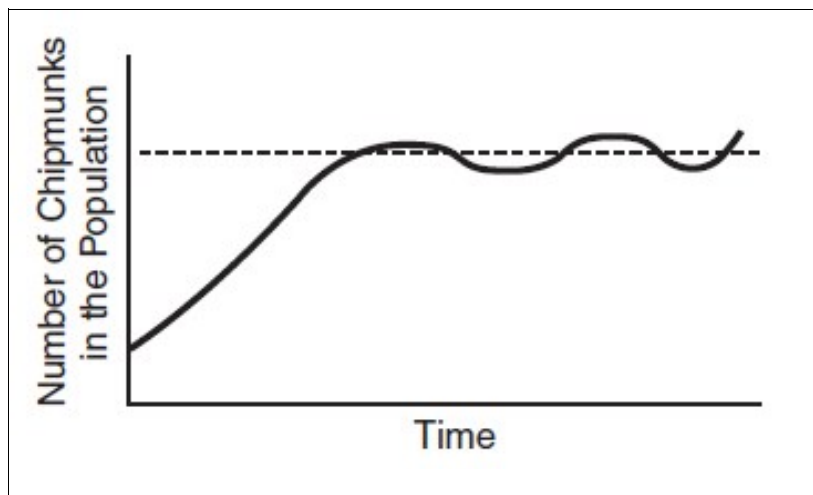
Data Base File Number: 667

Regents Date

June2004

26 6/18/2004 S4K6

Answer 2



carrying capacity

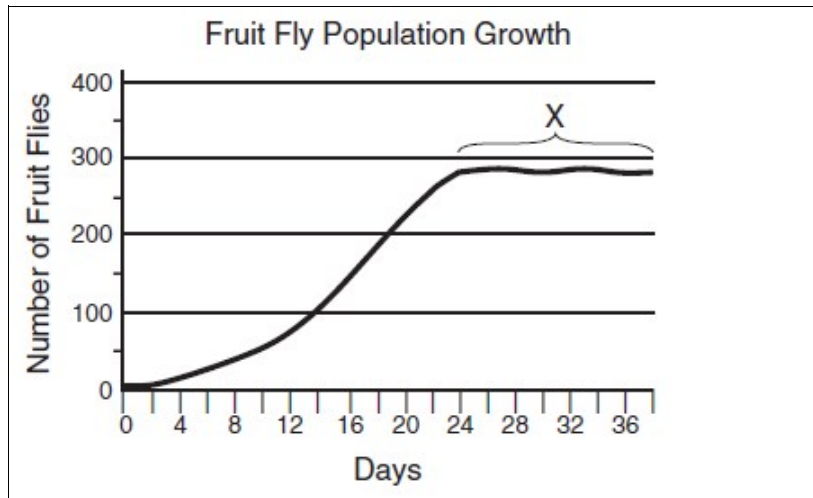
88. Which statement best describes the fruit fly population in the part of the curve labeled X in the graph shown?
- (1) The fruit fly population has reached the number of organisms the habitat can support.
 - (2) The fruit fly population can no longer mate and produce fertile offspring.
 - (3) The fruit fly population has an average life span of 36 days.
 - (4) The fruit fly population is no longer able to adapt to the changing environmental conditions.

Data Base File Number: 560

Regents Date

June2005
25 6/22/2005 S4K6

Answer 1



carrying capacity

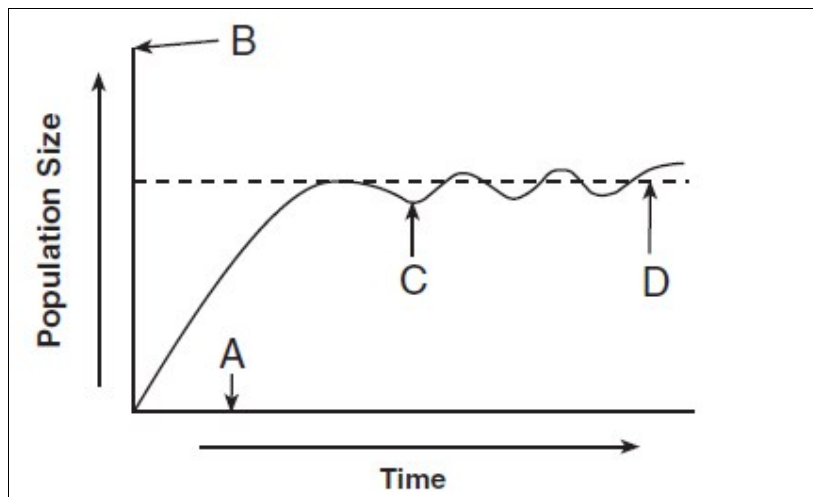
89. The growth of a population is shown in the graph. Which letter indicates the carrying capacity of the environment for this population?
- (1) A
 - (2) B
 - (3) C
 - (4) D

Data Base File Number: 484

Regents Date

June2006
25 6/21/2006 S4K6

Answer 4



cell division

90. The diagram shown illustrates the process of cell division. What is the significance of anaphase in this process?

- (1) Anaphase usually ensures that each daughter cell has the same number of chromosomes as the parent cell.
- (2) Anaphase usually ensures that each daughter cell has twice as many chromosomes as the parent cell.
- (3) In anaphase, the cell splits in half.
- (4) In anaphase, the DNA is being replicated

Data Base File Number:

570

Regents Date

June2005

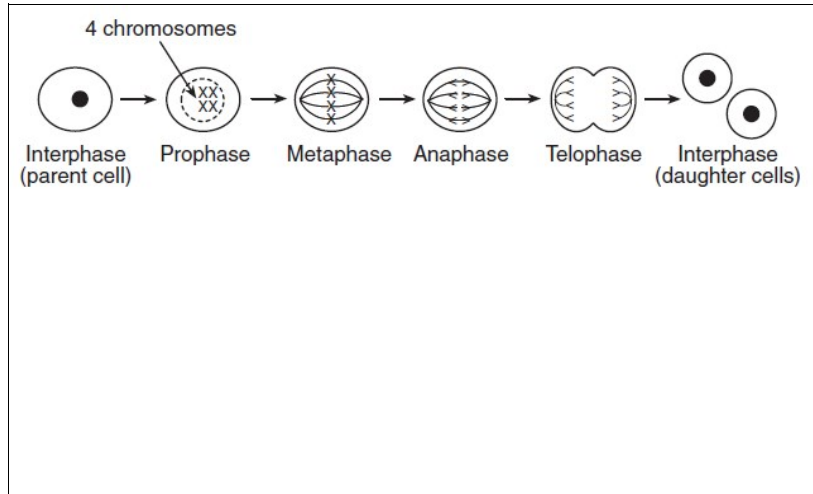
38

6/22/2005

S4K4

Answer

1



cell genetics

91. Several structures are labeled in the diagram of a puppy as shown. Every cell in each of these structures contains

- (1) equal amounts of ATP
- (2) identical genetic information
- (3) proteins that are all identical
- (4) organelles for the synthesis of glucose

Data Base File Number:

254

Regents Date

June2010

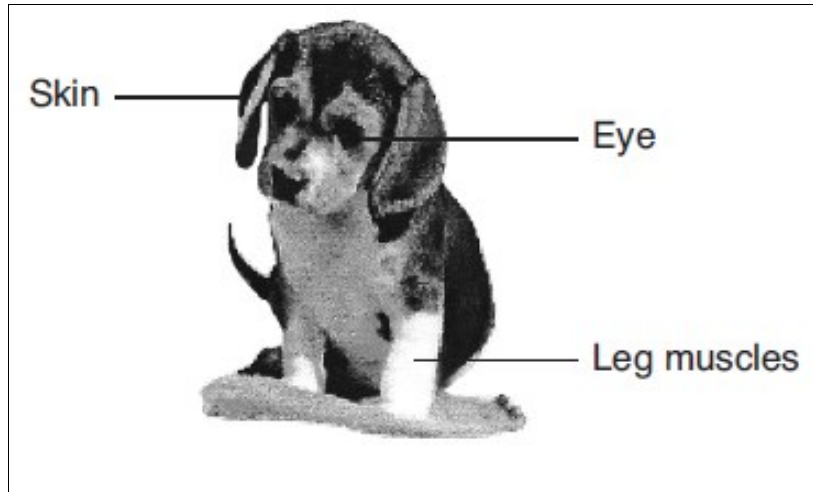
9

6/16/2010

S4K2

Answer

2



cell membrane

92. The cell represented in the diagram produces oxygen. Which structure allows the passage of this oxygen to the environment?

- (1) A
- (2) B
- (3) C
- (4) D

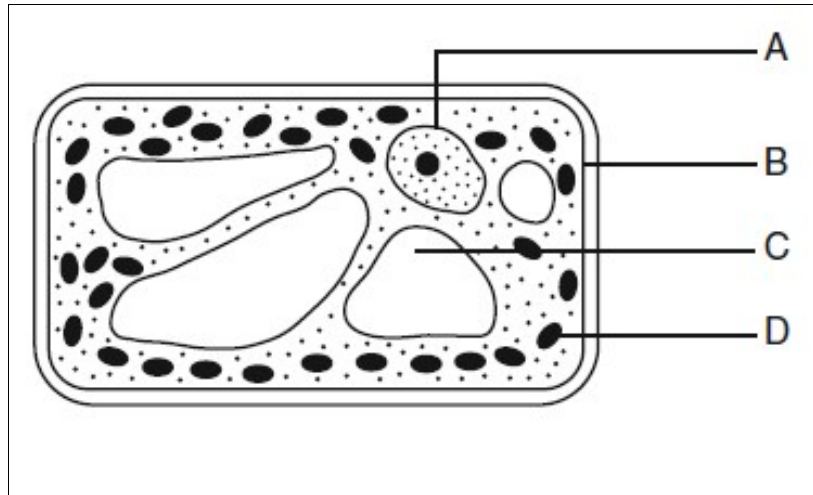
Data Base File Number: 430

Regents Date

Aug2012

1 8/17/2012 S4K1

Answer 2



cell membrane

93. The diagram shown represents the distribution of some molecules inside and outside of a cell over time. Which factor prevented the protein molecules from moving out of the cell?

- (1) temperature
- (2) pH
- (3) molecule size
- (4) molecule concentration

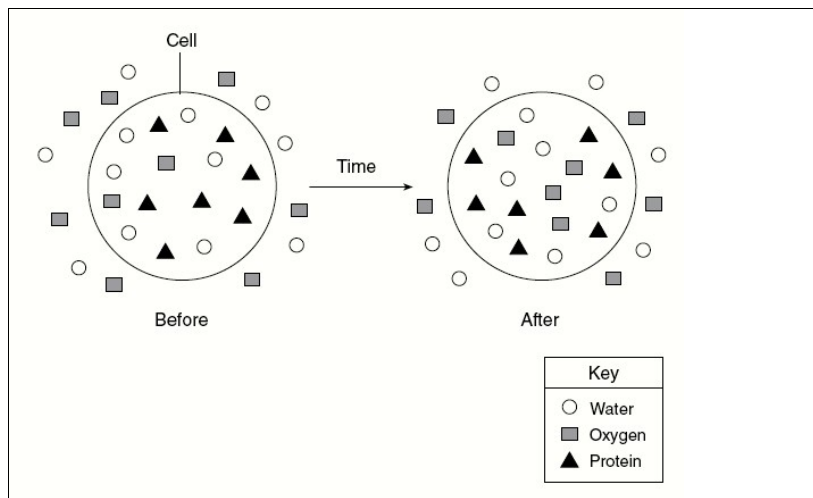
Data Base File Number: 173

Regents Date

Jan2009

80 1/27/2009 LABS

Answer 3



cell membrane

94. Which letter indicates a cell structure that directly controls the movement of molecules into and out of the cell?

(1) A

(3) C

(2) B

(4) D

Data Base File Number: 728

Regents Date

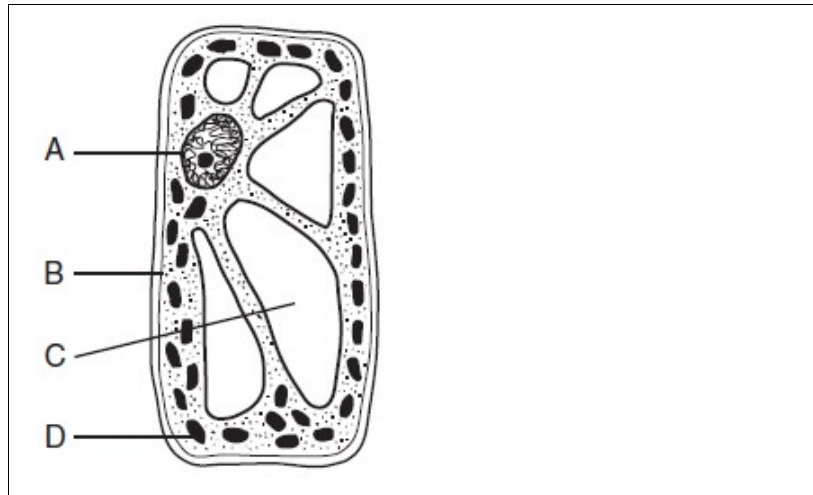
June2003

3

6/19/2003

S4K1

Answer 2



cell membrane

95. The diagram shown represents a portion of a cell membrane. Which structure may function in the recognition of chemical signals?

(1) A

(3) C

(2) B

(4) D

Data Base File Number: 191

Regents Date

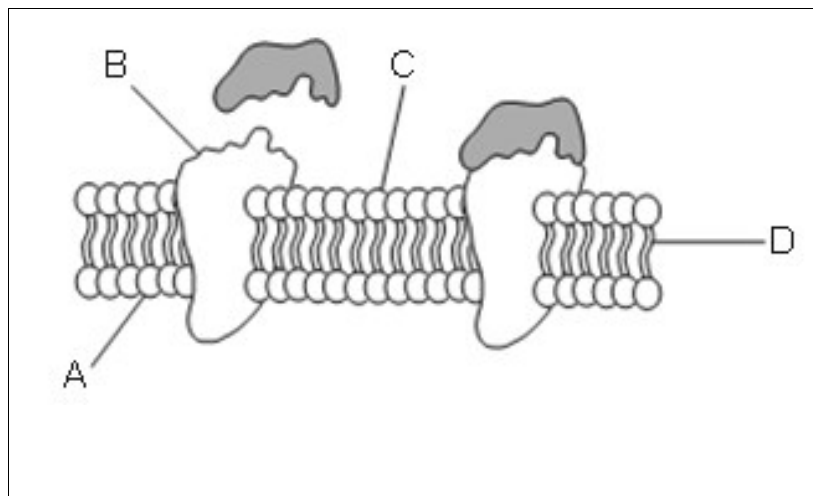
June2009

35

6/18/2009

S4K1

Answer 2



cell membrane

96. Some human structures and their functions are shown. In a single-celled organism such as an ameba, all these functions can be performed by the

- (1) nucleus
- (2) ribosomes
- (3) mitochondria
- (4) cell membrane

Data Base File Number: 361

Regents Date

Aug2011

8 8/18/2011 S4K1

Answer 4

Human Structures	Functions
alveoli	absorption of oxygen, excretion of carbon dioxide
kidney	excretion of salts and nitrogenous wastes
large intestine	absorption of water

cell membrane

97. A single-celled organism is represented in the diagram. Structure X carries out a function most similar to which structure in a human?

- (1) lung
- (2) brain
- (3) ovary
- (4) heart

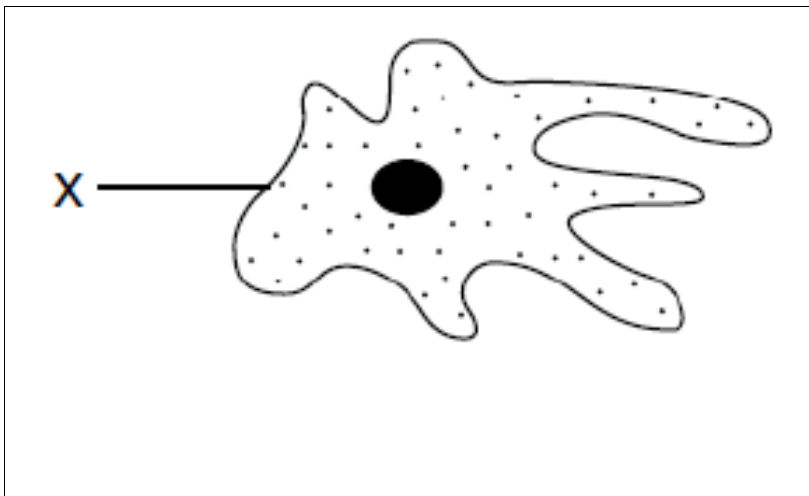
Data Base File Number: 401

Regents Date

June2012

5 6/19/2012 S4K1

Answer 1



cell membrane

98. The ameba represented in the diagram shown is a single-celled organism. Which two processes are most closely associated with structure A?

- (1) insertion and deletion
- (2) nervous regulation and circulation
- (3) active transport and diffusion
- (4) replication and photosynthesis

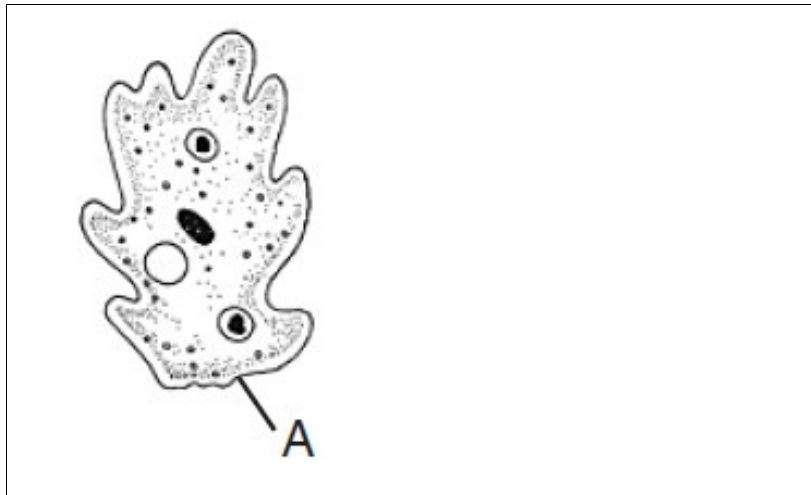
Data Base File Number: 230

Regents Date

Jan2010

3 1/26/2010 S4K1

Answer 3



cell membrane

99. In the diagram shown, which letter indicates the part of the cell that carries out a function most similar to a function of the human excretory system?

- (1) A
- (2) B
- (3) C
- (4) D

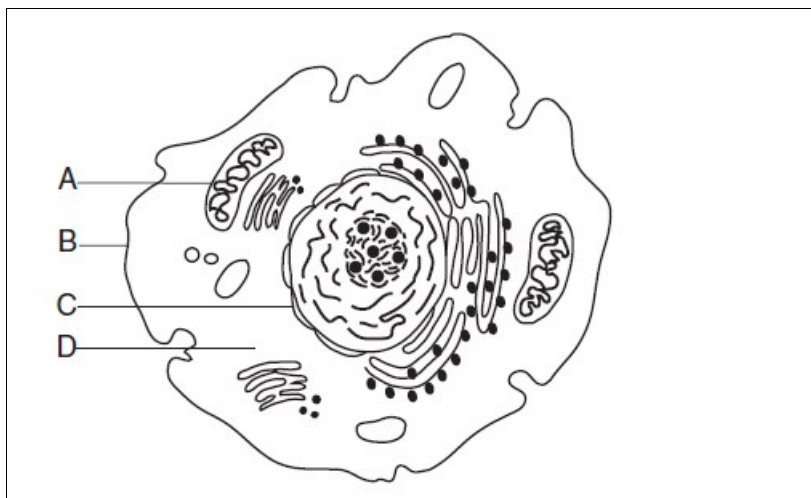
Data Base File Number: 387

Regents Date

Jan2012

37 1/25/2012 S4K1

Answer 2



cell membrane

100. In the diagram shown, which structure performs a function similar to a function of the human lungs?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

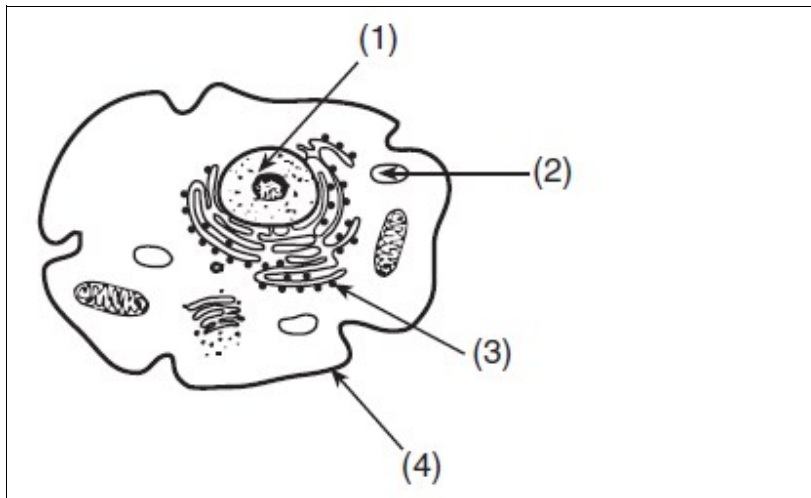
Data Base File Number: 588

Regents Date

Aug2005

32 8/16/2005 S4K1

Answer 4



cell membrane

101. In the cell shown in the diagram, which lettered structure is responsible for the excretion of most cellular wastes?

- (1) A
- (2) B
- (3) C
- (4) D

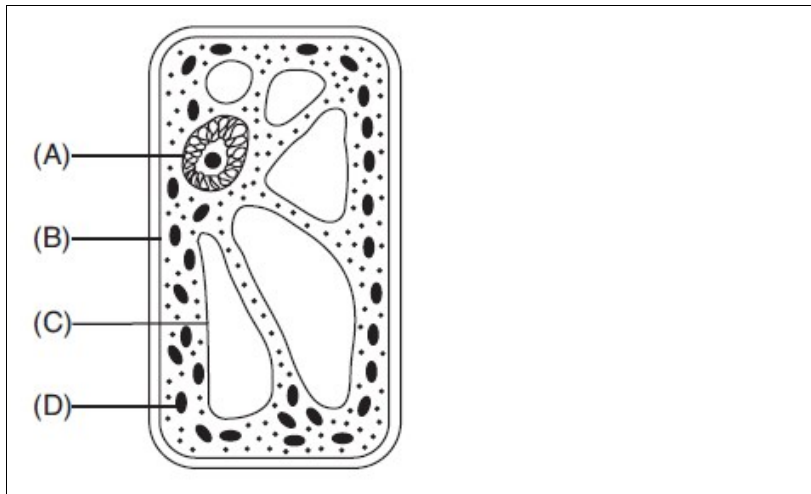
Data Base File Number: 253

Regents Date

June2010

5 6/16/2010 S4K1

Answer 2



cell membrane

102. The diagram below represents two cells, X and Y. Which statement is correct concerning the structure labeled A?

- (1) It aids in the removal of metabolic wastes in both cell X and cell Y.
- (2) It is involved in cell communication in cell X, but not in cell Y.
- (3) It prevents the absorption of CO₂ in cell X and O₂ in cell Y.
- (4) It represents the cell wall in cell X and the cell membrane in cell Y.

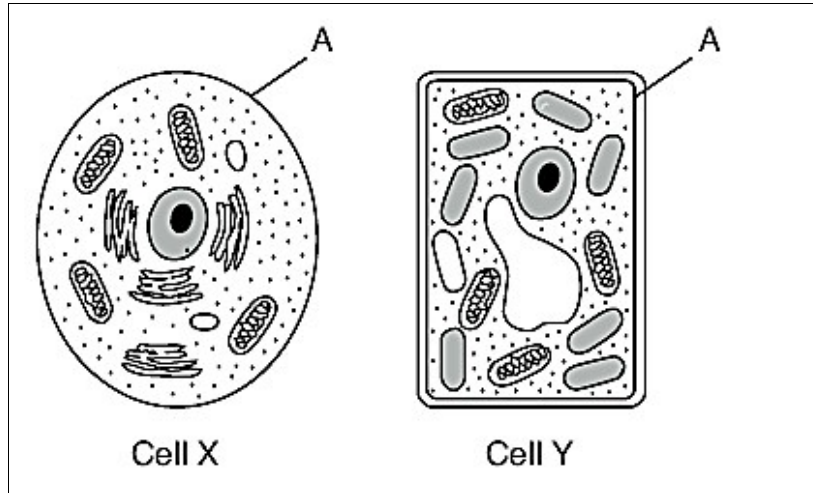
Data Base File Number: 101

Regents Date

June2008

36 6/24/2008 S4K1

Answer 1



cell organization

103. The diagram shown represents levels of organization within a cell of a multicellular organism. The level represented by X is composed of

- (1) four types of base subunits
- (2) folded chains of glucose molecules
- (3) twenty different kinds of amino acids
- (4) complex, energy-rich inorganic molecules

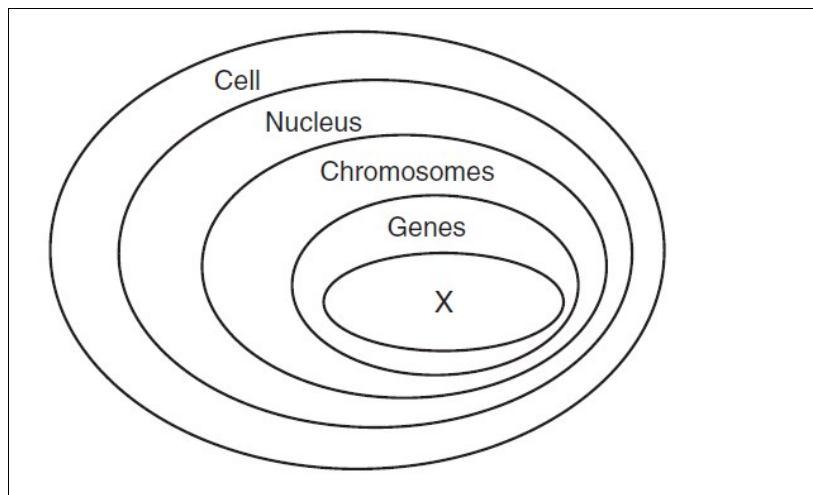
Data Base File Number: 279

Regents Date

Aug2010

12 8/18/2010 S4K2

Answer 1



cell structure

104. Which row in the chart below contains a cell structure paired with its primary function?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 333

Regents Date

June 2011

10 6/21/2011 **S4K1**

Answer 1

Row	Cell Structure	Function
(1)	ribosome	protein synthesis
(2)	vacuole	production of genetic information
(3)	nucleus	carbohydrate synthesis
(4)	mitochondrion	waste disposal

cell structure

105. Base your answer to this question on the diagrams of the two cells shown, and on your knowledge of biology. Which letter (A, B, and C) correctly identifies the cell part in BOTH diagrams?

- (1) A, cell membrane
- (2) B, chloroplast
- (3) C, vacuole
- (4) B, nucleolus

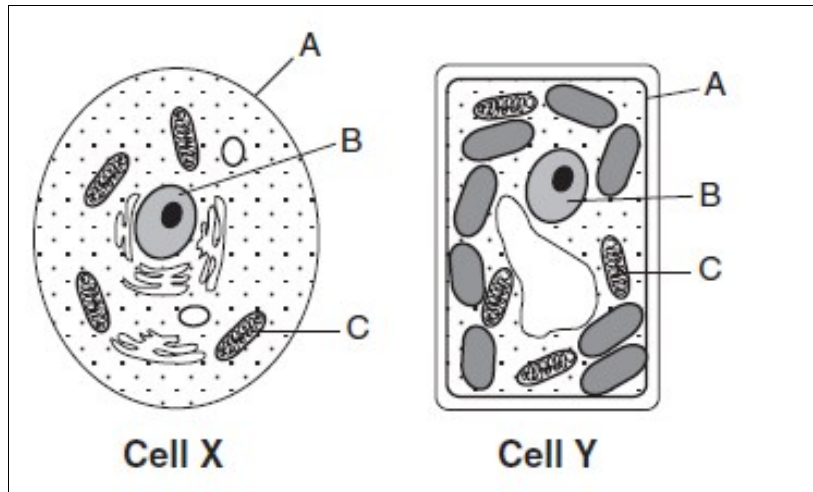
Data Base File Number: 547

Regents Date

Jan 2005

43 1/28/2005 **S4K1**

Answer 1



cell structure

106. Base your answer to this question on the diagram shown, which shows some of the specialized organelles in a single-celled organism, and on your knowledge of biology. What are the names of the organelles, which are labelled, IN ORDER as A, B, C, and D?

- | | |
|---|--|
| (1) cell membrane, nucleus, contractile vacuole, and food vacuole | (3) contractile vacuole, nucleus, food vacuole and cell membrane |
| (2) food vacuole, contractile vacuole, nucleus and cell membrane | (4) cell membrane, contractile vacuole, receptor sites, and DNA |

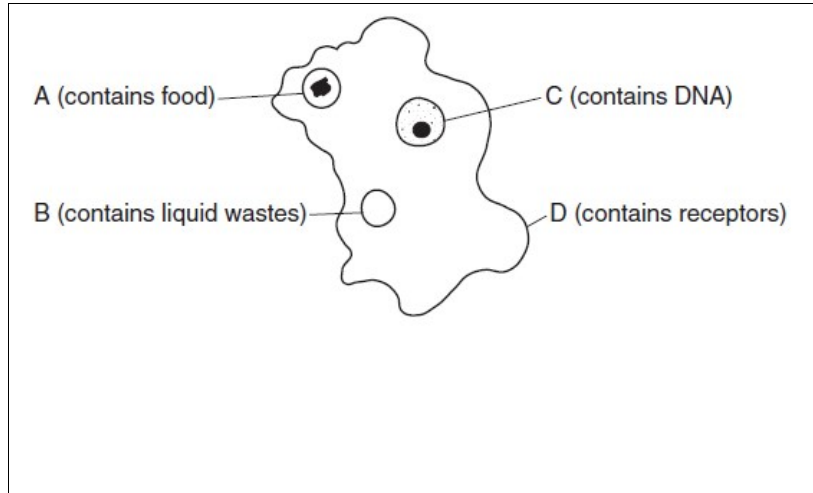
Data Base File Number: 867

Regents Date

Aug2001

36 8/16/2001 S4K1

Answer 2



cell structure

107. Base your answer to this question the diagram shown of a cell associated with coordination and on your knowledge of biology. Structure X would be involved in the

- | | |
|---------------------------------------|------------------------------|
| (1) storage of digestive enzymes | (3) development of pathogens |
| (2) absorption of energy from the Sun | (4) synthesis of proteins |

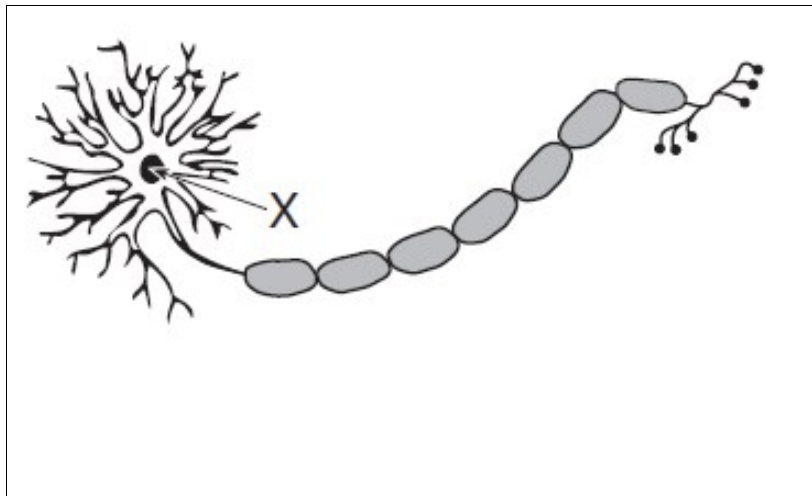
Data Base File Number: 592

Regents Date

Aug2005

38 8/16/2005 S4K1

Answer 4



cell structure

108. The letters in the diagram below indicate some parts of a cell. The function of which cell part is most similar to that of the human excretory system?

- (1) A
- (2) B
- (3) C
- (4) D

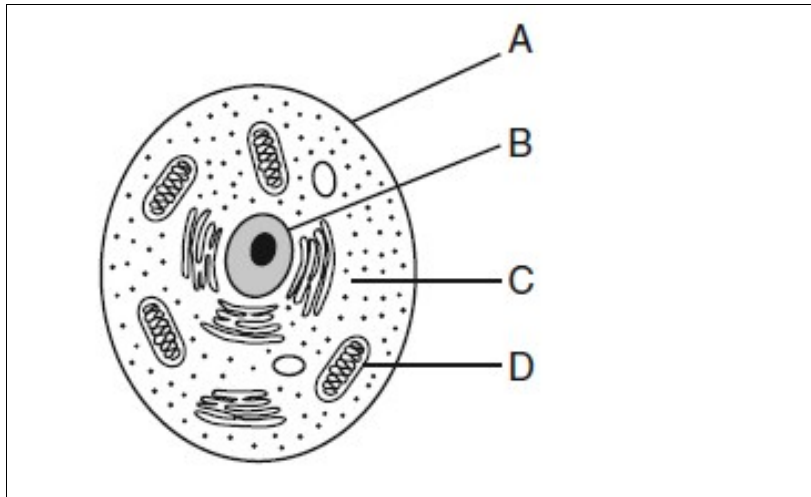
Data Base File Number: 605

Regents Date

Jan2013

5 1/23/2013 S4K1

Answer 1



cell structure

109. The series of circles shown represent cell structure. The letter assignments are as follows: A=chromosome. B=Nucleus. C=Cell. D=Gene. Which diagram best represents the relative locations of the structures as assigned by the letters?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

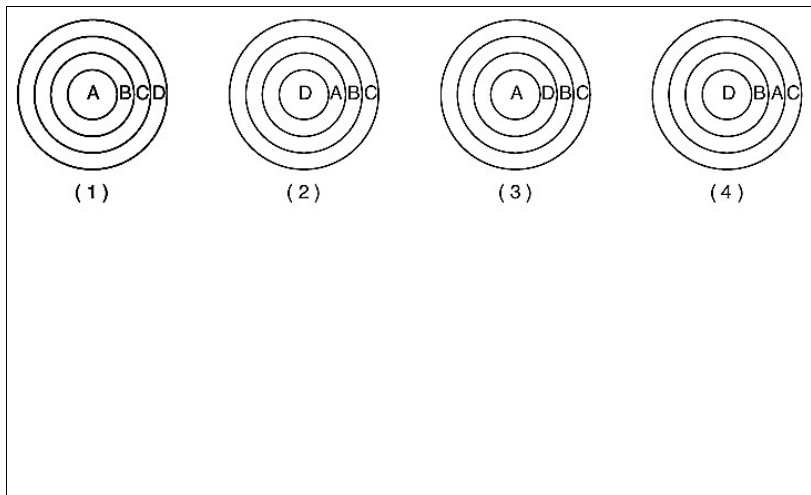
Data Base File Number: 91

Regents Date

June2008

10 6/24/2008 S4K2

Answer 2



cell structure

110. Which diagram represents the relative sizes of the gene, cell, chromosome and nucleus? Hint: The SMALLEST structure should start in the CENTER of each diagram.

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 157

Regents Date

Jan2009

32 1/27/2009 **S4K2**

Answer 2

Structures	
A	gene
B	cell
C	chromosome
D	nucleus

cell structure

111. Examine the diagram shown. Which cell structure contains information needed for protein synthesis?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

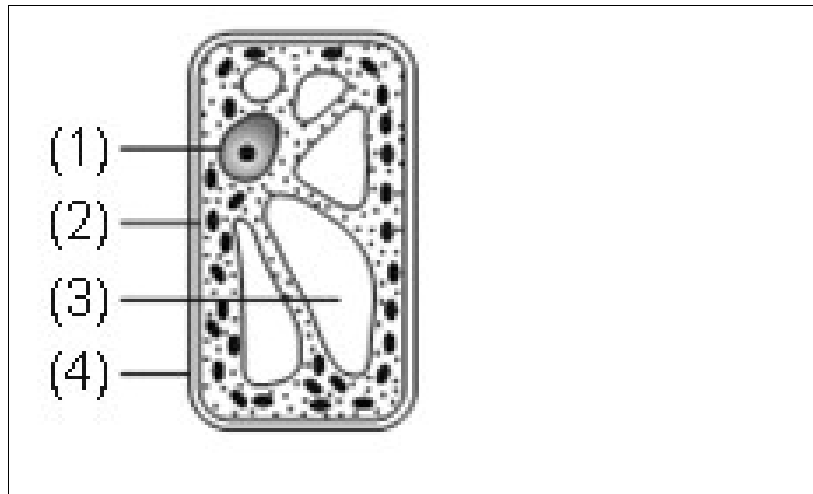
Data Base File Number: 178

Regents Date

June2009

3 6/18/2009 **S4K1**

Answer 1



cell structure

112. Base your answer to this question on the diagram and your knowledge of biology. The diagrams represent two different cells and some of their parts, The diagrams are not drawn to scale. Which statement best describes these cells?

- (1) Cell B lacks vacuoles while cell A has them.
- (2) DNA would not be found in either cell A or cell B.
- (3) Both cell A and cell B use energy released from ATP.
- (4) Both cell A and cell B produce antibiotics.

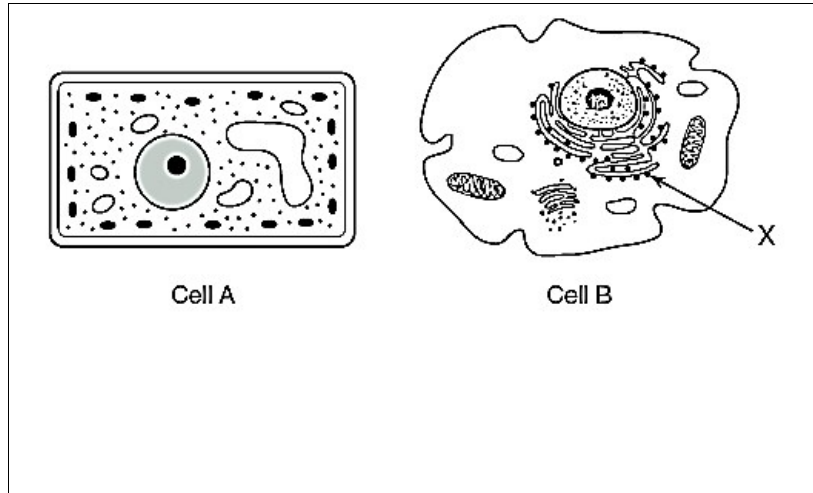
Data Base File Number: 43

Regents Date

June 2007

45 6/20/2007 S4K1

Answer 3



cell structure

113. Which model best represents the relationship between a cell, a nucleus, a gene, and a chromosome?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

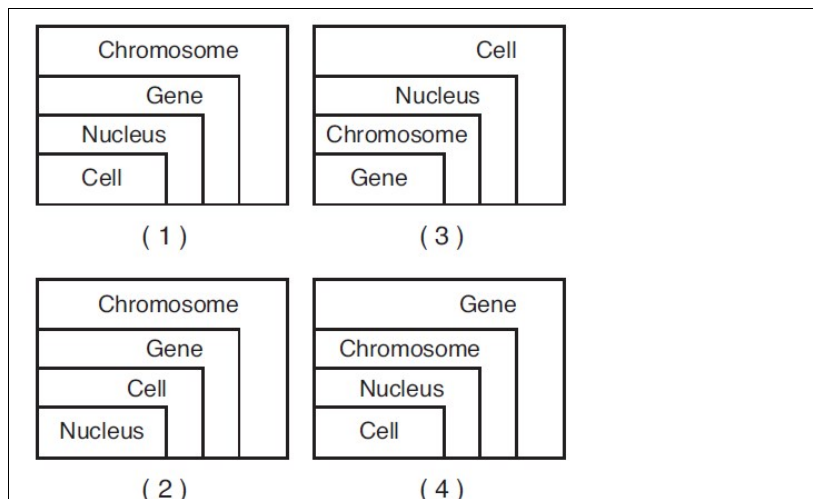
Data Base File Number: 216

Regents Date

Aug 2009

34 8/13/2009 S4K2

Answer 3



cells

114. Which diagram best represents the levels of organization in the human body?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

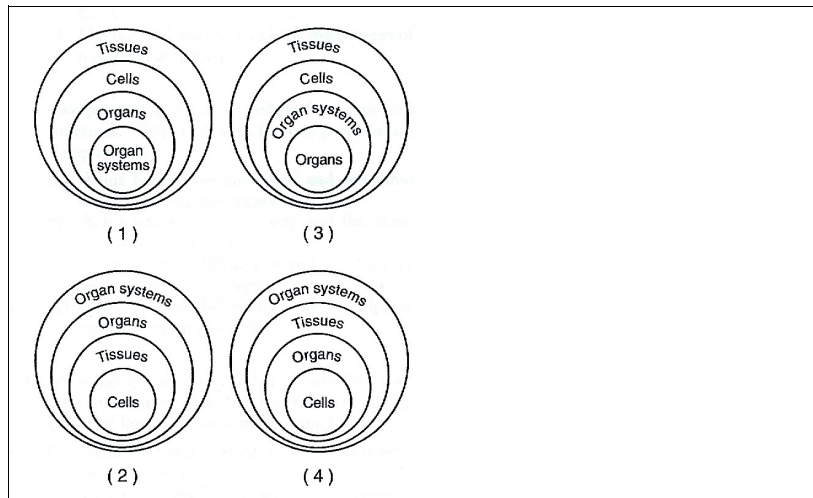
Data Base File Number: 22

Regents Date

June 2007

2 6/20/2007 **S4K1**

Answer 2



cellular communication

115. Two types of human cells are shown in the diagram. Cell A causes the cells at B to contract. This activity would be most useful for

- (1) lifting a book from a bookshelf
- (2) coordinating the functions of organelles
- (3) digesting food in the small intestine
- (4) carrying out the process of protein synthesis

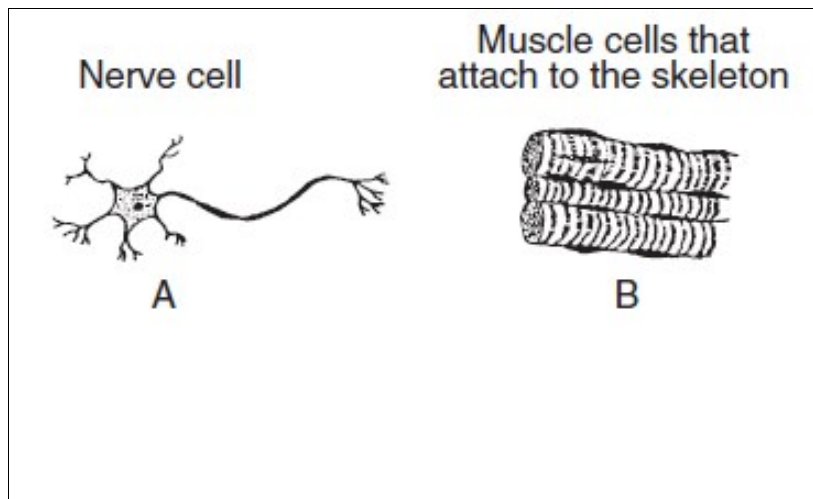
Data Base File Number: 751

Regents Date

Aug 2003

2 8/13/2003 **S4K1**

Answer 1



cellular communication

116. Base your answer to this question the diagram shown of a cell associated with coordination and on your knowledge of biology. Which statement best describes a function of the entire structure shown in the diagram?

- (1) It unites with an egg cell during fertilization.
- (2) It synthesizes a hormone involved in the control of blood sugar level.
- (3) It releases chemicals involved in cellular communication.
- (4) It controls the replication of genetic material

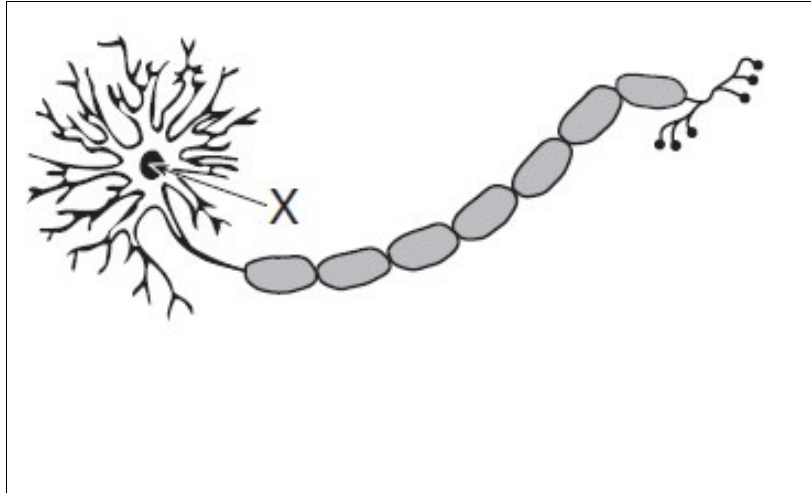
Data Base File Number: 593

Regents Date

Aug2005

39 8/16/2005 S4K1

Answer 3



cellular communication

117. Base your answer to this question on the diagram shown illustrating one type of cellular communication and on your knowledge of biology. In region F, there is a space between nerve cells C and D. Cell D is usually stimulated to respond by

- (1) a chemical produced by cell C moving to cell D
- (2) the movement of a virus from cell C to cell D
- (3) the flow of blood out of cell C to cell D
- (4) the movement of material through a blood vessel that forms between cell C and cell D

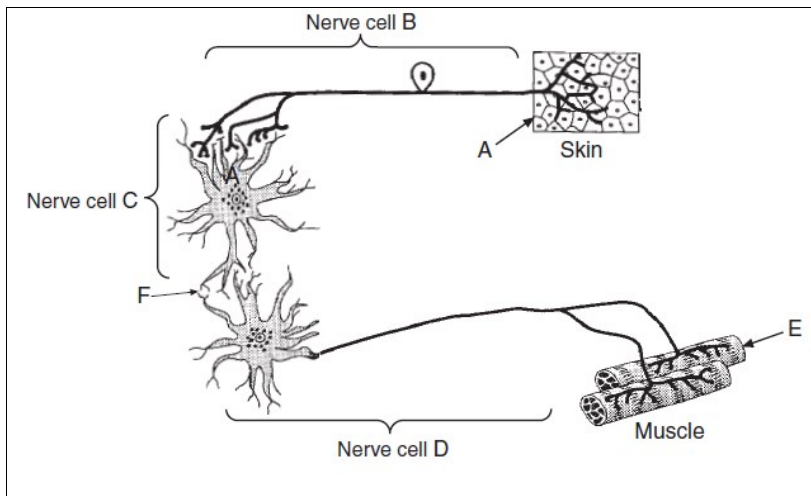
Data Base File Number: 822

Regents Date

June2002

56 6/19/2002 S4K1

Answer 1



cellular communication

118. Cellular communication is illustrated in the diagram shown. Information can be sent from

- (1) cell A to cell B because cell B is able to recognize signal 1
- (2) cell A to cell B because cell A is able to recognize signal 2
- (3) cell B to cell A because cell A is able to recognize signal 1
- (4) cell B to cell A because cell B is able to recognize signal 2

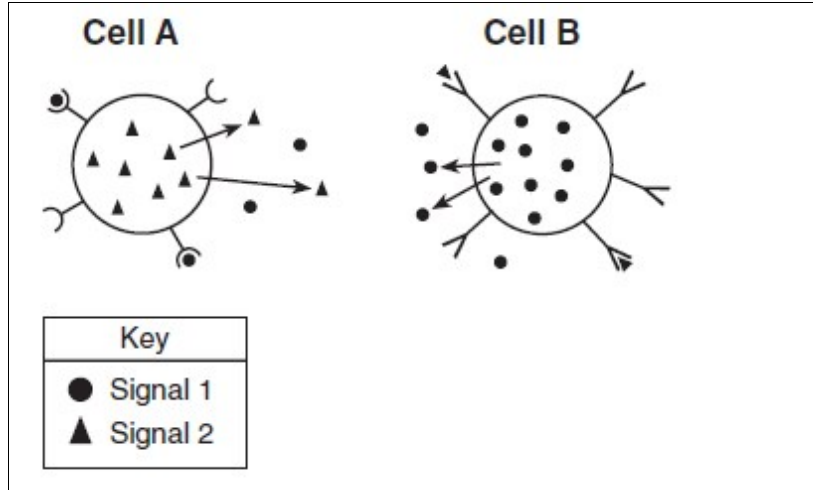
Data Base File Number: 489

Regents Date

June 2006

34 6/21/2006 S4K1

Answer 3



cellular communication

119. Base your answer to this question on the diagram shown and on your knowledge of biology. The process represented in the diagram best illustrates

- (1) cellular communication
- (2) muscle contraction
- (3) extraction of energy from nutrients
- (4) waste disposal

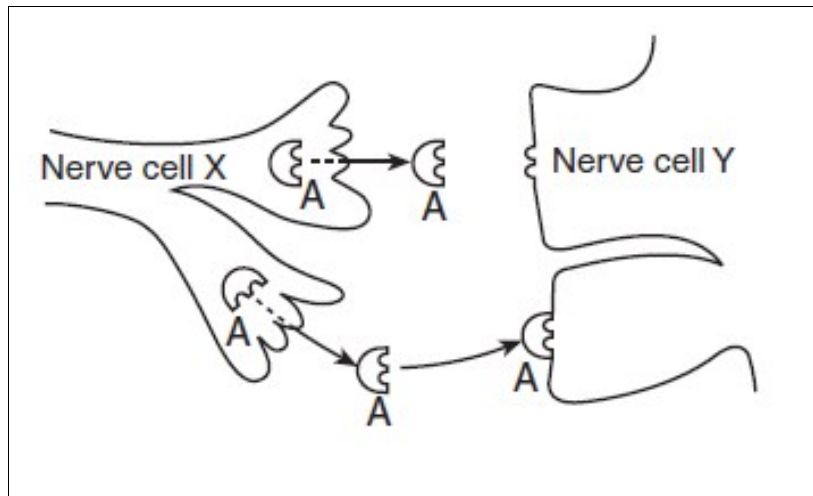
Data Base File Number: 669

Regents Date

June 2004

35 6/18/2004 S4K1

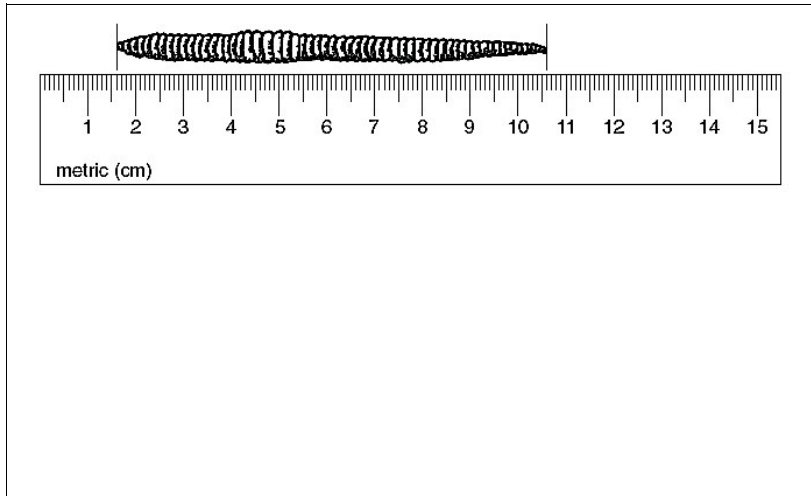
Answer 1



centimeter measurement

120. What is the approximate length of the earthworm shown in the diagram?

- (1) 9 mm
- (2) 90 mm
- (3) 10.6 cm
- (4) 106 cm



Data Base File Number: 32

Regents Date

June 2007

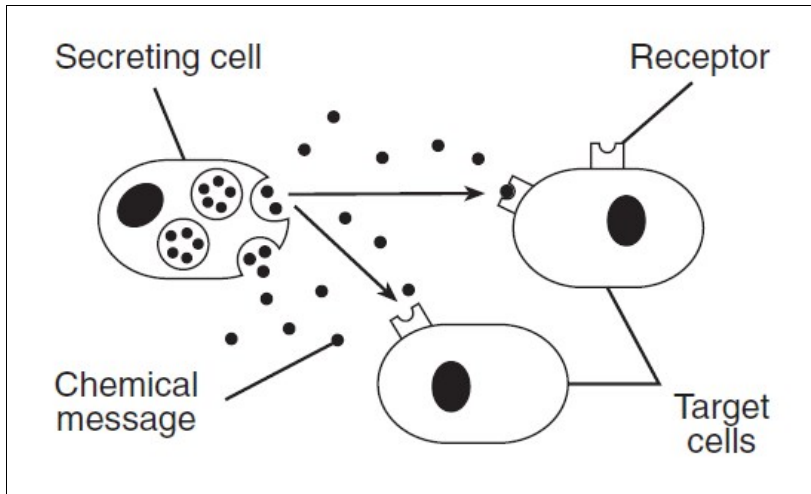
31 6/20/2007 LABS

Answer 2

chemical message

121. The diagram shows how a chemical message produced by one cell is received by other cells. If these chemical messages are destroyed, the target cells will

- (1) produce their own chemical messages
- (2) not respond with appropriate actions
- (3) develop different receptors
- (4) no longer be produced in the organism



Data Base File Number: 302

Regents Date

Jan 2011

4 1/25/2011 S4K1

Answer 2

chemical message

122. Base your answer to this question on the diagram shown and on your knowledge of biology. Structure X most likely functions in the

- (1) transport of chemical messenger molecules into the cell nucleus
- (2) extraction of energy from nutrients
- (3) separation of cell contents from the outside environment
- (4) digestion of large molecules

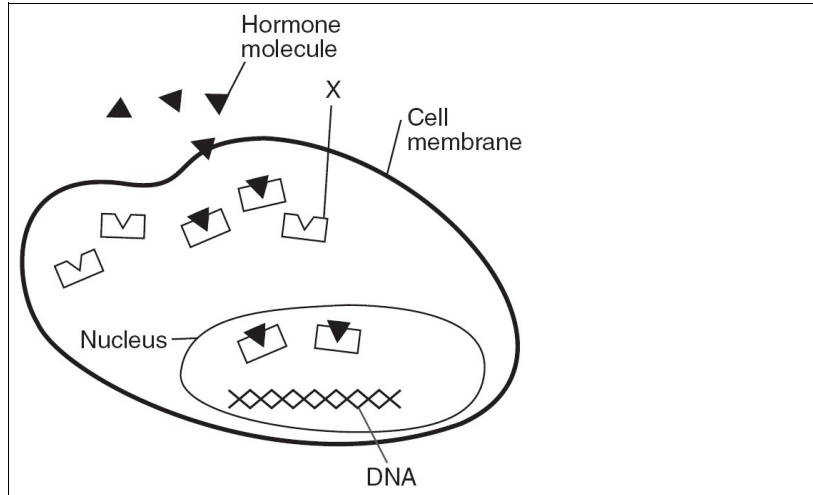
Data Base File Number: 341

Regents Date

June 2011

34 6/21/2011 S4K1

Answer 1



chloroplast

123. The diagram shown represents a cell of a green plant. Solar energy is used to produce energy-rich compounds in structure

- (1) A
- (2) B
- (3) C
- (4) D

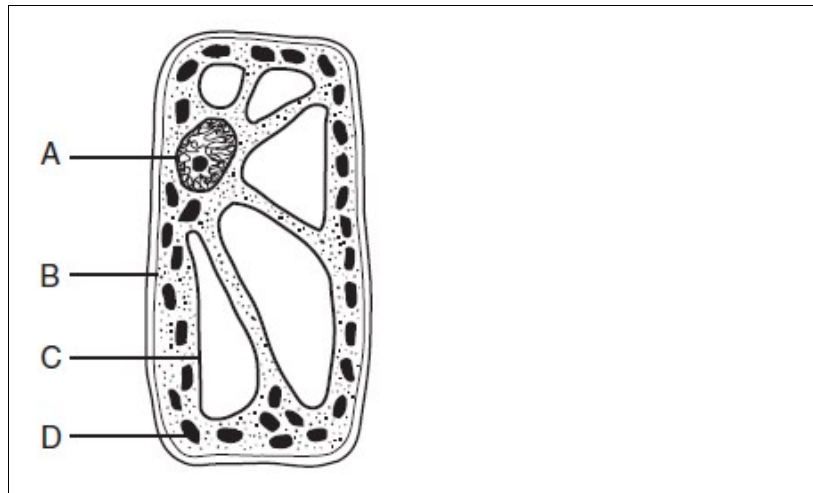
Data Base File Number: 367

Regents Date

Aug 2011

38 8/18/2011 S4K5

Answer 4



chloroplast

124. The diagram shown illustrates the movement of materials involved in a process that is vital for the energy needs of organisms. The process illustrated occurs within

- (1) chloroplasts
- (2) mitochondria
- (3) ribosomes
- (4) vacuoles

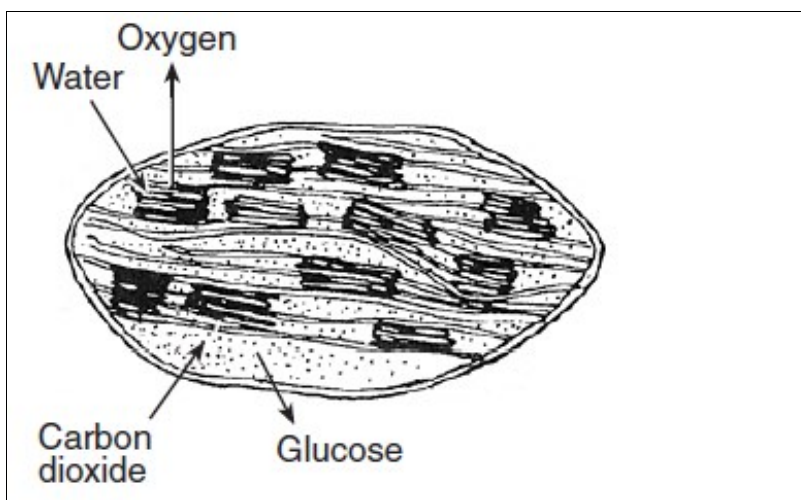
Data Base File Number: 583

Regents Date

Aug2005

21 8/16/2005 S4K5

Answer 1



chromatography

125. A chromatography setup is shown in the diagram. One error in the setup is

- (1) the stopper should have a hole in it
- (2) the pigment spot is below the surface of the solvent
- (3) the pigment is not properly placed on the paper
- (4) the solvent is not identified

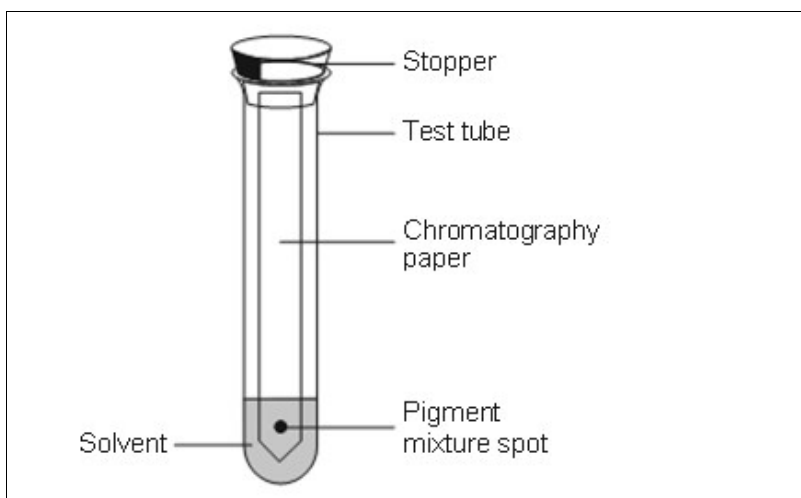
Data Base File Number: 206

Regents Date

June2009

63 6/18/2009 LABS

Answer 2



chromatography

126. Base your answer to this question on the results of an experiment using plant pigments represented as shown in the diagram and on your knowledge of biology. Which phrase could be used to describe this technique?

- (1) the use of chromatography to separate molecules in a mixture
- (2) the use of cut leaves to observe certain colors
- (3) using indicators to determine pH
- (4) using dichotomous keys to identify plants

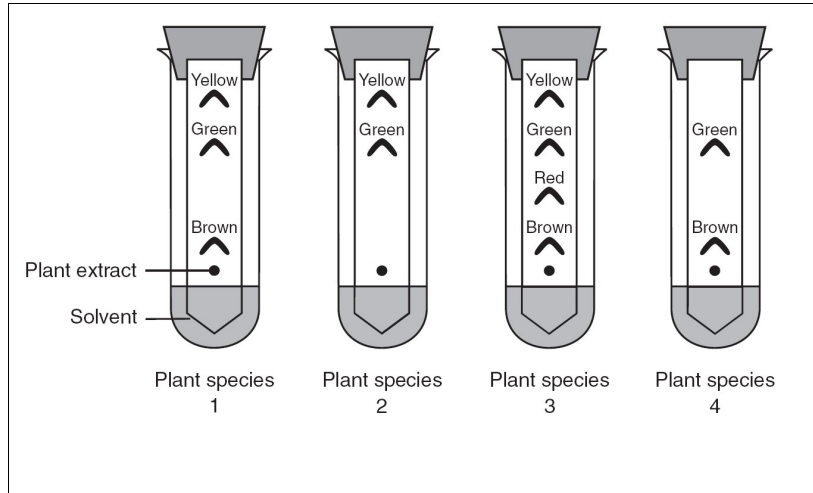
Data Base File Number: 356

Regents Date

June2011

82 6/21/2011 LAB1

Answer 1



chromosome / crossing over

127. The diagram shows a process that can occur during meiosis. The most likely result of this process is

- (1) a new combination of inheritable traits that can appear in the offspring
- (2) an inability to pass either of these chromosomes on to offspring
- (3) a loss of genetic information that will produce a genetic disorder in the offspring
- (4) an increase in the chromosome number of the organism in which this process occurs

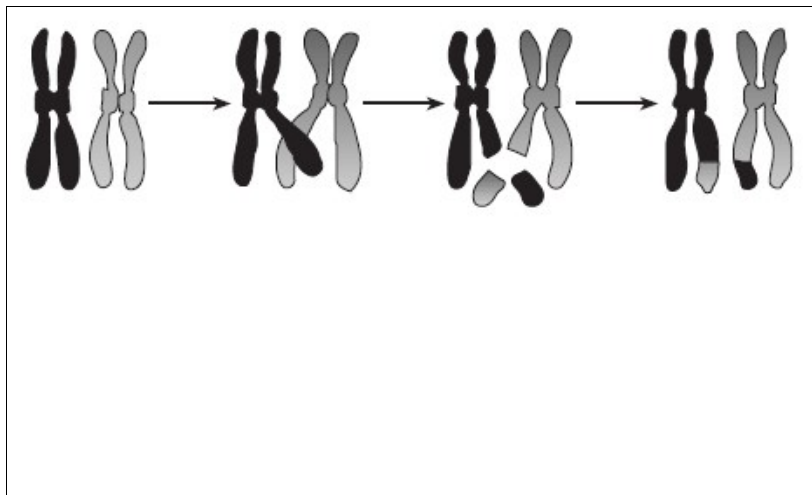
Data Base File Number: 732

Regents Date

June2003

15 6/19/2003 S4K3

Answer 1



chromosome / crossing over

128. The diagram shows a process that affects chromosomes during meiosis. This process can be used to explain
- (1) why some offspring are genetically identical to their parents
 - (2) the process of differentiation in offspring
 - (3) why some offspring physically resemble their parents
 - (4) the origin of new combinations of traits in offspring

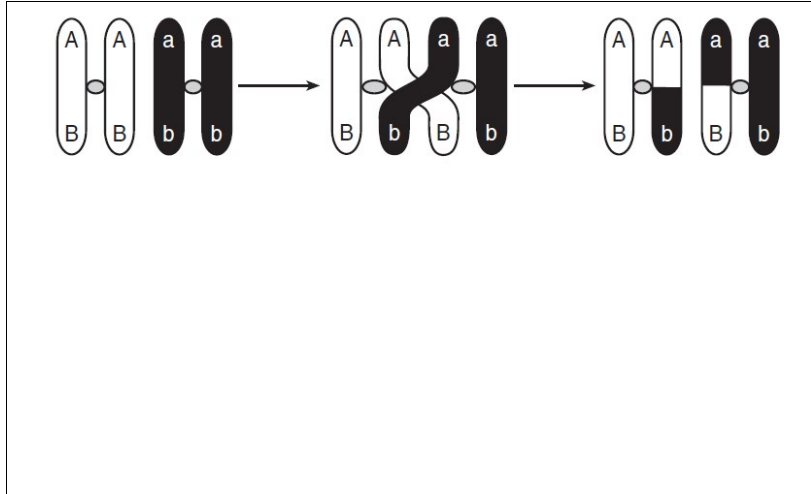
Data Base File Number: 277

Regents Date

Aug2010

10 8/18/2010 S4K3

Answer 4



chromosome / number

129. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents a single-celled organism, such as an amoeba, undergoing the changes shown. The genetic content of C is usually identical to the genetic content of
- (1) B but not D
 - (2) both B and D
 - (3) D but not A
 - (4) both A and D

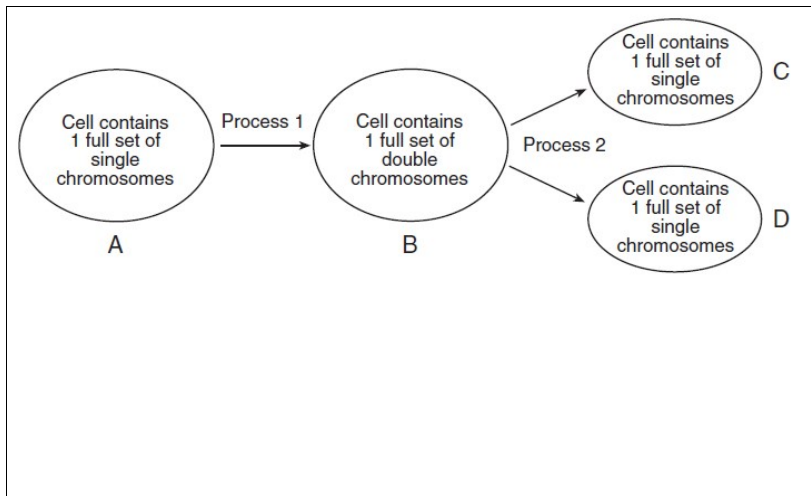
Data Base File Number: 517

Regents Date

Aug2006

34 8/16/2006 S4K2

Answer 4



chromosome / number

130. Base your answer to this question on the diagram shown and on your knowledge of biology. Why is "Process 2" necessary in sexual reproduction?

- (1) It creates the "n" number of chromosomes in the embryo.
- (2) It permits the formation of the zygote by meiosis.
- (3) It restores the normal species number of chromosomes.
- (4) It permits the formation of the zygote by mitosis.

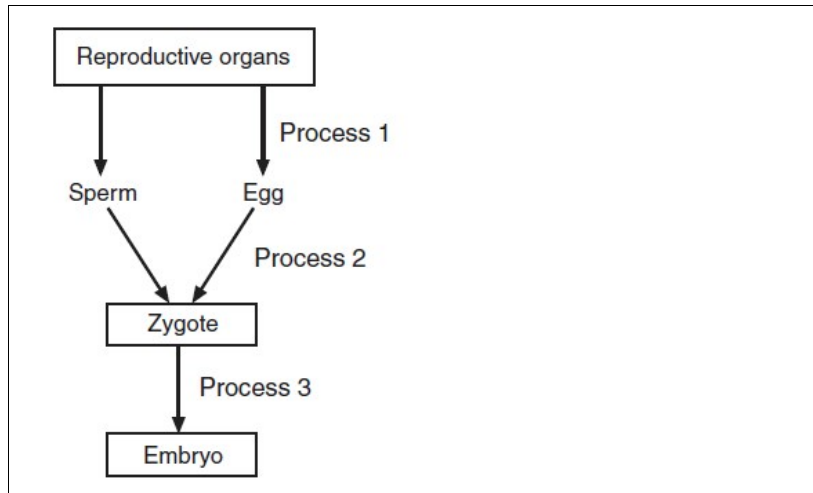
Data Base File Number: 719

Regents Date

Jan2003

46 1/30/2003 S4K4

Answer 3



chromosome bands

131. The Y-chromosome carries the SRY gene that codes for the production of testosterone in humans. Occasionally a mutation occurs resulting in the SRY gene being lost from the Y-chromosome and added to the X-chromosome, as shown in the diagram. Based on the diagram, which statement is correct?

- (1) The production of testosterone influences the development of male characteristics.
- (2) Reproductive technology has had an important influence on human development.
- (3) Normal female characteristics develop from a single X-chromosome.
- (4) Male characteristics only develop in the absence of X-chromosomes.

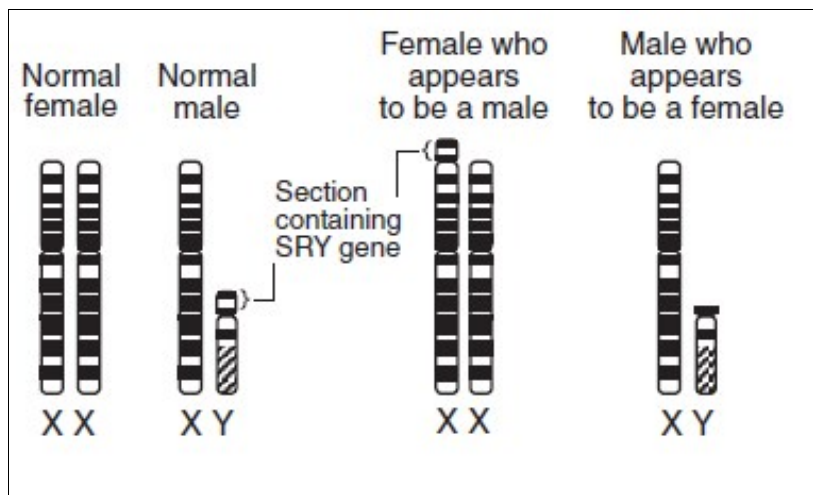
Data Base File Number: 589

Regents Date

Aug2005

34 8/16/2005 S4K2

Answer 1



chromosome bands

132. The diagram shown represents the banding pattern for human chromosome 11, with some of the bands labeled. The bands represent

- (1) proteins
- (2) genes
- (3) starches
- (4) enzymes

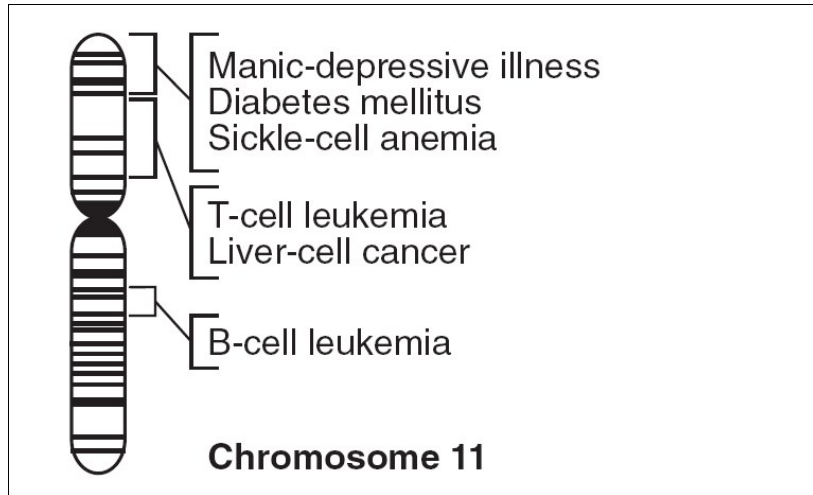
Data Base File Number: 332

Regents Date

June 2011

6 6/21/2011 S4K2

Answer 2



chromosome number / diploid

133. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents the reproductive cycle of a squirrel species with 40 chromosomes in each zygote. A liver cell in this species of squirrel would have

- (1) 20 chromosomes
- (2) 40 chromosomes
- (3) 60 chromosomes
- (4) 80 chromosomes

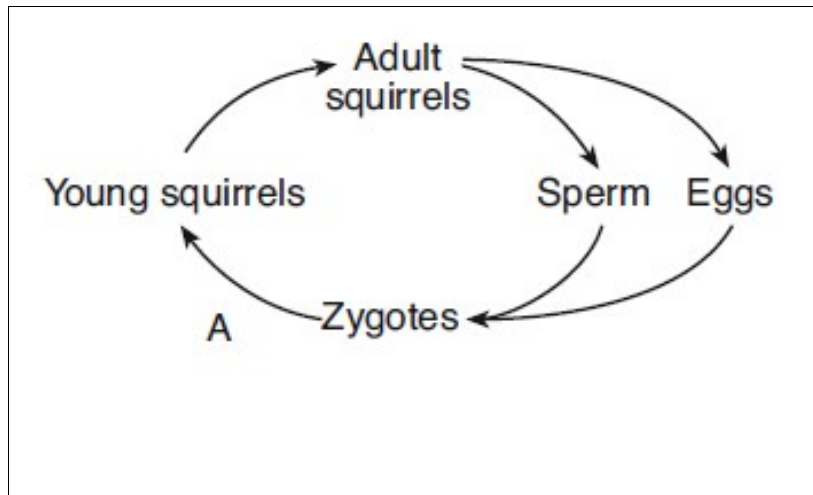
Data Base File Number: 416

Regents Date

June 2012

39 6/19/2012 S4K4

Answer 2



circulatory

134. Base your answers to this question on the data table shown and on your knowledge of biology. A group of students obtained the data as shown in the data table. The activity of which body system was measured to obtain these data?

- (1) excretory (3) skeletal
(2) circulatory (4) digestive

Data Base File Number: 471

Regents Date

Jan2006

67 1/27/2006 LAB5

Answer 2

Student Tested	Pulse Rate at Rest	Pulse Rate After Exercising
1	70	97
2	75	106
3	84	120
4	60	91
5	78	122

classification

135. Base your answer to this question on the information provided and on your knowledge of biology. A student observed the physical characteristics of seven organisms and prepared the data table as shown. One of the student's classmates sorted the seven organisms into two groups. GROUP 1 included the fly and parrot. GROUP 2 contained all the other organisms. Which characteristic from the data table did the student use to GROUP the organisms?

- (1) presence or absence of legs (3) presence or absence of wings
(2) presence or absence of fur (4) presence or absence of an internal skeleton

Data Base File Number: 701

Regents Date

Aug2004

65 8/17/2004 LAB1

Answer 3

Organism	Internal Skeleton Present	Legs Present	Wings Present	Fur Present	Moist Body Covering Present
Earthworm	no	no	no	no	yes
Fish	yes	no	no	no	yes
Fly	no	yes	yes	no	no
Gorilla	yes	yes	no	yes	no
Jellyfish	no	no	no	no	yes
Parrot	yes	yes	yes	no	no
Snake	yes	no	no	no	no

classification

136. The chart shown contains characteristics that can be used to classify organisms A, B, and C. What is one reason why organism A and organism C might be placed into two different classification groups, even though they are both single celled?

- (1) A and C are both single celled
- (2) B is autotrophic
- (3) A is an autotroph and C is a heterotroph
- (4) ribosomes are present in A, B and C

Data Base File Number: 446

Regents Date

Aug2012

46 8/17/2012 S4K3

Answer 3

Characteristics	Organism A	Organism B	Organism C
Number of Cells	single celled	multicellular	single celled
Type of Nutrition	autotrophic	autotrophic	heterotrophic
Nuclear Membrane	absent	present	absent
Ribosomes	present	present	present

classification

137. The chart shown contains a number of characteristics for three different organisms. The characteristics can be used in classifying these organisms. Which TWO organisms would be expected to have the most similar genetic material? Base your answer on information from the chart.

- (1) A and B
- (2) A and C
- (3) B and C
- (4) C and B

Data Base File Number: 545

Regents Date

Jan2005

38 1/28/2005 S4K3

Answer 2

Characteristics	Organism A	Organism B	Organism C
Number of cells	unicellular	multicellular	unicellular
Type of nutrition	autotrophic	autotrophic	heterotrophic
Nuclear membrane	absent	present	absent
DNA	present	present	present

clone

138. The diagram shown represents the cloning of a carrot plant. Compared to each cell of the original carrot plant, each cell of the new plant will have

- (1) the same number of chromosomes and the same types of genes
- (2) the same number of chromosomes, but different types of genes
- (3) half the number of chromosomes and the same types of genes
- (4) half the number of chromosomes, but different types of genes

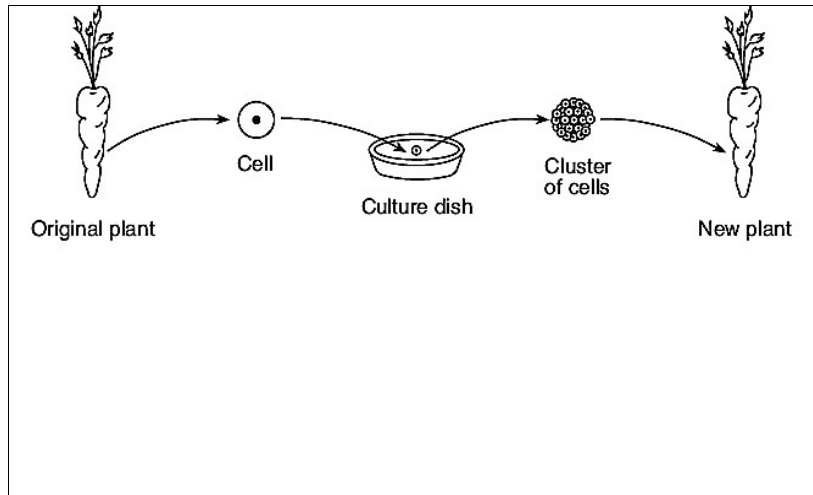
Data Base File Number: 94

Regents Date

June 2008

21 6/24/2008 S4K4

Answer 1



clone

139. A technique used to produce new plants is represented in the diagram. Which statement is best supported by the information in the diagram?

- (1) The one leaf cell removed formed a zygote that developed into a new plant by mitotic division.
- (2) This procedure is used to produce new tomato plants that are clones of the original tomato plant.
- (3) The cell taken from the leaf produced eight cells, each having one-half of the genetic information of the original leaf cell.
- (4) The new tomato plant will not be able to reproduce sexually because it was produced by mitotic cell division.

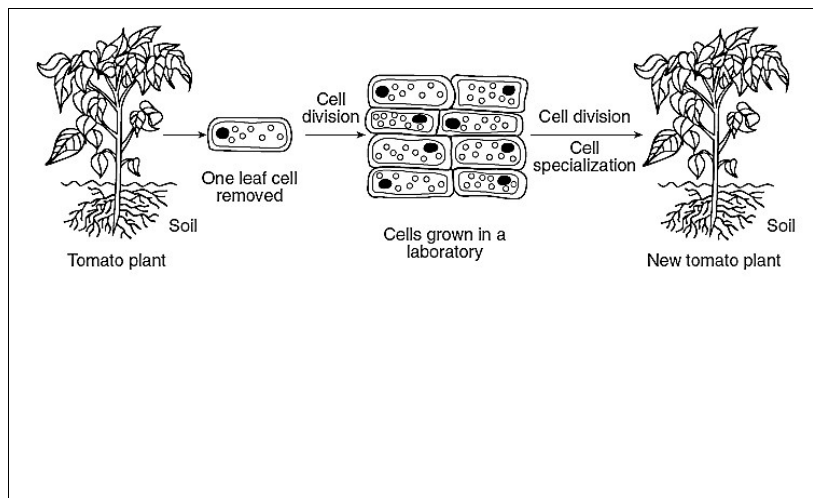
Data Base File Number: 17

Regents Date

Aug 2007

39 8/16/2007 S4K4

Answer 2



codons

140. Base your answer to this question on the chart shown and your knowledge of biology. Which three codons would code for a different amino acid sequence from that coded for by the mRNA base sequence AGU-UCA-CCA?

- (1) AGU-UCU-CCU
- (2) AGU-UCC-CCG
- (3) AGC-UCA-CUU
- (4) AGU-UCG-CCC

Data Base File Number: 229

Regents Date

Aug2009

69 8/13/2009 LABS

Answer 3

Universal Genetic Code Chart
Messenger RNA Codons and the Amino Acids for Which They Code

		Second Base				
		U	C	A	G	
First Base	U	UUU } PHE UUC } UUA } LEU UUG }	UCU } UCC } SER UCA } UCG }	UAU } TYR UAC } UAA } STOP UAG }	UGU } CYS UGC } UGA } STOP UGG } TRP	U C A G
	C	CUU } CUC } LEU CUA } CUG }	CCU } CCC } PRO CCA } CCG }	CAU } HIS CAC } CAA } GLN CAG }	CGU } CGC } ARG CGA } CGG }	U C A G
	A	AUU } AUC } ILE AUA } AUG } MET or START	ACU } ACC } THR ACA } ACG }	AAU } ASN AAC } AAA } LYS AAG }	AGU } SER AGC } AGA } ARG AGG }	U C A G
	G	GUU } GUC } VAL GUA } GUG }	GCU } GCC } ALA GCA } GCG }	GAU } ASP GAC } GAA } GLU GAG }	GGU } GGC } GLY GGA } GGG }	U C A G

common ancestor

141. The diagram shown represents possible evolutionary relationships between groups of organisms. Which statement is a valid conclusion that can be drawn from the diagram?

- (1) Snails appeared on Earth before corals.
- (2) Sponges were the last new species to appear on Earth.
- (3) Earthworms and sea stars have a common ancestor.
- (4) Insects are more complex than mammals

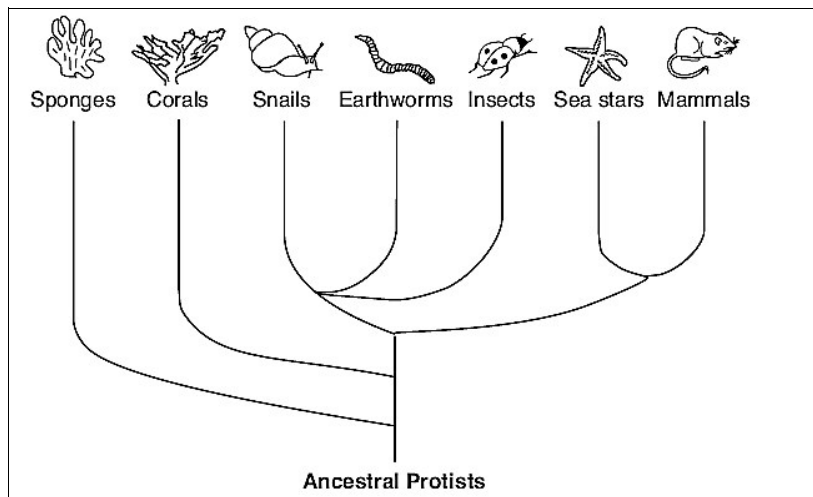
Data Base File Number: 106

Regents Date

June2008

41 6/24/2008 S4K3

Answer 3



common ancestor

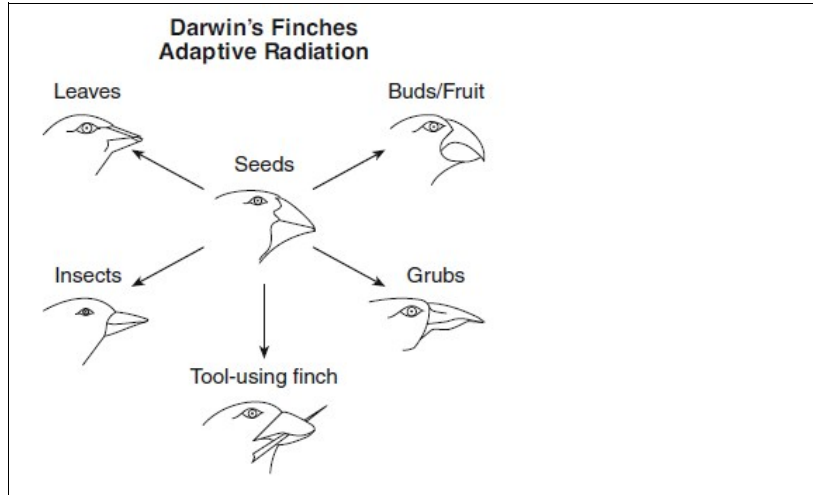
142. Base your answer to this question on the information and diagram shown and on your knowledge of biology. Finches on the Galapagos Islands are thought to have originated from South America and to have evolved into new species over the last 10,000 years. Some of this evolution is represented in the diagram shown. The seed-eating finch was most likely the
- (1) largest finch
 - (2) common ancestor
 - (3) parent of other finches
 - (4) most successful

Data Base File Number: 632

Regents Date

Jan2013
74 1/23/2013 **LAB3**

Answer 2



community

143. Base your answer to this question on the information given, the table shown, and on your knowledge of biology. The variety of organisms known as plankton contributes to the unique nutritional relationships in an ocean ecosystem. Phytoplankton include algae and other floating organisms that perform photosynthesis. Plankton that cannot produce food are known as zooplankton. Some nutritional relationships involving these organisms and several others are shown in the table. According to the table, which organism can be classified as both an herbivore and a carnivore?
- (1) codfish
 - (2) sharks
 - (3) small fish
 - (4) squid

Data Base File Number: 572

Regents Date

June2005
44 6/22/2005 **S4K6**

Answer 3

Animals in Community	Food Eaten by Animals in Community				
	Codfish	Phytoplankton	Small Fish	Squid	Zooplankton
codfish			X		
sharks	X			X	
small fish		X			X
squid	X		X		
zooplankton		X			

community

144. Some interactions in a desert community are shown in the diagram. Which statement is a valid inference based on the diagram?

- (1) Certain organisms may compete for vital resources.
- (2) All these organisms rely on energy from decomposers.
- (3) Organisms synthesize energy.
- (4) All organisms occupy the same niche.

Data Base File Number:

63

Regents Date

Jan2008

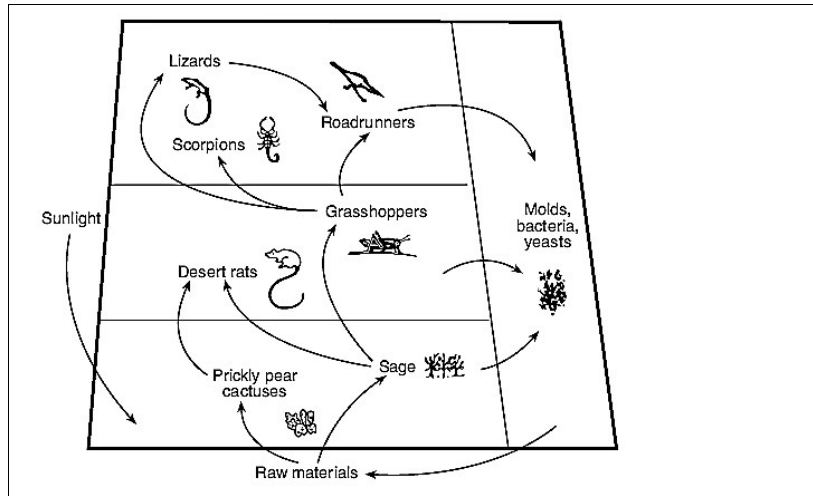
9

1/25/2008

S4K1

Answer

1



competition

145. The diagram shows four species of birds that evolved from an ancestral species that had a small, pointed beak. Today, all four species inhabit the same island. Which statement best explains the variation in the beaks of these four species?

- (1) Over time, an abundance of seeds for food led to increased similarities between the species.
- (2) Over time, an abundance of seeds for food led to increased differences between the species.
- (3) Competition for limited food resources led to selection for similar traits.
- (4) Competition for limited food resources led to selection for different traits.

Data Base File Number:

249

Regents Date

Jan2010

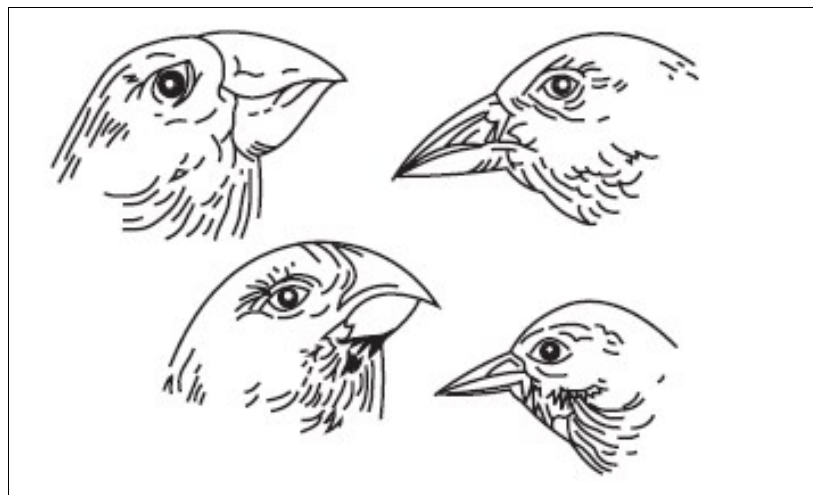
74

1/26/2010

LABS

Answer

4



competition

146. Two different species of single-celled organisms that eat the same food were placed in the same container. A constant food supply was provided starting on day 2, and the populations were monitored daily. The graph shown represents the growth of the two populations. The most likely reason for the observed changes in the populations over the 18-day period is

- (1) *P. caudatum* outcompeted *P. aurelia*
- (2) *P. aurelia* outcompeted *P. caudatum*
- (3) the two species shared available resources
- (4) *P. caudatum* became a predator for *P. aurelia*

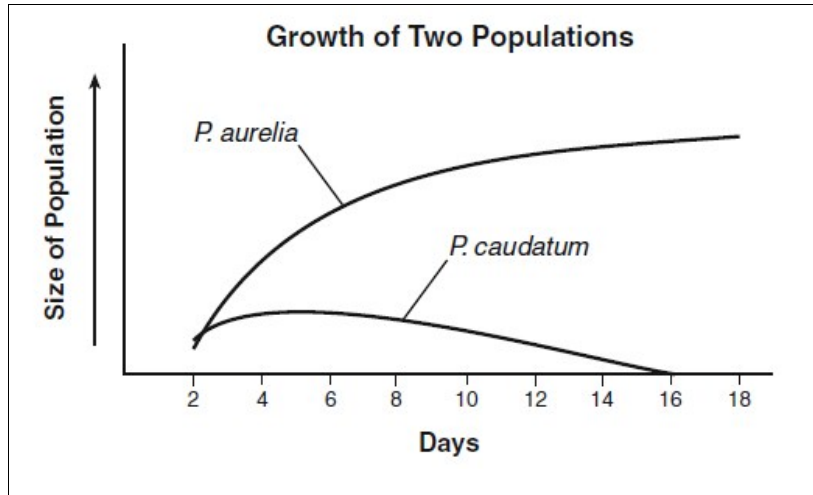
Data Base File Number: 439

Regents Date

Aug2012

37 8/17/2012 S4K1

Answer 2



competition

147. The graph shows the changes in the size of a population over a period of time. Which environmental condition could have caused the change in the population size at A?

- (1) an increase in competition
- (2) a constant availability of shelter
- (3) a decrease in the size of its predators
- (4) an unlimited supply of its food

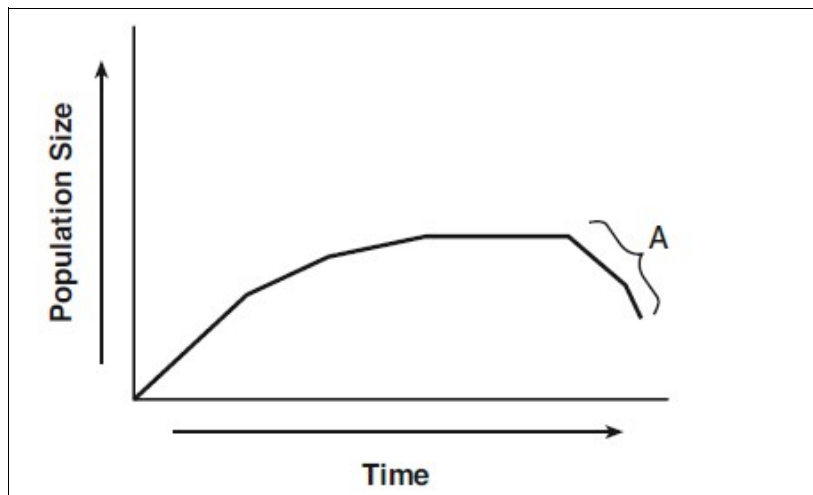
Data Base File Number: 622

Regents Date

Jan2013

43 1/23/2013 S4K6

Answer 1



competition

148. The graph shows the growth of two populations of paramecia grown in the same culture dish for 14 days. Which ecological concept is best represented by the graph?

- (1) recycling
- (2) equilibrium
- (3) competition
- (4) decomposition

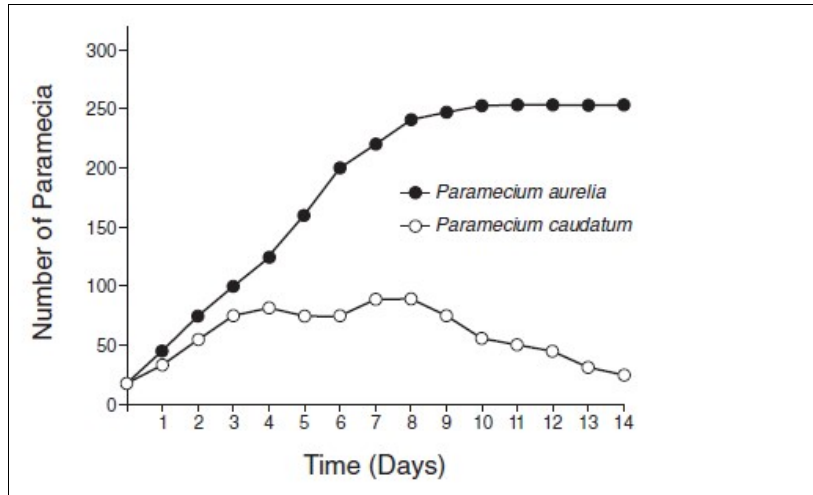
Data Base File Number: 744

Regents Date

June2003

45 6/19/2003 S4K6

Answer 3



competition

149. Base your answer to this question on the information given and on your knowledge of biology. -- Research indicates that many plants prevent the growth of other plants in their habitat by releasing natural herbicides (chemicals that kill plants). These substances are known as allelochemicals and include substances such as quinine, caffeine, and digitalis. Experiments have confirmed that chemicals in the bark and roots of black walnut trees are toxic, and when released into the soil they limit the growth of crop plants such as tomatoes, potatoes, and apples. Allelochemicals can alter growth and enzyme action, injure the outer cover of a seed so the seed dies, or stimulate seed growth at inappropriate times of the year. Studies on allelochemical effects help explain the observation that almost nothing grows under a black walnut tree even though light and moisture levels are adequate for growth. Which phrase best predicts the relative numbers of different plant species in regions A, B, and C in the diagram shown?

- (1) greater in C than B
- (2) greater in A than C
- (3) greater in A than B
- (4) greater in B than C

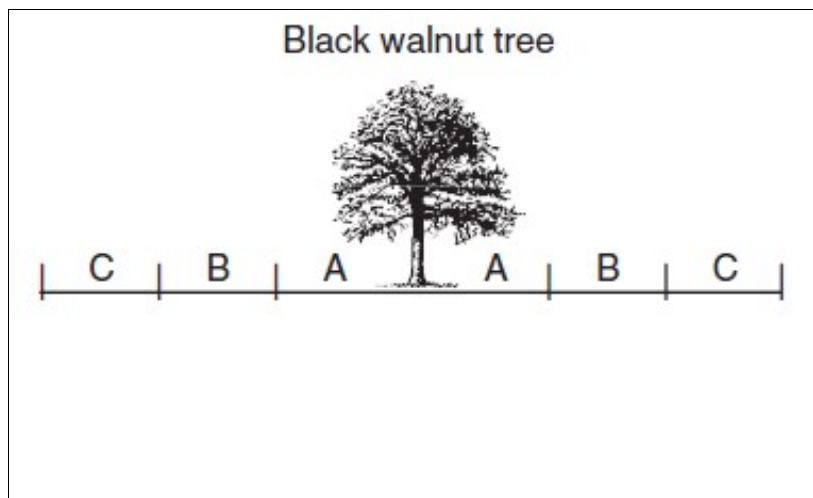
Data Base File Number: 574

Regents Date

June2005

51 6/22/2005 S4K1

Answer 1



competition

150. Base your answer to this question on the data table shown and on your knowledge of biology. Which two species would most likely be able to live in the same habitat without competing with each other for food?

- (1) A and C
- (2) B and C
- (3) B and D
- (4) C and E

Data Base File Number: 113

Regents Date

June 2008

75 6/24/2008 LABS

Answer 2

Species of Finch	Preferred Foods
A	nuts and seeds
B	worms and insects
C	fruits and seeds
D	insects and seeds
E	nuts and seeds

competition

151. The feeding niches of three bird species are shown in the diagram. What is the advantage of these different feeding niches for the birds?

- (1) less competition for food
- (2) fewer abiotic resources for each bird species
- (3) fewer biotic resources for each bird species
- (4) less energy available as the birds feed higher in the tree

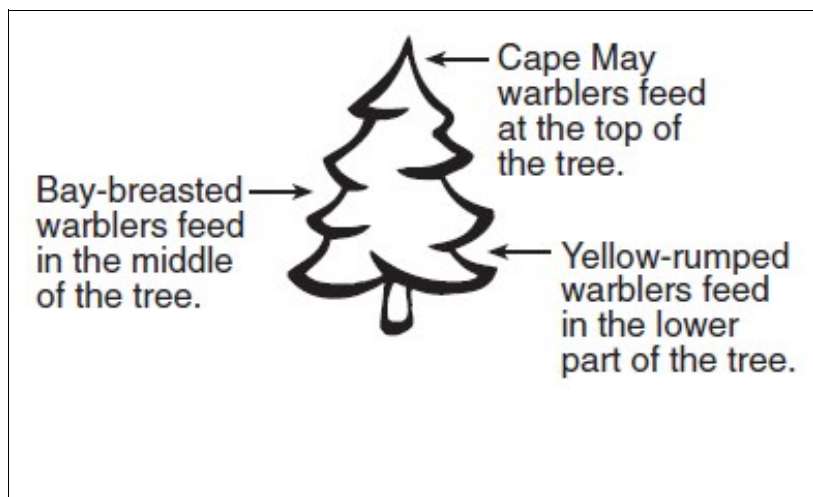
Data Base File Number: 585

Regents Date

Aug 2005

25 8/16/2005 S4K6

Answer 1



consumer

152. Base your answer to this question on the information given and on your knowledge of biology. Analysis of a sample taken from a pond showed variety in both number and type of organisms present. The data collected are shown in the table. If the frogs feed on insect larvae, what is the role of the frogs in this pond ecosystem?

- (1) herbivore
- (2) parasite
- (3) consumer
- (4) host

Data Base File Number: 463

Regents Date

Jan2006

34 1/27/2006 S4K1

Answer 3

Data Table

Type of Organisms	Number Present
bass	two
frogs	forty
phytoplankton	thousands
insect larvae	hundreds

control

153. The diagram shown illustrates the result of growing a garlic bulb in a cup of distilled water over five days. What is the control in this experiment?

- (1) The light.
- (2) The garlic bulb grown in distilled water.
- (3) The dark.
- (4) The fertilizer used.

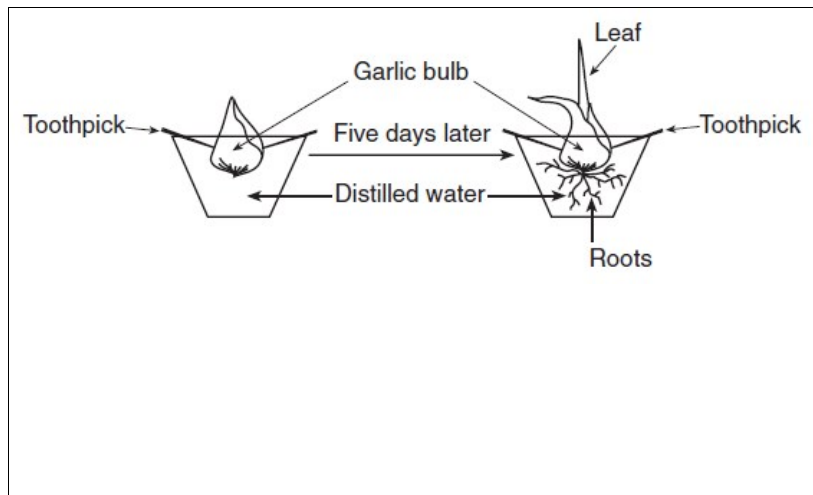
Data Base File Number: 575

Regents Date

June2005

57 6/22/2005 LABA

Answer 2



control

154. Base your answer to this question on the information given and on your knowledge of biology.
A Study of Antibacterial Cleansers

An experiment was designed to test the effectiveness of three antibacterial hand-cleansing solutions against bacteria present on hands. Swabs were used to take one sample each from the unwashed hands of ten test subjects. Each swab was then rubbed across the surface of bacterial growth medium in a separate petri dish. The dishes were placed in an incubator to allow bacterial colonies to develop. Ten other test subjects treated their hands with an antibacterial hand-cleansing solution, then had their hands swabbed, and ten more petri dishes were set up and incubated in the same way as the first set of dishes. The process was repeated again with ten more test subjects for a second hand cleanser, and again for a third group with a third hand cleanser. The results from the incubated petri dishes were averaged. The averages are shown in the data table. What was the purpose of testing unwashed hands?

- (1) unwashed hands acted as a control
- (2) unwashed hands acted as an hypothesis
- (3) unwashed hands acted as a theory
- (4) unwashed hands had no useful scientific purpose

Data Base File Number: 931

Regents Date

Jan2014

61 1/27/2014 LABA

Answer 1

Treatment Before Swabbing	Average Number of Bacterial Colonies
none	30
antibacterial hand-cleansing solution 1	12
antibacterial hand-cleansing solution 2	13
antibacterial hand-cleansing solution 3	11

controlled experiment

155. In an experiment to test the effect of light on plant growth, a student used two marigold plants of the same age. The plants were grown in separate pots. One pot was exposed to sunlight, the other to artificial light. All other conditions were kept the same. The height of each plant was measured at the start and at the end of the experiment. The student's data are shown in the table. The student concluded that all plants grow more rapidly in sunlight than in artificial light. Is this conclusion valid?

- (1) yes, because this is a well designed controlled experiment.
- (2) no, because only two plants of the same species were used and the 1 centimeter difference in height is not significant.
- (3) yes and no, because data is not conclusive.
- (4) yes because sunlight is always better for plant growth than artificial light.

Data Base File Number: 726

Regents Date

Jan2003

65 1/30/2003 S1K3

Answer 2

Data Table

Plant Grown In	Increase in Plant Height (cm)
Sunlight	9
Artificial light	8

controlled experiment

156. Base your answer to this question on the information, diagram, and data table shown and on your knowledge of biology. A student conducted an investigation to determine the effect of various environmental factors on the rate of transpiration (water loss through the leaves) in plants. The student prepared 4 groups of plants. Each group contained 10 plants of the same species and leaf area. Each group was exposed to different environmental factors. The apparatus shown in the diagram was constructed to measure water loss by the plants over time in 10-minute intervals for 30 minutes. The results are shown in the data table. What was the control group of plants in this experiment?

- (1) Classroom Conditions (3) Classroom Conditions + Fan
 (2) Classroom Conditions + Floodlight (4) Classroom Conditions + Mist

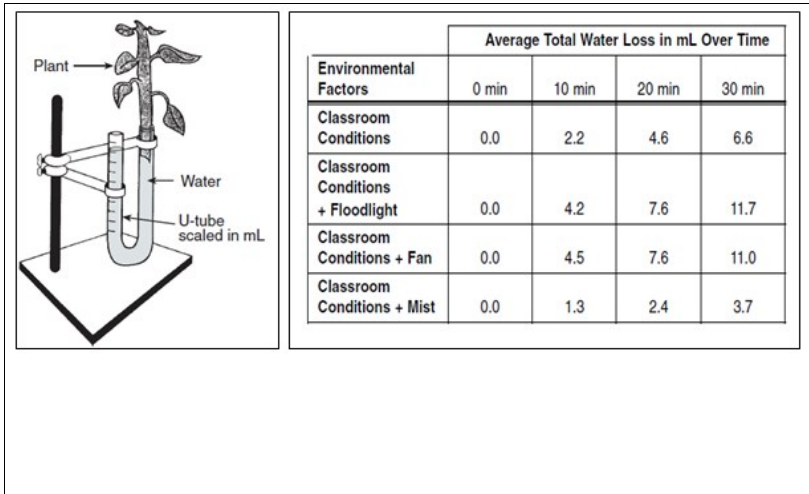
Data Base File Number: 722

Regents Date

Jan2003

54 1/30/2003 S1K3

Answer 1



daphnia

157. The daphnia shown in the diagram has produced three egg cells, eats live single-celled organisms, lives in freshwater, and is caught and eaten by animals known as hydra. Which terms would most likely be used in a description of this organism?

- (1) asexual reproduction, herbivore, prey, aquatic, heterotrophic (3) asexual reproduction, autotrophic, predator, terrestrial, scavenger
 (2) sexual reproduction, predator, aquatic, heterotrophic, prey (4) sexual reproduction, carnivore, aquatic, autotrophic, prey

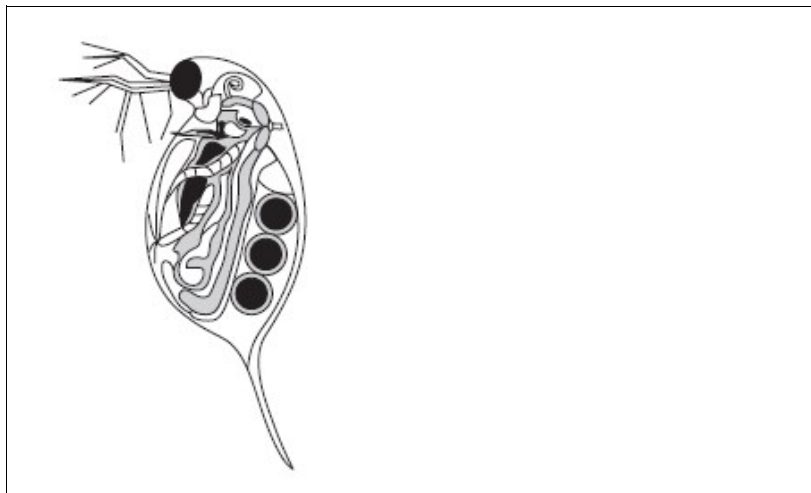
Data Base File Number: 318

Regents Date

Jan2011

39 1/25/2011 S4K6

Answer 2



data analysis

158. Base your answer to this question on the data table and information below and on your knowledge of biology. The data table shows water temperatures at various depths in an ocean. The approximate water temperature at a depth of 125 meters, in degrees C., would be closest to

- (1) 15
- (2) 13
- (3) 8
- (4) 3

Data Base File Number: 819

Regents Date

June2002

47 6/19/2002 S1K3

Answer 3

Water Temperatures at Various Depths

Water Depth (meters)	Temperature (°C)
50	18
75	15
100	12
150	5
200	4

data analysis

159. A student squeezed a clothespin as many times as possible in a 30-second time period. The student repeated this procedure nine more times in quick succession. The data obtained are in the chart shown. What is one hypothesis that this data would support concerning the relationship between the number of trials and number of squeezes in 30 seconds?

- (1) The number of squeezes in 30 seconds will increase with each consecutive trial.
- (2) The number of squeezes in 30 seconds will remain the same with each consecutive trial.
- (3) The number of squeezes in 30 seconds will decrease with each consecutive trial.
- (4) The number of squeezes in 30 seconds will accelerate with each consecutive trial.

Data Base File Number: 552

Regents Date

Jan2005

70 1/28/2005 LAB2

Answer 3

Trial	Number of Squeezes in 30 Seconds
1	32
2	29
3	28
4	27
5	26
6	25
7	23
8	21
9	19
10	17

data analysis

160. Base your answer to this question on the passage and data table given and on your knowledge of biology. The amount of oxygen gas dissolved in water is important to the organisms that live in a river. The amount of dissolved oxygen varies with changes in both physical factors and biological processes. The temperature of the water is one physical factor affecting dissolved oxygen levels as shown in the data table below. The amount of dissolved oxygen is expressed in parts per million (ppm). If the trend continues as shown in the data, what would the dissolved oxygen level most likely be if the temperature of the water was 35°C?

(1) 6

(3) 4

(2) 5

(4) 3

Data Base
File Number: 496

Regents Date

June 2006

46 6/21/2006 S1K3

Answer 1

Water Temperature (°C)	Level of Dissolved Oxygen (ppm)
1	14
10	11
15	10
20	9
25	8
30	7

data analysis

161. Base your answer to this question on the information and data table shown and on your knowledge of biology. You are the head of the research division of the Leafy Lettuce Company. Your company is experimenting with hydroponic technology. Hydroponic technology involves growing plants in containers of growth solution in a greenhouse. No soil is used. Your first experiment used five groups of five plants of the same size and species. Each group was grown in a different growth solution for the same period of time. The results of the experiment are shown in the data table. Based on the data as shown, what would be the best growth solution to use for hydroponic lettuce growth?

- (1) Group 2
- (2) Group 3
- (3) Group 4
- (4) Group 5

Data Base File Number: 843

Regents Date

Jan2002
69 1/23/2002 S1K3

Answer 4

Group	Growth Solution	Average Growth in Height (cm)	Average Surface Area of Leaves (cm ²)	Key N = Nitrogen P = Phosphorus Mg = Magnesium K = Potassium
1	H ₂ O	4.4	7.6	
2	H ₂ O + N	5.1	10.0	
3	H ₂ O + N + P	11.5	37.5	
4	H ₂ O + N + P + Mg	13.0	125.0	
5	H ₂ O + N + P + Mg + K	20.3	306.5	

data analysis

162. Base your answer to this question on the data table shown and on your knowledge of biology. The data table shows the number of breeding pairs of bald eagles in New York State from 1991 to 2003. In which time period did New York State see the largest increase in breeding pairs of bald eagles?

- (1) 1991-1993
- (2) 1993-1995
- (3) 1995-1997
- (4) 1999-2001

Data Base File Number: 885

Regents Date

June2013
47 6/11/2013 S1K3

Answer 4

Year	Number of Breeding Pairs
1991	15
1993	20
1995	25
1997	35
1999	45
2001	65
2003	75

data analysis

163. Base your answer to this question on the information shown and on your knowledge of biology. In a test for diabetes, blood samples were taken from an individual every 4 hours for 24 hours. The glucose concentrations were recorded and are shown in the data table. One likely cause of the change in blood glucose concentration between hour 16 and hour 20 is

- (1) The individual ate some food. (3) The individual exercised vigorously.
(2) The blood insulin level increased. (4) The individual went to sleep.

Data Base File Number: 165

Regents Date

Jan2009

50 1/27/2009 S1K3

Answer 1

Blood Glucose Level Over Time

Time (h)	Blood Glucose Concentration (mg/dL)
0	100
4	110
8	128
12	82
16	92
20	130
24	104

data analysis

164. Base your answer to this question on the data table shown and on your knowledge of biology. The data table shows the number of fish species found at various ocean depths. The approximate number of fish species that can be found at 120 meters is

- (1) 5 (3) 18
(2) 13 (4) 31

Data Base File Number: 372

Regents Date

Aug2011

47 8/18/2011 S1K3

Answer 3

Fish Species Found at Various Ocean Depths

Water Depth (m)	Number of Fish Species Found
50	35
75	31
100	22
150	13
200	6

data analysis

165. Base your answer to this question on the information and data table shown and on your knowledge of biology. A student grew two separate cultures of single-celled organisms. One culture contained "Paramecium caudatum" and the other contained "Paramecium aurelia". The cultures were grown under the same conditions and the number of paramecia (per drop) in each culture was estimated every 2 days for a period of 16 days. The results are shown in "Data Table 1". What change occurred in the two populations of paramecia between days 0 and 8?

- (1) both populations increased in number
- (2) both populations decreased in number
- (3) both populations stayed the same
- (4) one population increased while the other decreased

Data Base File Number: 546

Regents Date

Jan2005

39 1/28/2005 S1K3

Answer 1

Days	Number of <i>Paramecium caudatum</i> (per drop)	Number of <i>Paramecium aurelia</i> (per drop)
0	4	4
2	10	10
4	30	46
6	48	66
8	58	70
10	62	69
12	60	71
14	61	71
16	60	71

data analysis

166. Base your answer to this question on the information given and on your knowledge of biology. A student squeezes and releases a clothespin as often as possible for 2 minutes and then takes his pulse for 20 seconds. After a 2-minute rest, he repeats the procedure. This pattern is repeated one more time. The student's 20-second pulse counts were 23, 26, and 21 and are recorded in the data table as shown. What is the "Average Pulse/Min" to be recorded in the data table in the LOWER RIGHT CORNER?

- (1) 69
- (2) 78
- (3) 63
- (4) 70

Data Base File Number: 500

Regents Date

June2006

67 6/21/2006 LAB2

Answer 4

Trial	20-Second Pulse Counts	Pulse/Min
1	23	
2	26	
3	21	
Average		

data analysis

167. Select the interaction from the LIST SHOWN that is most closely associated with the following description: "The rhinoceros bird (organism A) feeds on parasites that live on the body of a rhinoceros (organism B). The rhinoceros allows the birds to feed on the parasites."

- (1) 1
- (2) 2
- (3) 3
- (4) 4

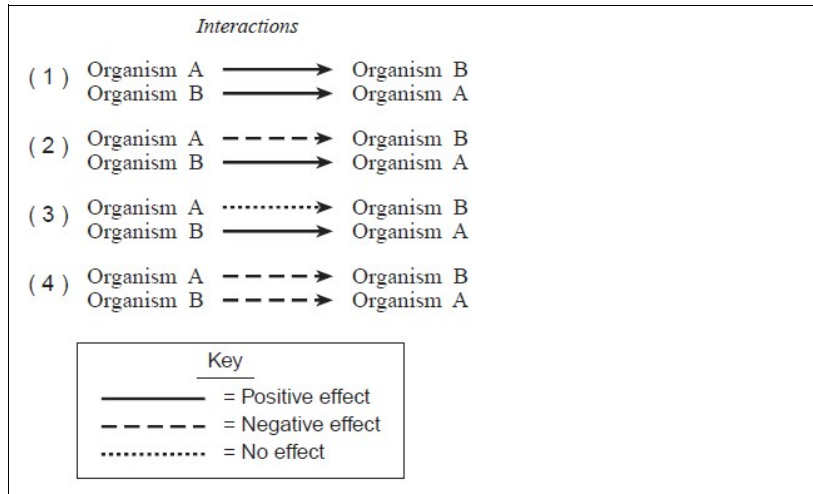
Data Base File Number: 852

Regents Date

June 2001

37 6/15/2001 S4K6

Answer 1



data analysis

168. Base your answer to this question on the information and data table shown and on your knowledge of biology. Two students collected data on their pulse rates while performing different activities. Their average results are shown in the data table. What is the relationship between activity and pulse rate?

- (1) pulse rate does not change
- (2) pulse rate is directly related to activity
- (3) pulse rate is not directly related to activity
- (4) pulse rate decreases as activity increases

Data Base File Number: 60

Regents Date

Jan 2007

66 1/26/2007 LABS

Answer 2

Data Table

Activity	Average Pulse Rate (beats/min)
sitting quietly	70
walking	98
running	120

data analysis

169. Base your answer to this question on the histograms shown and on your knowledge of biology. Students in a class recorded their resting pulse rates and their pulse rates immediately after strenuous activity. The data obtained are shown in the histograms. According to the data, compared to the average resting pulse rate, the average pulse rate immediately after strenuous activity generally
- (1) decreased
 - (2) increased
 - (3) remained the same
 - (4) decreased and leveled off

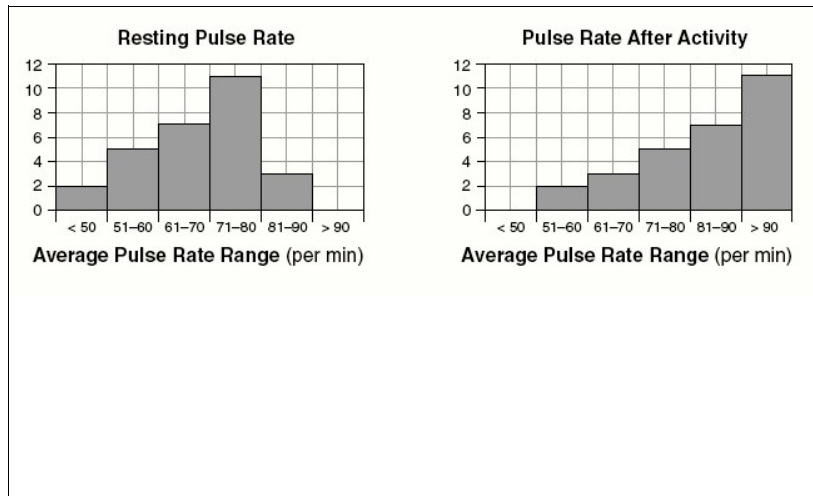
Data Base File Number: 168

Regents Date

Jan2009

72 1/27/2009 LABS

Answer 2



data analysis

170. Base your answer to this question on the data table shown and on your knowledge of biology. The data table shows the amount of oxygen that will dissolve in freshwater and seawater at different temperatures. The amount of oxygen is expressed in parts per million (ppm). What is the oxygen-holding ability of freshwater as compared to the oxygen-holding ability of seawater in the temperature range shown?
- (1) The oxygen holding content of fresh water is greater than the oxygen holding content of saltwater.
 - (2) The oxygen holding content of fresh water and salt water are the same.
 - (3) The data is insufficient to determine the oxygen holding capacity of fresh water and saltwater at a given temperature.
 - (4) Oxygen holding capacity depends on mineral content of the water.

Data Base File Number: 840

Regents Date

Jan2002

55 1/23/2002 S1K3

Answer 1

Temperature (°C)	Freshwater Oxygen Content (ppm)	Seawater Oxygen Content (ppm)
1	14.24	11.15
10	11.29	9.00
15	10.10	8.09
20	9.11	7.36
25	8.27	6.75
30	7.56	6.19

data analysis

171. Base your answer to this question on the data table given and your knowledge of biology. A number of bean seeds planted at the same time produced plants that were later divided into two groups, A and B. Each plant in group A was treated with the same concentration of gibberellic acid (a plant hormone). The plants in group B were not treated with gibberellic acid. All other growth conditions were kept constant. The height of each plant was measured on 5 consecutive days, and the average height of each group was recorded in the data table shown. What valid conclusion can be drawn concerning the effect of gibberellic acid on bean plant growth?

- (1) No valid conclusion can be drawn from the data given. (3) Bean plants given gibberellic grew taller than those that were not treated.
- (2) The height of Group A plants was smaller. (4) The height of Group B plants was taller.

Data Base File Number: 524

Regents Date

Aug2006

46 8/16/2006 S1K3

Answer 3

	Average Plant Height (cm)				
	Day 1	Day 2	Day 3	Day 4	Day 5
Group A	5	7	10	13	15
Group B	5	6	6.5	7	7.5

data analysis

172. Insecticides are used by farmers to destroy crop-eating insects. Recently, scientists tested several insecticides to see if they caused damage to chromosomes. Six groups of about 200 cells each were examined to determine the extent of chromosome damage after each group was exposed to a different concentration of one of two insecticides. The results are shown in the data table. Which insecticide has a more damaging effect on chromosomes?

- (1) methyl parathion
- (2) malathion
- (3) methyl malathion
- (4) parathion malathion

Data Base File Number: 597

Regents Date

Aug2005

47 8/16/2005 S1K4

Answer 1

Insecticide	Insecticide Concentration (ppm)	Number of Cells with Damaged Chromosomes
Methyl parathion	0.01	7
	0.10	15
	0.20	30
Malathion	0.01	3
	0.10	4
	0.20	11

data analysis

173. NOTE - Rotate your paper to the LEFT to properly view the diagram. Base your answer to this question on the graph shown and on your knowledge of biology. The graph shows the relative concentrations of different ions inside and outside of an animal cell. Which ion is closest to equilibrium inside and outside of the cell?

- (1) Sodium
- (2) Potassium
- (3) Calcium
- (4) Chloride

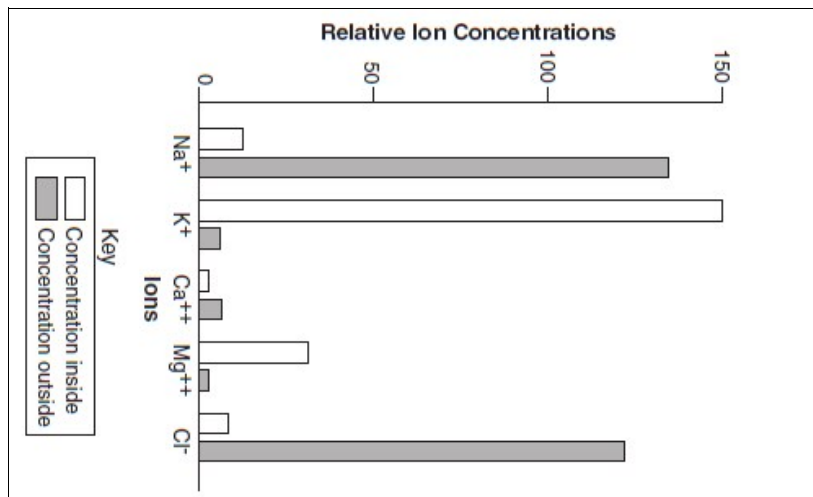
Data Base File Number: 791

Regents Date

Aug2002

52 8/13/2002 S4K1

Answer 3



data analysis

174. Base your answer to this question on the information given, the data table shown and on your knowledge of biology.
 An investigation was carried out on four different plant species to determine which of three species was most closely related to an unknown plant species. The results of the investigation are shown in the data table. Which plant species appears to be most closely related to the unknown species?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 934

Regents Date

Jan2014

78 1/27/2014 LAB1

Answer 2

Plant Species	Test for Enzyme M	Differences in Amino Acid Sequences	Gel Electrophoresis Banding Pattern
unknown	+		11, 8, 6, 2
1	-	4	24, 8, 5
2	+	1	11, 8, 6, 2
3	+	3	13, 7, 5, 2

data analysis

175. A class is recording pulse rates of the students in a data table like the one shown. One student checks his pulse and counts 23 beats over a time interval of 20 seconds. In which row in the data table should the pulse rate of this student be recorded?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 932

Regents Date

Jan2014

73 1/27/2014 LAB2

Answer 2

Row	Pulse Rate (beats per minute)	Number of Students
A	< 51	
B	51-70	
C	71-90	
D	>90	

data analysis

176. Base your answer to this question on the information and data table shown and on your knowledge of biology. A biology student performed an experiment to determine which of two species of single celled organisms would survive best when cultured together in a certain environment. The student placed 10 organisms of each species into a large test tube. Throughout the experiment, the test tube was maintained at 30°C. After the test tube was set up, the population of each species was determined each day for 5 days. The data collected are shown in the table. Based on the daily counts, on which day did it first become evident that one species was better adapted than the other species for survival in the environment provided?

(1) 1

(3) 3

(2) 2

(4) 4

Data Base
File Number:

788

Regents Date

Aug2002

45

8/13/2002

S1K3

Answer

4

Day	Population	
	Species A	Species B
1	10	10
2	16	16
3	32	32
4	48	12
5	60	4

data analysis

177. When living organisms obtain water and food from their environment, they may also take in toxic pesticides. Low concentrations of some pesticides may not kill animals, but they may damage reproductive organs and cause sterility. The data table shows concentrations of a pesticide in tissues of organisms at different levels of a food chain. How does pesticide concentration vary between all the organisms?

- (1) Producers have the highest pesticide concentration.
- (2) Herbivores have the highest pesticide concentration.
- (3) Carnivores have the highest concentration.
- (4) Data is insufficient to draw a conclusion.

Data Base File Number: 599

Regents Date

Aug2005

57 8/16/2005 S4K7

Answer 3

Organisms	Pesticide Concentration (parts per million)
producers	0.01–0.03
herbivores	0.25–1.50
carnivores	4.10–313.80

data analysis

178. Base your answer to this questions on the information given, the graph shown, and on your knowledge of biology. In an investigation, 28 students in a class determined their pulse rates after performing each of three different activities. Each activity was performed three times during equal time intervals. The average results are shown in the graph. Before constructing the graph it would have been most helpful to organize the results of the investigation in

- (1) a research plan
- (2) an equation
- (3) a data table
- (4) a generalization

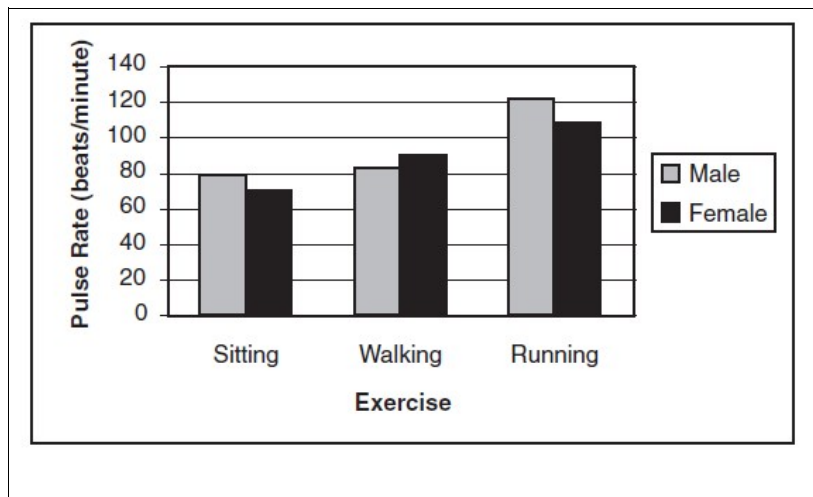
Data Base File Number: 602

Regents Date

Aug2005

68 8/16/2005 LAB2

Answer 3



data analysis

179. Base your answer to this question on the information and graph below and on your knowledge of biology. Pulse-rate data were collected from some students during their lunch time for a lab activity. The data are represented in the histogram shown. The histogram includes data from a total of how many students?

(1) 6

(3) 10

(2) 7

(4) 27

Data Base File Number: 530

Regents Date

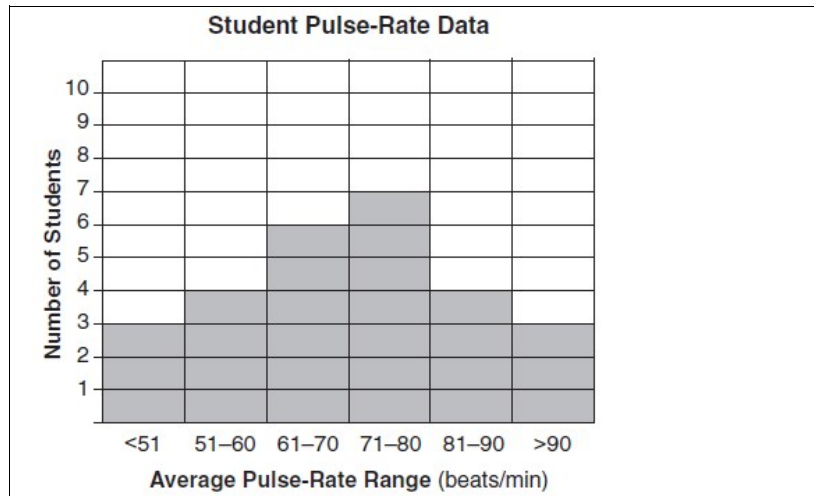
Aug2006

65

8/16/2006

LAB2

Answer 4



data analysis

- 180.** Base your answer to this question on the information given, the data table given and on your knowledge of biology. Daphnia (water fleas) are sensitive to many changes in pond ecosystems. For this reason they are often used in bioassays, tests in which organisms are exposed to various levels of a chemical to determine what levels are safe. The results of these tests determine whether or not the chemical being tested will affect other pond organisms. An experiment was designed to determine the toxicity of different salt solutions on cultures of daphnia. Five fish tanks were each filled with the same amount of water containing different concentrations of salt. Ten daphnia were placed into each tank. After 48 hours, the number of daphnia that had survived and the number of daphnia that had died in each tank were recorded and the percent mortality was calculated. The results of the experiment are shown in the data table. Which salt concentration was most toxic to the daphnia in this experiment?

- (1) 1.25 g/L
(2) 2.5 g/L
(3) 5.0 g/L
(4) 10.0 g/L

Data Base
File Number: 421

Regents Date

June 2012

44 6/19/2012 S1K3

Answer 4

Effect of Salt Concentration on Daphnia After 48 Hours

Salt Concentration (g/L)	Number that Survived	Number that Died	Mortality (%)
0.63	8	2	20
1.25	7	3	30
2.5	10	0	0
5.0	3	7	70
10.0	0	10	100

data analysis

181. Base your answer to this question on the data table and on your knowledge of biogy. Tooth decay occurs when bacteria living in the mouth produce an acid that dissolves tooth enamel (the outer, protective covering of a tooth). Which statement is a valid conclusion regarding tooth decay?
- (1) As sugar intake increases, the acidity in the mouth decreases, reducing tooth decay.
 - (2) As sugar intake increases, tooth decay increases in Europe and the Americas, but not in Africa and Southeast Asia.
 - (3) The greater the sugar intake, the greater the average number of decayed teeth.
 - (4) The greater the sugar intake, the faster a tooth decays.

Data Base 20
File Number:

Regents Date

Aug2007

54 8/16/2007 S4K1

Answer 3

The Effect of Sugar Intake on Tooth Decay

World Regions	Average Sugar Intake per Person (kg/year)	Average Number of Teeth with Decay per Person
Americas	40	3.0
Africa	18	1.7
Southeast Asia	14	1.6
Europe	36	2.6

data analysis

182. Base your answer to this question on the information given and on your knowledge of biology. An investigation was performed to determine the resistance of two species of Anopheles mosquito to the insecticides malathion and dieldrin. In May, two groups of 10,000 insects of each species were sprayed with insecticide. One group was sprayed with malathion, the second group with dieldrin. The number of surviving insects was recorded after the first spraying. The surviving insects were then allowed to reproduce. Several generations of new offspring were produced over the following three months. On the first day of each month they were sprayed, and the number of survivors was recorded in the table as shown. One valid conclusion that can be drawn from these data is

- (1) Anopheles culifacies is the dominant insect.
- (2) Anopheles stephensi is more resistant to malathion than to dieldrin.
- (3) Anopheles strephensi is more resistant to dieldrin than to malathion.
- (4) No valid conclusion can be made.

Data Base File Number: 842

Regents Date

Jan2002

59 1/23/2002 LABA

Answer 3

Species	Insecticide	Number Before First Spraying	Number of Survivors			
			May	June	July	Aug
<i>Anopheles culifacies</i>	malathion	10,000	31	129	1,654	4,055
	dieldrin	10,000	78	339	1,982	3,106
<i>Anopheles strephensi</i>	malathion	10,000	28	56	1,207	1,744
	dieldrin	10,000	30	71	1,321	2,388

data analysis

183. Base your answer to this question on the information and data table shown and on your knowledge of biology. A student counted the total number of leaves in a group of duckweed plants ("Lemna gibba") over a 5-day period. The data collected are shown in the table. The time it takes for the number of leaves to increase from 15 to 30 is approximately

- (1) 2.0 days
- (2) 2.3 days
- (3) 2.9 days
- (4) 3.2 days

Data Base File Number: 868

Regents Date

Aug2001

39 8/16/2001 S1K3

Answer 2

Time in Days	Number of Leaves
0	15
1	20
2	25
3	40
4	60
5	80

data analysis

184. The chart shows information about the relationship between the age of the mother and the occurrence of Down syndrome in the child. What is one conclusion that can be drawn from the chart concerning the relationship between the age of the mother and the chance of her having a child with Down syndrome.

- (1) The age of the mother does not make any difference in the chance of her having a child with Down syndrome.
- (2) The younger the mother the greater the chance of her having a child with Down syndrome.
- (3) The older the mother the greater the chance of her having a child with Down syndrome.
- (4) No conclusion can be drawn from the data given.

Data Base File Number: 869

Regents Date

Aug2001

50 8/16/2001 S1K3

Answer 3

Age of Mother	Occurrence of Down Syndrome per 1000 Births
25	0.8
30	1.0
35	3.0
40	10.0
45	30.0
50	80.0

data analysis

185. In an investigation, students determined the average rate of movement of gill covers of a species of freshwater fish at different temperatures. The results are shown in the data table at the LEFT in the diagram. FROM THE CHOICES AT THE RIGHT IN THE DIAGRAM, which labeled axes should be used to graph the relationship between the two variables?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 870

Regents Date

Aug2001

54 8/16/2001 S1K3

Answer 1

Data Table			
Group	Number of Fish	Temperature (°C)	Average Rate of Movement of Gill Covers per Minute
1	5	10	15
2	6	15	25
3	4	18	30
4	7	20	38
5	6	23	60
6	4	25	57
7	4	27	25

Average Rate of Movement of Gill Covers

Temperature (°C)

(1)

Group

Average Rate of Movement of Gill Covers

(3)

Number of Fish

Average Rate of Movement of Gill Covers

(2)

Number of Fish

Temperature (°C)

(4)

data analysis

186. Base your answer to this question on the information and data table given and on your knowledge of biology. The rate of respiration of a freshwater sunfish was determined at different temperatures. The rate of respiration was determined by counting the number of times the gill covers of the fish opened and closed during 1-minute intervals at the various temperatures. The following data in the table shown were collected. According to the data, as the temperature increases, the rate of respiration of the sunfish

- (1) increases steadily
- (2) decreases steadily
- (3) increases, then decreases
- (4) decreases, then increases

Data Base File Number: 853

Regents Date

June2001

40 6/15/2001 S1K3

Answer 3

Data Table	
Temperature (°C)	Gill Cover Opening and Closing Per Minute
10	15
15	25
18	30
20	38
23	60
25	57
27	25

data analysis

187. Information concerning the diet of crocodiles of different sizes is contained in the table shown. Which statement is NOT a valid conclusion based on the data?

- (1) Overharvesting of fish could have a negative impact on Group C.
- (2) The smaller the crocodile is, the larger the prey.
- (3) Group B has no preference between reptiles and birds.
- (4) Spraying insecticides would have the most direct impact on Group A.

Data Base File Number: 35

Regents Date

June 2007

32 6/20/2007 S4K6

Answer 2

Food Source	Group A 0.3–0.5 Meter	Group B 2.5–3.9 Meters	Group C 4.5–5.0 Meters
mammals	0	18	65
reptiles	0	17	48
fish	0	62	38
birds	0	17	0
snails	0	25	0
shellfish	0	5	0
spiders	20	0	0
frogs	35	0	0
insects	100	2	0

data analysis

188. The data table shown contains information on the growth of eight white pine trees, planted in eight different locations, after a period of time. Which statement is best supported by the data in the table?

- (1) White pines grow best at higher elevations.
- (2) White pines are not found at elevations below 1,000 feet.
- (3) White pines have a long life span.
- (4) White pines can grow in acidic soil.

Data Base File Number: 859

Regents Date

June 2001

63 6/15/2001 S4K5

Answer 4

Tree Number	Trunk Diameter 1.2 Meters Above Soil Surface (m)	Soil pH	Elevation Above Sea Level (ft)
1	0.54	4.0	1,200
2	0.79	6.5	1,650
3	0.64	4.5	1,400
4	1.04	5.0	1,350
5	0.96	5.0	1,350
6	0.82	4.5	1,250
7	0.80	5.5	1,400
8	0.52	5.0	1,600

data analysis

189. Base your answer to this question on the information given and on your knowledge of biology. An investigation was performed to determine the effects of enzyme X on three different disaccharides (double sugars) at 37°C. Three test tubes were set up as shown in the TOP of the diagram. At the end of 5 minutes, the solution in each test tube was tested for the presence of disaccharides(double sugars) and monosaccharides(simple sugars). The results of these tests are shown in the data table AT THE BOTTOM of the diagram. What can be concluded about the activity of enzyme X from the data table?

- (1) Enzyme X breaks down sugar A, B, and C.
- (2) Enzyme X breaks down sugar C to disaccharides.
- (3) Enzyme X breaks down sugar C to monosaccharides.
- (4) No conclusion can be drawn from the data provided.

Data Base File Number:

872

Regents Date

Aug2001

64

8/16/2001

S4K5

Answer

3

	Test Tube 1	Test Tube 2	Test Tube 3
Monosaccharide	not present	not present	present
Disaccharide	present	present	not present

data analysis

190. A student designed an investigation to determine the effect of temperature on the rate of seed germination. The student placed moist filter paper in each of four culture dishes. Ten bean seeds were placed on the filter paper in each dish. The four dishes were numbered and placed in the dark at different temperatures as follows: Dish 1: 10°C, Dish 2: 15°C, Dish 3: 20°C, Dish 4: 25°C. The total number of germinated seeds in each culture dish was counted each day for two weeks. Which data table is best for recording the results of this investigation?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 838

Regents Date

Jan2002

50 1/23/2002 S1K3

Answer 4

Petri Dish	Day	Temperature	Amount of Light
1			
2			
3			
4			

(1)

Day	Temperature			
	Dish 1	Dish 2	Dish 3	Dish 4

(3)

Petri Dish	Amount of Water	Number of Germinated Seeds	Amount of Light
1			
2			
3			
4			

(2)

Day	Number of Germinated Seeds			
	10°C	15°C	20°C	25°C

(4)

decomposer

191. The process illustrated in the sequence shown occurs constantly in the biosphere. Which type of organism is most likely represented by X?

- (1) decomposer
- (2) producer
- (3) herbivore
- (4) carnivore

Data Base File Number: 159

Regents Date

Jan2009

38 1/27/2009 S4K6

Answer 1



decomposer

192. The diagram shown represents three groups of organisms that are part of an ecosystem. Which organisms, of those shown, are decomposers?

- (1) A and B
- (2) A, only
- (3) B, only
- (4) C, only

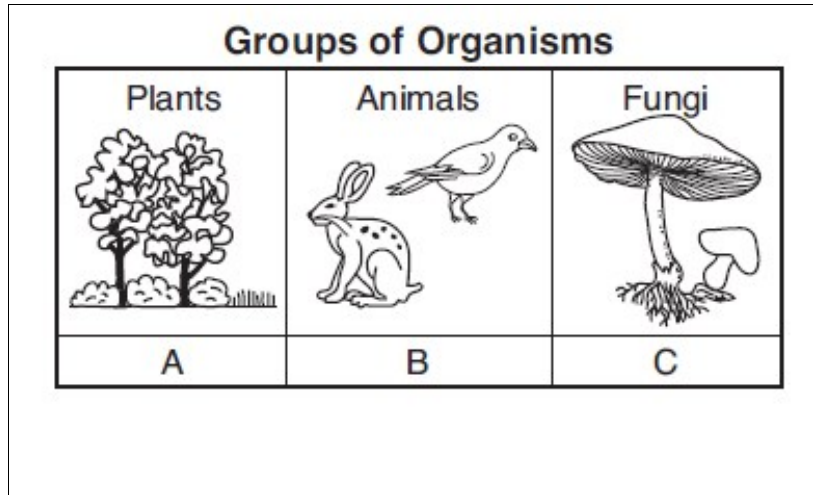
Data Base File Number: 914

Regents Date

Aug2013

65 8/14/2013 S4K5

Answer 4



decomposer

193. Which row in the chart shown best describes decomposers?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 897

Regents Date

Aug2013

2 8/14/2013 S4K1

Answer 2

Row	Method of Nutrition	Recycles
(1)	autotrophic	nutrients
(2)	heterotrophic	nutrients
(3)	autotrophic	energy
(4)	heterotrophic	energy

decomposer

194. Organisms from a particular ecosystem are shown in the diagram. Which statement concerning an organism in this ecosystem is correct?

- (1) Organism 2 is heterotrophic.
- (2) Organism 3 helps recycle materials.
- (3) Organism 4 obtains all of its nutrients from an abiotic source.
- (4) Organism 5 must obtain its energy from organism 1.

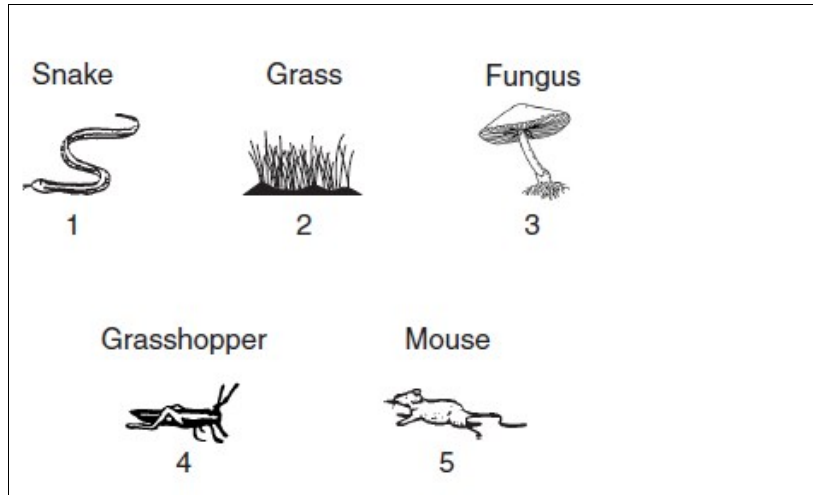
Data Base File Number: 654

Regents Date

June 2004

5 6/18/2004 S4K1

Answer 2



decomposer

195. The diagram shown represents some energy transfers in an ecosystem. Which type of organism is most likely represented by letter X?

- (1) decomposer
- (2) autotroph
- (3) producer
- (4) herbivore

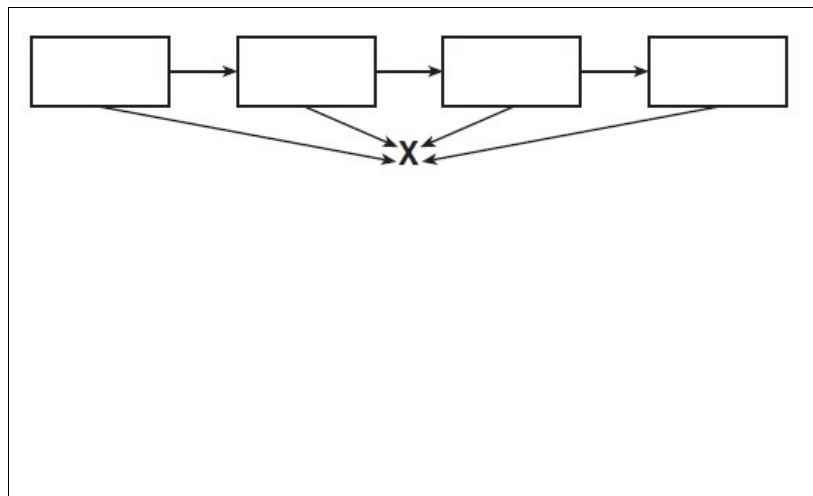
Data Base File Number: 486

Regents Date

June 2006

28 6/21/2006 S4K6

Answer 1



decomposer

196. Untreated organic wastes were accidentally discharged into a river from a sewage treatment plant. The graph shows the dissolved oxygen content of water samples taken from the river at specific distances downstream from the plant, both before, and then three days after the discharge occurred. Use the data given in the graph and your knowledge of biology to answer this question. Why would this accident be expected to benefit decomposers?

- (1) The raw sewage provides a sudden increase in the food supply for the decomposers which in turn requires more oxygen to support the decomposers.
- (2) The raw sewage itself uses more oxygen.
- (3) No conclusion can be made based on the data given.
- (4) The decrease in the oxygen levels in the river is caused by some other natural process in the water.

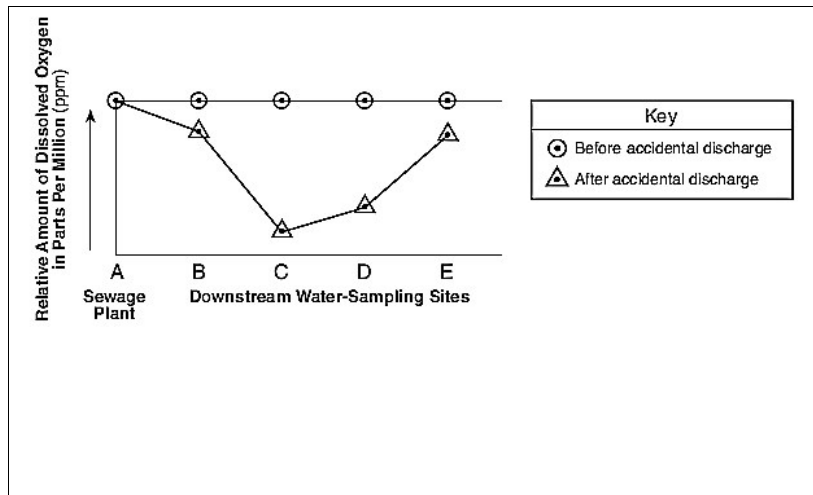
Data Base File Number: 82

Regents Date

Jan2008

57 1/25/2008 S4K6

Answer 1



decomposer

197. The diagram shows the relationships between the organisms in and around a pond. One additional biotic factor needed to make this a stable ecosystem is the presence of

- (1) producers
- (2) herbivores
- (3) decomposers
- (4) consumers

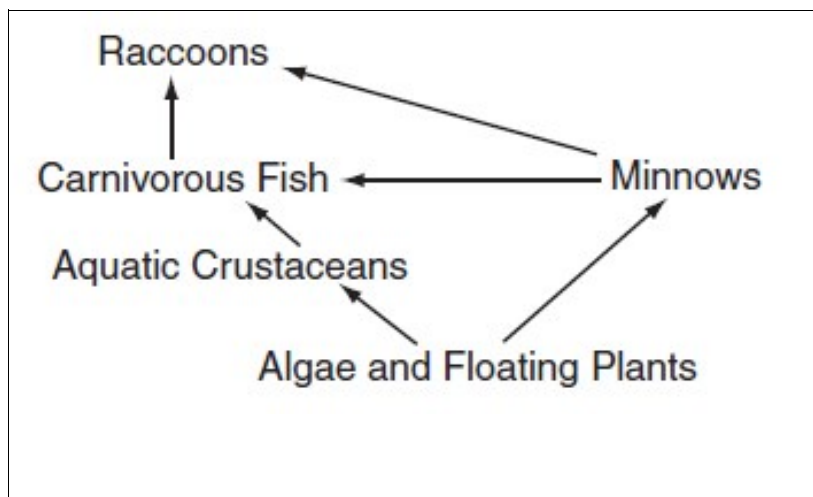
Data Base File Number: 865

Regents Date

Aug2001

27 8/16/2001 S4K6

Answer 3



decomposer

198. In the diagram shown, what does X most likely represent?

- (1) autotrophs
- (2) herbivores
- (3) decomposers
- (4) carnivores

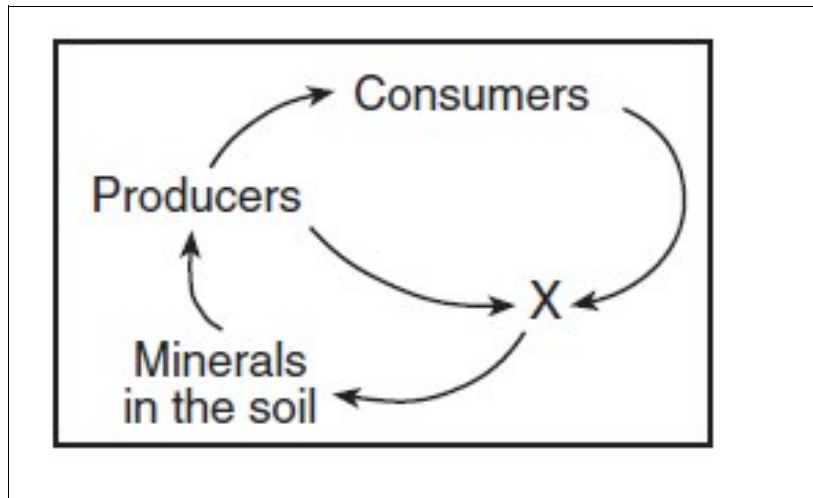
Data Base File Number: 452

Regents Date

Jan2006

1 1/27/2006 S4K1

Answer 3



dependent variable

199. Base your answer to this question on the information and data table shown and on your knowledge of biology. The effect of temperature on the action of pepsin, a protein-digesting enzyme present in stomach fluid, was tested. In this investigation, 20 milliliters of stomach fluid and 10 grams of protein were placed in each of five test tubes. The tubes were then kept at different temperatures. After 24 hours, the contents of each tube were tested to determine the amount of protein that had been digested. The results are shown in the table. The dependent variable in this investigation is the

- (1) size of the test tube
- (2) time of digestion
- (3) amount of stomach fluid
- (4) amount of protein digested

Data Base File Number: 573

Regents Date

June2005

46 6/22/2005 LABA

Answer 4

Tube #	Temperature (°C)	Amount of Protein Digested (grams)
1	5	0.5
2	10	1.0
3	20	4.0
4	37	9.5
5	85	0.0

development

200. Some stages in the development of an individual are listed as shown. Which sequence represents the correct order of these stages?

(1) A-B-C-D

(3) D-B-C-A

(2) B-C-A-D

(4) B-D-A-C

Data Base File Number: 779

Regents Date

Aug2002

16 8/13/2002 S4K4

Answer 4

(A) differentiation of cells into tissues
(B) fertilization of egg by sperm
(C) organ development
(D) mitotic cell division of zygote

development / organism

201. Some stages in the development of an organism are represented in the diagram below. Which levels of biological organization do stages 2 and 7 have in common?

(1) cells and organs

(3) tissues and organelles

(2) cells and tissues

(4) organelles and cells

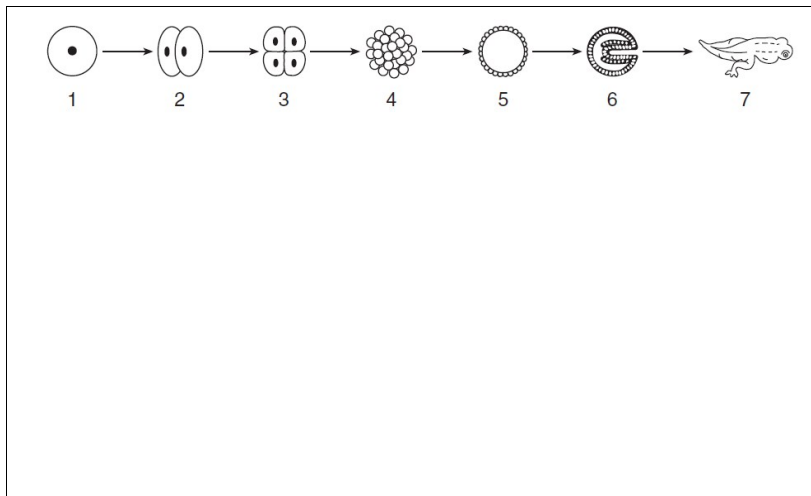
Data Base File Number: 276

Regents Date

Aug2010

8 8/18/2010 S4K1

Answer 4



dialysis

202. Base your answer to this question on the information shown and on your knowledge of biology. Students prepared four models of cells by using dialysis tubing containing the same blue solution. Each of the model cells originally weighed 10 grams. They then placed each model cell in a beaker containing a different concentration of water. After 24 hours, they recorded the mass of the model cells as shown in the data table. Why did the model cell that was placed in 100% water increase in mass?

- (1) Water diffused into the model cell.
- (2) Water diffused out of the model cell.
- (3) Water achieved equilibrium on the outside of the model cell.
- (4) No conclusion can be made based on the data given.

Data Base
File Number:

472

Regents Date

Jan2006

72

1/27/2006

LAB5

Answer

1

Concentration of Water Surrounding the Model Cell	Mass of Model Cell
100%	12 grams
90%	11 grams
80%	10 grams
70%	9 grams

dialysis

203. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows the changes that occurred in a beaker after 30 minutes. The beaker contained water, food coloring, and a bag made from dialysis tubing membrane. When the colors yellow and blue are combined they produce a green color. Which statement most likely describes the relative sizes of the yellow and blue food-coloring molecules in the diagram?

- (1) The yellow food-coloring molecules are small, while the blue food-coloring molecules are large.
- (2) The yellow food-coloring molecules are large, while the blue food-coloring molecules are small.
- (3) Both the yellow food-coloring molecules and the blue food-coloring molecules are large.
- (4) Both the yellow food-coloring molecules and the blue food-coloring molecules are small.

Data Base File Number: 47

Regents Date

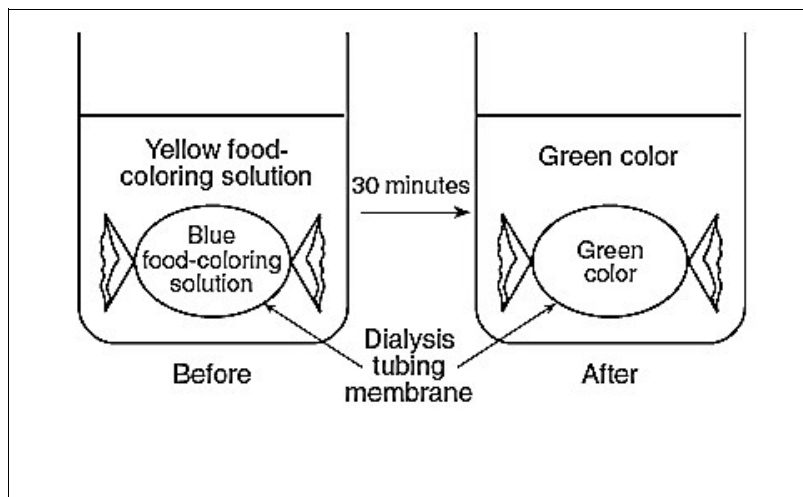
June 2007

71

6/20/2007

LABS

Answer 4



dialysis

204. Base your answer to this question on the information given, the diagram shown, and your knowledge of biology. Starch turns blue black in the presence of a starch indicator. Dialysis tubing tied at both ends and containing starch solution is placed in a beaker of water. Yellowish brown starch indicator is then added to the water. What will the solutions in the beaker and the tubing look like after 20 minutes?

- (1) The indicator solution in the beaker will be blue black and the starch solution in the tubing will not change color.
- (2) The starch solution in the tubing will be blue black and the indicator solution in the beaker will not change color.
- (3) Neither the indicator solution nor the starch solution will be blue black.
- (4) Both the indicator solution and the starch solution will be blue black.

Data Base 228
File Number:

Regents Date

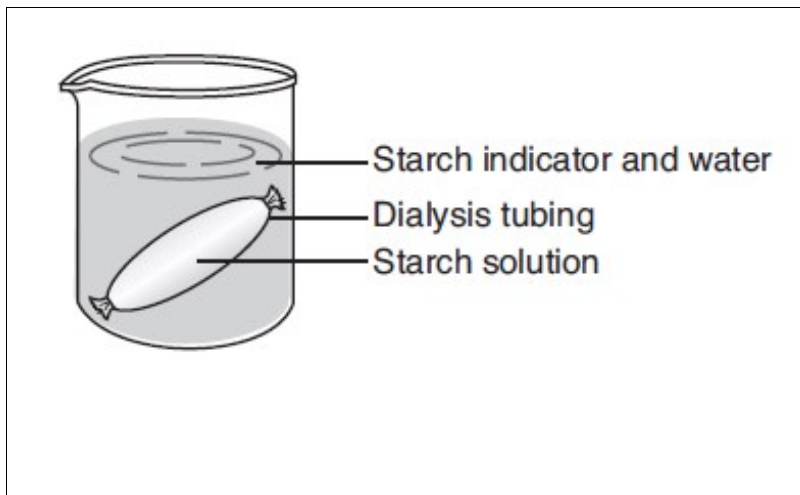
Aug2009

67

8/13/2009

LABS

Answer 2



dialysis

205. Base your answer to this question on the information and diagram shown and on your knowledge of biology. In an experiment, students placed a dialysis bag containing 100 mL of a starch-water mixture in a beaker of water, as shown in the diagram. They left the setup until class the next day, when they removed the dialysis bag and measured the volume of the contents. They found that there were now 125 mL of the starch-water mixture. To measure the volume of the starch-water mixture in the dialysis bag, the students should have used a

- (1) meterstick
- (2) triple-beam balance
- (3) graduated cylinder
- (4) test tube

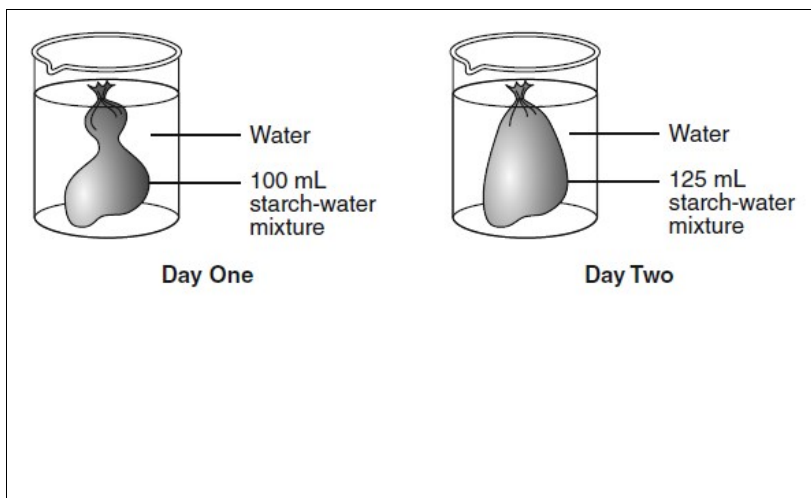
Data Base File Number: 451

Regents Date

Aug2012

82 8/17/2012 LAB5

Answer 3



dialysis

206. Base your answer to this question on the experimental setup shown and your knowledge of biology. The experimental setup is allowed to sit for one hour. What is one possible observation after the one hour?

- (1) There will be no change in the distribution of the molecules.
- (2) Starch molecules will move from within the dialysis membrane to the water in the beaker.
- (3) The inside of the dialysis membrane will turn blue-black in color.
- (4) The water in the beaker will turn blue-black.

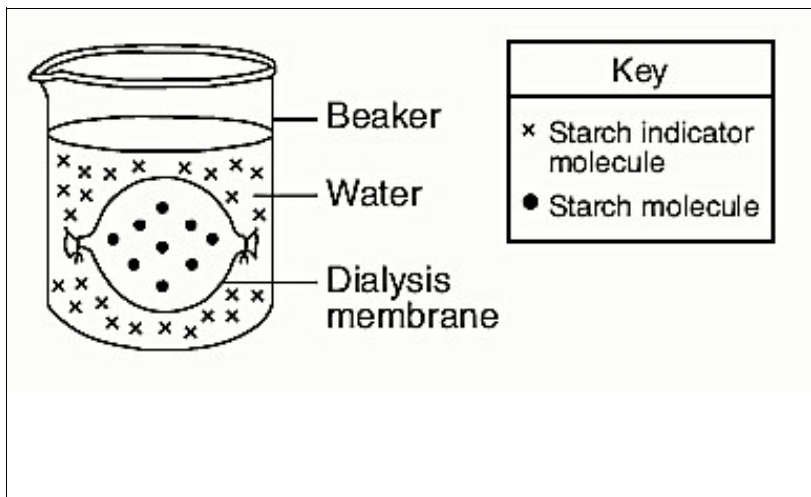
Data Base File Number: 114

Regents Date

June2008

76 6/24/2008 LABS

Answer 3



dialysis

207. An experimental setup using a model cell is shown in the diagram. What cell structure does the dialysis tubing represent?

- (1) cell membrane
- (2) cell wall
- (3) vacuole
- (4) chromosome

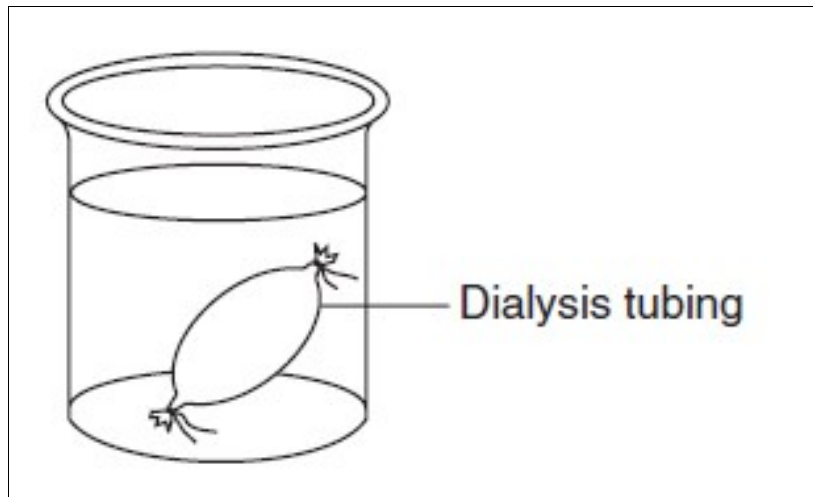
Data Base File Number: 378

Regents Date

Aug2011

80 8/18/2011 LAB5

Answer 1



dialysis

208. The masses of six sections of dialysis tubing, each containing 20 mL of a 25% sugar solution, were recorded. They were then placed in beakers each containing 100-mL solutions of varying sugar concentrations, as shown in the diagrams. The sections of tubing remained in the beakers for 30 minutes. They were then removed and the outside of each section of tubing was blotted dry. Following this, the mass of each section of tubing was measured again. Which section of tubing most likely had the GREATEST increase in mass?

- (1) 25% sugar solution inside the tubing and 0% sugar solution in the beaker
- (2) 25% sugar solution inside the tubing and 5% sugar solution in the beaker
- (3) 25% sugar solution inside the tubing and 10% sugar solution in the beaker
- (4) 25% sugar solution inside the tubing and 25% sugar solution in the beaker

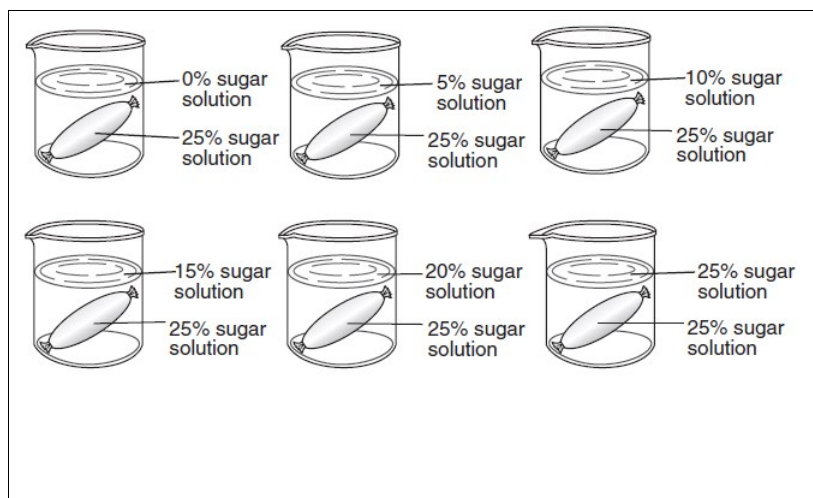
Data Base File Number: 244

Regents Date

Jan2010

46 1/26/2010 LABS

Answer 1



dichotomous key

209. The dichotomous key shown below can be used to identify birds W, X, Y, and Z. Bird X is most likely
- (1) "Certhidea"
 - (2) "Geospiza"
 - (3) "Camarhynchus"
 - (4) "Platypsiza"

Data Base File Number: 492

Regents Date

June 2006

38 6/21/2006 LABA

Answer 4

Bird W Bird X Bird Y Bird Z

Dichotomous Key to Representative Birds

1. a. The beak is relatively long and slender.....*Certhidea*
 b. The beak is relatively stout and heavy.....go to 2
2. a. The bottom surface of the lower beak is flat and straight*Geospiza*
 b. The bottom surface of the lower beak is curvedgo to 3
3. a. The lower edge of the upper beak has a distinct bend*Camarhynchus*
 b. The lower edge of the upper beak is mostly flat*Platypsiza*

dichotomous key

210. A student was using a dichotomous key like the one shown in the diagram. The most likely use for the dichotomous key would be

- (1) to explain evolutionary relationships between the animals shown
- (2) to use the key to identify the four animals shown
- (3) to show which animals are the oldest in evolution
- (4) to determine the origins of each animal shown

Data Base File Number: 200

Regents Date

June 2009

50 6/18/2009 LABS

Answer 2

I II III IV

Dichotomous Key

1. a. Legs present..... Go to 2
 b. Legs not present..... Go to 3

dichotomous key

211. A dichotomous key was used by students in reference to the picture shown. What were the students most likely trying to do?

- (1) identify the organism
- (2) identify the scientific name of the organism
- (3) determine whether the organism has teeth or tusks
- (4) all of the above are possible answers

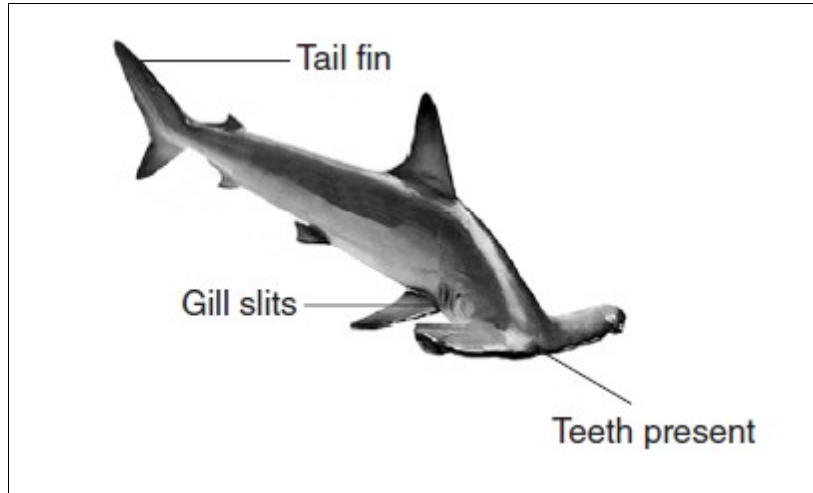
Data Base File Number: 247

Regents Date

Jan2010

55 1/26/2010 S4K6

Answer 4



dichotomous key

212. The dichotomous key shown provides a way to classify some animals into groups according to their physical characteristics. The key can be used to classify each of the four animals represented below. Which row in the chart shows the correct classification group for each animal?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 903

Regents Date

Aug2013

31 8/14/2013 LABA

Answer 4

Dichotomous Key				
I	wings.....	go to II		
	no wings.....	group A		
II	feathers.....	group B		
	no feathers.....	go to III		
III	two legs.....	group C		
	six legs.....	group D		

Wasp Ant Tiger Bird

Which row in the chart shows the correct classification group for each animal?

Row	Wasp	Ant	Tiger	Bird
(1)	group D	group D	group A	group B
(2)	group B	group A	group D	group C
(3)	group B	group D	group A	group C
(4)	group D	group A	group A	group B

differentiation

213. The diagram shown represents early stages of embryo development. The greatest amount of differentiation for organ formation most likely occurs at arrow

- (1) A
- (2) B
- (3) C
- (4) D

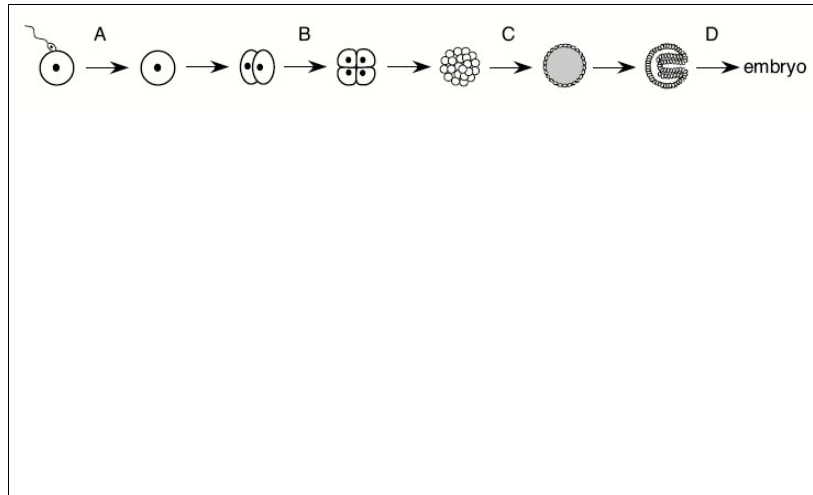
Data Base File Number: 123

Regents Date

Aug2008

21 8/13/2008 S4K4

Answer 4



differentiation

214. Which developmental process is represented by the diagram shown?

- (1) fertilization
- (2) differentiation
- (3) evolution
- (4) mutation

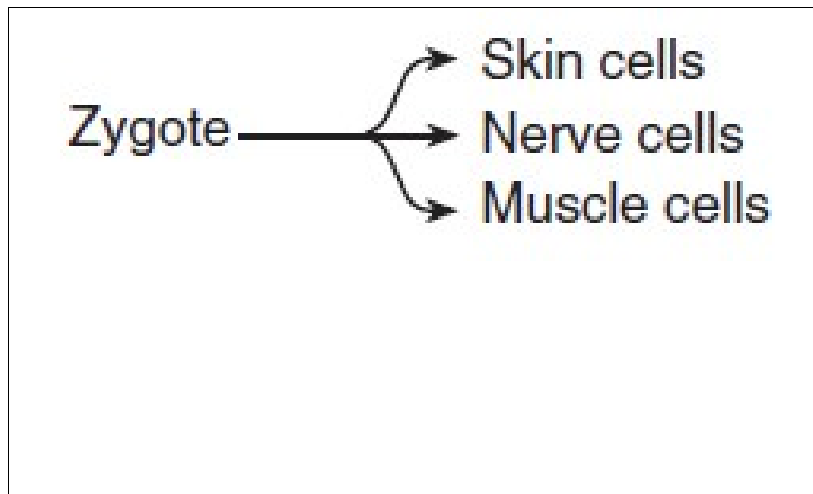
Data Base File Number: 480

Regents Date

June2006

17 6/21/2006 S4K4

Answer 2



differentiation

215. The diagram and chart shown represent some of the changes a zygote undergoes during its development. The processes that are most directly responsible for these changes are

- (1) sorting and recombination of genetic information
- (2) mitosis and differentiation
- (3) meiosis and adaptation
- (4) fertilization and cycling of materials

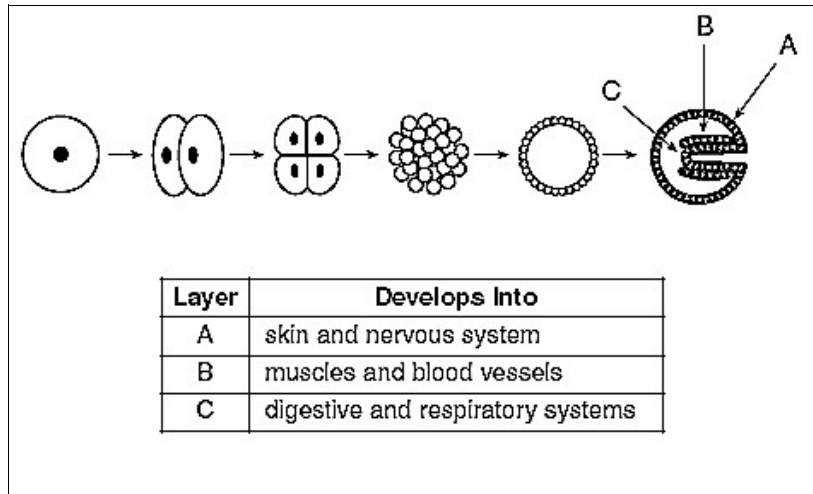
Data Base File Number: 7

Regents Date

Aug2007

20 8/16/2007 S4K4

Answer 2



differentiation

216. The development of an embryo is represented in the diagram shown. These changes in the form of the embryo are a direct result of

- (1) uncontrolled cell division and mutations
- (2) differentiation and growth
- (3) antibodies and antigens inherited from the father
- (4) meiosis and fertilization

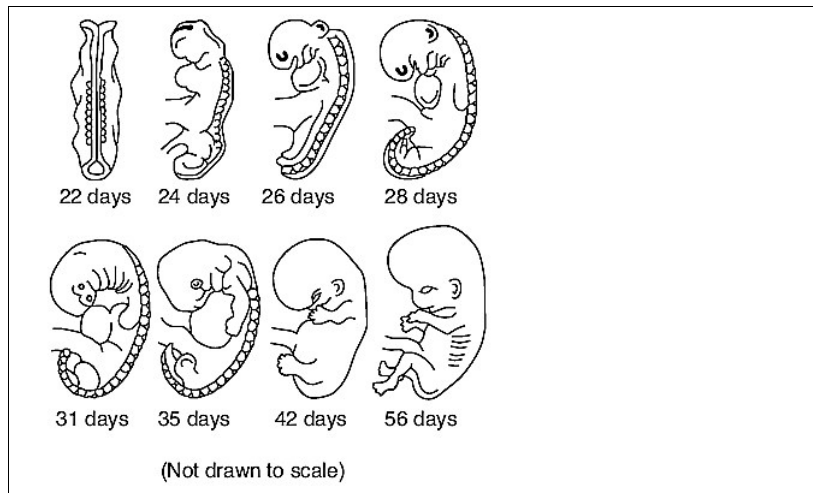
Data Base File Number: 95

Regents Date

June2008

22 6/24/2008 S4K4

Answer 2



differentiation

217. The types of human cells shown in the diagram are different from one another, even though they all originated from the same fertilized egg and contain the same genetic information. Why do these genetically identical cells differ in structure and function?

- (1) External environmental factors can change the appearance and function of cells.
- (2) The cells originated from a single zygote.
- (3) Different parts of genetic information are used in different cells.
- (4) The reasons that genetically identical cells appear different is not known.

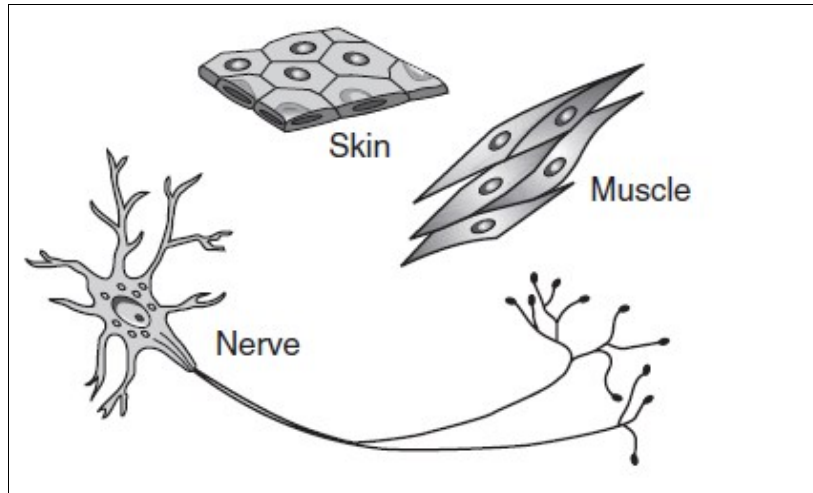
Data Base File Number: 571

Regents Date

June2005

40 6/22/2005 S4K2

Answer 3



diffusion

218. The diagram shown represents a cell in water. Formulas of molecules that can move freely across the cell membrane are shown. Some molecules are located inside the cell and others are in the water outside the cell. Based on the distribution of these molecules, what would most likely happen after a period of time?

- (1) The concentration of O₂ will increase inside the cell.
- (2) The concentration of CO₂ will remain the same inside the cell.
- (3) The concentration of O₂ will remain the same outside the cell.
- (4) The concentration of CO₂ will decrease outside the cell.

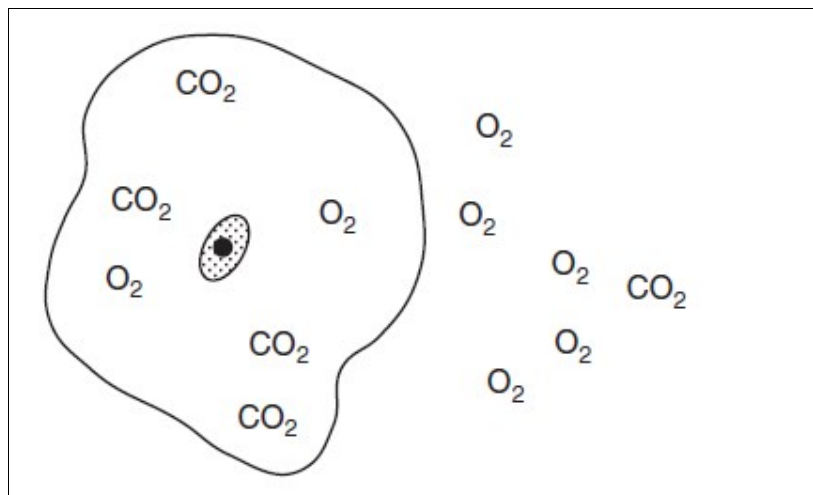
Data Base File Number: 862

Regents Date

Aug2001

9 8/16/2001 S4K1

Answer 1



diffusion

219. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents a model cell setup. The locations of three different substances are indicated in the diagram. What will most likely happen after several minutes?

- (1) The contents of the model cell will change color.
- (2) The liquid outside the model cell will change color.
- (3) The model cell will shrink.
- (4) The model cell will rupture.

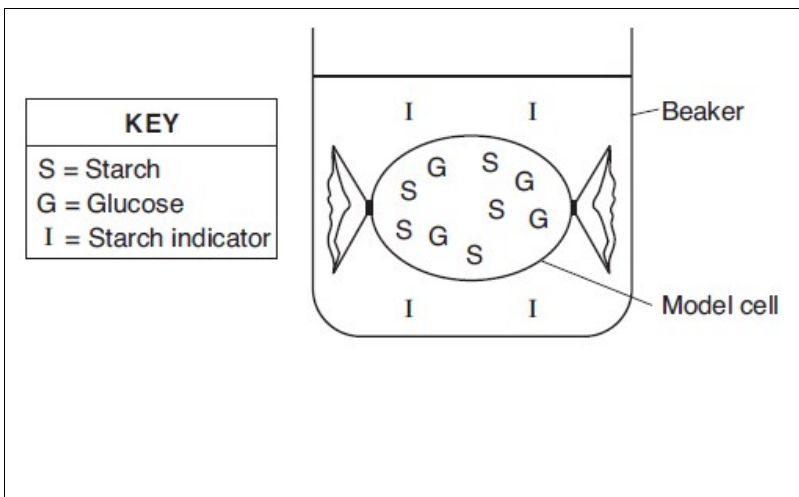
Data Base File Number: 635

Regents Date

Jan2013

81 1/23/2013 LAB5

Answer 1



diffusion

220. Two molecules, A and B, and their distribution inside and outside of a cell are represented in the diagram shown. What is a possible reason molecule A could diffuse across the membrane of the cell but molecule B could not?

- (1) The membrane is selectively permeable to A.
- (2) The membrane is selectively permeable to B.
- (3) Molecule B is too small to pass through the membrane.
- (4) Molecule B cannot be forced through the membrane.

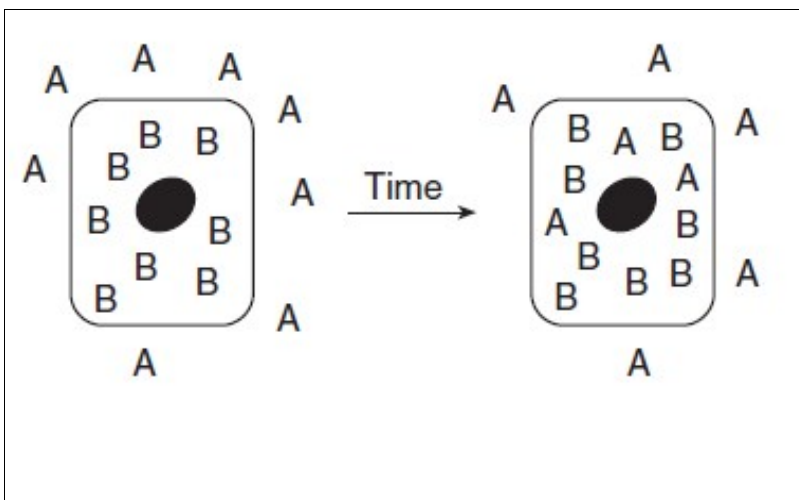
Data Base File Number: 376

Regents Date

Aug2011

77 8/18/2011 LAB5

Answer 1



diffusion

221. Base your answer to this question on the information given and the diagram shown. A student prepared a wet-mount slide of red onion skin and observed it under high power of a compound light microscope (view A). After adding a substance to the slide and waiting one minute, the student observed that there were changes in the cells (view B). What substance could have been added to the cells on the slide in view A that would make them resemble the cells observed in view B?

- (1) distilled water
- (2) tap water
- (3) salt water
- (4) water with oxygen

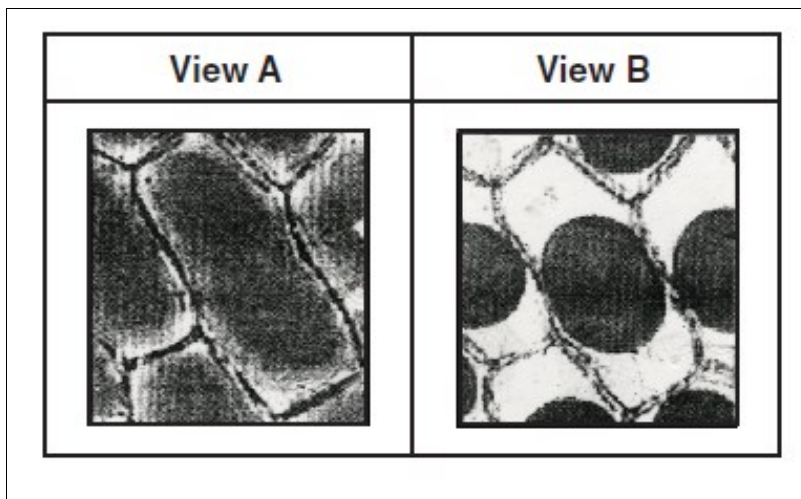
Data Base File Number: 600

Regents Date

Aug2005

62 8/16/2005 LAB5

Answer 3



diffusion

222. An investigation was set up to study the movement of water through a membrane. The results are shown in the diagram. Based on these results, which statement correctly predicts what will happen to red blood cells when they are placed in a beaker containing a water solution in which the salt concentration is much higher than the salt concentration in the red blood cells?

- (1) The red blood cells will absorb water and increase in size.
- (2) The red blood cells will lose water and decrease in size.
- (3) The red blood cells will first absorb water, then lose water and maintain their normal size.
- (4) The red blood cells will first lose water, then absorb water, and finally double in size.

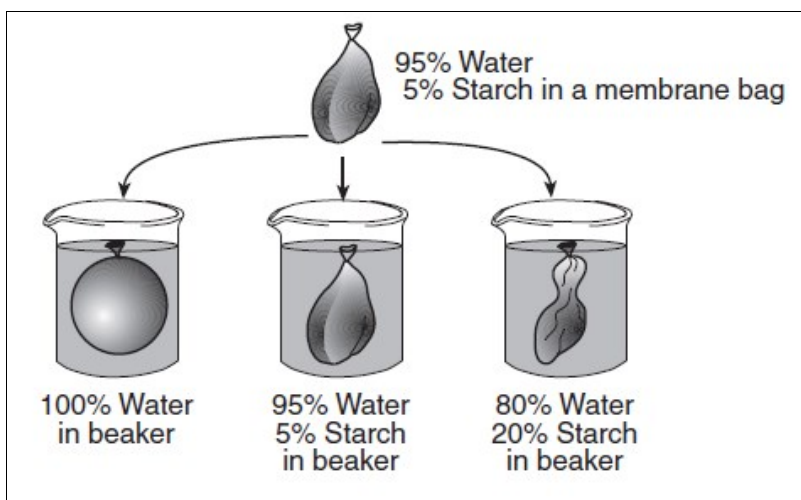
Data Base File Number: 684

Regents Date

June2004

67 6/18/2004 LAB5

Answer 2



diffusion

223. A model cell setup is represented in the "Initial State" as shown in the UPPER half of the diagram. The LOWER diagram shows some possible results after 20 minutes. Which diagram in the LOWER HALF indicates the areas where each of the substances would be located?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

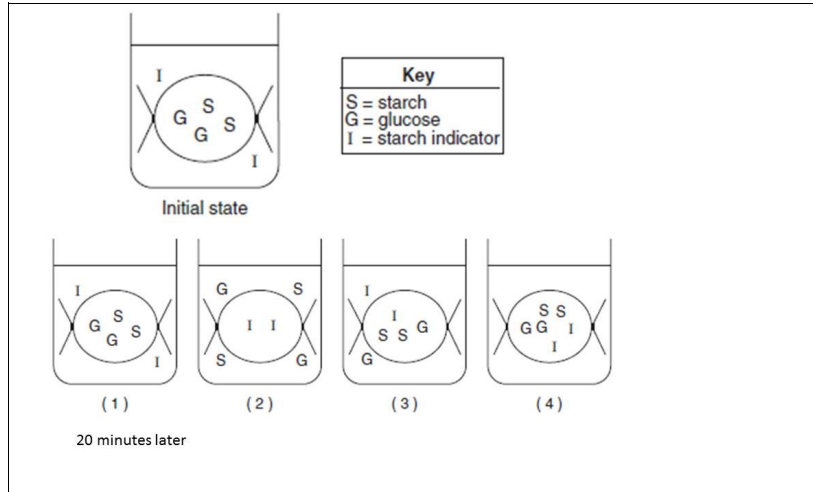
Data Base File Number: 352

Regents Date

June 2011

73 6/21/2011 LAB5

Answer 3



diffusion

224. Base your answer to this question on the laboratory setup illustrated and on your knowledge of biology. This laboratory setup would most likely be used to demonstrate

- (1) carbohydrate synthesis
- (2) active transport
- (3) diffusion
- (4) dehydration

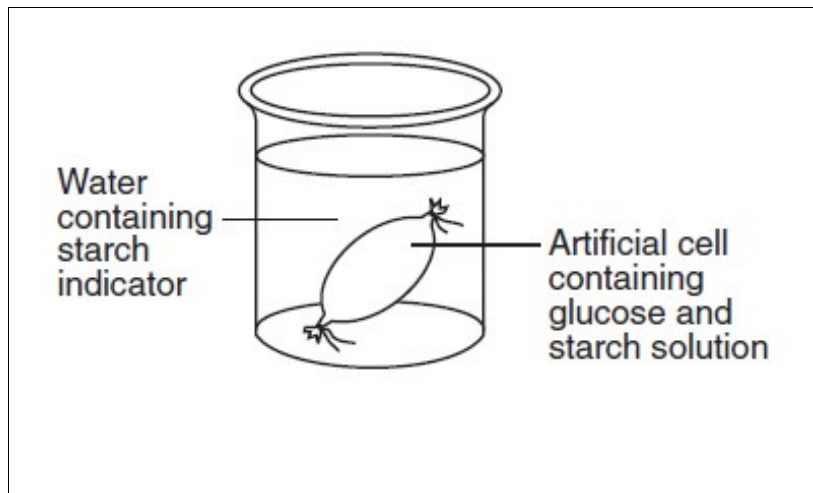
Data Base File Number: 300

Regents Date

Aug 2010

75 8/18/2010 LABS

Answer 3



diffusion

225. Base your answer to this question on the diagram shown of sugar in a beaker of water and on your knowledge of biology. In lab setup B, structure Z prevents the movement of sugar molecules into side 1. Which part of a living cell serves the same purpose as structure Z?

- (1) cell wall
- (2) cell membrane
- (3) cell cytoplasm
- (4) cell mitochondria

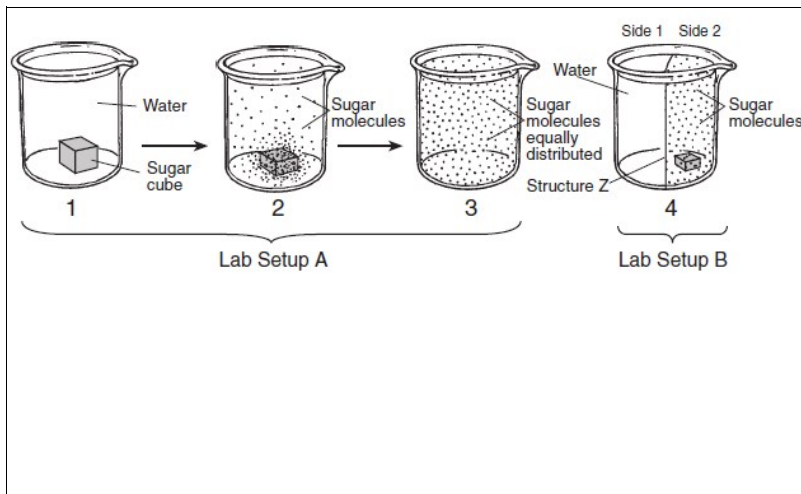
Data Base File Number: 790

Regents Date

Aug2002

50 8/13/2002 S4K1

Answer 2



diffusion

226. The diagram shows the relative concentration of molecules inside and outside of a cell. Which statement best describes the general direction of diffusion across the membrane of this cell?

- (1) Glucose would diffuse into the cell.
- (2) Protein would diffuse out of the cell.
- (3) Carbon dioxide would diffuse out of the cell.
- (4) Oxygen would diffuse into the cell.

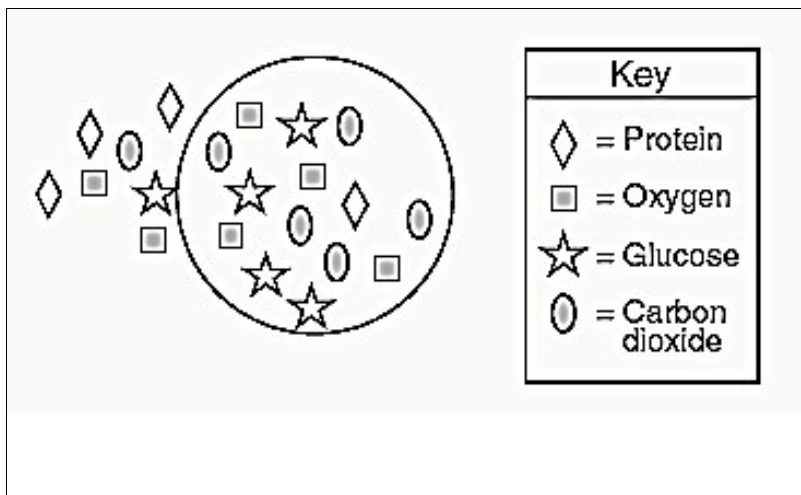
Data Base File Number: 54

Regents Date

Jan2007

32 1/26/2007 S4K1

Answer 3



diffusion

227. Base your answer to this question on the information given and on your knowledge of biology. An artificial cell filled with a glucose solution was placed in a beaker of water, as represented in the diagram on the left. The beaker was left undisturbed for 20 minutes. In the diagram at the RIGHT, a student was instructed to show the distribution of glucose using the black dots. How would the glucose molecules be distributed in the diagram at the right after twenty minutes?

- (1) equally on the inside and outside of the membrane
- (2) more glucose on the inside of the membrane
- (3) more glucose on the outside of the membrane
- (4) no change from the original on the left

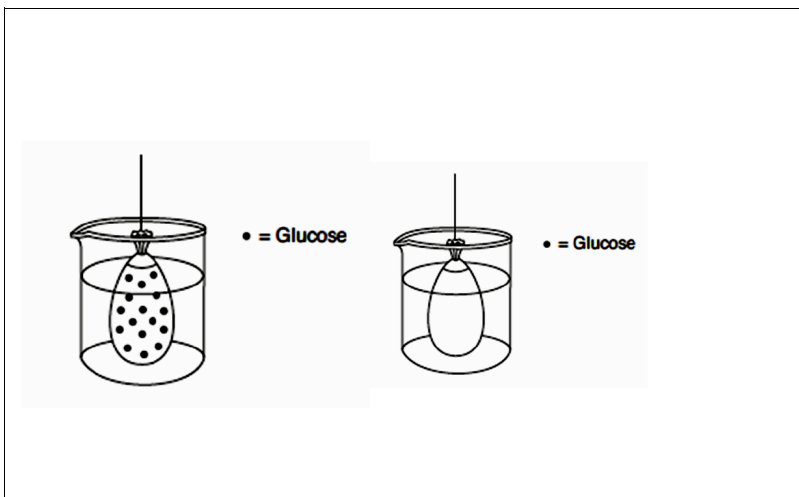
Data Base 428
File Number:

Regents Date

June 2012

78 6/19/2012 LAB5

Answer 1



diffusion

228. Base your answer to this question on the information and diagram shown and on your knowledge of biology. The diagram illustrates an investigation carried out in a laboratory activity on diffusion. The beaker and the artificial cell also contain water. What would happen over time regarding the location of molecules I, G, and S?

- (1) All molecules remain in their original locations.
- (2) I, G, and S are outside the cell.
- (3) I, G, and S are inside the cell
- (4) S, only, moves out of the cell.

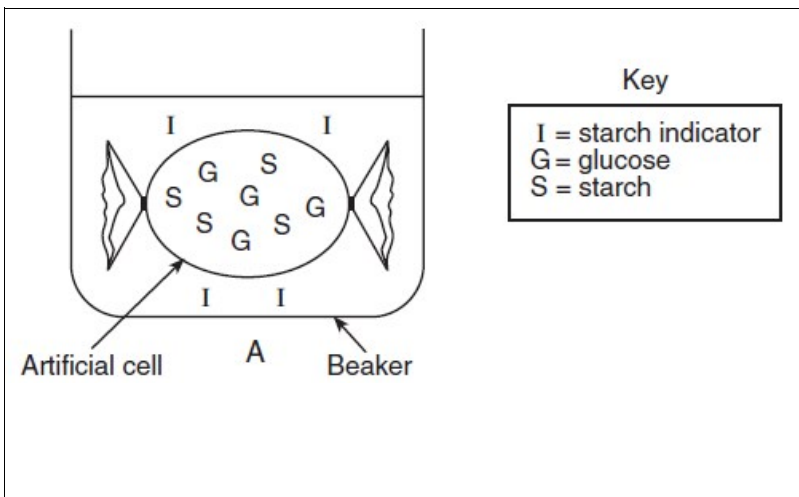
Data Base 527
File Number:

Regents Date

Aug 2006

60 8/16/2006 LAB5

Answer 3



diffusion

229. A model of a cell is prepared and placed in a beaker of fluid as shown in the diagram. The letters A, B, and C represent substances in the initial experimental setup. The amber color is from iodine placed into the water. The whitish color is from starch placed inside the dialysis tube membrane also with water. After twenty minutes, the color of the water outside the membrane is amber and the color of the chemical mixture inside the membrane is blue-black. Why is only the inside of the membrane blue-black? Base your answer to this question on the information given and on your knowledge of biology.

- (1) Iodine moves into the cell because of its small molecular size, while starch cannot move out of the cell because of its large molecular size..
- (2) Iodine and starch both move through the membrane.
- (3) Only starch moves through the membrane.
- (4) Only water moves through the membrane.

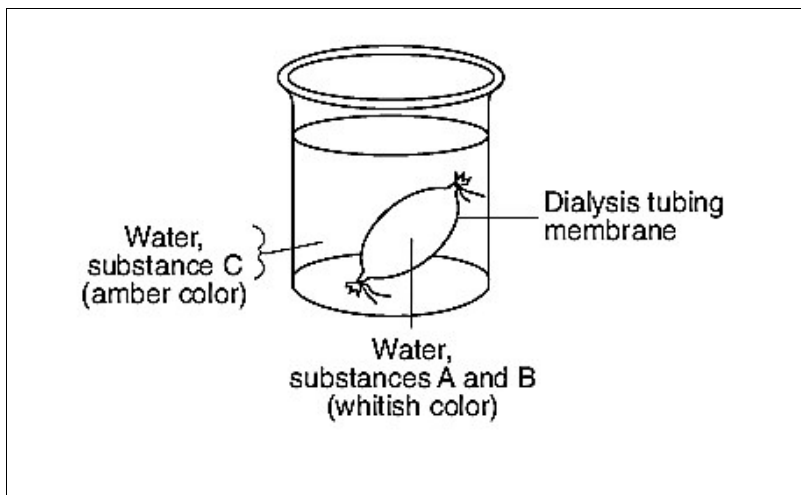
Data Base File Number: 87

Regents Date

Jan2008

72 1/25/2008 LABS

Answer 1



diffusion

230. A student wants to prepare a chart as shown in the diagram. Which of the choices shown would be correct information to enter into the chart as A and B?

- (1) A-Mounth and B-starch
- (2) A-Small intestine and B-glucose
- (3) A-stomach and B-fat
- (4) A-large intestine and B-amino acids

Data Base File Number: 674

Regents Date

June2004

41 6/18/2004 S4K1

Answer 2

An organ in the human body where molecules diffuse into the blood	A specific molecule that diffuses into the blood at this organ
A	B

diffusion

231. The diagram shown represents a laboratory setup used by a student during an investigation of diffusion. Which statement best explains why the liquid in tube A will rise over a period of time?
- (1) The starch concentrations are equal on both sides of the membrane.
 - (2) The water will pass from a region of lower starch concentration to one of higher starch concentration.
 - (3) Water and starch volumes are the same in both tubes A and B.
 - (4) The fluids in both tubes A and B will change from a higher temperature to a lower temperature.

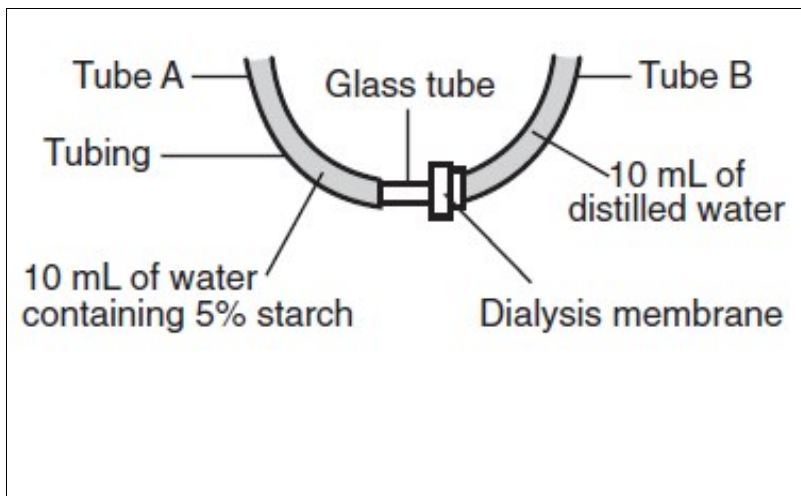
Data Base File Number: 501

Regents Date

June2006

72 6/21/2006 LAB5

Answer 2



diffusion / membrane

232. Base your answer to this question on the information given in the data table shown and on your knowledge of biology. A student cut three identical slices from a potato. She determined the mass of each slice. She then placed them in labeled beakers and added a different solution to each beaker. After 30 minutes, she removed each potato slice from its solution, removed the excess liquid with a paper towel, and determined the mass of each slice. The change in mass was calculated and the results are shown in the data table below. What is the process that is responsible for the change in mass of each of the three slices.
- (1) osmosis
 - (2) diffusion
 - (3) passive transport
 - (4) all three choices are correct

Data Base File Number: 146

Regents Date

Aug2008

81 8/13/2008 LABS

Answer 4

Beaker	Solution	Change in Mass
1	distilled water	gained 4.0 grams
2	6% salt solution	lost 0.4 gram
3	16% salt solution	lost 4.7 grams

diffusion / membrane

233. A solution containing both starch and glucose was placed inside the model cell represented in the diagram shown. The model cell was then placed in a beaker containing distilled water. Identify one specific substance that should have been added to the distilled water so that observations regarding movement of starch could be made.

- (1) iodine solution
- (2) Benedict's solution
- (3) phenolphthalein solution
- (4) sucrose solution

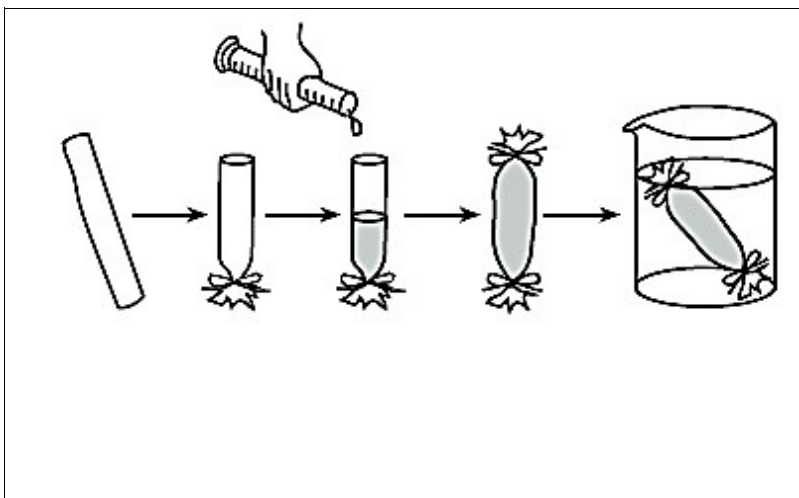
Data Base File Number: 147

Regents Date

Aug2008

84 8/13/2008 LABS

Answer 1



diffusion / membrane

234. The diagram shown represents a container of water and two different kinds of molecules, A and B, separated into two chambers by a membrane through which only water and molecule A can pass. How would the molecules, A and B, be distributed on either side of the membrane after the net movement of these molecules stops?

- (1) Molecule A is equally distributed on either side of the membrane and molecule B is only on the right side.
- (2) Molecules A and B are equally distributed on either side of the membrane.
- (3) The molecules remain the same as shown in the diagram.
- (4) Distribution of molecules A and B cannot be determined by the information given.

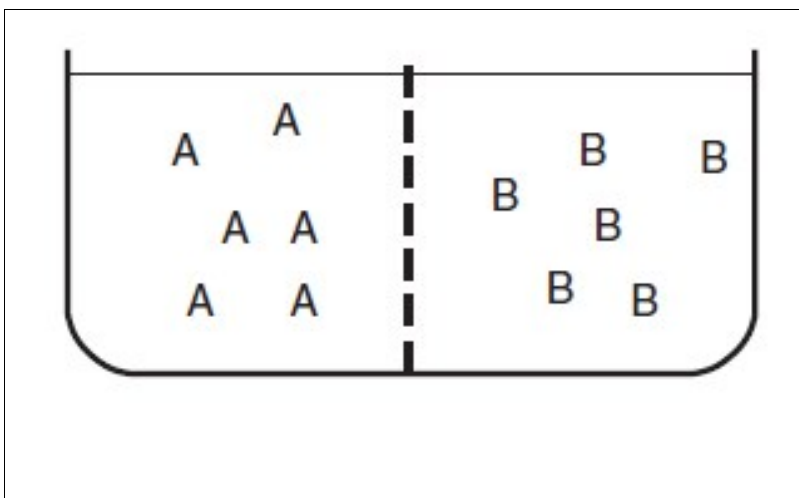
Data Base File Number: 470

Regents Date

Jan2006

66 1/27/2006 LAB5

Answer 1



diffusion / membrane

235. Molecule X moves across a cell membrane by diffusion. Which row in the chart shown best indicates the relationship between the relative concentrations of molecule X and the use of ATP for diffusion?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 506

Regents Date

Aug2006

5 8/16/2006 S4K1

Answer 2

Row	Movement of Molecule X	Use of ATP
(1)	high concentration → low concentration	used
(2)	high concentration → low concentration	not used
(3)	low concentration → high concentration	used
(4)	low concentration → high concentration	not used

diffusion / membrane

236. Elodea is a plant that lives in freshwater. The diagram shown represents one Elodea cell in its normal freshwater environment. How would the contents of the Elodea cell change if the cell was placed in saltwater for several minutes?

- (1) The cell contents would shrink inward.
- (2) The cell contents would not change.
- (3) The cell would die.
- (4) The cell contents would explode.

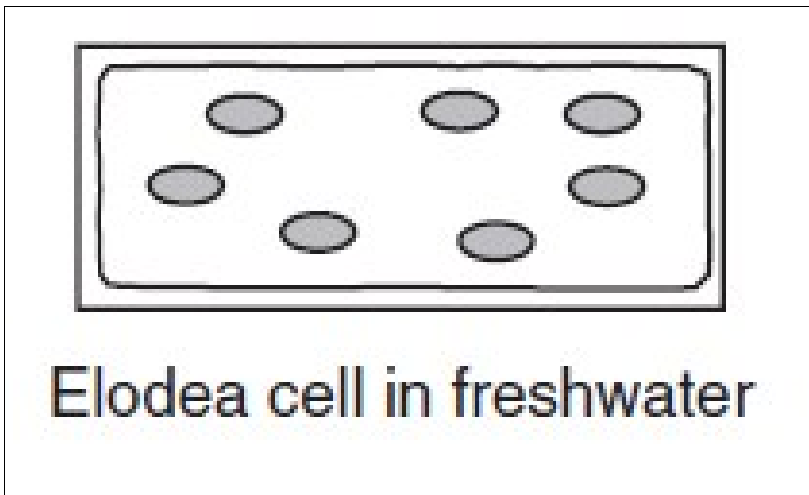
Data Base File Number: 700

Regents Date

Aug2004

64 8/17/2004 LAB5

Answer 1



diffusion / membrane

237. Phenolphthalein is a chemical that turns pink in the presence of a base. A student set up the demonstration shown in the diagram. The appearance of the pink color was due to the movement of

- (1) phenolphthalein molecules from low concentration to high concentration
- (2) base molecules from high concentration through the membrane to low concentration
- (3) water molecules through the membrane from high concentration to low concentration
- (4) phenolphthalein molecules in the water from high concentration to low concentration

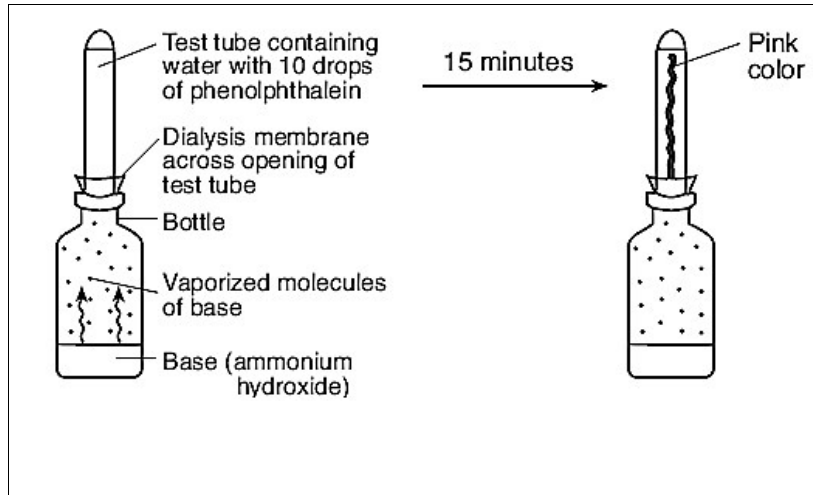
Data Base File Number: 145

Regents Date

Aug2008

80 8/13/2008 LABS

Answer 2



digestion

238. A word equation is shown. This reaction is most directly involved in the process of

- (1) reproduction
- (2) protein synthesis
- (3) replication
- (4) heterotrophic nutrition

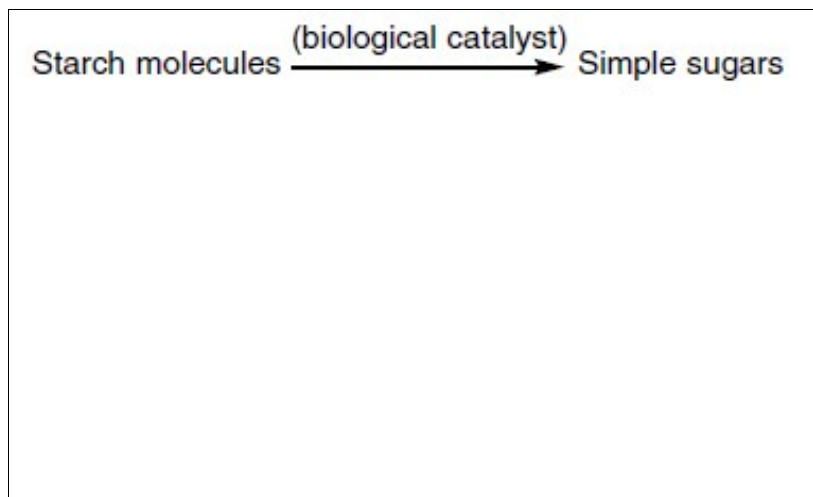
Data Base File Number: 693

Regents Date

Aug2004

36 8/17/2004 S4K1

Answer 4



digestion

239. Which words best complete the lettered blanks in the two sentences shown in the diagram?

- (1) A--large, B--simple sugars, C--amino acids
- (2) A--small, B--simple sugars, C--amino acids
- (3) A--large, B--amino acids, C--simple sugars
- (4) A--small, B--amino acids, C--simple sugars

Data Base File Number: 718

Regents Date

Jan2003

38 1/30/2003 S4K1

Answer 3

Organic compounds, such as proteins and starches, are too A to diffuse into cells. Proteins are digested into B and starches are digested into C.

digestion

240. The diagram to the LEFT represents one metabolic activity of a human. Refer to the chart at the RIGHT to answer this question. Letters A and B are best represented by which row in the chart at the RIGHT?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 729

Regents Date

June2003

5 6/19/2003 S4K1

Answer 4

Metabolic Activity A

Protein → B B B B

Row	Metabolic Activity A	B
(1)	respiration	oxygen molecules
(2)	reproduction	hormone molecules
(3)	excretion	simple sugar molecules
(4)	digestion	amino acid molecules

digestion

241. The diagram shown represents a beaker containing a solution of various molecules involved in digestion. Which structures represent products of digestion?

- (1) A and D
- (2) B and C
- (3) B and E
- (4) D and E

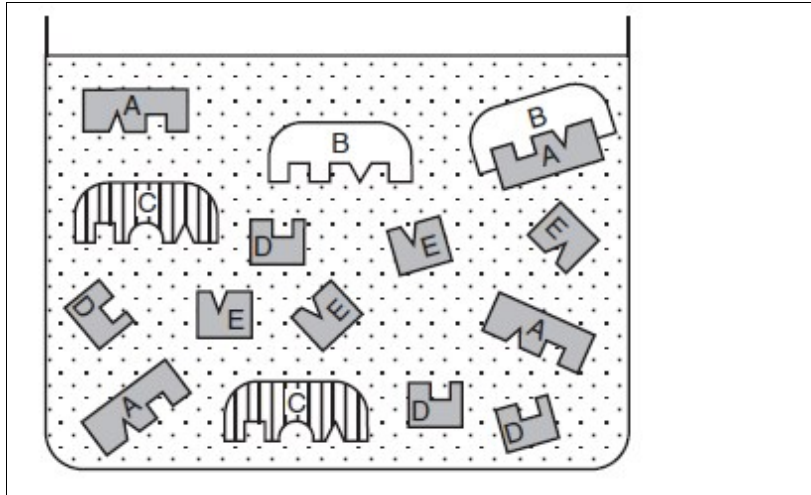
Data Base File Number: 663

Regents Date

June 2004

18 6/18/2004 S4K5

Answer 4



digestion

242. Base your answers to this question on the diagram shown, which represents stages in the digestion of a starch, and on your knowledge of biology. The products would most likely contain

- (1) simple sugars
- (2) fats
- (3) amino acids
- (4) minerals

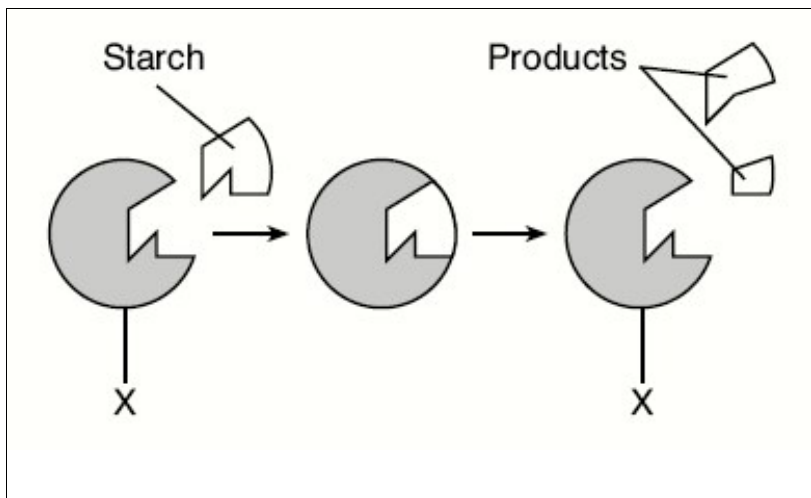
Data Base File Number: 131

Regents Date

Aug 2008

36 8/13/2008 S4K1

Answer 1



digestion

243. The diagram shown represents a process that occurs in organisms. Which row in the chart indicates what A and B in the boxes could represent?

- (1) 1 (3) 3
(2) 2 (4) 4

Data Base File Number: 182

Regents Date

June 2009

17 6/18/2009 S4K1

Answer 3

A
➔
Broken down to
➔
B

Which row in the chart indicates what A and B in the boxes could represent?

Row	A	B
(1)	starch	proteins
(2)	starch	amino acids
(3)	protein	amino acids
(4)	protein	simple sugars

digestion

244. Base your answer to this question on the information given, the diagram shown, and on your knowledge of biology. An enzyme and soluble starch were added to a test tube of water and kept at room temperature for 24 hours. Then, 10 drops of glucose indicator solution were added to the test tube, and the test tube was heated in a hot water bath for 2 minutes. The test was performed in order to

- (1) measure the quantity of fat that is converted to starch (3) evaporate the water from the test tube
(2) determine if digestion took place (4) cause the enzyme to bond to the water

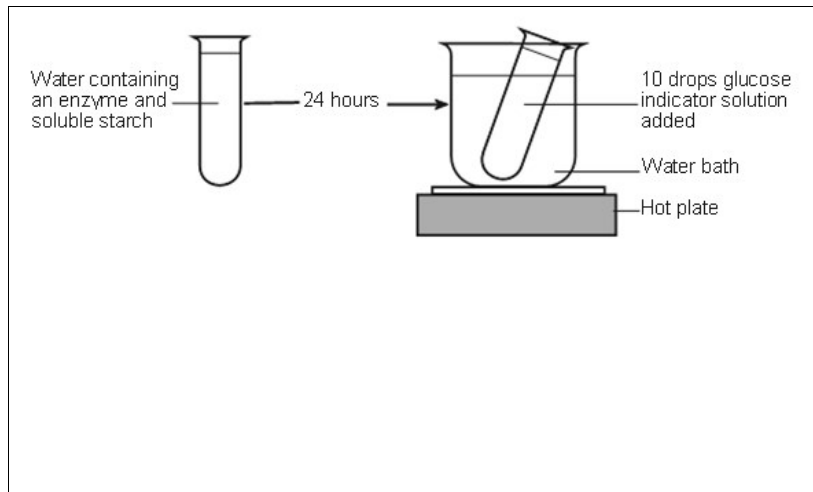
Data Base File Number: 204

Regents Date

June 2009

62 6/18/2009 LABS

Answer 2



disease transmission

245. "Plasmodium falciparum", one parasite that causes malaria, spreads rapidly, infecting up to 500 million people every year. Malaria spreads when an infected mosquito bites an uninfected human, who then becomes infected. This infected human is bitten by an uninfected mosquito, which then becomes infected. This infected mosquito then bites and infects an uninfected human. Malaria transmission is illustrated in the diagram. Scientists have a new idea about how this disease spreads. When the malaria parasite is passed to humans through the bite of an infected mosquito, there is a great possibility that this action alters the chemical scent of the human. The altered human body scent then attracts more uninfected mosquitoes, which bite the infected person, thus spreading the disease. To test this hypothesis, an experiment was conducted on humans infected with malaria. The results indicate that malaria gametocytes (a stage of the parasite) may trigger the production of chemicals that change the scent of the human. The change in human scent makes humans more appealing to mosquitoes. Which statement best describes the role of gametocytes in the spread of malaria?

- (1) They give off a scent that attracts infected mosquitoes.
- (2) They absorb human body scents that attract mosquitoes.
- (3) They release a scent into the human body.
- (4) They cause a chemical reaction that alters human scent.

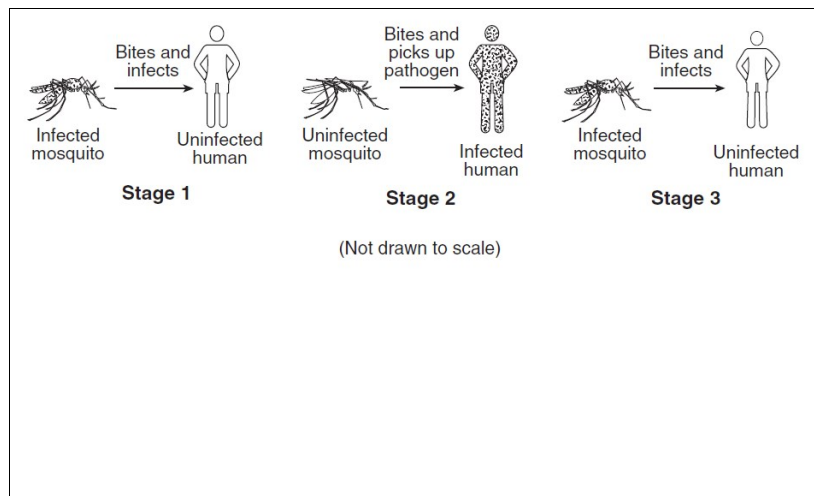
Data Base
File Number: 325

Regents Date

Jan2011

51 1/25/2011 S4K5

Answer 4



diversity

246. Base your answer to this question on the information given and on your knowledge of biology. The three great lakes in Africa (Victoria, Tanganyika, and Malawi) contain a greater number of fish species than any other lakes in the world. Lake Malawi alone has 200 species of cichlid fish. The diversity of cichlid species in these African lakes could have been caused by changes in water level over thousands of years. According to one hypothesis, at one time the three lakes were connected as one large lake and all the cichlids could interbreed. When the water level fell, groups of cichlids were isolated in smaller lakes as shown in the diagram. Over time, the groups of cichlids developed genetic differences. When the water levels rose again, the isolated populations were brought back into contact. Due to significant genetic differences, these populations were unable to interbreed. Variations in water level over thousands of years resulted in today's diversity of cichlid species. Which discovery would support this explanation of cichlid diversity?

- (1) The water level changed little over time.
- (2) The local conditions in each of the small lakes were very different.
- (3) Differences between cichlid species are small and interbreeding is possible.
- (4) Once formed, the lakes remained isolated from each other.

Data Base 598
File Number:

Regents Date

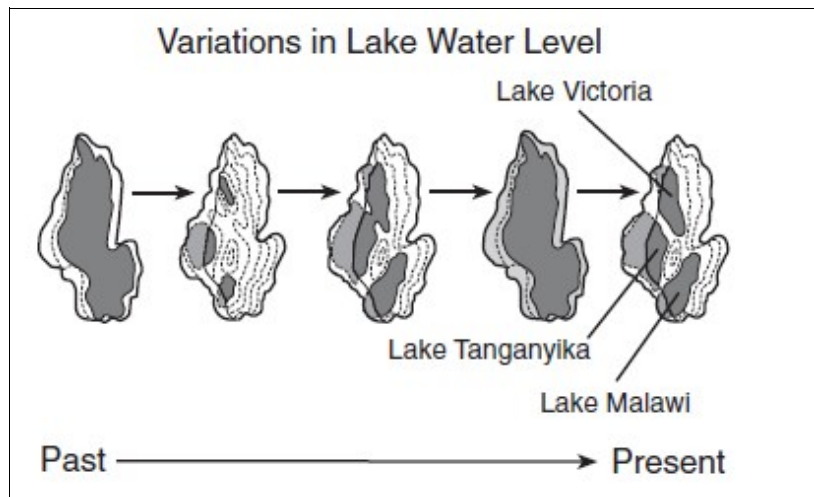
Aug2005

50

8/16/2005

S4K3

Answer 2



diversity

247. Base your answer to this question on the finch diversity diagram shown and on your knowledge of biology. Warbler finches are classified as

- (1) producers
- (2) herbivores
- (3) carnivores
- (4) decomposers

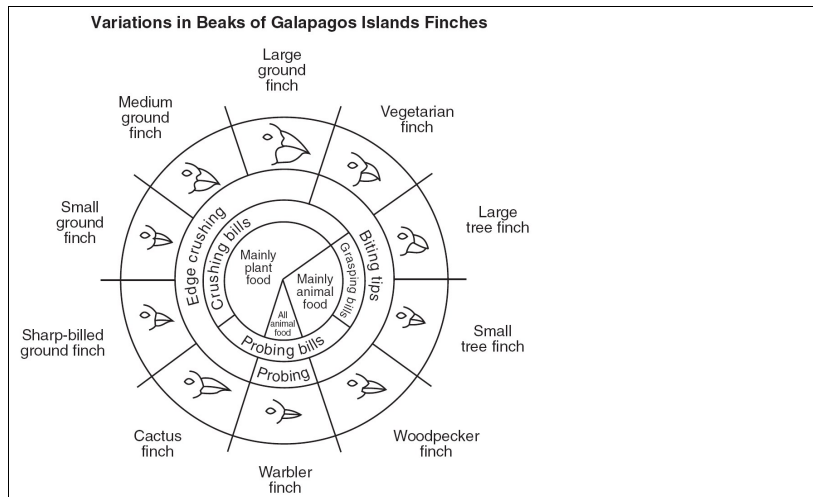
Data Base File Number: 353

Regents Date

June 2011

75 6/21/2011 LAB3

Answer 3



diversity

248. Species of finches are represented in the diagram below. Which species of finch from the diagram would be most likely to compete with the small tree finch if they lived on the same island?

- (1) Large tree finch.
- (2) Large ground finch.
- (3) Small ground finch
- (4) Cactus finch.

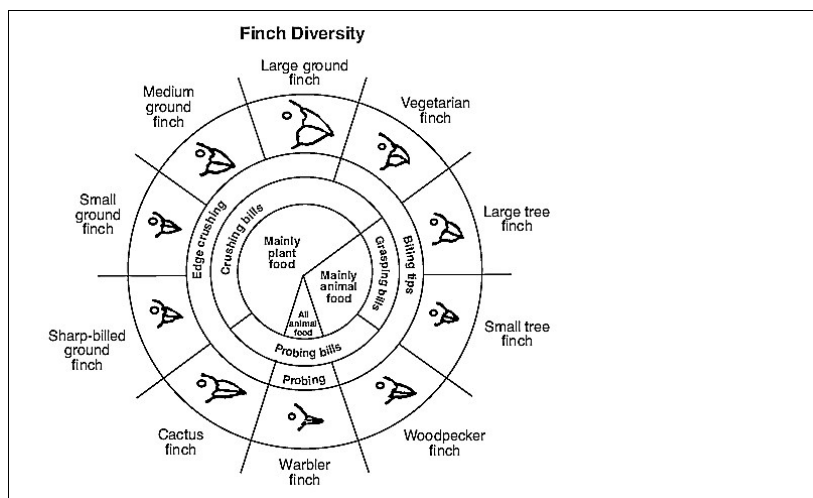
Data Base File Number: 88

Regents Date

Jan 2008

74 1/25/2008 LABS

Answer 1



DNA

249. Base your answer to this question on the information given and on your knowledge of biology. The segments of DNA shown were extracted from two different species of plants. The segments represent the same region of DNA that codes for a particular pigment (color) in these species. A restriction enzyme is used to cut the DNA from species A and B. The enzyme binds to the sequence GGGATT and cuts between G and A. State how many cuts will be made in the DNA sequence of PLANT SPECIES A when this enzyme is used.

- (1) 0
(2) 1
(3) 2
(4) 3

Data Base File Number: 377

Regents Date

Aug2011

79 8/18/2011 LAB1

Answer 2

Plant Species A: ACCGCAGGGATTTCGC
Plant Species B: ACCGGAGCGATTTCGC

DNA

250. The diagram shown represents a section of a molecule that carries genetic information. The pattern of numbers represents
- (1) a sequence of paired bases
(2) the order of proteins in a gene
(3) folds of an amino acid
(4) positions of gene mutations

Data Base File Number: 657

Regents Date

June2004

9 6/18/2004 S4K2

Answer 1



DNA

251. The percent of DNA that species A has in common with species B, C, D, and E are shown in the graph. Which statement is a valid conclusion that can be drawn from this graph?
- (1) Species A is closely related to species B, but is not related to species E.
 - (2) Fewer mutations have occurred in species B and C than in species A.
 - (3) Species A and E have the greatest similarity in protein structure.
 - (4) Environment influences the rate of evolution.

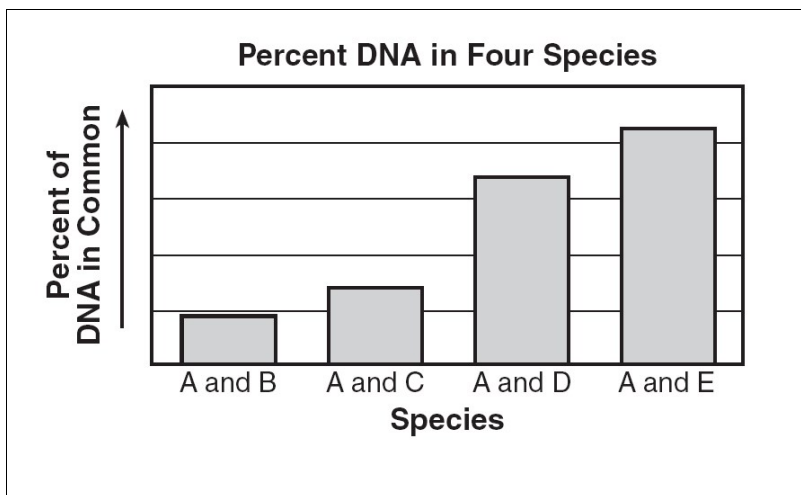
Data Base File Number: 345

Regents Date

June 2011

41 6/21/2011 S4K2

Answer 3



DNA

252. The diagram shown illustrates some of the changes that occur during gamete formation. Which graph best represents the changes in the amount of DNA in one of the cells at each stage?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

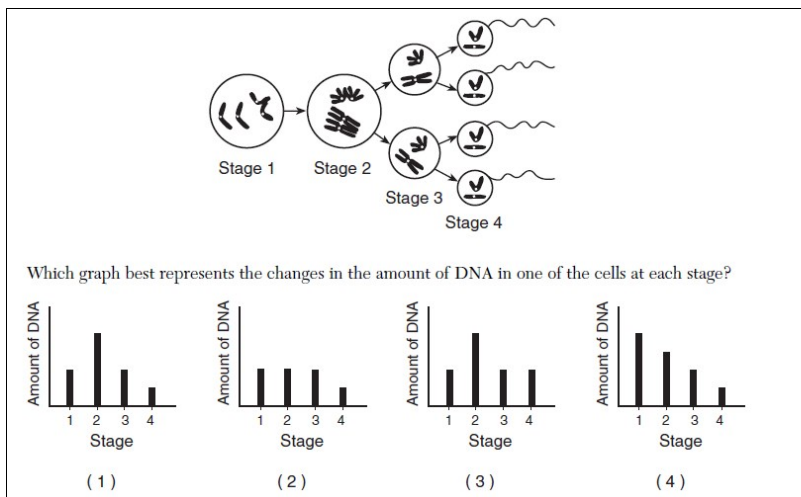
Data Base File Number: 465

Regents Date

Jan 2006

38 1/27/2006 S1K1

Answer 1



DNA

253. Which statement best expresses the relationship between the three structures represented in the diagram shown?
- (1) DNA is produced from protein absorbed by the cell.
 - (2) Protein is composed of DNA that is produced in the cell.
 - (3) DNA controls the production of protein in the cell.
 - (4) Cells make DNA by digesting protein.

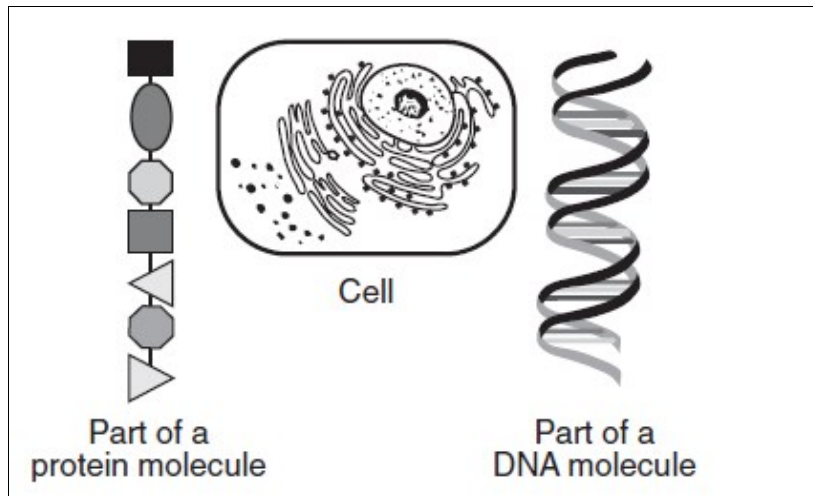
Data Base File Number: 454

Regents Date

Jan2006

7 1/27/2006 S4K2

Answer 3



DNA

254. The diagram shown represents a portion of a DNA molecule. The letters represent different types of
- (1) sugar molecules
 - (2) molecular bases
 - (3) enzymes
 - (4) proteins

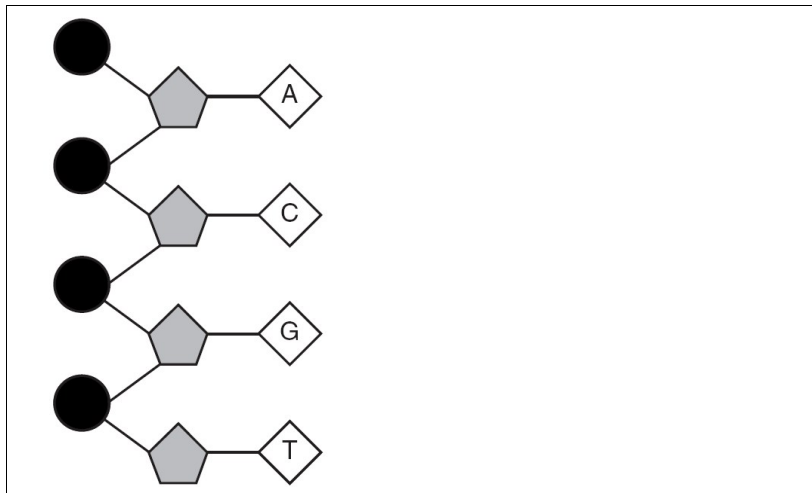
Data Base File Number: 337

Regents Date

June2011

16 6/21/2011 S4K2

Answer 2



DNA

255. Base your answer to this question on the information given and on your knowledge of biology. The sequences shown represent the same portions of a DNA molecule from the same gene used by a student to study the relationship between two plant species. A biological catalyst that recognizes the CCGG site is used to cut the DNA molecules into pieces. The catalyst cuts the DNA between the C and G of the site. How many CUTS are made in the DNA of SPECIES 1.

- (1) 1
(2) 2
(3) 3
(4) 4

Data Base File Number: 396

Regents Date

Jan2012

78 1/25/2012 LAB1

Answer 2

Species 1: T A C C G G A T T A G T T A T G C C G G A T C G
Species 2: T A C G G A T G C C G G A T C G G A A A T T C G

DNA

256. Three structures are represented in the diagram shown. What is the relationship between these three structures?

- (1) DNA is made up of proteins that are synthesized in the cell.
(2) Protein is composed of DNA that is stored in the cell.
(3) DNA controls the production of protein in the cell.
(4) The cell is composed only of DNA and protein.

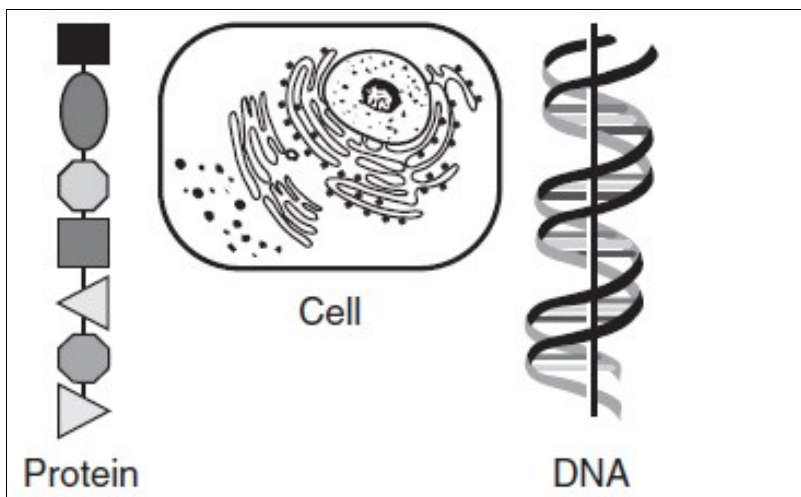
Data Base File Number: 507

Regents Date

Aug2006

8 8/16/2006 S4K2

Answer 3



DNA

257. In the diagram shown, strands I and II represent portions of a DNA molecule. Strand II would normally include

- (1) ACG
- (2) TCG
- (3) TAC
- (4) GAT

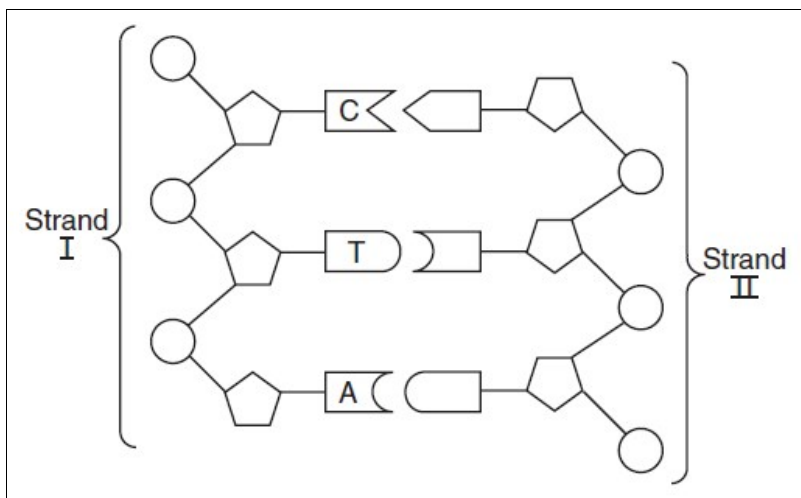
Data Base File Number: 776

Regents Date

Aug2002

10 8/13/2002 S4K2

Answer 4



DNA

258. The diagram shown represents a genetic procedure. Which statement best describes the outcome of this procedure?

- (1) Bacterial cells will destroy defective human genetic material.
- (2) Bacterial cells may form a multicellular embryo
- (3) The inserted human DNA will change harmful bacteria to harmless ones
- (4) The inserted human DNA may direct the synthesis of human proteins

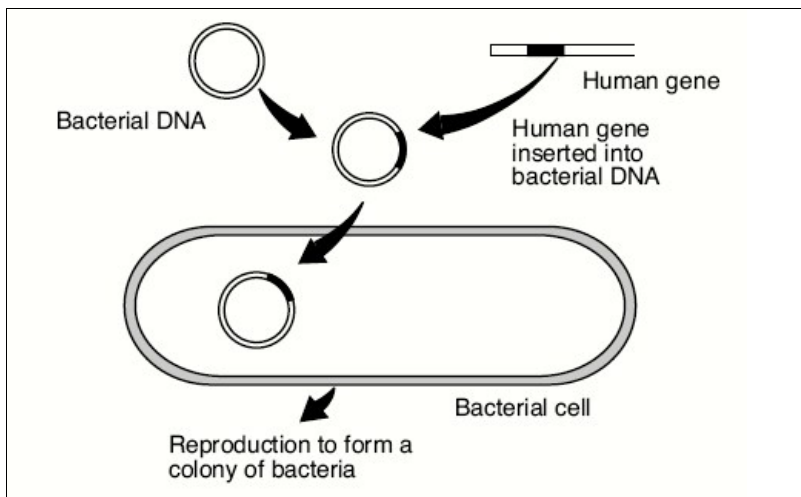
Data Base File Number: 118

Regents Date

Aug2008

9 8/13/2008 S4K2

Answer 4



DNA

259. A portion of a molecule is shown in the diagram. Which statement best describes the main function of this type of molecule?

- (1) It is a structural part of the cell wall.
- (2) It stores energy for metabolic processes.
- (3) It determines what traits may be inherited.
- (4) It transports materials across the cell membrane.

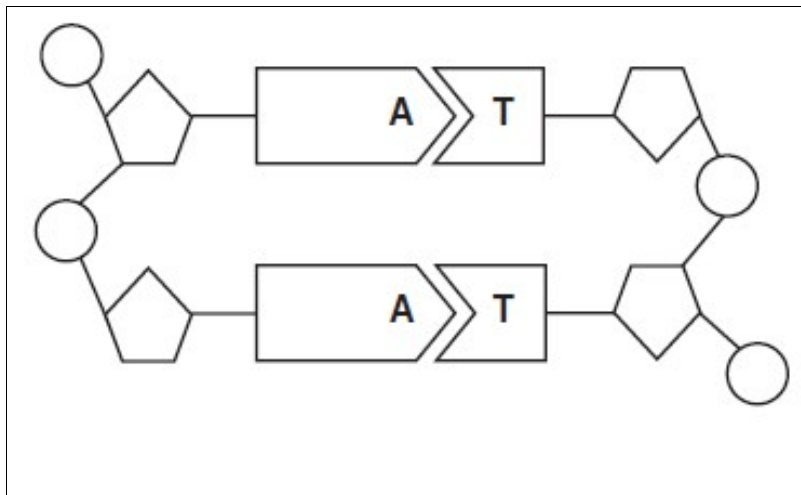
Data Base File Number: 757

Regents Date

Aug2003

14 8/13/2003 S4K2

Answer 3



DNA

260. The molecule represented in the diagram is found in living things. Which statement describes one characteristic of this molecule?

- (1) It is the template for the replication of genetic information.
- (2) Organic catalysts are made up of these molecules.
- (3) It is different in each cell of an organism.
- (4) Cell membranes contain many of these molecules.

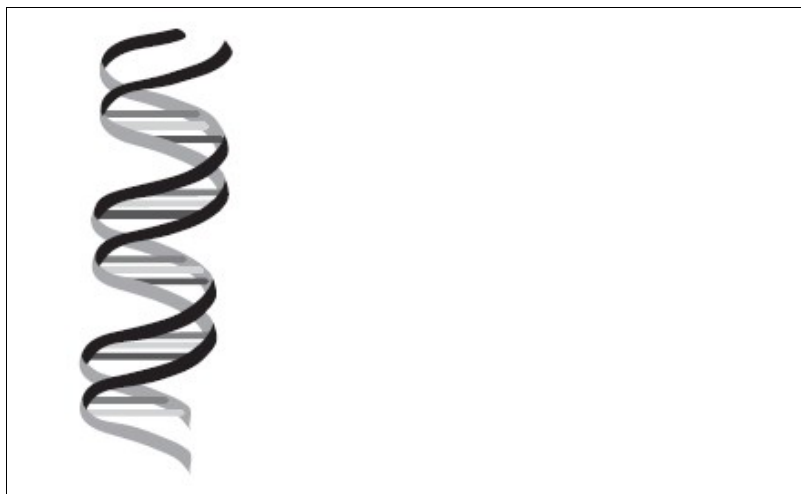
Data Base File Number: 232

Regents Date

Jan2010

10 1/26/2010 S4K2

Answer 1



DNA

261. The data table shows the presence or absence of DNA in four different cell organelles. Information in the table suggests that DNA functions

- (1) within cytoplasm and outside of the cell membrane
- (2) both inside and outside of the nucleus
- (3) only within energy-releasing structures
- (4) within cell vacuoles

Data Base File Number: 130

Regents Date

Aug2008

35 8/13/2008 S4K2

Answer 2

Organelle	DNA
cell membrane	absent
cell wall	absent
mitochondrion	present
nucleus	present

DNA

262. The diagram shown represents the chemical pathway of a process in a human liver cell. A particular liver cell is unable to make substance C. One possible explanation for the inability of this cell to make substance C is that

- (1) excess energy for step 2 prevented the conversion of substance B to substance C
- (2) an excess of enzyme X was present, resulting in a decrease in the production of substance B
- (3) nuclear DNA was altered resulting in the cell being unable to make enzyme Y
- (4) a mutation occurred causing a change in the ability of the cell to use substance C

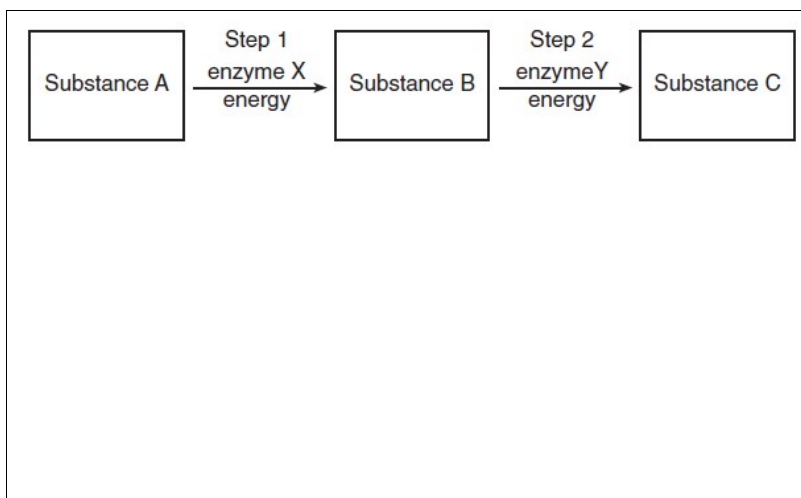
Data Base File Number: 731

Regents Date

June2003

14 6/19/2003 S4K2

Answer 3



DNA

263. Base your answer to this question on the diagram shown and on your knowledge of biology. This technique used to analyze DNA directly results in
- (1) synthesizing large fragments of DNA
 - (2) separating DNA fragments on the basis of size
 - (3) producing genetically engineered DNA molecules
 - (4) removing the larger DNA fragments from the samples

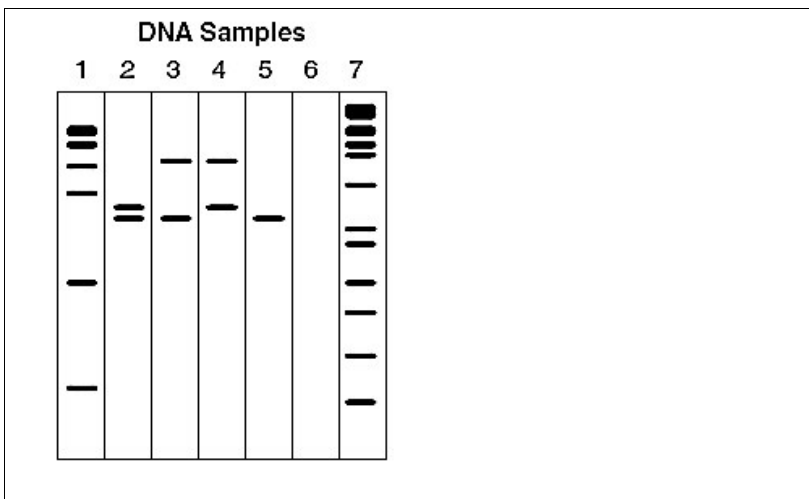
Data Base File Number: 46

Regents Date

June 2007

65 6/20/2007 LABS

Answer 2



DNA

264. The type of molecule represented in the diagram is found in organisms. Which statement correctly describes the sequence of bases found in this type of molecule?
- (1) It changes every time it replicates.
 - (2) It determines the characteristics that will be inherited.
 - (3) It is exactly the same in all organisms.
 - (4) It directly controls the synthesis of starch within a cell.

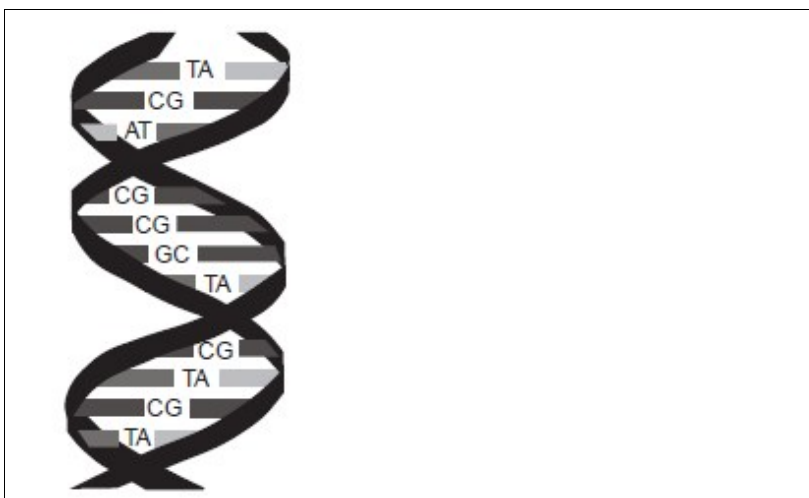
Data Base File Number: 831

Regents Date

Jan 2002

13 1/23/2002 S4K2

Answer 2



DNA

265. The diagram shown represents an incomplete section of a DNA molecule. The boxes represent unidentified bases. When the boxes are filled in, the total number of bases represented by the letter A (both inside and outside the boxes) will be

- (1) 1
- (2) 2
- (3) 3
- (4) 4

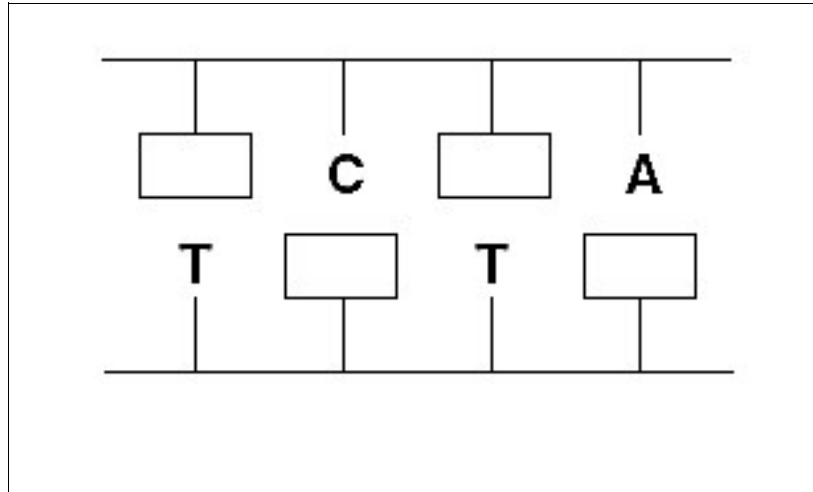
Data Base File Number: 36

Regents Date

June 2007

33 6/20/2007 S4K5

Answer 3



DNA

266. Human genetic material is represented in the diagram shown. The region labeled A is made up of a section of

- (1) a protein that becomes an enzyme
- (2) DNA that may direct protein synthesis
- (3) a carbohydrate made from amino acids
- (4) glucose that may be copied to make DNA

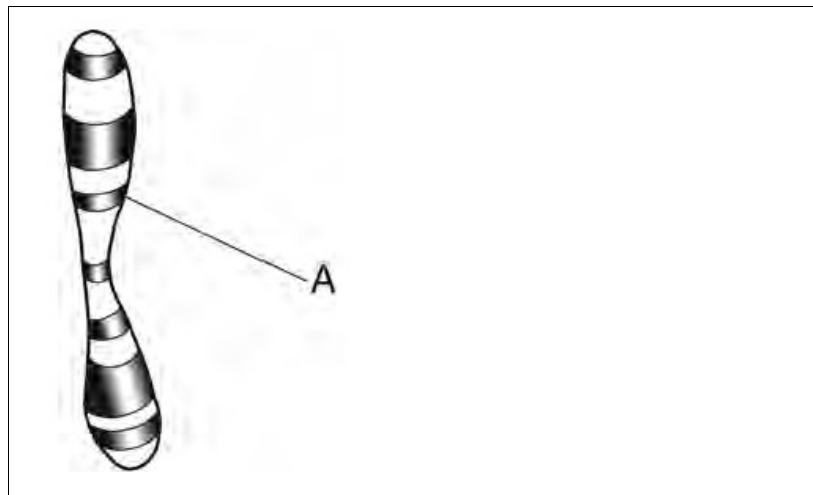
Data Base File Number: 918

Regents Date

Jan 2014

2 1/27/2014 S4K2

Answer 2



DNA

267. The diagram shown represents a structure found in most cells. The section labeled A in the diagram is most likely a

- (1) protein composed of folded chains of base subunits
- (2) biological catalyst
- (3) part of a gene for a particular trait
- (4) chromosome undergoing a mutation

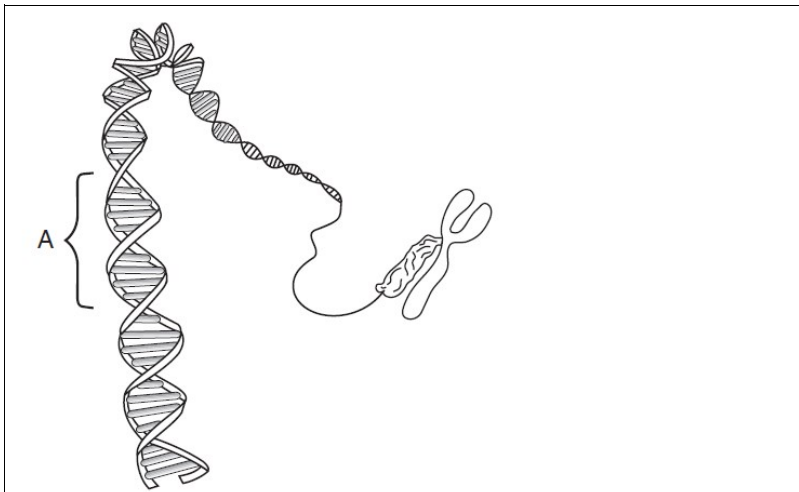
Data Base File Number: 304

Regents Date

Jan2011

9 1/25/2011 S4K2

Answer 3



DNA

268. The diagram shown represents a portion of a type of organic molecule present in the cells of organisms. What will most likely happen if there is a change in the base sequence of this molecule?

- (1) The molecule will be converted into an inorganic compound.
- (2) The amino acid sequence may be altered during protein synthesis.
- (3) The chromosome number will decrease in future generations.
- (4) The chromosome number may increase within the organisms.

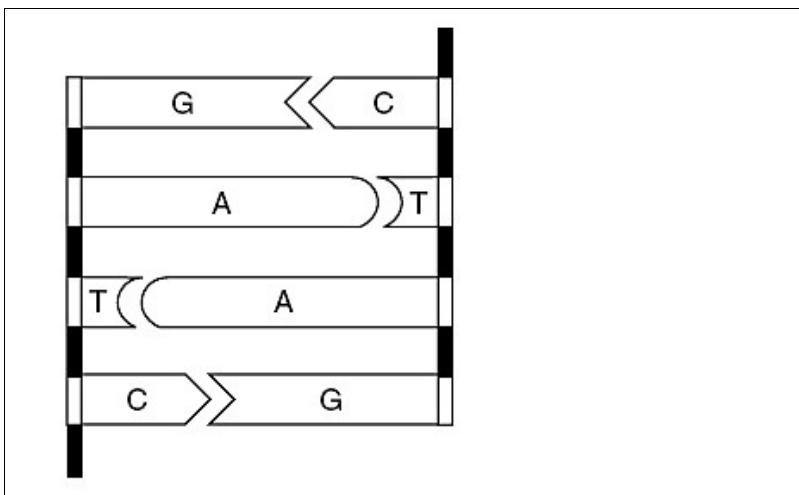
Data Base File Number: 4

Regents Date

Aug2007

10 8/16/2007 S4K2

Answer 3



DNA

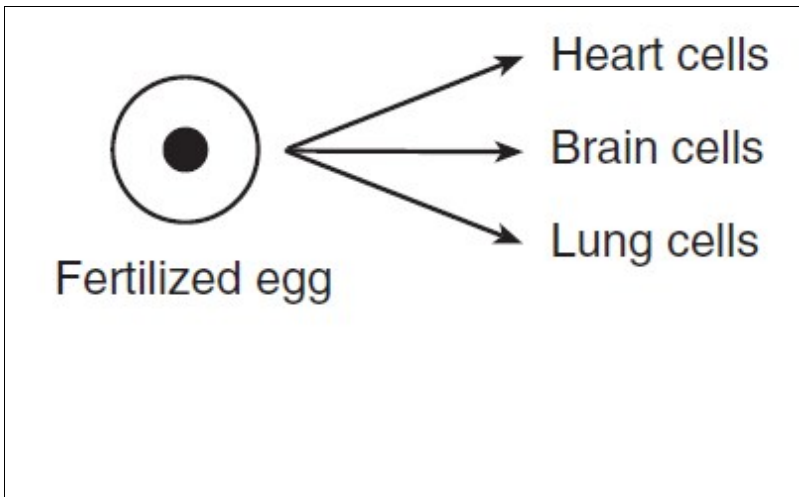
269. The diagram shown represents a process that occurs during normal human development. Which statement is correct regarding the cells and DNA?
- (1) All the cells have identical DNA.
 - (2) The DNA of the fertilized egg differs from the DNA of all the other cells.
 - (3) The DNA of the fertilized egg differs from some, but not all, of the other cells.
 - (4) Only the fertilized egg contains DNA

Data Base File Number: 311

Regents Date

Jan2011
30 1/25/2011 S4K2

Answer 1



DNA

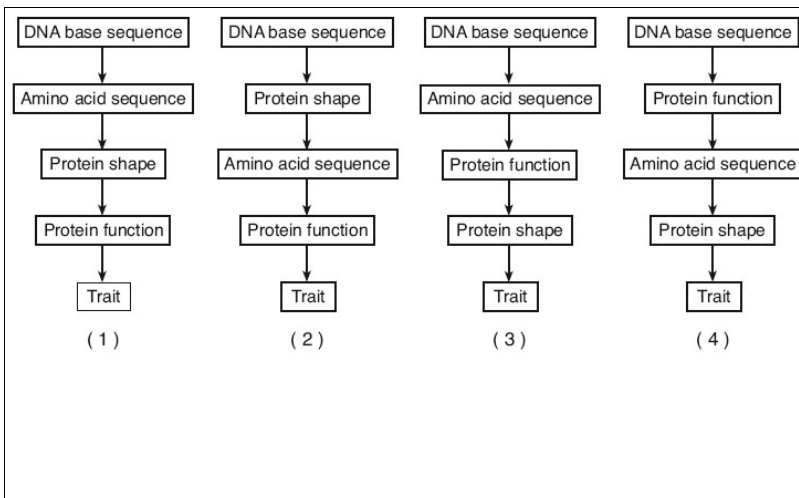
270. In the diagram shown. Which sequence best represents the relationship between DNA and the traits of an organism?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

Data Base File Number: 179

Regents Date

June2009
8 6/18/2009 S4K2

Answer 1



DNA / base pairing

271. Four different segments of a DNA molecule are shown. There is an error in the DNA molecule in

- (1) segment 1, only
- (2) segment 3, only
- (3) segments 2 and 3
- (4) segments 2 and 4

Data Base File Number: 360

Regents Date

Aug2011

7 8/18/2011 S4K2

Answer 2

Segment 1	Segment 2	Segment 3	Segment 4
T-A-G-G-C	G-G-T-G-A	G-A-T-T-A	C-A-A-T-G
A-T-C-C-G	C-C-A-C-T	C-C-A-A-T	G-T-T-A-C

DNA / base pairing

272. NOTE: You may wish to ROTATE the diagram to the LEFT by turning your paper. The diagram shows a portion of an organic molecule. This molecule controls cellular activity by directing the synthesis of

- (1) carbohydrates
- (2) minerals
- (3) fats
- (4) proteins

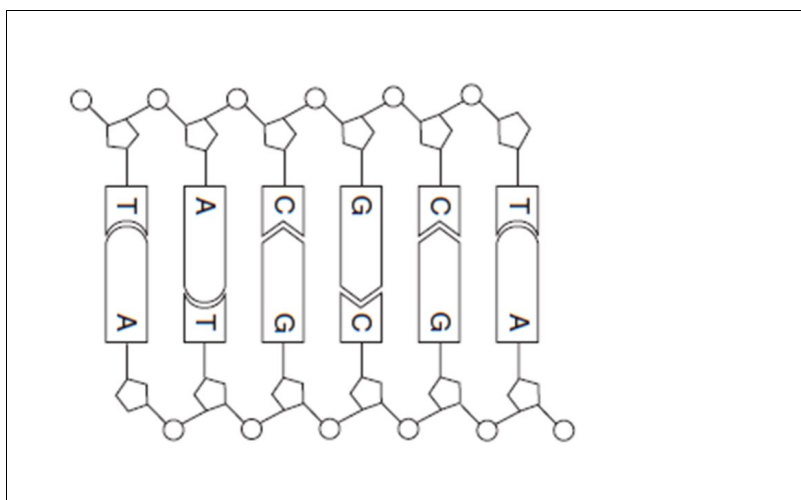
Data Base File Number: 581

Regents Date

Aug2005

6 8/16/2005 S4K2

Answer 4



DNA analysis

273. Base your answer to this question on the information shown and on your knowledge of biology. To demonstrate techniques used in DNA analysis, a student was given two paper strip samples of DNA. The two DNA samples are shown in the diagram. The student cut between the C and G in each of the shaded "CCGG" sequences in sample 1 and between the "AA" in each of the shaded "TAAT" sequences in sample 2. Both sets of fragments were then arranged on a paper model of a gel. The results of this type of DNA analysis are often used to help determine

- (1) the number of DNA molecules in an organism
- (2) if two species are closely related
- (3) the number of mRNA molecules in DNA
- (4) if two organisms contain carbohydrate molecules

Data Base File Number: 61

Regents Date

Jan2007

70 1/26/2007 LABS

Answer 2

Sample 1: ATTCCGGTAATCCCGTAATGCCGGATAATACTCCGGTAATATC
 Sample 2: ATTCCGGTAATCCCGTAATGCCGGATAATACTCCGGTAATATC

DNA base sequences

274. A researcher recently discovered a new species of bacteria in the body of a tubeworm living near a hydrothermal vent. He compared the DNA of this new bacterial species to the DNA of four other species of bacteria. The DNA sequences came from the same part of the bacterial chromosome of all four species. According to these data, the unknown bacterial species is most closely related to

- (1) species I
- (2) species II
- (3) species III
- (4) species IV

Data Base File Number: 217

Regents Date

Aug2009

35 8/13/2009 S4K2

Answer 4

Species	DNA Sequence
unknown species	ACT GCA CCC
species I	ACA GCA CCG
species II	ACT GCT GGA
species III	ACA GCA GGG
species IV	ACT GCA CCG

DNA base sequences

275. Base your answer to this question on the table shown which represents the DNA codes for several amino acids. A certain DNA strand has the following base sequence: TACACACAAACGGGG. What sequence of amino acids is synthesized from this code if it is read from left to right?

- (1) cysteine-tryptophan-valine-proline-asparagine
 (2) methionine-asparagine-proline-cysteine-cysteine
 (3) methionine-cysteine-valine-cysteine-proline
 (4) proline-cysteine-valine-methionine-tryptophan

Data Base File Number: 773

Regents Date

Aug2003

58 8/13/2003 S4K2

Answer 3

Amino Acid	DNA Code Sequence
Cysteine	ACA or ACG
Tryptophan	ACC
Valine	CAA or CAC or CAG or CAT
Proline	GGA or GGC or GGG or GGT
Asparagine	TTA or TTG
Methionine	TAC

DNA base sequences

276. The diagram shown represents a segment of a gene on two chromosomes. The change in the gene sequence is an example of

- (1) an insertion
 (2) a deletion
 (3) a substitution
 (4) a replication

Data Base File Number: 900

Regents Date

Aug2013

10 8/14/2013 S4K2

Answer 3

Normal gene	A	T	A	C	C	T
Mutated gene	A	T	G	C	C	T

DNA base sequences

277. Base your answer to this question on the table and information given and your knowledge of biology. The TOP TABLE is for REFERENCE. In DNA, a sequence of three bases is a code for the placement of a certain amino acid in a protein chain. The TOP TABLE shows some amino acids with their abbreviations and DNA codes. A DNA base sequence is shown in the MIDDLE of the diagram. The sequence is "CAAGTTAAATTATTGTGA". Which amino acid chain would be produced by this DNA base sequence? Your choices are shown in the BOTTOM part of the diagram!

(1) 1

(3) 3

(2) 2

(4) 4

Data Base
File Number:

679

Regents Date

June2004

50

6/18/2004

S4K2

Answer

3

Amino Acid	Abbreviation	DNA Code
Phenylalanine	Phe	AAA, AAG
Tryptophan	Try	ACC
Serine	Ser	AGA, AGG, AGT, AGC, TCA, TCG
Valine	Val	CAA, CAG, CAT, CAC
Proline	Pro	GGA, GGG, GGT, GGC
Glutamine	Glu	GTT, GTC
Threonine	Thr	TGA, TGG, TGT, TGC
Asparagine	Asp	TTA, TTG

C-A-A-G-T-T-A-A-A-T-T-A-T-T-G-T-G-A

(1) Val — Glu — Phe — Asp — Thr — Asp

(2) Val — Pro — Phe — Asp — Asp — Thr

(3) Val — Glu — Phe — Asp — Asp — Thr

(4) Val — Glu — Phe — Thr — Asp — Asp

DNA base sequences

278. Molecule 1 represents a segment of hereditary information, and molecule 2 represents the portion of a molecule that is determined by information from molecule 1. What will most likely happen if there is a change in the first three subunits on the upper strand of molecule 1?

(1) The remaining subunits in molecule 1 will also change.

(3) Molecule 1 will split apart, triggering an immune response.

(2) A portion of molecule 2 may be different.

(4) Molecule 2 may form two strands rather than one.

Data Base
File Number:

803

Regents Date

June2002

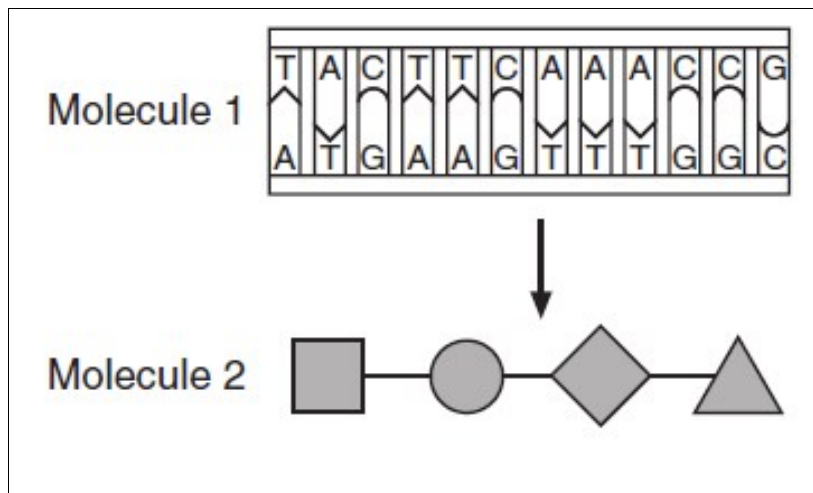
11

6/19/2002

S4K2

Answer

2



DNA base sequences

279. The photograph shows two penguins of the same species displaying different feather color patterns. The newly discovered all-black penguin had only black feathers since emerging from the egg. The sudden appearance of this characteristic was most likely due to

- (1) a change in environmental conditions
- (2) deposition of oil on the feathers due to pollution
- (3) a random change in the sequences of bases in DNA
- (4) a change in the diet of the penguin chick

Data Base File Number: 877

Regents Date

June 2013

28 6/11/2013 S4K2

Answer 3



Source: http://green.yahoo.com/blog/guest_bloggers/24/all-black-penguin-discovered.html

DNA bases

280. Which row in the chart shown best describes what happens when some DNA bases are deleted from a gene?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 211

Regents Date

Aug 2009

11 8/13/2009 S4K2

Answer 4

Row	Gene	Trait Controlled By the Original DNA
(1)	is not changed	is never changed
(2)	is not changed	may be changed
(3)	is changed	is never changed
(4)	is changed	may be changed

DNA electrophoresis

281. DNA electrophoresis is used to study evolutionary relationships of species. The diagram shows the results of DNA electrophoresis for four different animal species. Which species has the most DNA in common with species A?

- (1) X and Y, only
 (2) Y, only
 (3) Z, only
 (4) X, Y, and Z

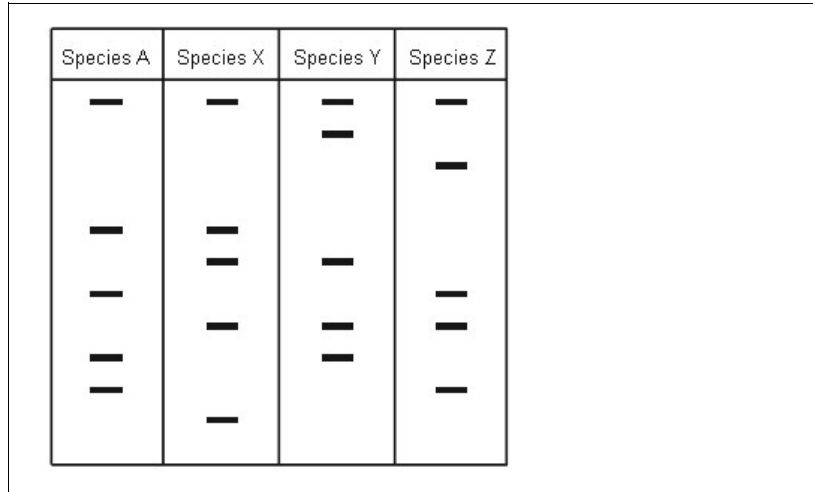
Data Base File Number: 209

Regents Date

June 2009

70 6/18/2009 LABS

Answer 3



dynamic equilibrium

282. Which graph illustrates changes that indicate a state of dynamic equilibrium in a mosquito population?

- (1) 1
 (2) 2
 (3) 3
 (4) 4

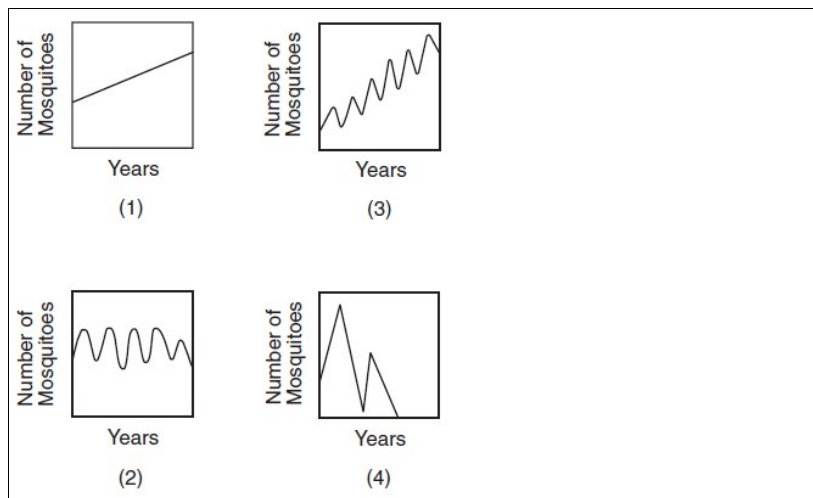
Data Base File Number: 512

Regents Date

Aug 2006

27 8/16/2006 S4K1

Answer 2



dynamic equilibrium

283. The graph shows the number of birds in a population. Which statement best explains section X of the graph?

- (1) Interbreeding between members of this population increased the mutation rate.
- (2) An increase in the bird population caused an increase in the producer population.
- (3) The population reached a state of dynamic equilibrium due to limiting factors.
- (4) Another species came to the area and provided food for the birds.

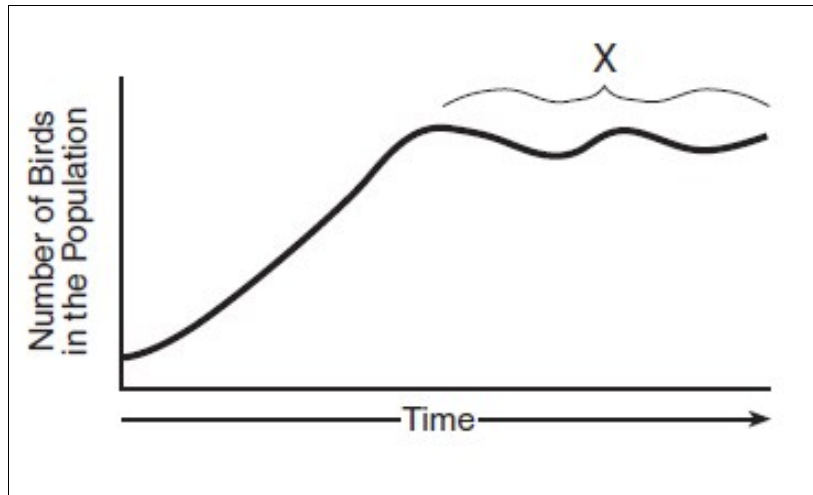
Data Base File Number: 586

Regents Date

Aug2005

29 8/16/2005 S4K6

Answer 3



dynamic equilibrium

284. The data in the graph included, shows evidence of disease in the human body. A disruption in dynamic equilibrium is indicated by the temperature change between points

- (1) A and B
- (2) B and C
- (3) C and D
- (4) E and F

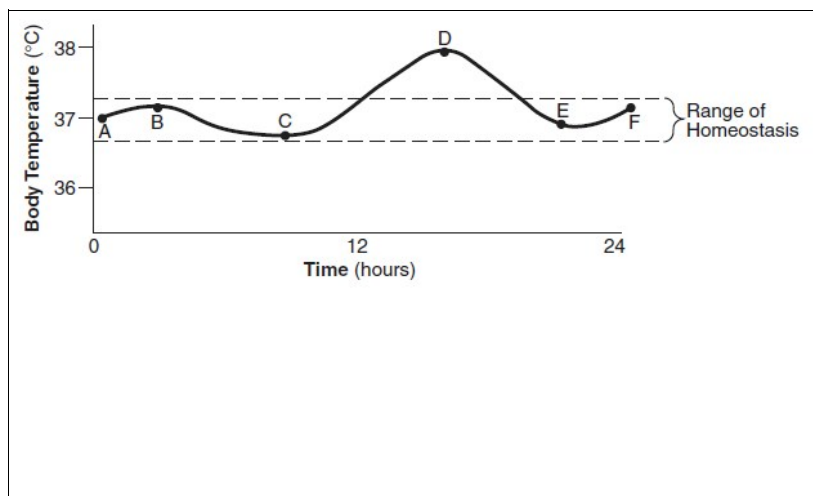
Data Base File Number: 705

Regents Date

Jan2003

9 1/30/2003 S4K1

Answer 3



dynamic equilibrium

285. Which graph of blood sugar level over a 12-hour period best illustrates the concept of dynamic equilibrium in the body?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

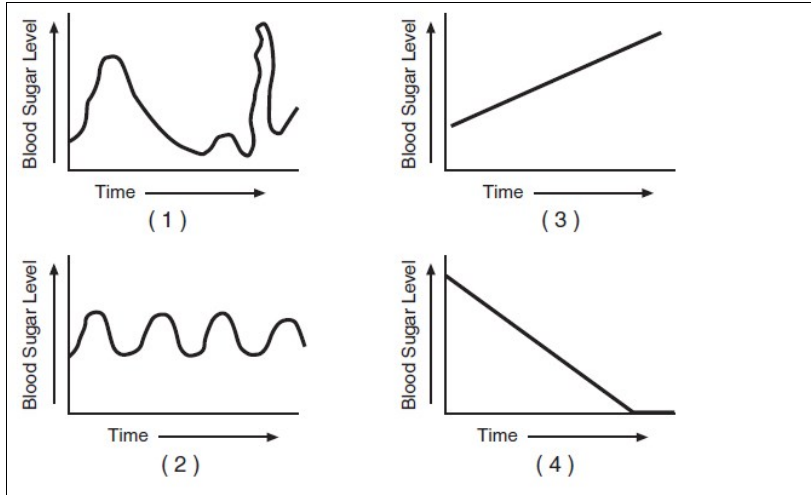
Data Base File Number: 815

Regents Date

June 2002

38 6/19/2002 S4K5

Answer 2



ecological succession

286. The diagram represents the changes in an area over time. This series of changes in the area over hundreds of years is known as

- (1) evolution
- (2) feedback
- (3) ecological succession
- (4) direct harvesting

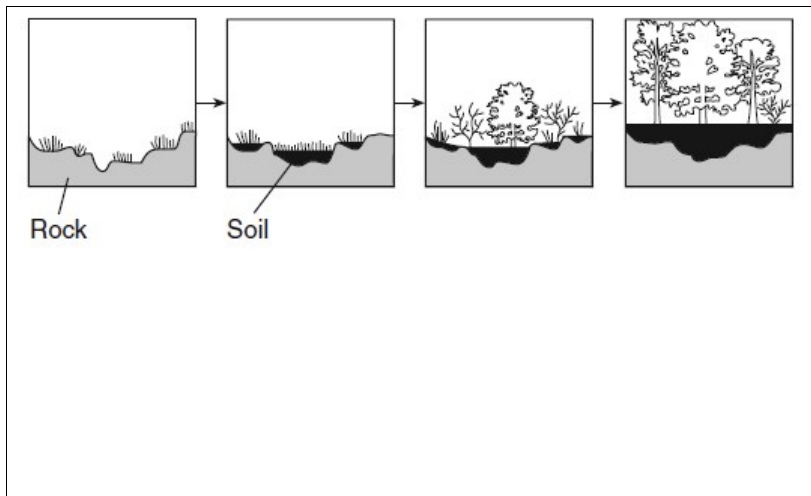
Data Base File Number: 612

Regents Date

Jan 2013

30 1/23/2013 S4K6

Answer 3



ecological succession

287. Which concept is best represented in the diagram shown?

- (1) random mutations
- (2) ecological succession
- (3) genetic engineering
- (4) direct harvesting

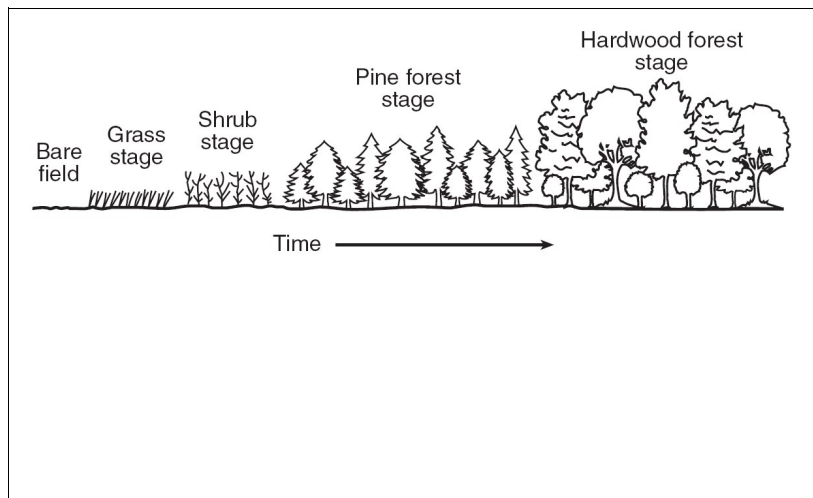
Data Base File Number: 335

Regents Date

June 2011

12 6/21/2011 **S4K6**

Answer 2



ecological succession

288. Which process is represented in the diagram shown?

- (1) energy flow
- (2) biological evolution
- (3) cellular communication
- (4) ecological succession

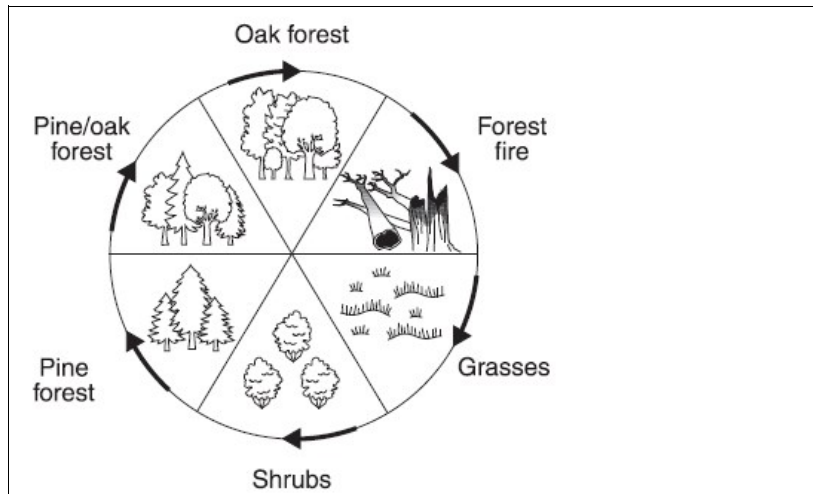
Data Base File Number: 389

Regents Date

Jan 2012

40 1/25/2012 **S4K6**

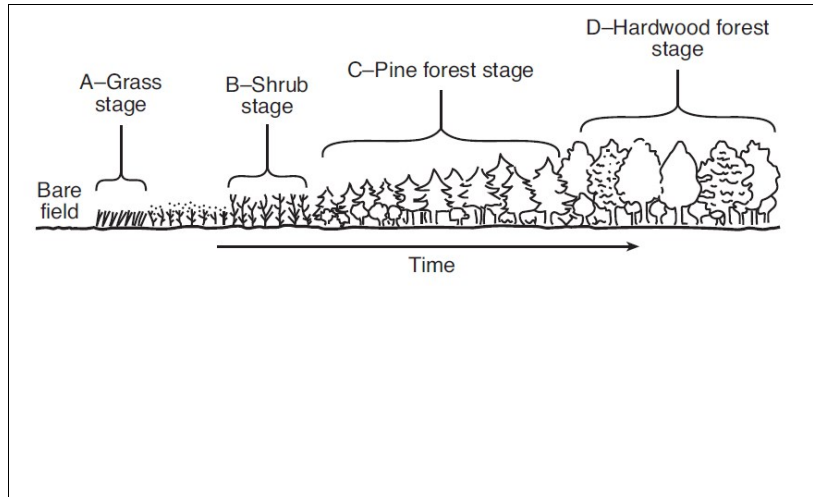
Answer 4



ecological succession

289. The diagram shown represents different stages of an ecosystem over a period of time. Which stage of the ecosystem has the greatest long-term stability?

- (1) A
- (2) B
- (3) C
- (4) D



Data Base File Number: 878

Regents Date

June 2013

29 6/11/2013 S4K6

Answer 4

ecological succession

290. Events that occur in four different ecosystems are shown in the chart. Which ecosystem would most likely require the most time for ecological succession to restore it to its original state?

- (1) A
- (2) B
- (3) C
- (4) D

Ecosystem	Events
A	A severe ice storm occurs during the winter, damaging trees and shrubs. No ice storms occur for the next 20 years.
B	A severe drought causes most of the leaves to fall from the trees during a single summer. There are no serious droughts for the next 20 years.
C	An island with a dense shrub population becomes submerged for 3 years. When the river water lowers, the island does not become submerged for the next 20 years.
D	A fire burns through a large grassy area. Fires do not occur in the area for the next 20 years.

Data Base File Number: 766

Regents Date

Aug 2003

38 8/13/2003 S4K6

Answer 3

ecological succession

291. The diagram shows various ecological communities that occupied an area over a period of 300 years. Which statement best describes the diagram?

- (1) Community A is the most stable community.
- (2) Community B replaced community C after a period of 100 years
- (3) Community C developed into community A after a period of 75 years.
- (4) Community D modified the environment, making it more suitable for community E.

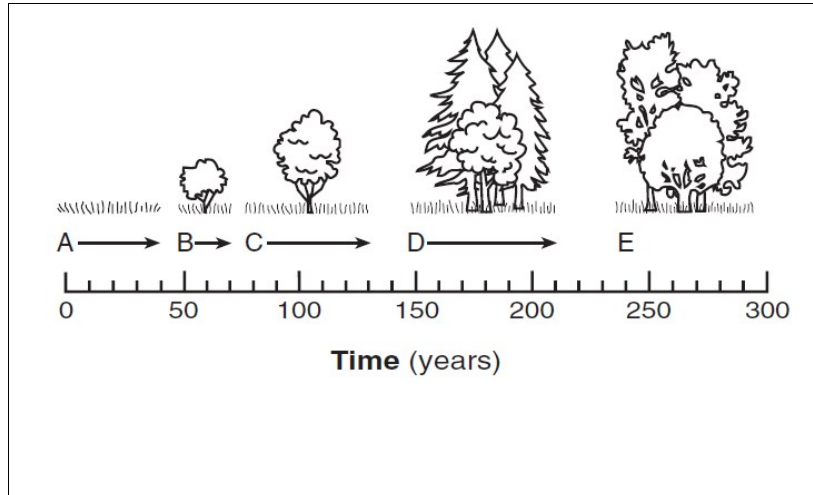
Data Base File Number: 320

Regents Date

Jan2011

41 1/25/2011 S4K6

Answer 4



ecological succession

292. Base your answer to this question on the diagram shown, which represents the changes in an ecosystem over a period of 100 years, and on your knowledge of biology. Which human activity could be responsible for the change from C to D?

- (1) human caused fire
- (2) secondary succession
- (3) pioneer organisms introduced
- (4) energy flow

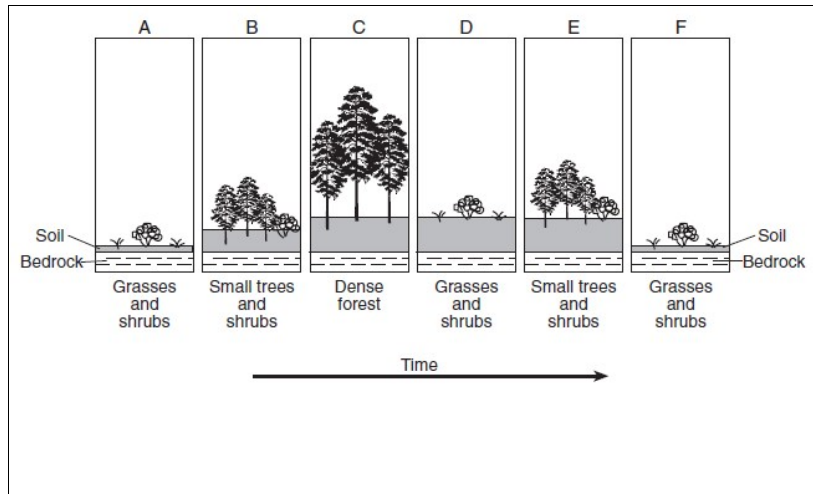
Data Base File Number: 698

Regents Date

Aug2004

54 8/17/2004 S4K6

Answer 1



ecological succession

293. An ecological process is represented in the diagram. Which statement describes an event in this process?

- (1) Community B modifies the environment, making it suitable for community C.
- (2) Community D modifies the environment, making it suitable for community C.
- (3) Community E will develop into community A, if the environment remains stable.
- (4) Community A organisms will develop directly into community D organisms.

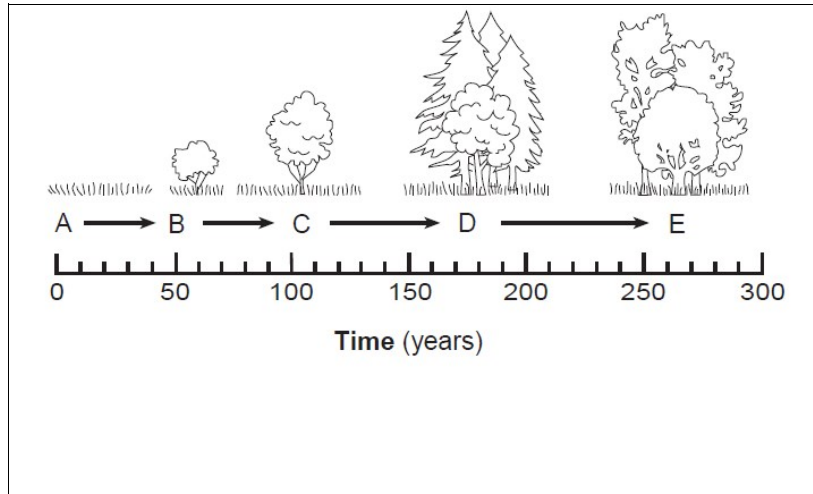
Data Base File Number: 920

Regents Date

Jan2014

12 1/27/2014 S4K6

Answer 1



ecological succession

294. Base your answer to this question on the information shown in the chart and on your knowledge of biology. If farm fields in the Piedmont region of North Carolina are abandoned, there is a regular sequence of plant species that will inhabit the field. The data table shows a typical sequence of dominant plant species. This regular sequence of plant species over the 150-year period is known as

- (1) degrading of the ecosystem
- (2) loss of biodiversity
- (3) ecological succession
- (4) biological evolution

Data Base File Number: 226

Regents Date

Aug2009

54 8/13/2009 S4K6

Answer 3

Years After Last Cultivation	Dominant Plant Species
0	crabgrass
1	horseweed
2	aster
3	broomsedge
5-15	shortleaf pine
50-150	oak trees

ecological succession

295. The diagram shown represents the various stages of ecological succession in New York State. If the ecosystem is not altered, which stage would be the most stable?

- (1) grass
- (2) shrub
- (3) pine forest
- (4) hardwood forest

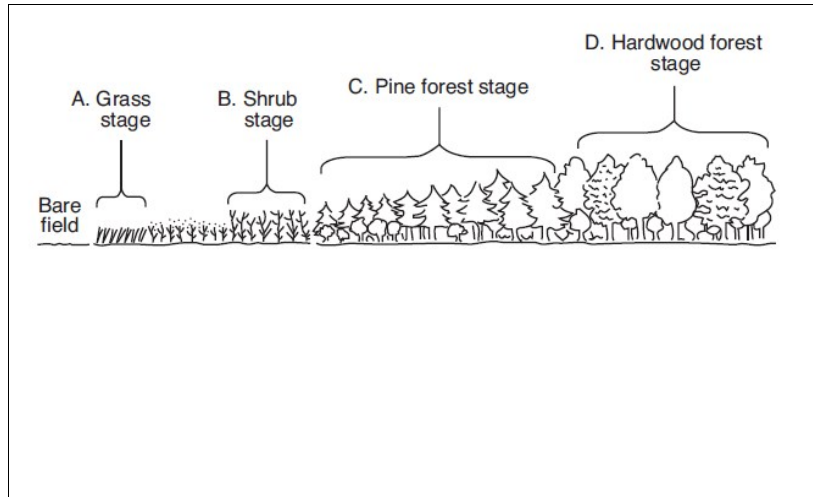
Data Base File Number: 259

Regents Date

June 2010

29 6/16/2010 **S4K6**

Answer 4



ecology

296. The chart show three ecological terms used to describe levels of organization on Earth. Which diagram best represents the relationship of these ecological terms?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 437

Regents Date

Aug 2012

35 8/17/2012 **S4K1**

Answer 1

A	ecosystem
B	population
C	biosphere

Which diagram best represents the relationship of these ecological terms?

(1)

(2)

(3)

(4)

ecosystem

297. A pond ecosystem is represented in the diagram as shown. Energy for this ecosystem originally comes from

- (1) water
- (2) consumers
- (3) sunlight
- (4) plants

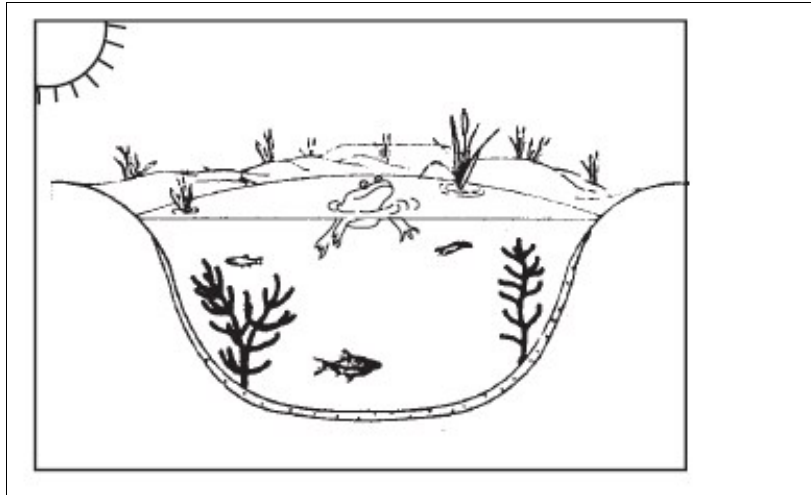
Data Base File Number: 833

Regents Date

Jan2002

22 1/23/2002 S4K6

Answer 3



ecosystem

298. A pond ecosystem is shown in the diagram, Which statement describes an interaction that helps maintain the dynamic equilibrium of this ecosystem?

- (1) The frogs make energy available to this ecosystem through the process of photosynthesis.
- (2) The algae directly provide food for both the rotifers and the catfish.
- (3) The green-backed heron provides energy for the mosquito larvae.
- (4) The catfish population helps control the populations of water boatman and water fleas.

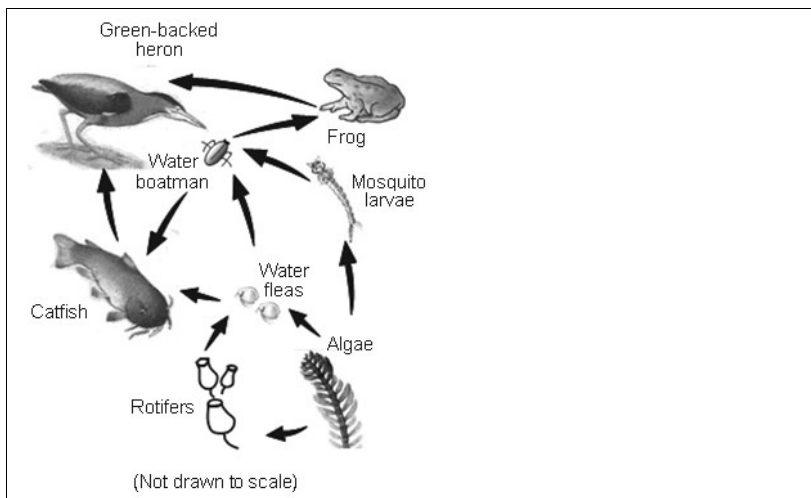
Data Base File Number: 190

Regents Date

June2009

34 6/18/2009 S4K1

Answer 4



ecosystem

299. Which ecological term includes everything represented in the illustration?

- (1) ecosystem
- (2) community
- (3) population
- (4) species

Data Base 730
File Number:

Regents Date

June2003

7 6/19/2003 S4K1

Answer 1



ecosystem

300. Base your answer to this question on the diagram given and on your knowledge of biology. The diagram represents an energy pyramid for an ecosystem in the Australian outback. Wombats are classified as herbivores because they can

- (1) get energy from the Sun
- (2) provide energy for the kookaburras
- (3) get nutrition from the grasses and sedges
- (4) provide nutrition for the kangaroos

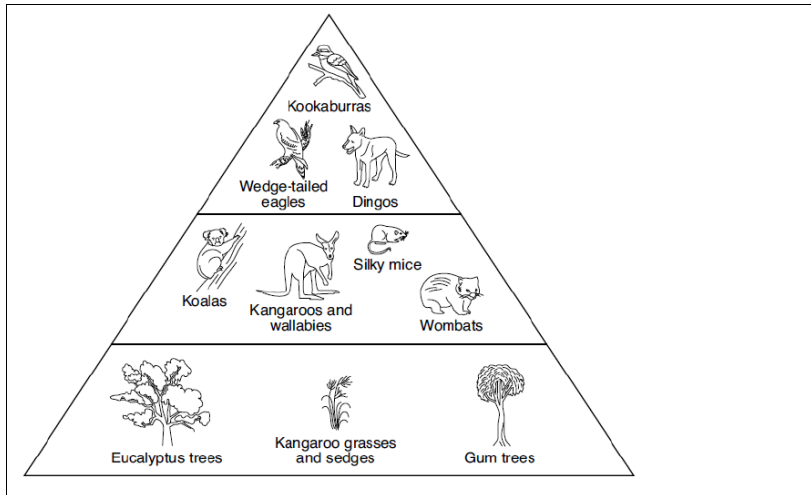
Data Base 418
File Number:

Regents Date

June2012

41 6/19/2012 S4K1

Answer 3



ecosystem

301. An ecosystem is represented in the diagram shown. The organisms represented as "algae and seaweeds" are found in the area shown due to which factor?

- (1) pH
- (2) sediment
- (3) light intensity
- (4) colder temperature

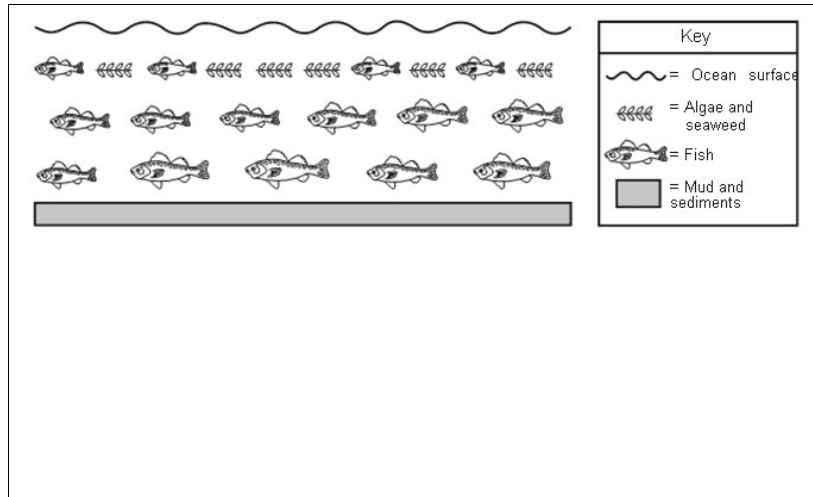
Data Base File Number: 196

Regents Date

June 2009

41 6/18/2009 **S4K6**

Answer 3



ecosystem

302. The graphs show dissolved oxygen content, sewage waste content, and fish populations in a lake between 1950 and 1970. What happened to the amount of dissolved oxygen and the number of fish species as the amount of sewage waste increased?

- (1) oxygen levels increased and number of fish species increased
- (2) oxygen levels decreased and number of fish species decreased
- (3) oxygen levels increased and number of fish species decreased
- (4) oxygen levels decreased and sewage levels increased

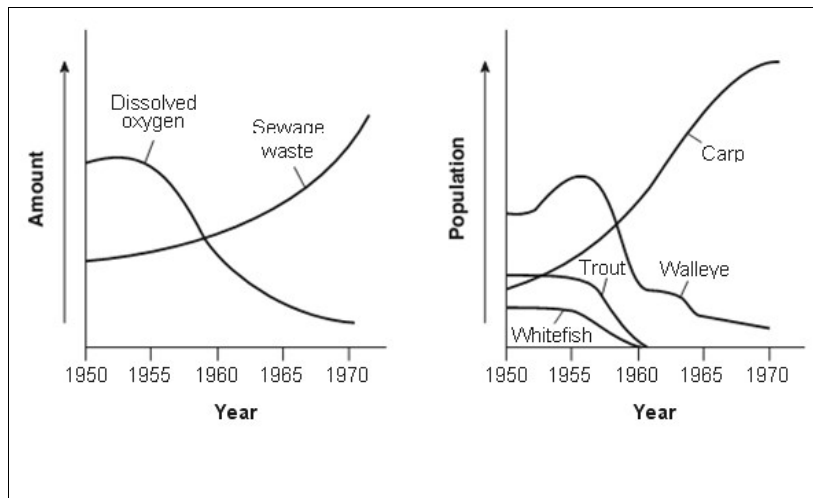
Data Base File Number: 197

Regents Date

June 2009

42 6/18/2009 **S4K5**

Answer 2



ecosystem

303. Base your answers to this question on the information shown and on your knowledge of biology. An ecologist made some observations in a forest ecosystem over a period of several days. Some of the data collected are shown in the data table. Which statement describes how one biotic factor of the forest uses one of the abiotic factors listed in the data table?

- (1) Trees absorb water as a raw material for photosynthesis.
- (2) Insects eat and digest the leaves of trees.
- (3) Erosion of sedimentary rock adds phosphorous to the soil.
- (4) Fungi release oxygen from the trees back into the air.

Data Base File Number: 199

Regents Date

June 2009

49 6/18/2009 S4K1

Answer 2

Date	Observed Feeding Relationships	Ecosystem Observations
6/2	<ul style="list-style-type: none"> • white-tailed deer feeding on maple tree leaves • woodpecker feeding on insects • salamander feeding on insects 	<ul style="list-style-type: none"> • 2 cm of rain in 24 hours
6/5	<ul style="list-style-type: none"> • fungus growing on a maple tree • insects feeding on oak trees 	<ul style="list-style-type: none"> • several types of sedimentary rock are in the forest
6/8	<ul style="list-style-type: none"> • woodpecker feeding on insects • red-tailed hawk feeding on chipmunk 	<ul style="list-style-type: none"> • air contains 20.9% oxygen
6/11	<ul style="list-style-type: none"> • chipmunk feeding on insects • insect feeding on maple tree leaves • chipmunk feeding on a small salamander 	<ul style="list-style-type: none"> • soil contains phosphorous

ecosystem

304. What is the primary source of energy for all the organisms in the ecosystem represented in the diagram?

- (1) photosynthesis in the producers
- (2) respiration in the heterotrophs
- (3) light energy from the Sun
- (4) light energy from the Sun

Data Base File Number: 433

Regents Date

Aug 2012

19 8/17/2012 S4K5

Answer 3



ecosystem

305. Base your answer to this question on the information and graph shown and on your knowledge of biology. The graph contains information about an ecosystem. The graph shows the carrying capacities of an ecosystem for three different species, 1, 2, and 3, that inhabit an area and the actual population sizes of these three different species in the area. Which species population would most likely have the greatest competition among its members?

(1) 1

(3) 3

(2) 2

(4) 4

Data Base
File Number:

425

Regents Date

June 2012

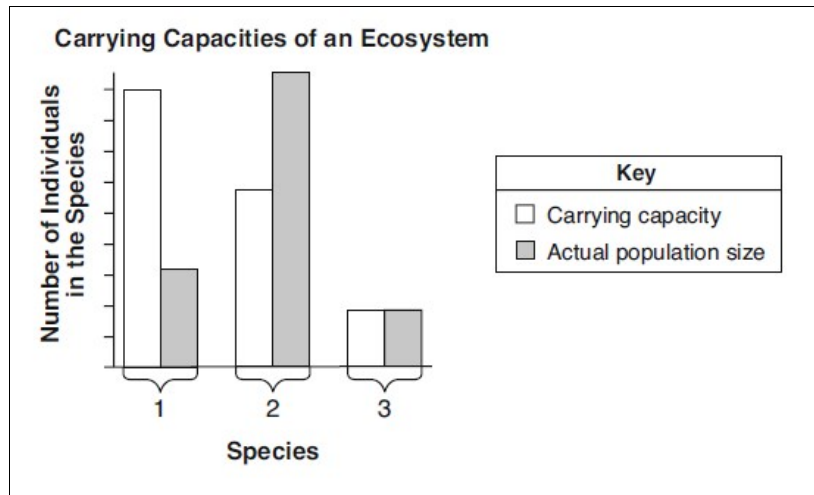
54

6/19/2012

S4K6

Answer

2



ecosystem

306. Base your answer to this question on the diagram below that shows some interactions between several organisms located in a meadow environment and on your knowledge of biology. A rapid DECREASE in the frog population results in a change in the hawk population. A possible change in the food relationship is that the hawk population will

- (1) decrease because there will be fewer snakes since there are fewer frogs for them to eat
- (2) will increase because there will be more grasshoppers for the shrews to eat and more shrews for the hawks to eat
- (3) both 1 and 2 are possible changes
- (4) 1 and 2 are incorrect changes

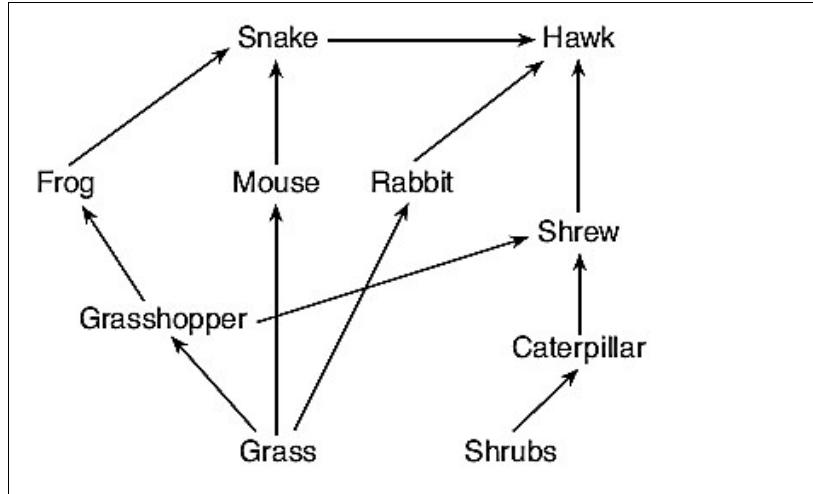
Data Base File Number: 109

Regents Date

June2008

48 6/24/2008 S4K1

Answer 3



ecosystem

307. Which statement describes the ecosystem represented in the diagram as shown?

- (1) This ecosystem would be the first stage in ecological succession.
- (2) This ecosystem would most likely lack decomposers.
- (3) All of the organisms in this ecosystem are producers.
- (4) All of the organisms in this ecosystem depend on the activities of biological catalyts.

Data Base File Number: 568

Regents Date

June2005

36 6/22/2005 S4K5

Answer 4



ecosystem

308. Which diagram best illustrates the relationship between humans (H) and ecosystems?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

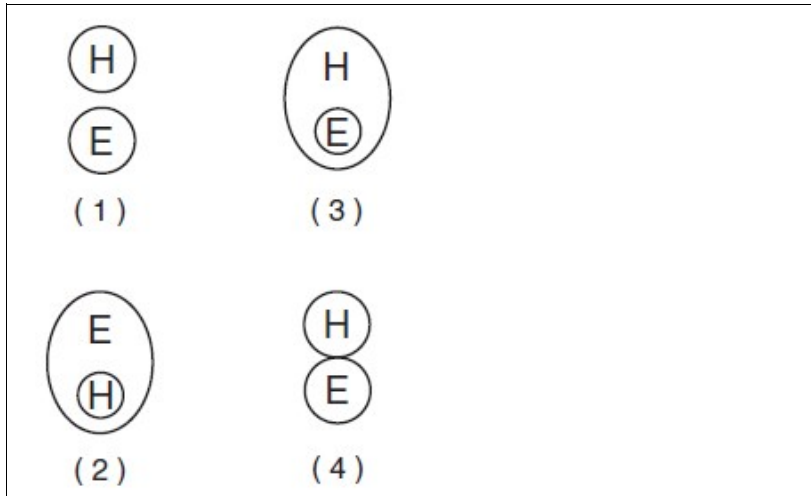
Data Base File Number: 562

Regents Date

June2005

29 6/22/2005 S4K7

Answer 2



ecosystem

309. Base your answer to this question on the passage given which describes an ecosystem in New York State and on your knowledge of biology. -- The Pine Bush ecosystem near Albany, New York, is one of the last known habitats of the nearly extinct Karner Blue butterfly. The butterfly's larvae feed on the wild green plant, lupine. The larvae are in turn consumed by predatory wasps. The four groups shown represent other organisms living in this ecosystem. The Karner Blue larvae belong in which group?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 494

Regents Date

June2006

40 6/21/2006 S4K6

Answer 2

Group A	Group B	Group C	Group D
algae mosses ferns pine trees oak trees	rabbits tent caterpillars moths	hawks moles hognosed snakes toads	soil bacteria molds mushrooms

ecosystem

310. Which statement concerning the producers in the ocean ecosystem, shown in the diagram, is correct?

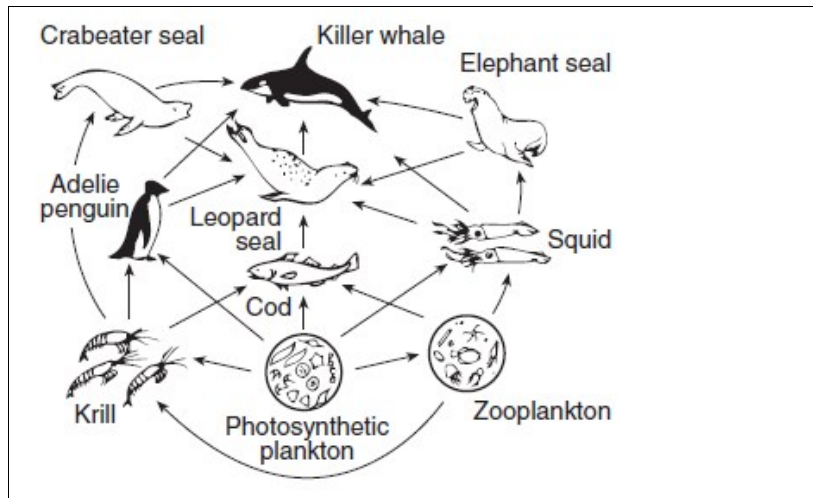
- (1) An increase in the types of producers will most likely decrease the available energy for the squid.
- (2) A producer in this ecosystem is the zoo-plankton.
- (3) If all the producers in this ecosystem are destroyed, the number of heterotrophs will increase, but the ecosystem will reach a new equilibrium.
- (4) Since there is only one group of producers their numbers must be large enough to supply the energy for the rest of the food web.

Data Base File Number: 762

Regents Date

Aug2003
30 8/13/2003 S4K6

Answer 4



ecosystem

311. The diagram shown represents an energy pyramid constructed from data collected from an aquatic ecosystem. Which statement best describes this ecosystem?

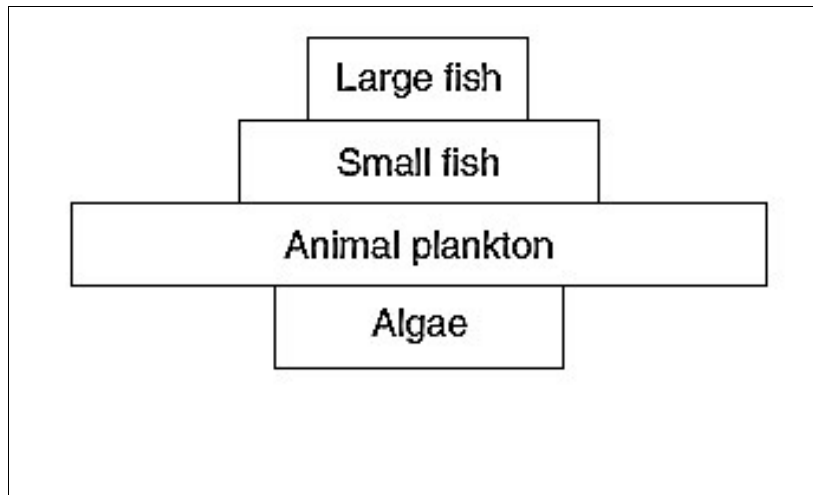
- (1) The ecosystem is most likely unstable.
- (2) Long-term stability of this ecosystem will continue.
- (3) The herbivore populations will continue to increase in size for many years.
- (4) The producer organisms outnumber the consumer organisms.

Data Base File Number: 31

Regents Date

June2007
28 6/20/2007 S4K6

Answer 1



ecosystem

312. Base your answer to this question on the information given in the chart and on your knowledge of biology. Every population is linked, directly or indirectly, with many others in an ecosystem. The table shows the size of the moose and wolf populations that live on an island in Lake Superior. What is one possible ecological reason, other than human activity, for the change in the moose population between 1975 and 1980?

- (1) There were more wolves, so the moose were being killed off.
- (2) There may have been less food available for the moose, since the moose population had been growing for 20 years.
- (3) Disease may have affected the moose population.
- (4) All of the above could be correct.

Data Base File Number: 374

Regents Date

Aug2011

66 8/18/2011 S4K6

Answer 4

Year	Population Size	
	Moose	Wolves
1960	610	22
1965	733	28
1970	1295	18
1975	1355	41
1980	910	50
1985	1115	22
1990	1216	15
1995	2422	16
2000	850	29

ecosystem

313. The diagram shown represents many species of plants and animals and their surroundings. The diagram best represents

- (1) a population
- (2) a community
- (3) an ecosystem
- (4) the biosphere

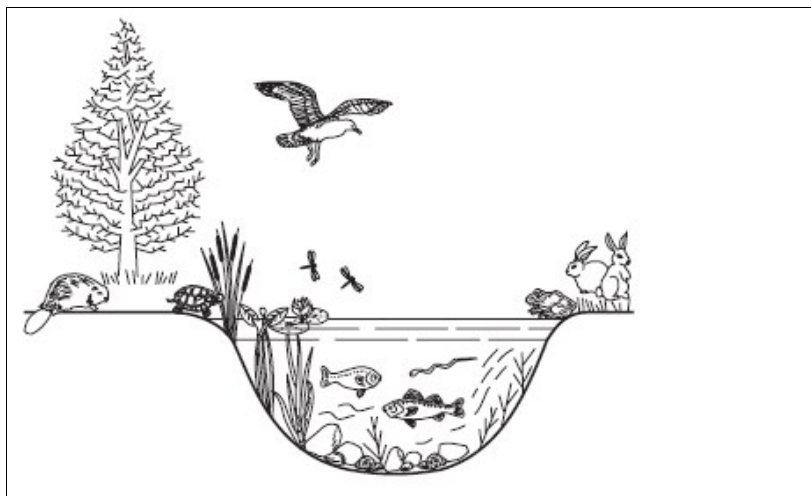
Data Base File Number: 359

Regents Date

Aug2011

4 8/18/2011 S4K1

Answer 3



ecosystem

314. Base your answer to this question on the lake ecosystem represented as shown and on your knowledge of biology. Which organisms represented in the diagram provides the vital link for the transfer of energy from the Sun to the other organisms in the ecosystem?

- (1) primary consumers
- (2) secondary consumers
- (3) autotrophs
- (4) heterotrophs

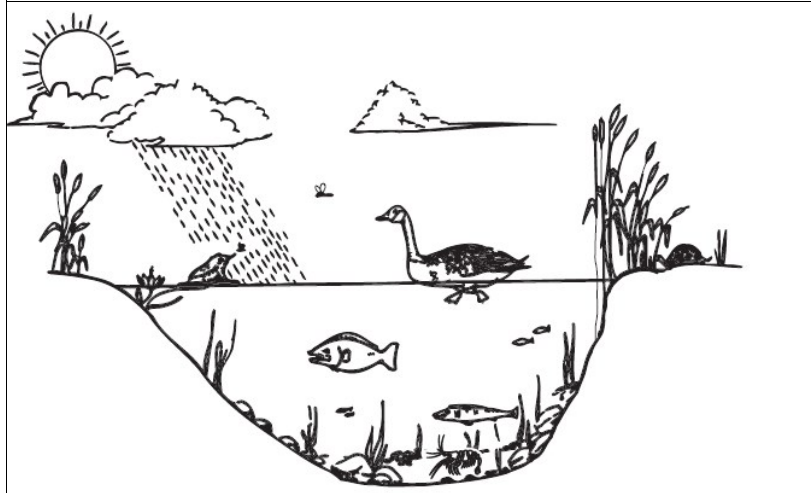
Data Base File Number: 550

Regents Date

Jan2005

51 1/28/2005 S4K6

Answer 3



ecosystem

315. The graph shown represents the populations of two different species in an ecosystem over a period of several years. Which statement is a possible explanation for the changes shown?

- (1) Species A is better adapted to this environment.
- (2) Species A is a predator of species B.
- (3) Species B is better adapted to this environment.
- (4) Species B is a parasite that has benefited species A.

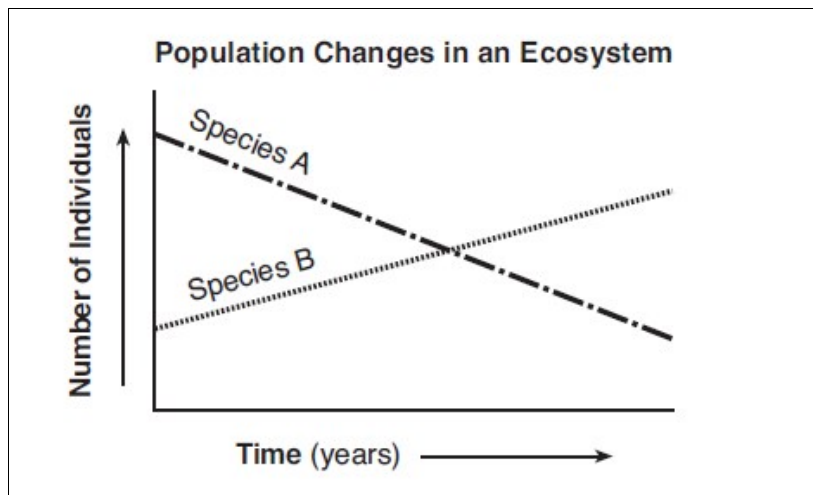
Data Base File Number: 261

Regents Date

June2010

32 6/16/2010 S4K1

Answer 3



ecosystem

316. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents various levels of interaction between organisms in a prairie ecosystem. If the amount of carbon dioxide in the atmosphere were to decrease, which organism in the diagram would be one of the first affected by this change?

- (1) hawks
- (2) wheat
- (3) locusts
- (4) molds

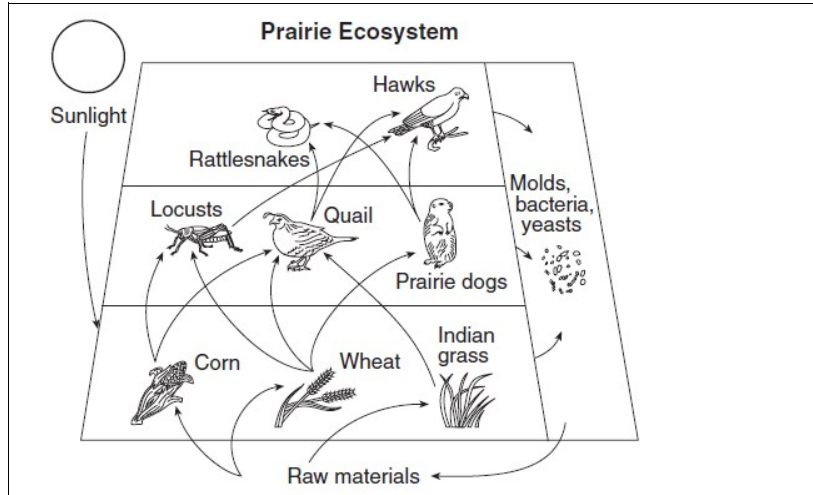
Data Base File Number: 390

Regents Date

Jan2012

41 1/25/2012 S4K6

Answer 2



ecosystem

317. The graph shows photosynthetic activity in a ecosystem over a 24-hour period. Data for a study on respiration in this ecosystem should be collected during

- (1) interval A, from only the producers in the ecosystem
- (2) intervals A and B, from only the consumers in the ecosystem
- (3) intervals A and B, from both the producers and consumers in the ecosystem
- (4) interval A only, from abiotic but not biotic components of the ecosystem

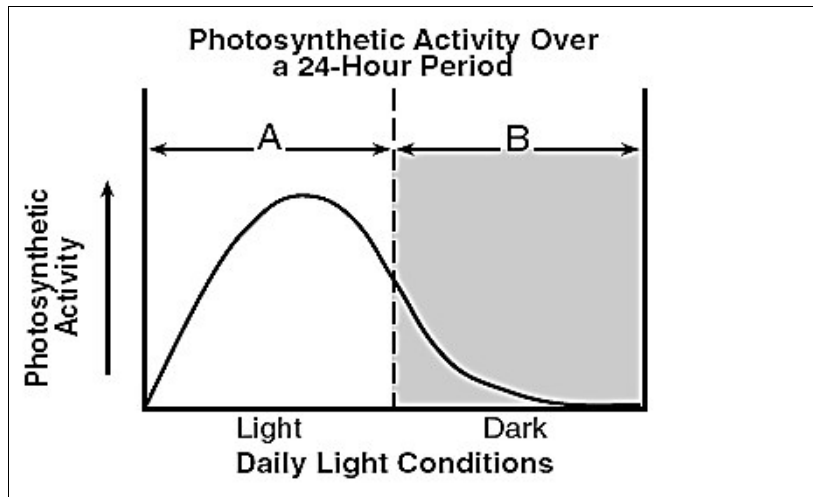
Data Base File Number: 14

Regents Date

Aug2007

33 8/16/2007 S4K5

Answer 3



ecosystem

318. The diagram shown represents interactions between organisms in a stable ecosystem. Which statement correctly describes organisms in this ecosystem?

- (1) Organisms in level B obtain their energy directly from the Sun.
- (2) Organisms in level C obtain their nutrients directly from organisms in level D.
- (3) Organisms in level A are herbivores.
- (4) Organisms in level D are heterotrophic.

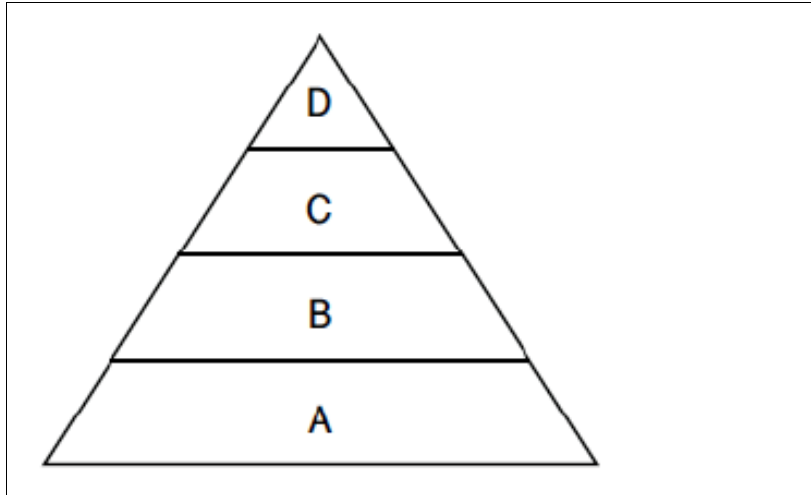
Data Base File Number: 400

Regents Date

June2012

2 6/19/2012 S4K1

Answer 4



ecosystem

319. On which day did the population represented in the graph shown reach the carrying capacity of the ecosystem?

- (1) day 11
- (2) day 8
- (3) day 3
- (4) day 5

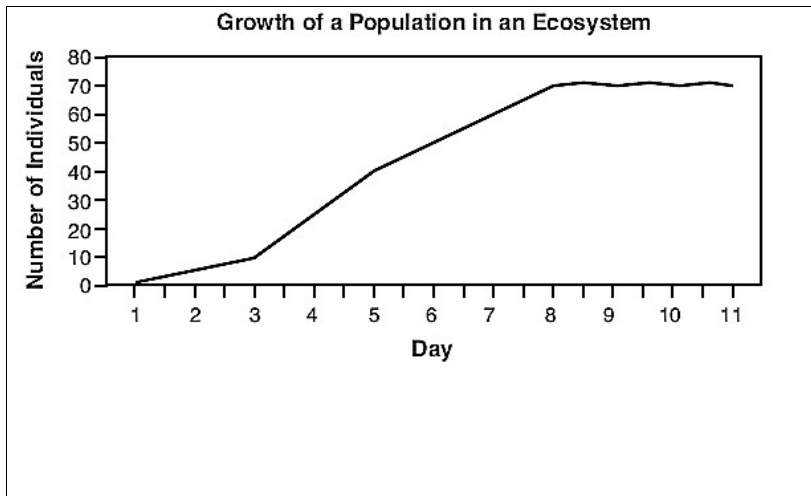
Data Base File Number: 107

Regents Date

June2008

42 6/24/2008 S4K1

Answer 2



ecosystem

320. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents a food web in an ecosystem. If the population of hawks in this area increases, their prey populations might decrease. Later, with fewer prey, the hawk population might decrease. The prey populations might then increase. This is an example of

- (1) an ecosystem that is completely out of balance
- (2) how ecosystems maintain stability over time
- (3) interaction between biotic and abiotic factors within an ecosystem
- (4) ecological succession in an ecosystem

Data Base File Number:

880

Regents Date

June 2013

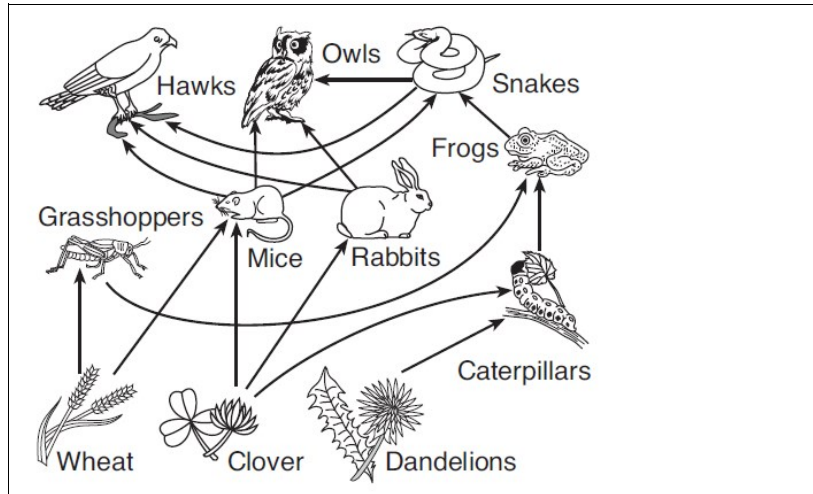
32

6/11/2013

S4K6

Answer

2



ecosystem / altered

321. The diagram shown represents factors that affect New York State ecosystems. An increase in human activity at X would most likely result in

- (1) a decrease in rainfall in the area
- (2) a decrease in available carbon dioxide
- (3) an increase in air pollution in the area
- (4) an increase in the supply of fossil fuels

Data Base File Number:

873

Regents Date

June 2013

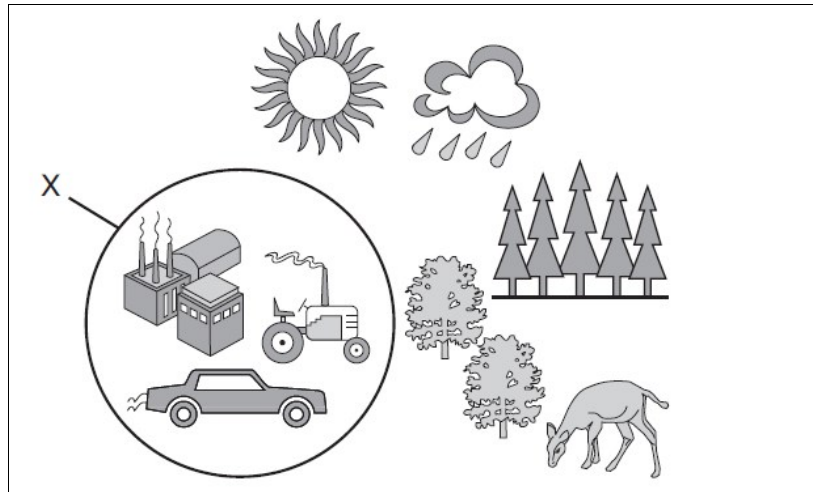
4

6/11/2013

S4K7

Answer

3



ecosystem / carrying capacity

322. Which graph represents a population that grew and is maintained at the carrying capacity of its ecosystem?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

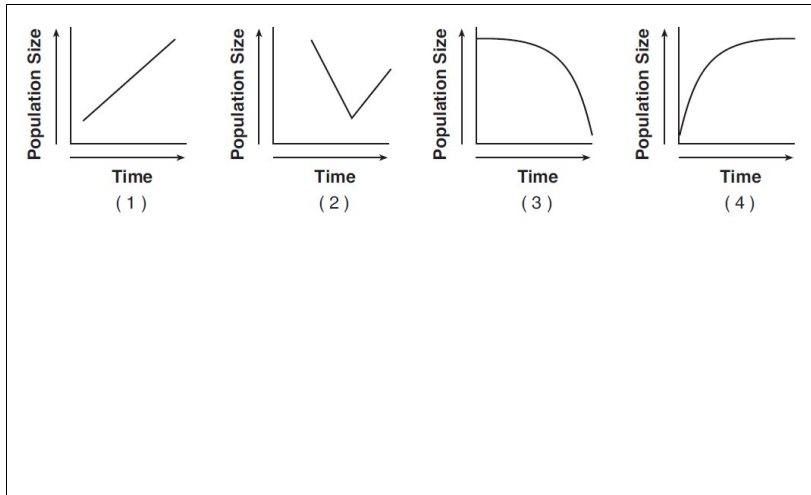
Data Base File Number: 214

Regents Date

Aug2009

30 8/13/2009 S4K6

Answer 4



ecosystem / stable

323. The chart shows the environmental functions that some organisms perform in a stable ecosystem. How would a decrease in the number of organisms that perform these functions most likely affect the ecosystem?

- (1) The interactions between other organisms would stop immediately.
- (2) The functions carried out by these organisms would no longer be necessary.
- (3) The ecosystem would remain stable.
- (4) The ecosystem would become less stable.

Data Base File Number: 850

Regents Date

June2001

34 6/15/2001 S4K6

Answer 4

Environmental Functions	Performed By
Pollination	bees, bats
Biodegradation	microorganisms
Soil aeration	earthworms
Recycling of atoms	soil bacteria
CO ₂ – O ₂ exchange	plants
Water storage	plants

ecosystem / stable

324. The graph shows changes in the stability of an ecosystem over a period of time. Which statement best describes the change in ecosystem stability shown in the graph?

- (1) A stable ecosystem can be altered, then it can recover to a point of stability
- (2) An ecosystem remains unchanged as its stability decreases.
- (3) The stability of an ecosystem remains unchanged but its biodiversity decreases.
- (4) A stable ecosystem cannot recover after it is altered.

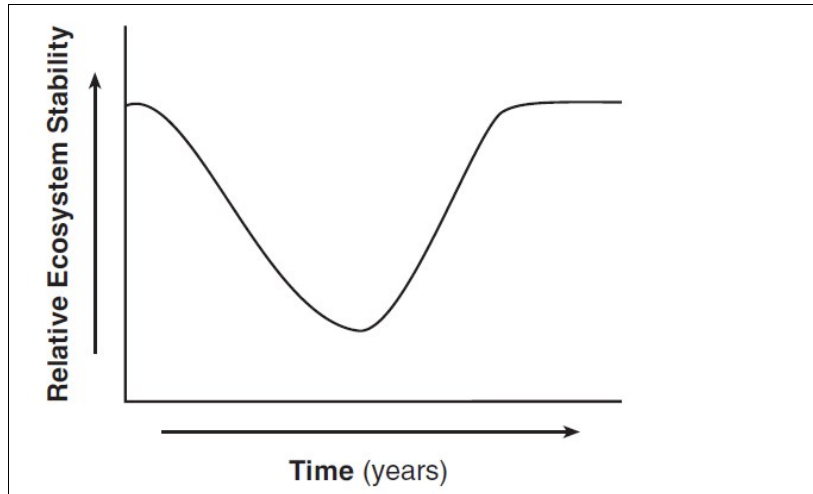
Data Base File Number: 285

Regents Date

Aug2010

35 8/18/2010 S1K3

Answer 1



ecosystem / stable

325. Changes in an ecosystem over a long period of time are shown in the diagram. These changes will most likely lead to a

- (1) stable ecosystem that can last for many years
- (2) loss of heterotrophs that cannot be recovered
- (3) long-term rise in environmental temperatures
- (4) forest consisting of only producers and decomposers

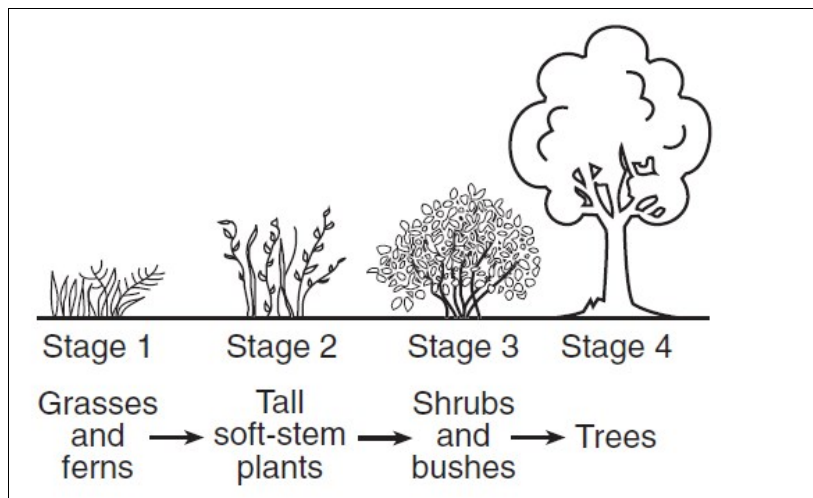
Data Base File Number: 281

Regents Date

Aug2010

24 8/18/2010 S4K1

Answer 1



electrophoresis

326. Base your answer to this question on the information and diagram shown and on your knowledge of biology. DNA samples were collected from four children. The diagram shown represents the results of a procedure that separated the DNA in each sample. Identify the procedure used to obtain these results

- (1) staining
- (2) electrophoresis
- (3) electron microscopy
- (4) light microscopy

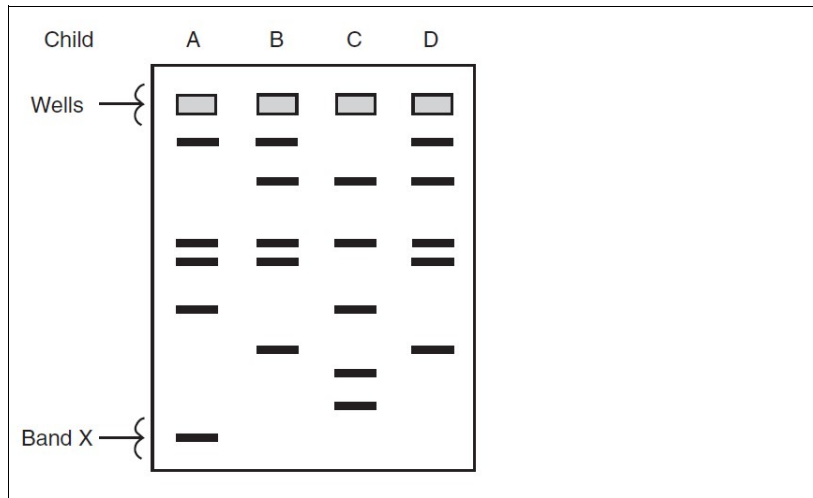
Data Base File Number: 297

Regents Date

Aug2010

63 8/18/2010 LABS

Answer 2



electrophoresis

327. Base your answer to this question on the information and diagram given and on your knowledge of biology. The DNA of three different species of birds was analyzed to help determine if there is an evolutionary relationship between these species. The diagram shows the results of this analysis. Which technique could be used to separate the DNA fragments to produce the patterns shown in the diagram?

- (1) electrophoresis, only
- (2) gel electrophoresis, only
- (3) electrophoresis or gel electrophoresis
- (4) insufficient information is given

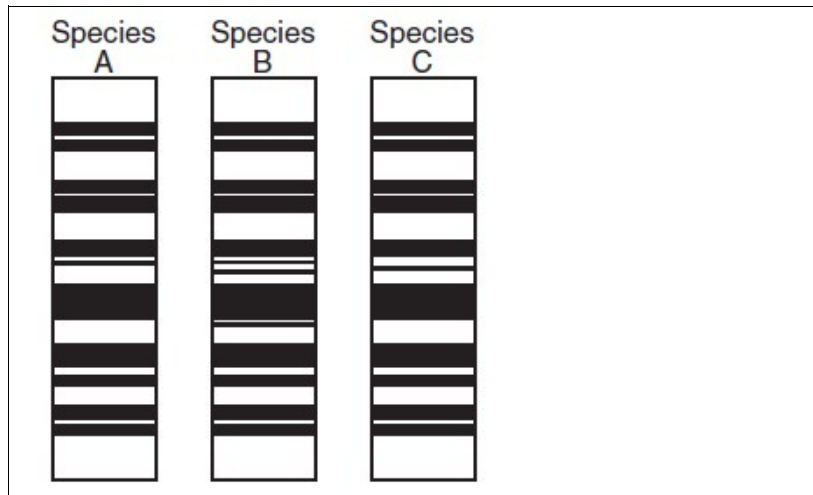
Data Base File Number: 528

Regents Date

Aug2006

62 8/16/2006 LAB1

Answer 3



embryology

328. Base your answer to this question on the diagram shown, which represents some stages in the development of an embryo, and on your knowledge of biology. If cell A has 46 chromosomes, how many chromosomes will most likely be found in each cell of stage G?

- (1) 23
 (2) 46
 (3) 69
 (4) 92

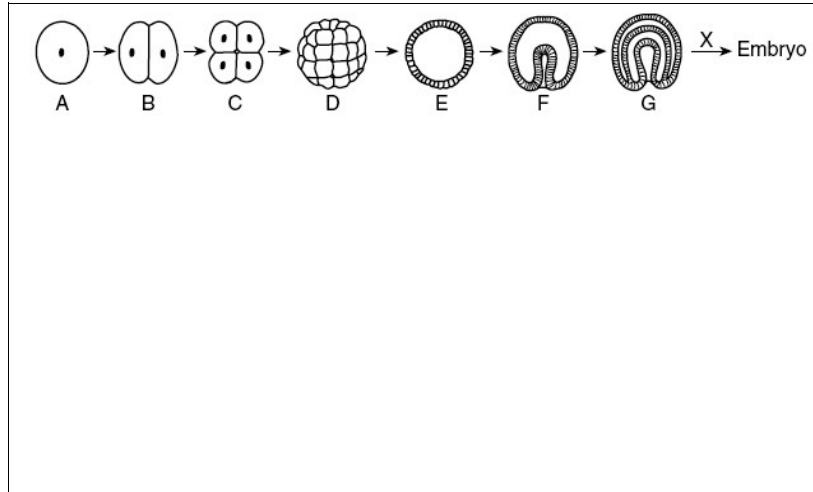
Data Base File Number: 158

Regents Date

Jan2009

1/27/2009 S4K4

Answer 2



embryonic development

329. The diagram shown represents some stages of early embryonic development. Which process is represented by the arrows in the diagram?

- (1) meiosis
 (2) fertilization
 (3) mitosis
 (4) evolution

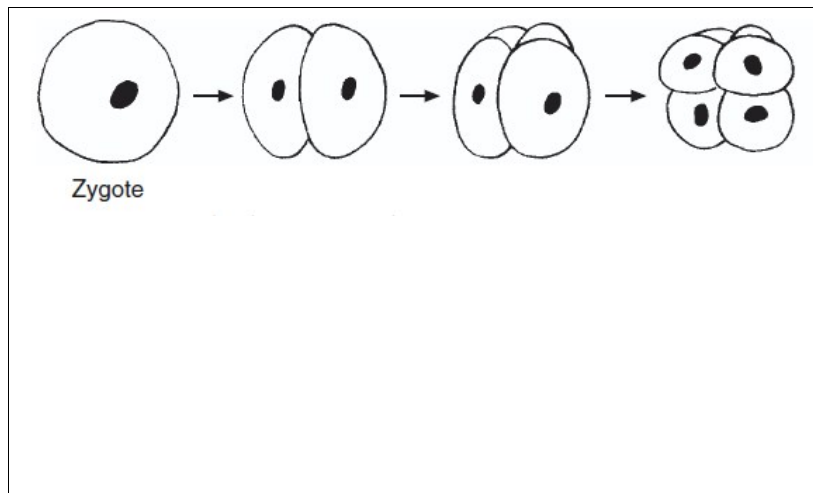
Data Base File Number: 711

Regents Date

Jan2003

17 1/30/2003 S4K4

Answer 3



embryonic development

330. Part of the embryonic development in a species is illustrated in the diagram shown. Which set of factors plays the most direct role in controlling the events shown in the diagram?
- (1) genes, hormones, and cell location
 - (2) antibodies, insulin, and starch
 - (3) abiotic resources, homeostasis, and selective breeding
 - (4) ATP, amino acids, and inorganic compounds

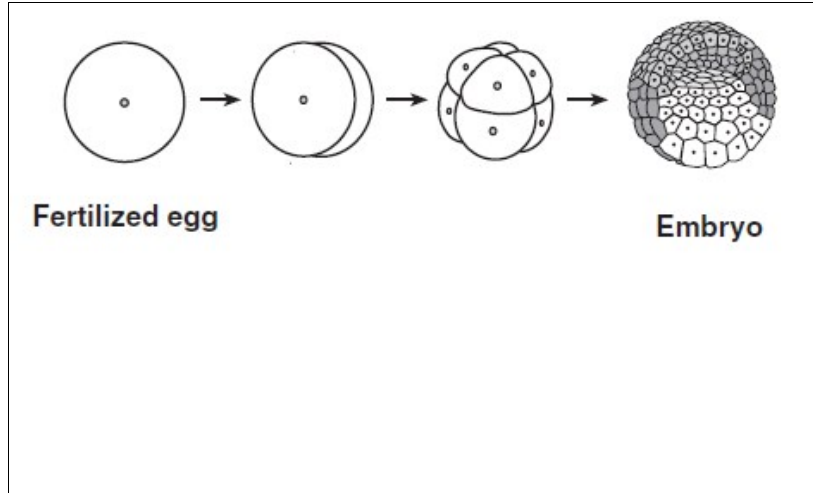
Data Base File Number: 539

Regents Date

Jan2005

27 1/28/2005 S4K4

Answer 1



embryonic development

331. The diagram shown represents a series of events in the development of a bird. Which series of terms best represents the sequence of processes shown?
- (1) meiosis → growth → differentiation
 - (2) meiosis → differentiation → growth
 - (3) mitosis → meiosis → differentiation
 - (4) mitosis → differentiation → growth

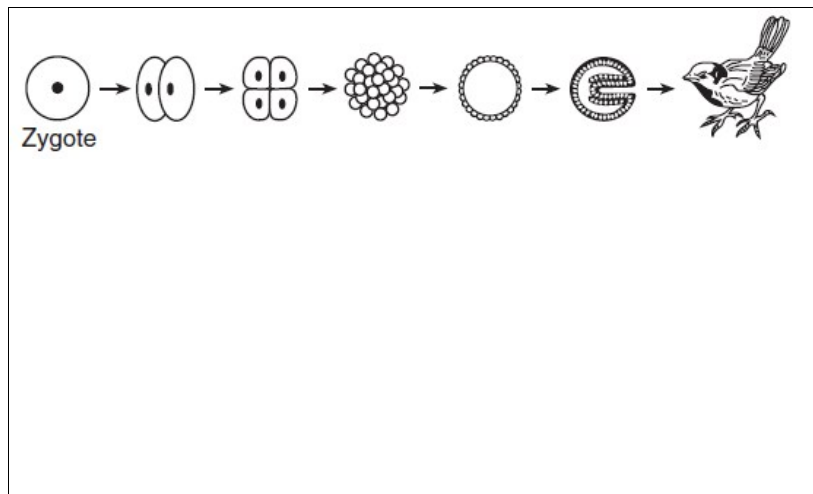
Data Base File Number: 509

Regents Date

Aug2006

24 8/16/2006 S4K4

Answer 4



embryonic development

332. The sequence of diagrams shown represent some events in a reproductive process. To regulate similar events in human reproduction, what adaptations are required?

- (1) the presence of genes and chemicals in each cell in stages 1 to 7
- (2) an increase in the number of genes in each cell in stages 3 to 5
- (3) the removal of all enzymes from the cells in stage 7
- (4) the elimination of mutations from cells after stage 5

Data Base
File Number:

735

Regents Date

June 2003

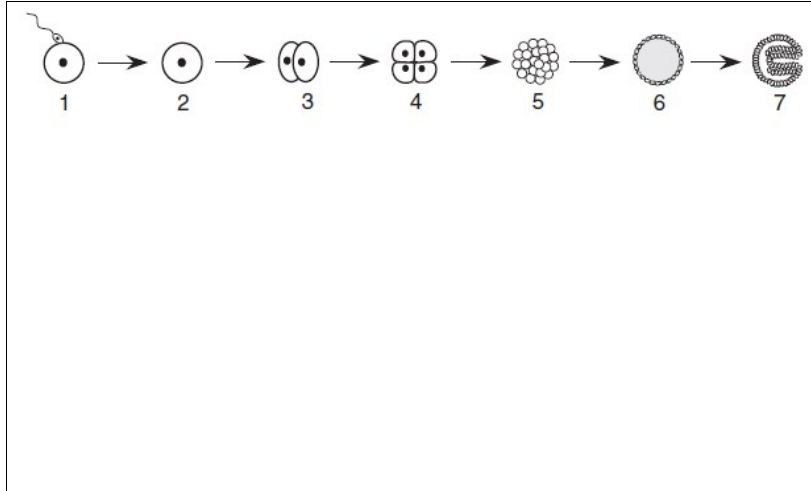
18

6/19/2003

S4K4

Answer

1



energy pyramid

333. Which statement about the pyramid of energy shown is correct?

- (1) The amount of energy needed to sustain the pyramid enters at level D.
- (2) The total amount of energy decreases with each successive feeding level from D to A.
- (3) The amount of energy is identical in each level of the pyramid.
- (4) The total amount of energy at level D is less than the total amount of energy at level B.

Data Base
File Number:

537

Regents Date

Jan 2005

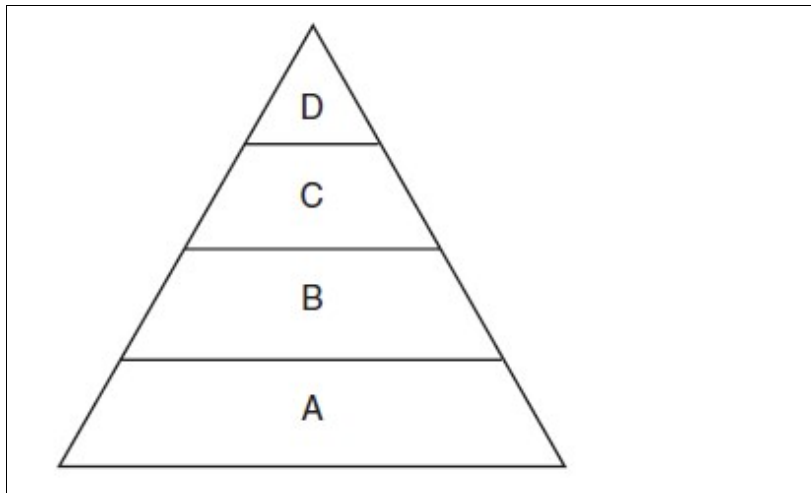
23

1/28/2005

S4K6

Answer

4



energy pyramid

334. An energy pyramid has four levels numbered from TOP to BOTTOM as levels 1,2,3,4. Examine the diagram shown and determine which graph represents the relative energy content of the pyramid

- (1) 1
- (2) 2
- (3) 3
- (4) 4

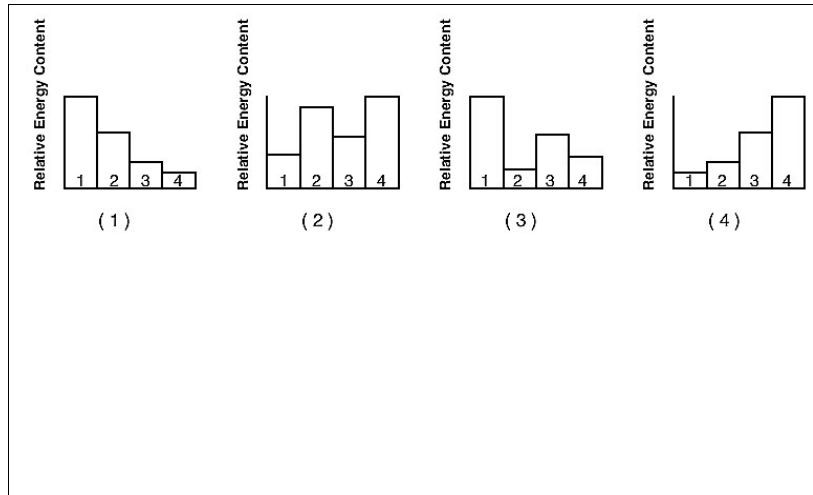
Data Base File Number: 104

Regents Date

June2008

39 6/24/2008 S1K3

Answer 4



energy pyramid

335. The diagram shown represents a typical energy pyramid. Which level in the pyramid includes autotrophs?

- (1) A
- (2) B
- (3) C
- (4) D

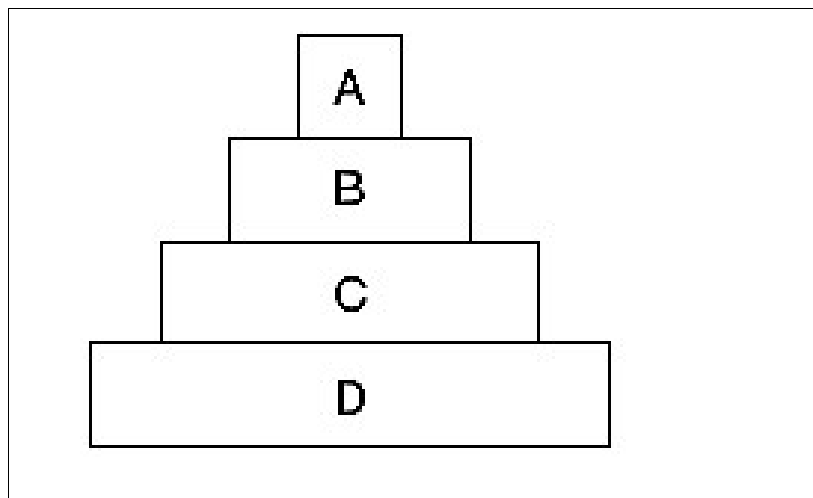
Data Base File Number: 148

Regents Date

Jan2009

7 1/27/2009 S4K1

Answer 4



energy pyramid

336. Base your answer to this question on the energy pyramid shown and on your knowledge of biology. Energy from nutrients is transferred to ATP in

- (1) level A, only
(2) levels B and C, only
(3) levels B, C, and D, only
(4) levels A, B, C, and D

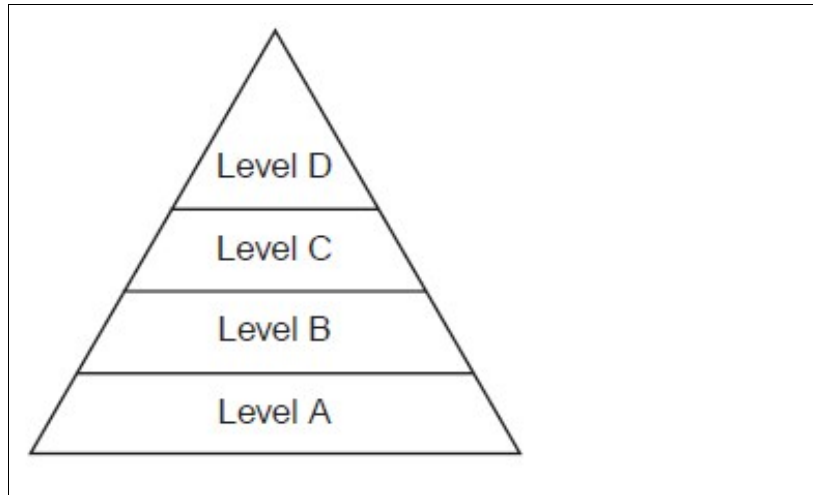
Data Base File Number: 837

Regents Date

Jan2002

46 1/23/2002 S4K6

Answer 4



energy pyramid

337. Which diagram best represents the organisms arranged as an energy pyramid?

- (1) 1
(2) 2
(3) 3
(4) 4

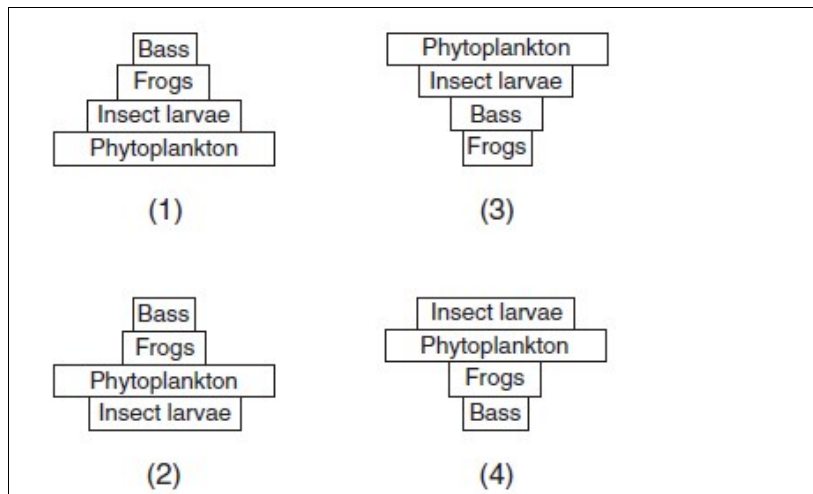
Data Base File Number: 464

Regents Date

Jan2006

34 1/27/2006 S4K6

Answer 1



energy pyramid

338. The diagram shown represents a pyramid of energy that includes both producers and consumers. The greatest amount of available energy is found at level

(1) 1

(3) 3

(2) 2

(4) 4

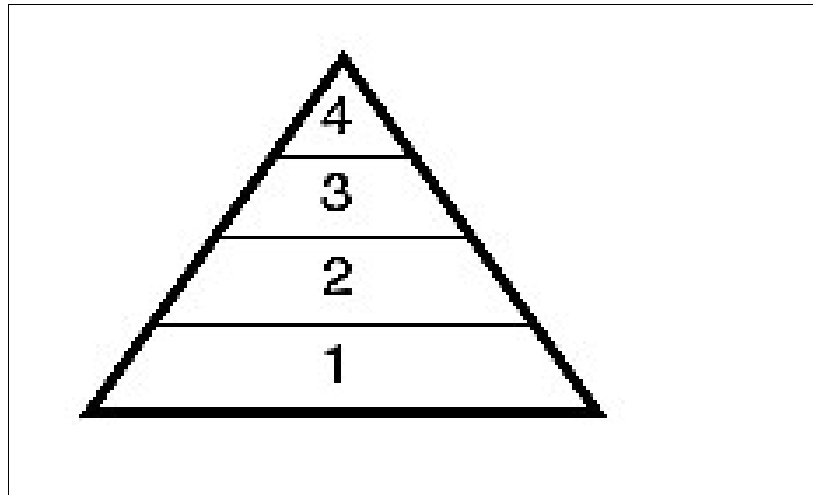
Data Base File Number: 55

Regents Date

Jan2007

34 1/26/2007 S4K6

Answer 1



energy pyramid

339. Base your answers to this questions on the diagram shown that represents an energy pyramid in a meadow ecosystem and on your knowledge of biology. Which species would have the largest amount of available energy in this ecosystem?

(1) A

(3) C

(2) B

(4) E

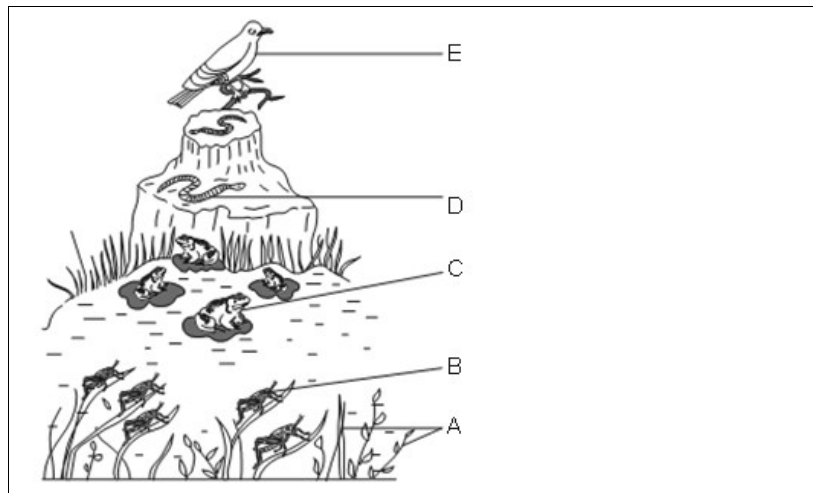
Data Base File Number: 194

Regents Date

June2009

38 6/18/2009 S4K6

Answer 1



energy pyramid

340. The diagram shown represents an energy pyramid. At each successive level from A to D, the amount of available energy
- (1) increases, only
 - (2) decreases, only
 - (3) increases, then decreases
 - (4) remains the same

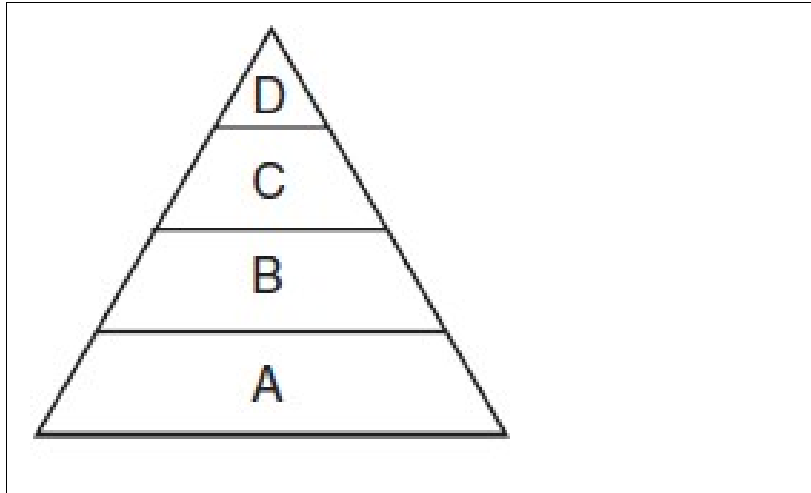
Data Base File Number: 584

Regents Date

Aug2005

23 8/16/2005 S4K6

Answer 2



energy pyramid

341. Which process provides the initial energy to support all the levels in the energy pyramid as shown in the diagram?
- (1) circulation
 - (2) photosynthesis
 - (3) active transport
 - (4) digestion

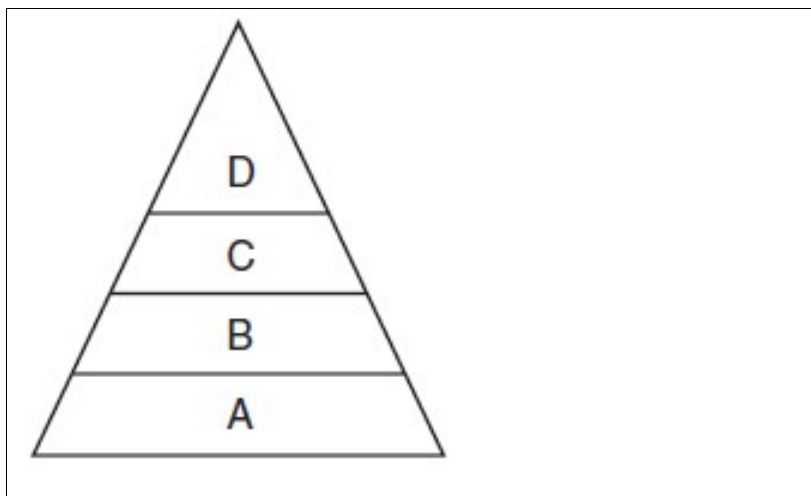
Data Base File Number: 557

Regents Date

June2005

19 6/22/2005 S4K5

Answer 2



energy pyramid

342. Which level of the energy pyramid shown would contain the green plant species of a marsh?

- (1) A
- (2) B
- (3) C
- (4) D

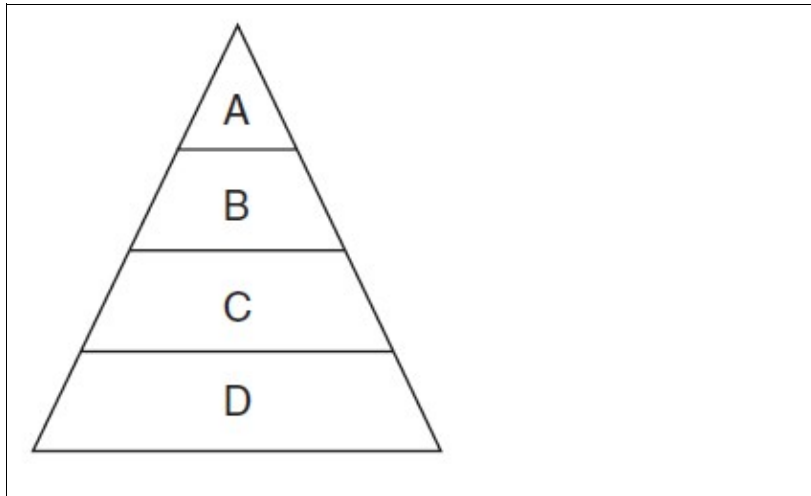
Data Base File Number: 526

Regents Date

Aug2006

55 8/16/2006 S4K6

Answer 4



energy pyramid

343. The diagram shown represents an energy pyramid. Which organisms would most likely be found at level A?

- (1) birds
- (2) worms
- (3) mammals
- (4) algae

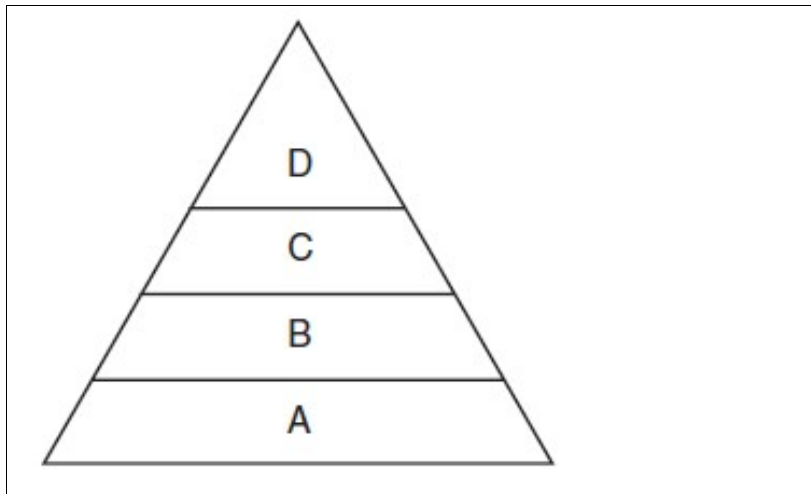
Data Base File Number: 810

Regents Date

June2002

30 6/19/2002 S4K6

Answer 4



energy pyramid

344. An energy pyramid is represented in the diagram shown. How much energy would be available to the organisms in level C?
- (1) all of the energy in level A, plus the energy in level B
 - (2) all of the energy in level A, minus the energy in level B
 - (3) a percentage of the energy contained in level B
 - (4) a percentage of the energy synthesized in level B and level D

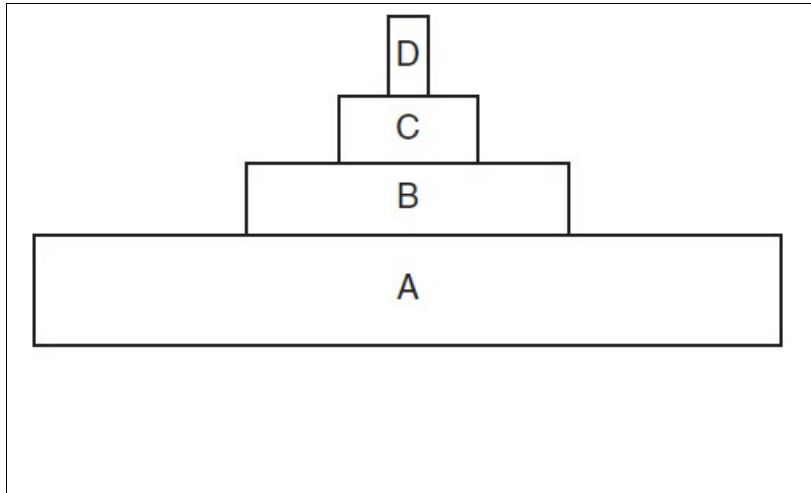
Data Base File Number: 511

Regents Date

Aug2006

26 8/16/2006 S4K6

Answer 3



energy pyramid

345. Base your answer to this question on the diagram shown and on your knowledge of biology. The base of an energy pyramid for this ecosystem would include a
- (1) frog
 - (2) snake
 - (3) plant
 - (4) grasshopper

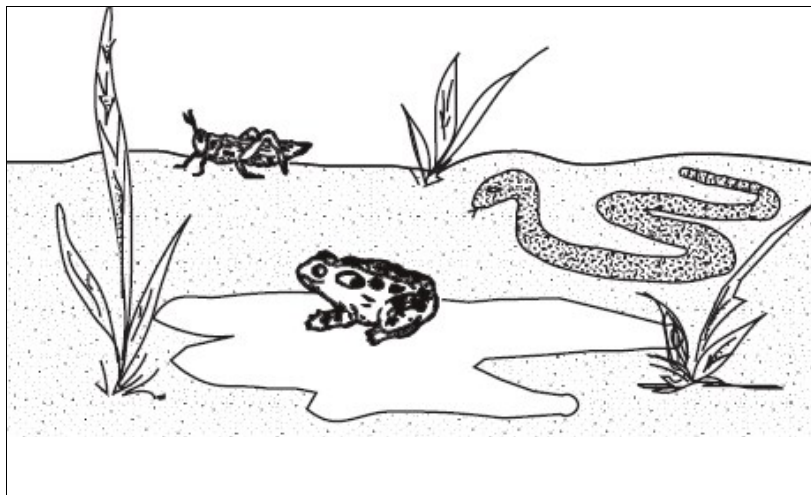
Data Base File Number: 787

Regents Date

Aug2002

41 8/13/2002 S4K6

Answer 3



energy pyramid

346. Four levels of an energy pyramid are shown in the diagram. Which statement about this energy pyramid is correct?

- (1) Organisms in level 4 receive their energy directly from the Sun.
- (2) Organisms in level 2 are carnivores.
- (3) Organisms in level 2 receive their energy from level 3.
- (4) Organisms in level 1 are autotrophic.

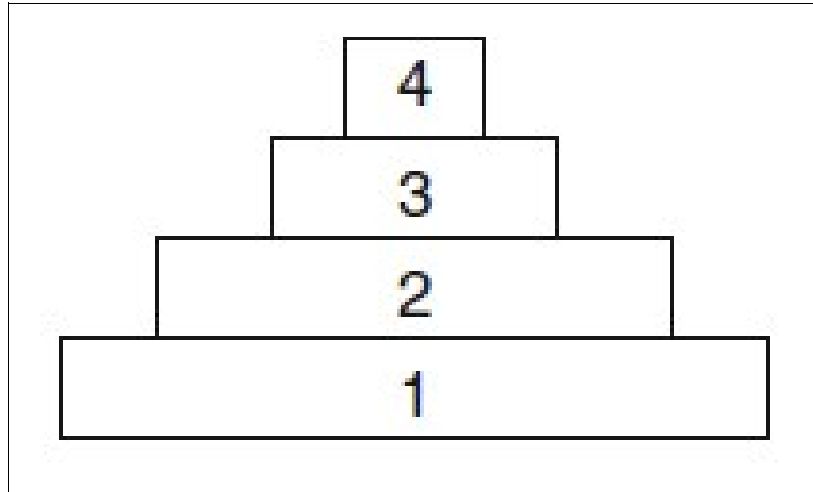
Data Base File Number: 610

Regents Date

Jan2013

26 1/23/2013 S4K6

Answer 4



energy pyramid

347. Base your answers to this question on the energy pyramid shown and on your knowledge of biology. Which level includes organisms that receive their energy from level B?

- (1) A
- (2) B
- (3) C
- (4) D

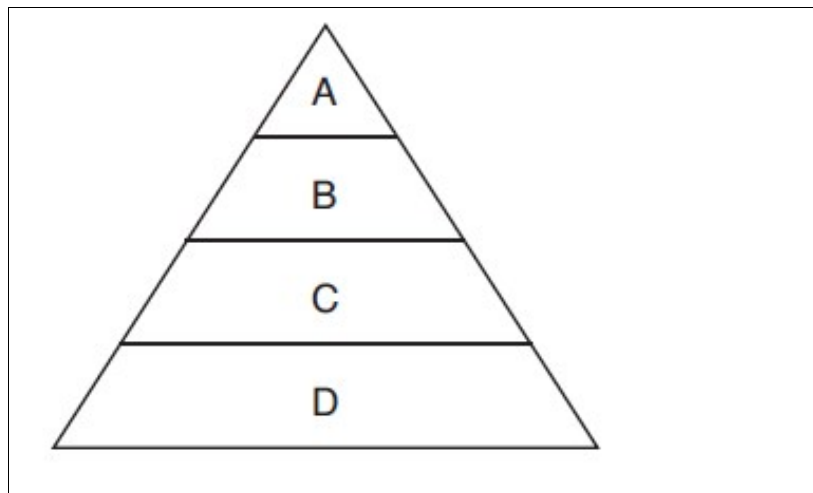
Data Base File Number: 263

Regents Date

June2010

35 6/16/2010 S4K2

Answer 1



energy pyramid

348. An energy pyramid is shown in the diagram. Which of the following organisms could be found at level "X"?
- (1) hawks and eagles
 - (2) trees and grass
 - (3) snakes and foxes
 - (4) mice and rats

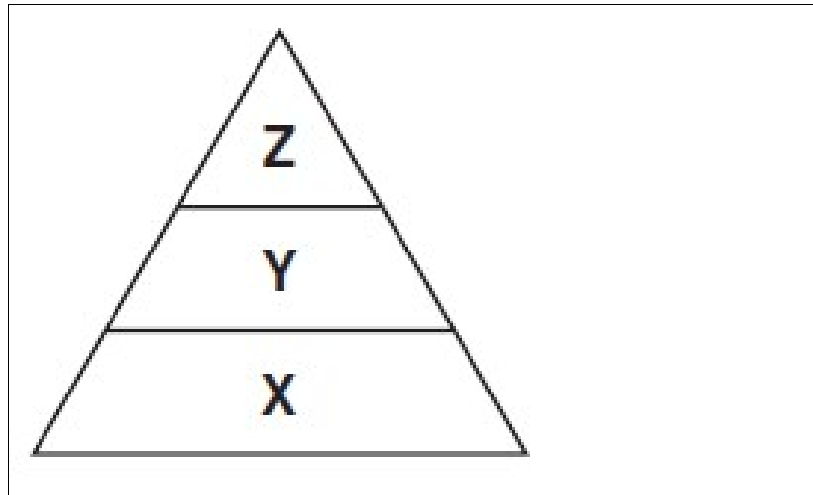
Data Base File Number: 678

Regents Date

June 2004

49 6/18/2004 S4K6

Answer 2



energy pyramid

349. Base your answer to this question on the diagram given and on your knowledge of biology. The diagram represents an energy pyramid for an ecosystem in the Australian outback. Dingos are an introduced species in Australia that are outcompeting many native species. Which of the current environmental problems most likely resulted directly from the introduction of dingos to Australia?
- (1) vanishing of kangaroo grasses
 - (2) near extinction of wallabies
 - (3) forests overrun with koalas
 - (4) increase in the kookaburra population

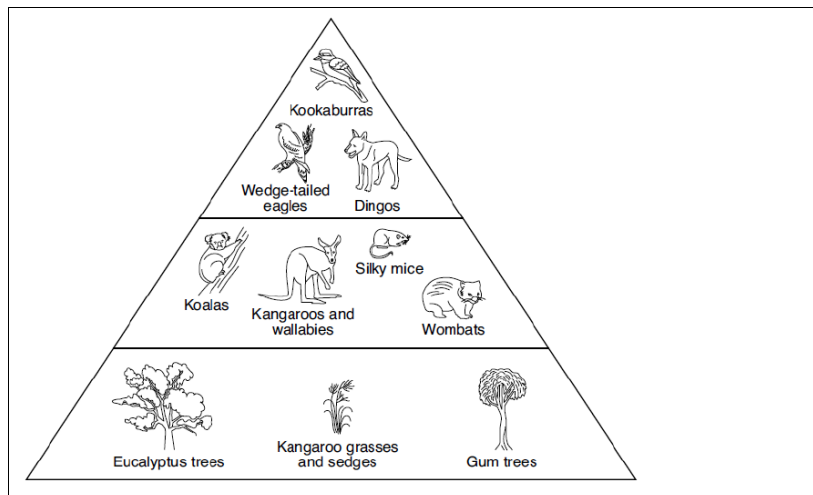
Data Base File Number: 420

Regents Date

June 2012

43 6/19/2012 S4K7

Answer 2



energy pyramid

350. An energy pyramid is represented in the diagram shown. The energy for use by organisms in level A originally comes from

- (1) producers
- (2) the sun
- (3) level B
- (4) level D

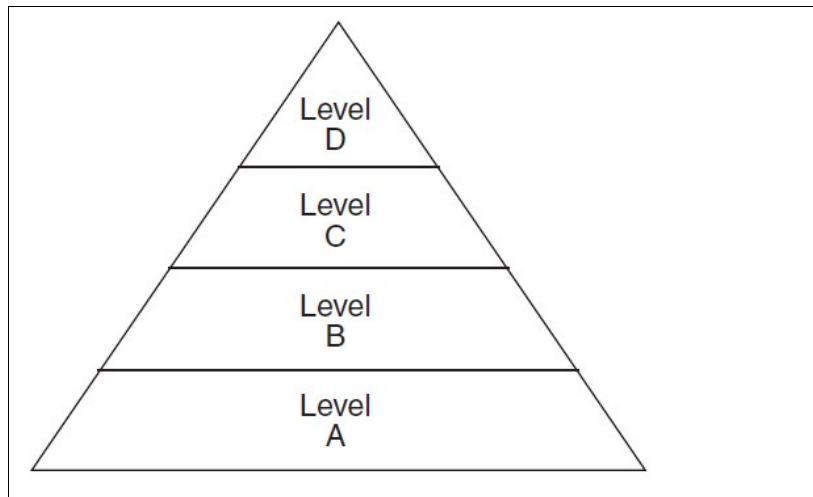
Data Base File Number: 235

Regents Date

Jan2010

27 1/26/2010 S4K5

Answer 2



energy pyramid

351. Base your answer to this question on the diagram given and on your knowledge of biology. The diagram represents an energy pyramid for an ecosystem in the Australian outback. Which two organisms could have a predator-prey relationship?

- (1) kookaburras and gum trees
- (2) kangaroos and silky mice
- (3) dingos and kangaroo grasses
- (4) wedge-tailed eagles and wombats

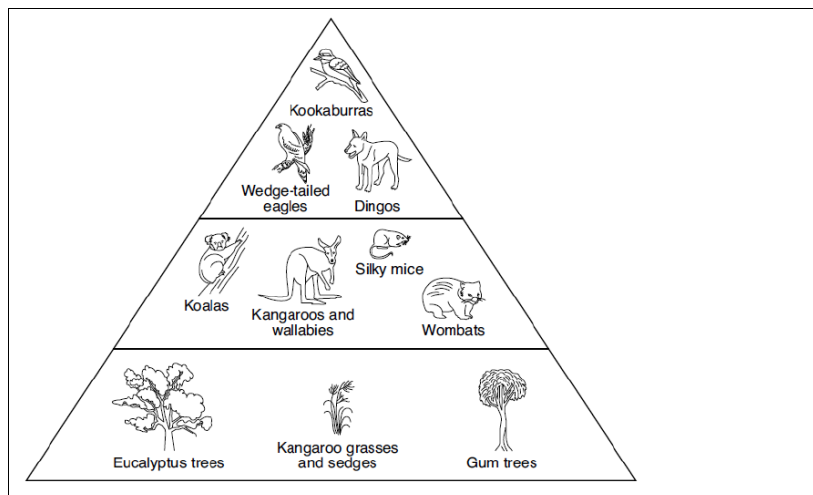
Data Base File Number: 419

Regents Date

June2012

42 6/19/2012 S4K6

Answer 4



energy transfer

352. NOTE-- ROTATE the test paper to the LEFT to properly view the diagram. -- Four students each drew an illustration to show the flow of energy in a field ecosystem. Which illustration is MOST accurate?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

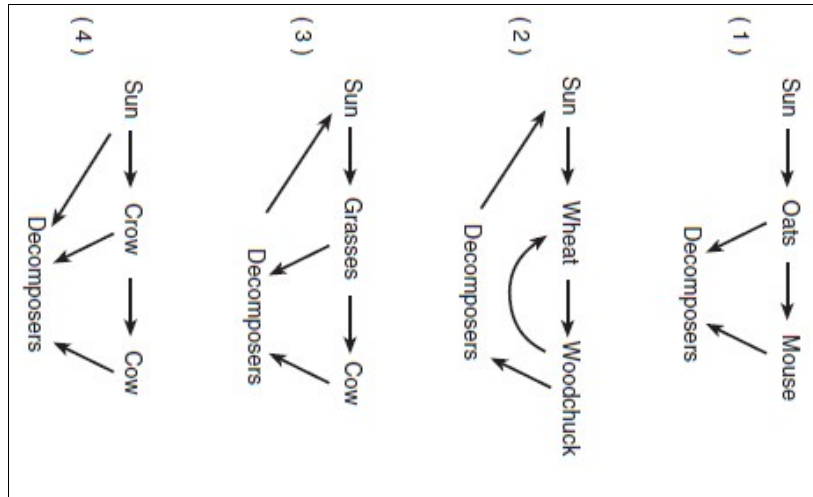
Data Base File Number: 508

Regents Date

Aug2006

22 8/16/2006 S4K6

Answer 1



energy transfer

353. Which sequence best represents the flow of energy in the cartoon as shown?

- (1) prey → predator
- (2) host → parasite
- (3) producer → herbivore
- (4) autotroph → carnivore

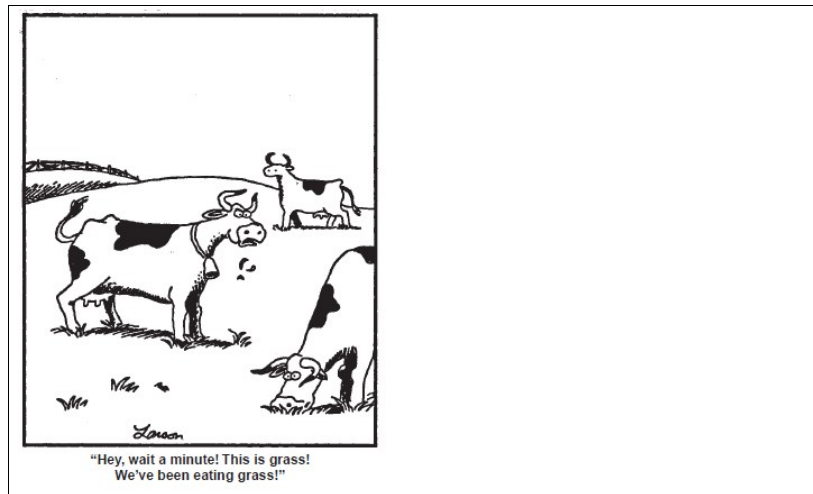
Data Base File Number: 834

Regents Date

Jan2002

30 1/23/2002 S4K6

Answer 3



energy transfer

354. The diagram shown at the LEFT represents events involved as energy is ultimately released from food. Which row in the table shown at the RIGHT best represents the chain of Xs and letters A and B in the diagram?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

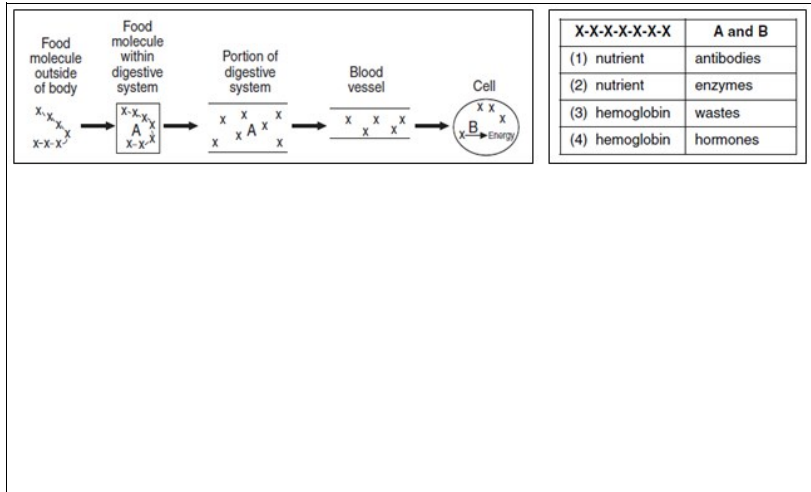
Data Base File Number: 706

Regents Date

Jan2003

10 1/30/2003 S4K1

Answer 2



energy transfer

355. The flow of energy through an ecosystem involves many energy transfers. The diagram shown summarizes the transfer of energy that eventually powers muscle activity. The process of cellular respiration is represented by

- (1) arrow A, only
- (2) arrow B, only
- (3) arrow C, only
- (4) arrows A, B, and C

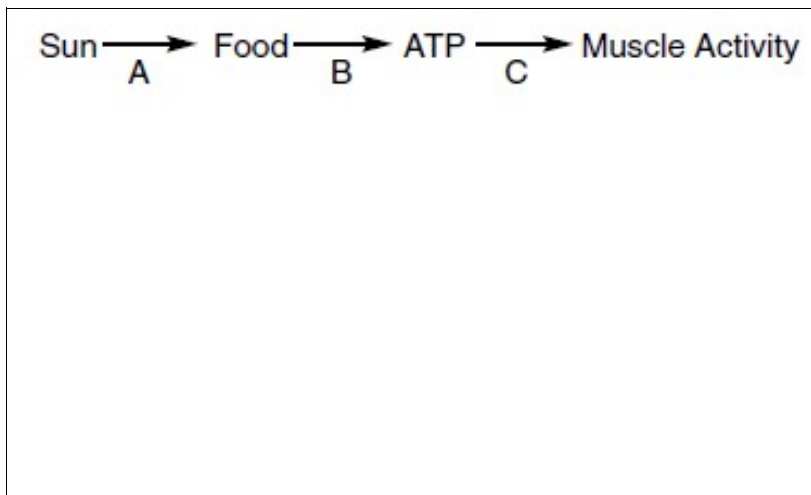
Data Base File Number: 715

Regents Date

Jan2003

24 1/30/2003 S4K5

Answer 2



energy transfer

356. Arrows A, B, and C in the diagram shown represent the processes necessary to make the energy stored in food available for muscle activity. The correct sequence of processes represented by A, B, and C is

- (1) diffusion → synthesis → active transport (3) digestion → excretion → cellular respiration
(2) digestion → diffusion → cellular respiration (4) synthesis → active transport → excretion

Data Base File Number: 666

Regents Date

June 2004

21 6/18/2004 S4K5

Answer 2

Food \xrightarrow{A} Simpler molecules \xrightarrow{B} Mitochondria \xrightarrow{C} ATP in muscle cells

energy transfer

357. Base your answer to this question on the summary equations of two processes as shown and on your knowledge of biology. What is the original source of energy for the processes shown?

- (1) water (3) air
(2) soil (4) sun

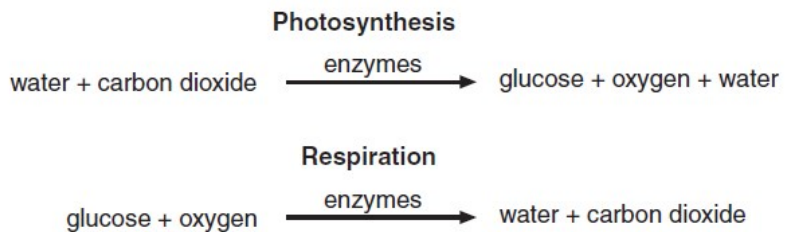
Data Base File Number: 800

Regents Date

Aug 2002

77 8/13/2002 S4K6

Answer 4



environment stability

358. The amounts of all the organisms present in four different aquariums are shown in the data tables. Which aquarium would be the most stable?

- (1) 1 (3) 3
 (2) 2 (4) 4

Data Base File Number: 240

Regents Date

Jan2010

39 1/26/2010 S4K6

Answer 1

Organism	Amount
aquatic plants	300 g
fish that eat plants	30 g
fish that eat fish	3 g
bacteria	.001 g

(1)

Organism	Amount
aquatic plants	.1 g
fish that eat plants	3 g
fish that eat fish	30 g
bacteria	300 g

(2)

Organism	Amount
aquatic plants	.1 g
fish that eat plants	3 g
fish that eat fish	30 g

(3)

Organism	Amount
aquatic plants	300 g
fish that eat plants	30 g
fish that eat fish	3 g

(4)

environmental factor

359. The graph shows how the level of carbon dioxide in the atmosphere has changed over the last 150,000 years. Which environmental factor has been most recently affected by these changes in carbon dioxide level?

- (1) light intensity (3) size of consumers
 (2) types of decomposers (4) atmospheric temperature

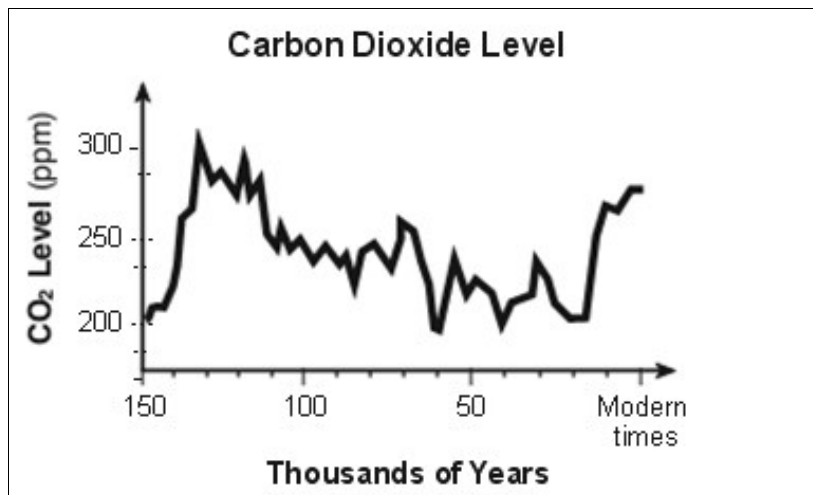
Data Base File Number: 186

Regents Date

June2009

29 6/18/2009 S4K7

Answer 4



environmental influence

360. Which concept does the cartoon shown illustrate?

- (1) Fish require certain environmental conditions for survival.
- (2) Fish can adapt to any environment.
- (3) Fish alter the ecosystems to improve their ability to survive.
- (4) Fish can survive abrupt climate changes.

Data Base File Number: 812

Regents Date

June2002

33 6/19/2002 S4K6

Answer 1



environmental influence

361. The data table shown summarizes the results of an investigation in which seeds from the same plant were grown under different conditions of temperature and relative humidity. Which conclusion can be drawn from the information in the data table?

- (1) Color in this species is determined by genes, only.
- (2) Many characteristics are not inherited.
- (3) Mutations occur only when plants are grown at low temperatures
- (4) There is an interaction between environment and heredity.

Data Base File Number: 844

Regents Date

June2001

10 6/15/2001 S1K3

Answer 4

Temperature: 20°C Relative Humidity: 20%		Temperature: 31°C Relative Humidity: 95%	
Genes Present in Cells of Organism	Appearance of Organism	Genes Present in Cells of Organism	Appearance of Organism
AA	red	AA	white
Aa	red	Aa	white
aa	white	aa	white

enzyme

362. Enzymes have an optimum temperature at which they work best. Temperatures above and below this optimum will decrease enzyme activity. Which graph best illustrates the effect of temperature on enzyme activity?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

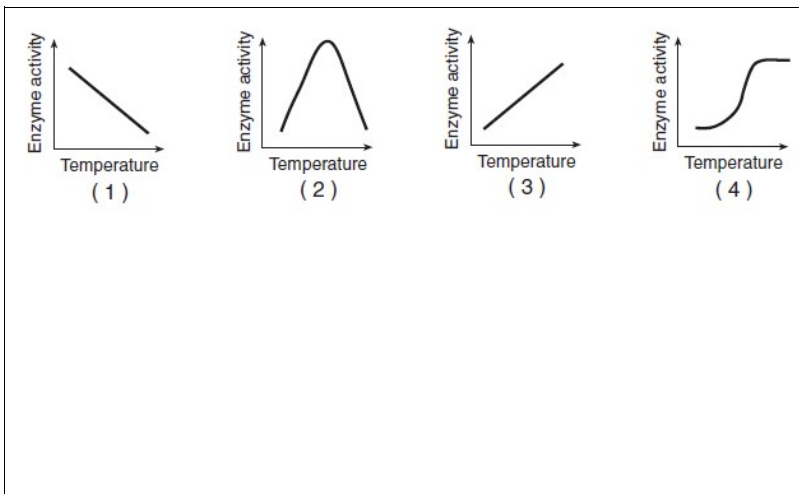
Data Base File Number: 692

Regents Date

Aug2004

35 8/17/2004 S4K5

Answer 2



enzyme

363. Base your answer to this question on the information given and on your knowledge of biology. A student has a sandwich for lunch. The bread contains starch molecules and various other molecules. After chewing and swallowing some of the sandwich, the starch moves along the digestive system and is digested. The sequence shown represents what takes place. Which molecules are used to digest the starch?

- (1) enzymes
- (2) simple sugars
- (3) monosaccharides
- (4) disaccharides

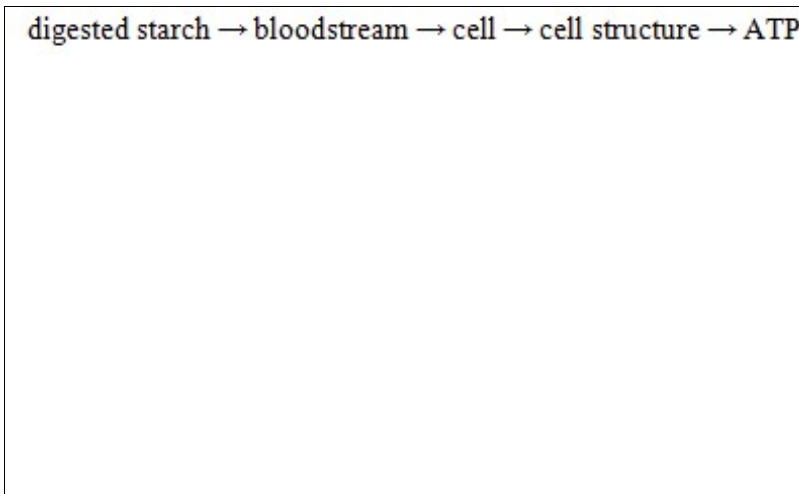
Data Base File Number: 930

Regents Date

Jan2014

56 1/27/2014 S4K1

Answer 1



enzyme

364. While the changing climate endangers some species, a little global warming suits many shallow-water squid just fine. Slightly higher ocean temperatures have been shown to boost the growth of these squid, whose digestive enzymes speed up when warm. Which graph most accurately shows the interaction between water temperature and digestive enzyme action in the shallow-water squid?

- (1) 1
- (2) 2
- (3) 3
- (4) 5

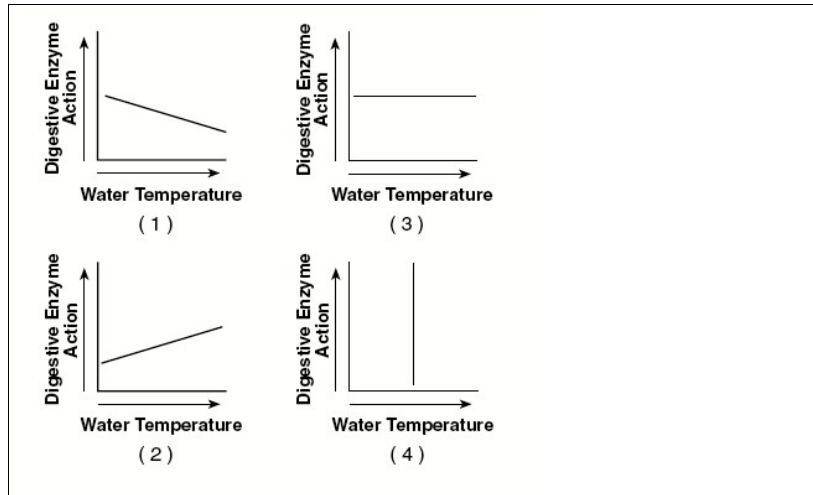
Data Base File Number: 164

Regents Date

Jan2009

48 1/27/2009 S4K5

Answer 2



enzyme

365. An incomplete graph is shown below (NO value for "Z"). What label could appropriately be used to replace letter Z on the axis?

- (1) date
- (2) oxygen level
- (3) temperature
- (4) carbon dioxide level

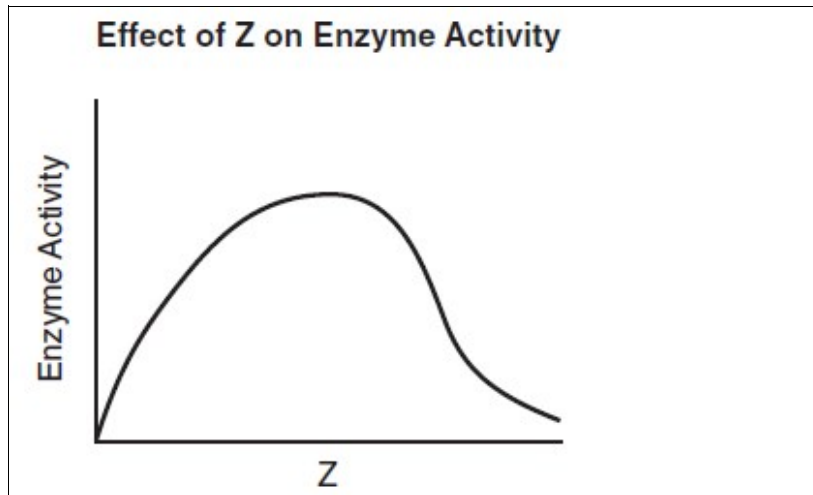
Data Base File Number: 680

Regents Date

June2004

53 6/18/2004 S4K6

Answer 3



enzyme

366. Base your answer to this question on the information given and on your knowledge of biology. A student completed a series of experiments and found that a protein digesting enzyme (intestinal protease) functions best when the pH is 8.0 and the temperature is 37°C. During an experiment, the student used some of the procedures listed. Which procedure would have the least effect on the rate of protein digestion?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 841

Regents Date

Jan2002

57 1/23/2002 S4K5

Answer 2

Procedures

- (A) Adding more protease
- (B) Adding more protein
- (C) Decreasing the pH to 6.0
- (D) Increasing the temperature to 45°C
- (E) Decreasing the amount of light

enzyme

367. Base your answers to this question on the diagram shown, which represents stages in the digestion of a starch, and on your knowledge of biology. The structure labeled X most likely represents

- (1) an antibody
- (2) a receptor molecule
- (3) an enzyme
- (4) a hormone

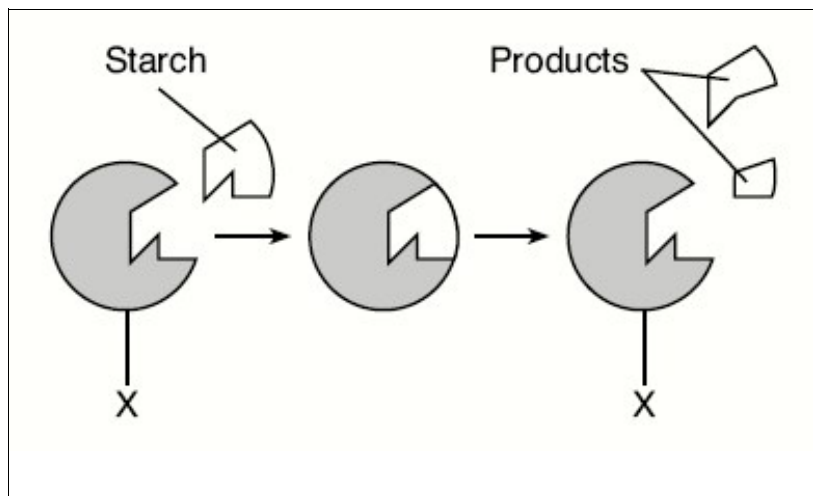
Data Base File Number: 132

Regents Date

Aug2008

36 8/13/2008 S4K5

Answer 3



enzyme

368. The graph shown illustrates the relative amounts of product formed by the action of an enzyme in a solution with a pH of 6 at seven different temperatures. Which statement best expresses the amount of product that will be formed at each temperature if the experiment is repeated at a pH of 4?
- (1) The amount of product formed will be equal to that produced at pH 6.
 - (2) The amount of product formed will be greater than that produced at pH 6
 - (3) The amount of product formed will be less than that produced at pH 6.
 - (4) The amount of product formed can not be accurately predicted.

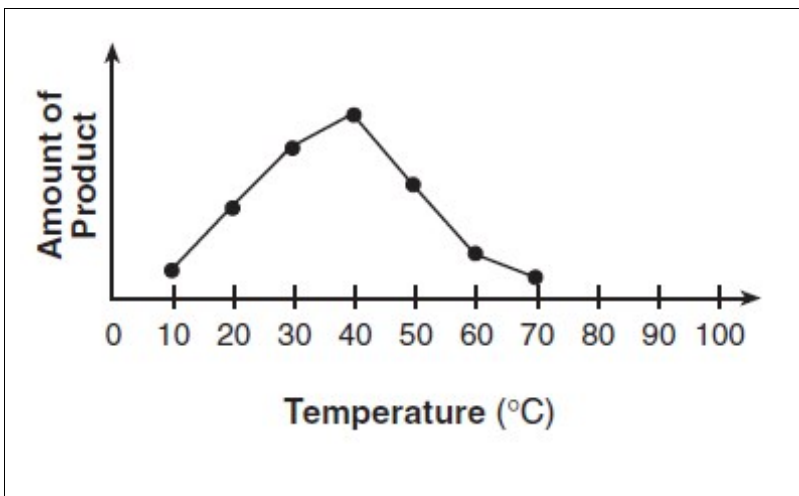
Data Base File Number: 453

Regents Date

Jan2006

5 1/27/2006 S4K3

Answer 4



enzyme

369. Base your answer to this question on the information shown in the chart and on your knowledge of biology. Cytochrome c is an enzyme located in the mitochondria of many types of cells. The number of differences in the amino acid sequences of Cytochrome c from different species are compared to human Cytochrome c in the data table shown. Of the organisms listed below, which one has a DNA code for Cytochrome c that is most similar to that of a human?
- (1) tuna
 - (2) chicken
 - (3) moth
 - (4) dog

Data Base File Number: 84

Regents Date

Jan2008

68 1/25/2008 LABS

Answer 4

Organism	Number of Differences in Cytochrome c Compared to Humans
tuna	21
mold	48
moth	31
dog	11
horse	12
chicken	13
monkey	1

enzyme

370. Base your answer to this question on the information given and on your knowledge of biology. Hydrogen peroxide is a toxic substance produced in an organism as a result of certain metabolic processes. Catalase, a biological catalyst produced by cells, speeds the breakdown of hydrogen peroxide into less harmful substances. In an investigation, 2-gram pieces of liver (which contains catalase) were added to separate dishes. Each dish contained the same amount of a 3% solution of hydrogen peroxide, but at different temperatures. The relative activity of the catalase was determined. The results were recorded and are shown in the data table. What kind of organic substance is catalase?
- (1) enzyme (2) lipid (3) carbohydrate (4) amino acid

Data Base File Number: 224

Regents Date

Aug2009

47 8/13/2009 S1K3

Answer 1

The Effect of Temperature on Catalase Activity

Temperature (°C)	Relative Catalase Activity
20	17
25	22
30	33
35	43
40	37
45	24
50	12

enzyme / substrate

371. The graph shown represents data obtained from an experiment on starch digestion. Which statement best describes point A and point B on the graph?
- (1) The concentration of sugars is greater at point A than it is at point B. (2) The concentration of sugars is greater at point B than it is at point A. (3) The starch concentration is the same at point A as it is at point B. (4) The starch concentration is greater at point B than it is at point A.

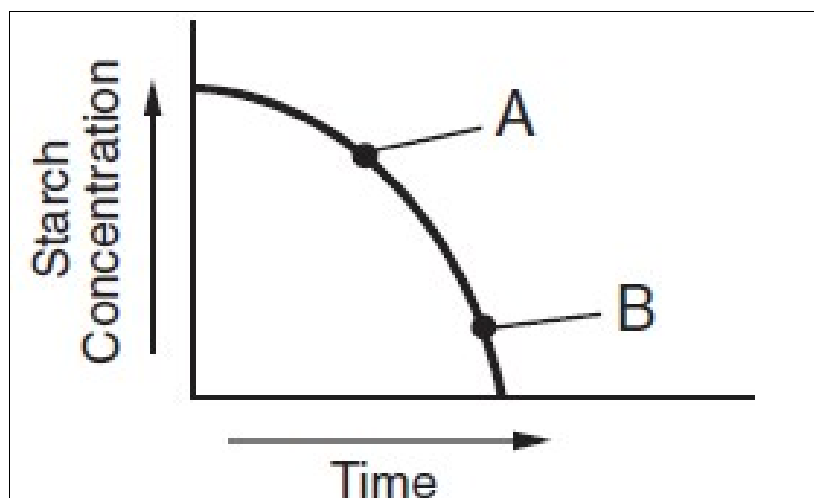
Data Base File Number: 754

Regents Date

Aug2003

5 8/13/2003 S1K3

Answer 2



enzyme / substrate

372. The graph shows the effect of temperature on the relative rate of action of enzyme X on a protein. Which change would NOT affect the relative rate of action of enzyme X?

- (1) the addition of cold water when the reaction is at 50°C
- (2) an increase in temperature from 70°C to 80°C
- (3) the removal of the protein when the reaction is at 30°C
- (4) a decrease in temperature from 40°C to 10°C

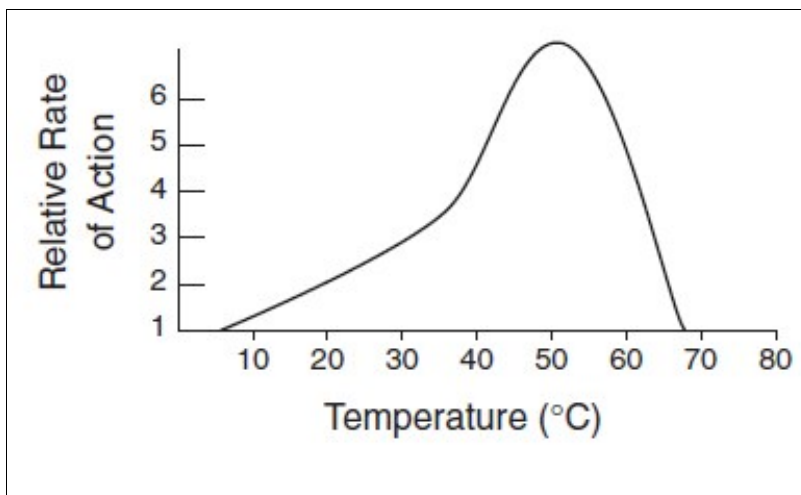
Data Base File Number: 536

Regents Date

Jan2005

21 1/28/2005 S4K5

Answer 2



enzyme / substrate

373. Base your answer to this question on the information given and on your knowledge of biology. The graph shows the effect of substrate concentration on the action of enzyme X. This enzyme is functioning at its optimal temperature, 36°C, and at its optimal pH, 5.5. When the substrate concentration increases from 0.4% to 0.5%, the rate of the reaction

- (1) decreases
- (2) increases
- (3) remains the same
- (4) increases, then decreases

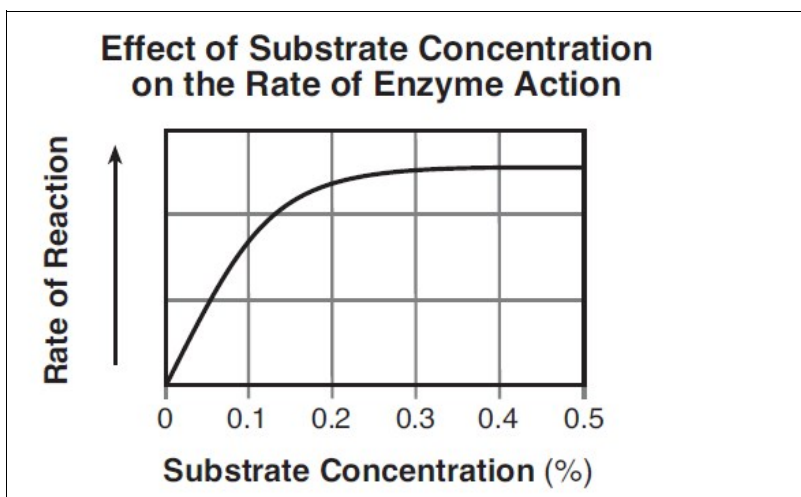
Data Base File Number: 326

Regents Date

Jan2011

54 1/25/2011 S4K1

Answer 3



enzyme / substrate

374. An enzyme and four different molecules are shown in the diagram. The enzyme would most likely affect reactions involving

- (1) molecule A, only
- (2) molecule C, only
- (3) molecules B and D
- (4) molecules A and C

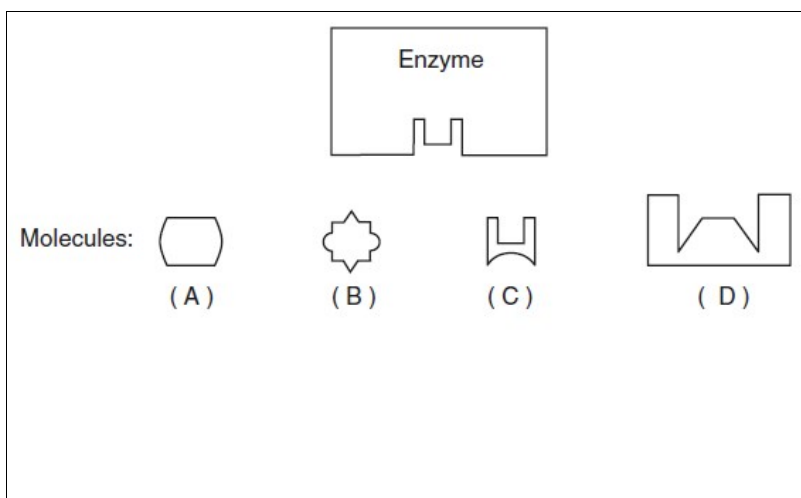
Data Base File Number: 724

Regents Date

Jan2003

62 1/30/2003 S4K5

Answer 2



enzyme / substrate

375. The diagram shown represents stages in the digestion of an organic compound. Why would substance X not be likely to digest a different organic compound?

- (1) Substance X can only be used once.
- (2) The active site of substance X does not fit a different substrate.
- (3) Substance X cannot be reproduced.
- (4) Substance X is unstable.

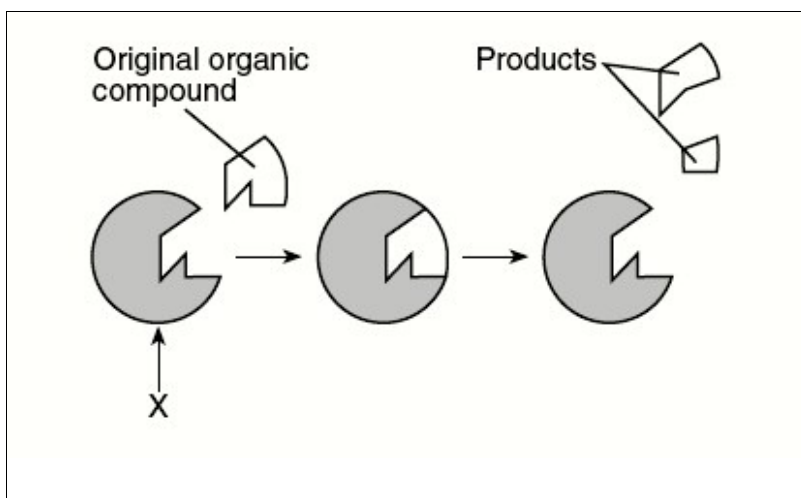
Data Base File Number: 163

Regents Date

Jan2009

44 1/27/2009 S4K5

Answer 2



enzyme / substrate

376. Base your answer to this question on the diagram shown that represents a human enzyme and four types of molecules present in a solution in a flask. Which molecule would most likely react with the enzyme?

- (1) A
- (2) B
- (3) C
- (4) D

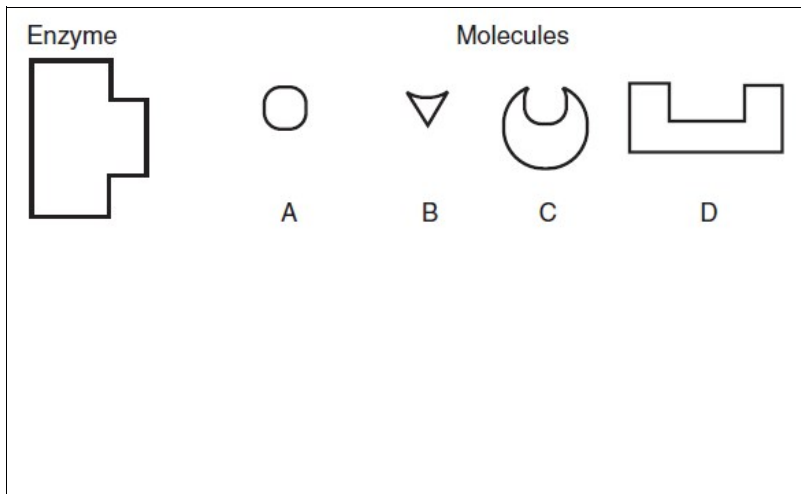
Data Base File Number: 796

Regents Date

Aug2002

66 8/13/2002 S4K5

Answer 4



enzyme / substrate

377. The diagram shown illustrates a biochemical process that occurs in organisms. The substance labeled "catalyst" is also known as

- (1) a hormone
- (2) an enzyme
- (3) an antibody
- (4) an inorganic compound

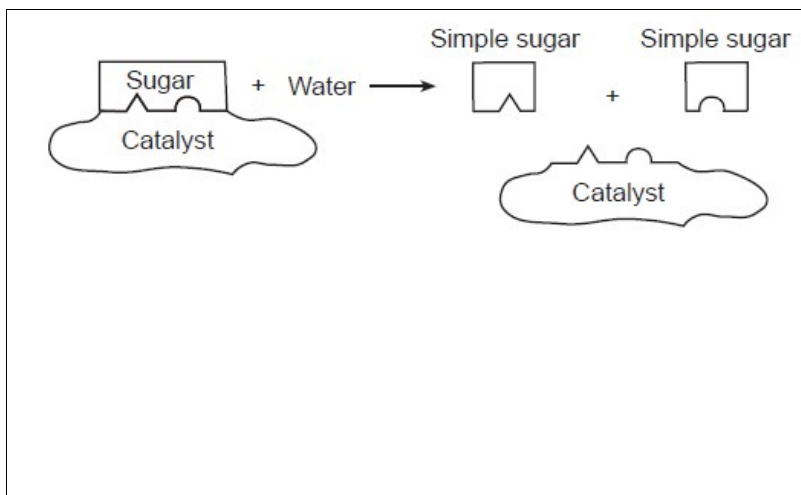
Data Base File Number: 847

Regents Date

June2001

22 6/15/2001 S4K5

Answer 2



enzyme activity / pH

378. Base your answer to this question on the graph shown and on your knowledge of biology. Neither enzyme works at a pH of

- (1) 1 (3) 3
(2) 5 (4) 13

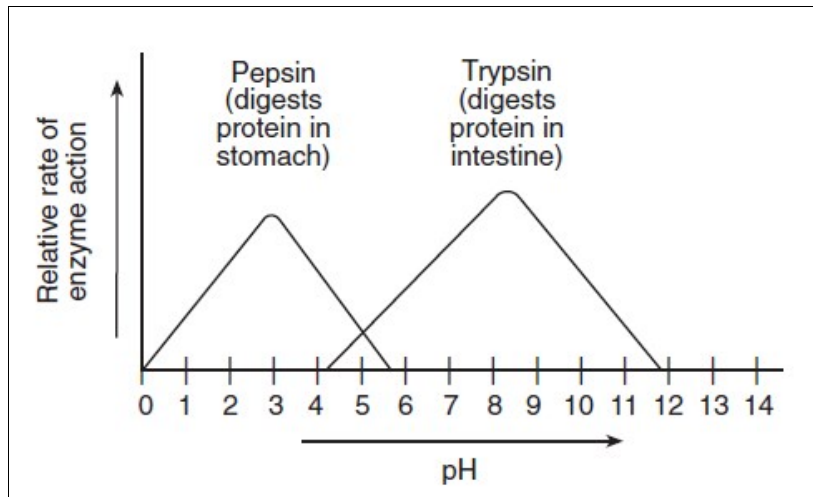
Data Base File Number: 648

Regents Date

Jan2004

41 1/29/2004 S4K5

Answer 4



enzyme activity / pH

379. Base your answer to this question on the graph shown and on your knowledge of biology. Pepsin works best in which type of environment?

- (1) acidic, only (3) neutral
(2) basic, only (4) sometimes acidic, sometimes basic

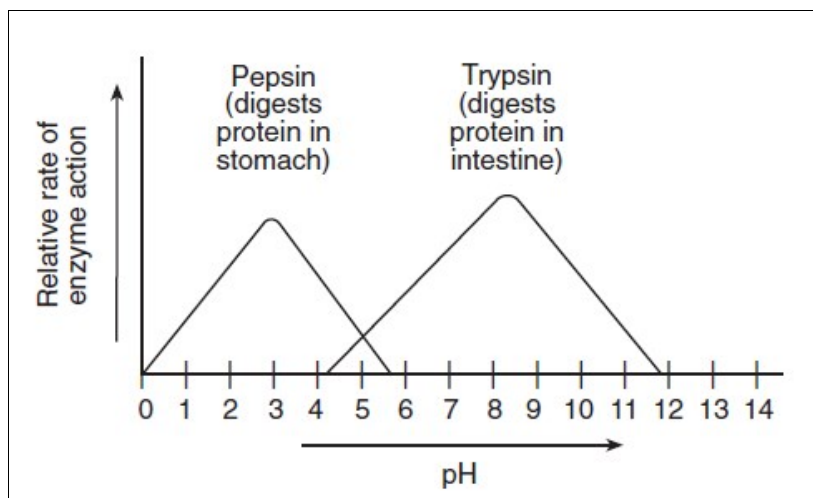
Data Base File Number: 647

Regents Date

Jan2004

40 1/29/2004 S4K5

Answer 1



enzyme activity / pH

380. The pH of the internal environment of lysosomes (organelles that contain digestive enzymes) is approximately 4.5, while the pH of the surrounding cytoplasm is approximately 7. The average pH of the human stomach during digestion is approximately 2.5, while the average pH of the small intestine during digestion is about 8. The graph shows how pH affects the enzyme activity of four different enzymes, A, B, C, and D. Which enzyme functions best in a pH environment most similar to that of human stomach enzymes?

- (1) A (3) C
(2) B (4) D

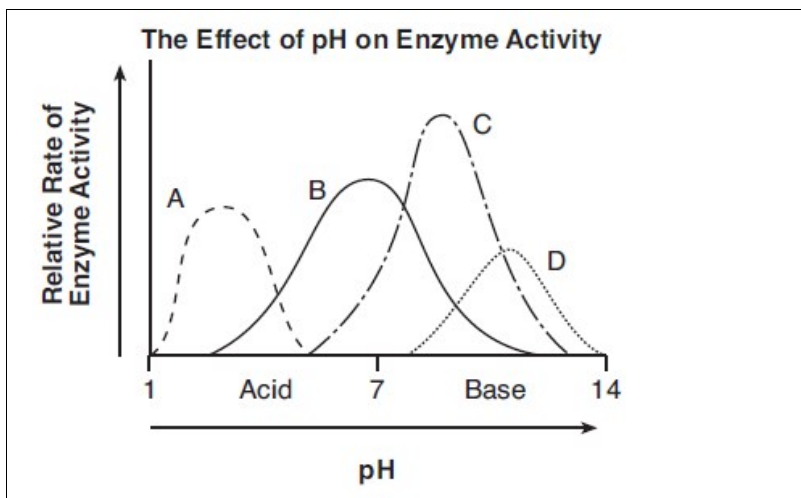
Data Base File Number: 909

Regents Date

Aug2013

37 8/14/2013 S4K5

Answer 1



enzyme activity / pH

381. The table shown lists enzymes that function in different locations in the human body, and the temperature and pH ranges of these locations. Different enzymes are secreted in each of the three locations. Ptyalin digests carbohydrates. Pepsin and trypsin both digest proteins. Use the data in the chart and your knowledge of biology to answer this question. What will most likely happen to the activity of pepsin after it moves with the food from the stomach to the small intestine?

- (1) Pepsin will either stop functioning or slow down. (3) Pepsin activity will increase.
(2) Pepsin will continue to function with the same activity as in the stomach. (4) Pepsin will be destroyed.

Data Base File Number: 296

Regents Date

Aug2010

57 8/18/2010 S4K5

Answer 1

Enzyme	Location	Temperature (°C)	pH
ptyalin	mouth	36.7–37.0	6.5–7.0
pepsin	stomach	37.3–37.6	1.0–3.0
trypsin	small intestine	37.3–37.6	7.5–9.0

enzyme activity / pH

382. The word equation shown represents a chemical reaction that occurs in humans. What data should be collected to support the hypothesis that enzyme C works best in an environment that is slightly basic?

- (1) the amino acid sequence of enzyme C
- (2) the amount of substance W produced in five minutes at various pH levels
- (3) the shapes of substances X and Y after the reaction occurs
- (4) the temperature before the reaction occurs

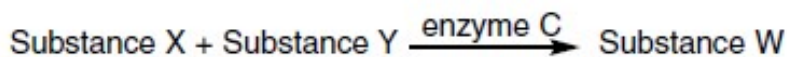
Data Base File Number: 752

Regents Date

Aug2003

3 8/13/2003 S1K2

Answer 2



enzyme activity / pH

383. The effect of pH on a certain enzyme is shown in the graph. At what pH would the enzyme be most effective?

- (1) above 10
- (2) between 8 and 10
- (3) between 5 and 7
- (4) below 5

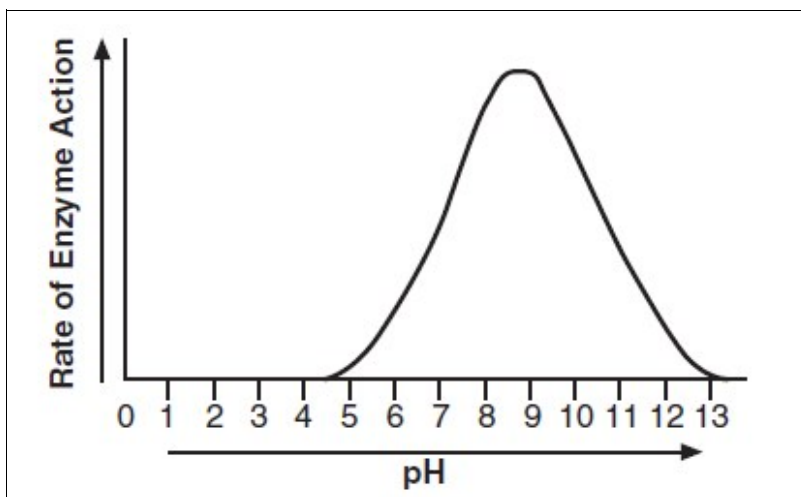
Data Base File Number: 814

Regents Date

June2002

37 6/19/2002 S4K5

Answer 2



enzyme reaction

384. The diagram shown represents a model of a biological process that occurs in humans at normal body temperature, 37°C. Increasing body temperature to 40°C would interfere most directly with the rate of function of structure

- (1) A
- (2) B
- (3) C
- (4) D

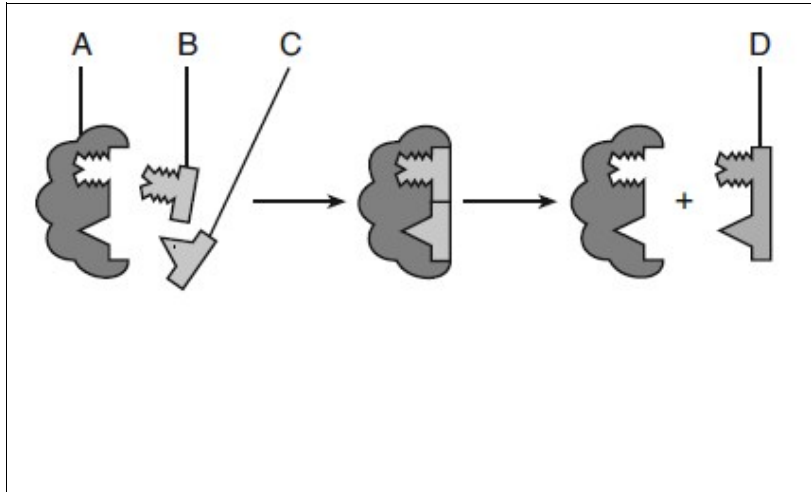
Data Base File Number: 414

Regents Date

June 2012

37 6/19/2012 S4K5

Answer 1



enzyme structure

385. Base your answer to this question on the diagram shown, which represents a chemical reaction that occurs in the human body, and on your knowledge of biology. Substances X and Y are examples of which kind of molecule?

- (1) simple sugar
- (2) amino acid
- (3) fat
- (4) hormone

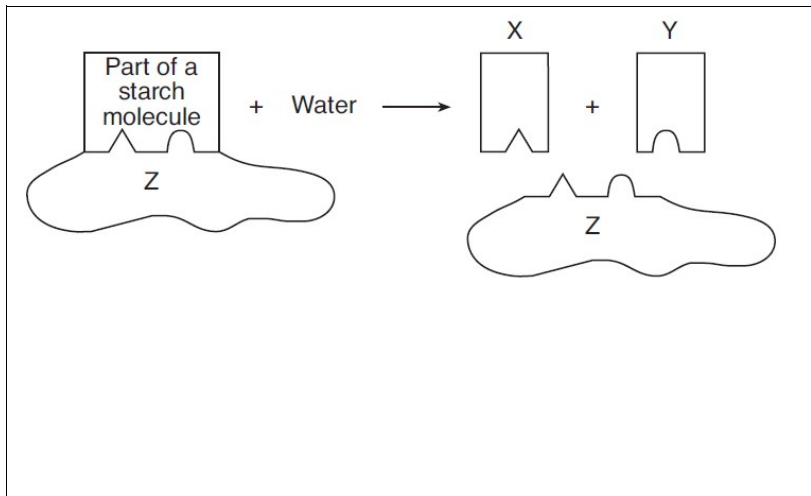
Data Base File Number: 223

Regents Date

Aug 2009

42 8/13/2009 S4K5

Answer 1



evolution

386. The evolutionary pathways of five species are represented in the diagram shown. Which statement is supported by the diagram?

- (1) Species C is the ancestor of species B.
- (2) Species D and E evolved from species B.
- (3) Species X evolved later than species D but before species B.
- (4) Both species C and species D are related to species X.

Data Base File Number:

5

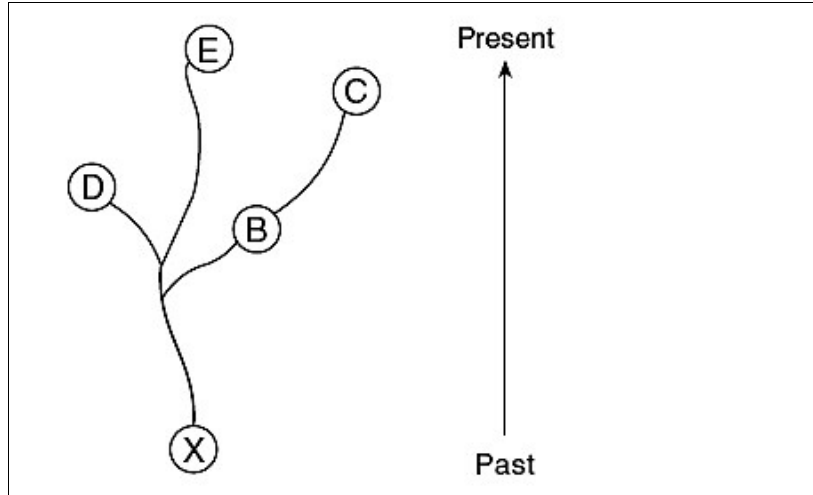
Regents Date

Aug2007

18 8/16/2007 S4K3

Answer

4



evolution

387. The kit fox and red fox species are closely related. The kit fox lives in the desert, while the red fox inhabits forests. Ear size and fur color are two differences that can be observed between the species. An illustration of these two species is shown in the diagram. Which statement best explains how the differences between these two species came about?

- (1) Different adaptations developed because the kit fox preferred hotter environments than the red fox.
- (2) As the foxes adapted to different environments, differences in appearance evolved.
- (3) The foxes evolved differently to prevent overpopulation of the forest habitat.
- (4) The foxes evolved differently because their ancestors were trying to avoid competition.

Data Base File Number:

195

Regents Date

June2009

40 6/18/2009 S4K3

Answer

2



evolution

388. The data table shows the number of amino acid differences in the hemoglobin molecules of several species compared with amino acids in the hemoglobin of humans. Based on the information in the data table, what would be the evolutionary relationship between the animals shown from LEAST related to MOST related to the human?

- (1) gorilla - pig - horse - frog
 (2) frog - horse - pig - gorilla
 (3) horse - pig - frog - gorilla
 (4) pig - frog - horse - gorilla

Data Base File Number: 202

Regents Date

June2009

60 6/18/2009 LABS

Answer 2

Species	Number of Amino Acid Differences
human	0
frog	67
pig	10
gorilla	1
horse	26

evolution

389. The diagram shown represents four different species of bacteria. Which statement is correct concerning the chances of survival for these species if there is a change in the environment?

- (1) Species A has the best chance of survival because it has the most genetic diversity.
 (2) Species C has the best chance of survival because it has no gene mutations.
 (3) Neither species B nor species D will survive because they compete for the same resources.
 (4) None of the species will survive because bacteria reproduce asexually.

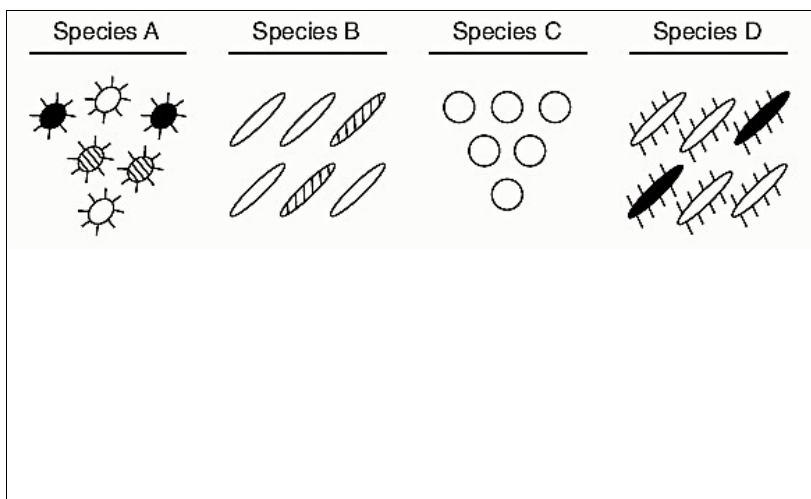
Data Base File Number: 105

Regents Date

June2008

40 6/24/2008 S4K3

Answer 1



evolution

390. A student was using an evolutionary tree as shown in the diagram. If the four top lines of the tree were filled in and contained correct evolutionary relationships, the tree would show

- (1) a dichotomous key
- (2) a monopolous key
- (3) common ancestry
- (4) no relationship between animals

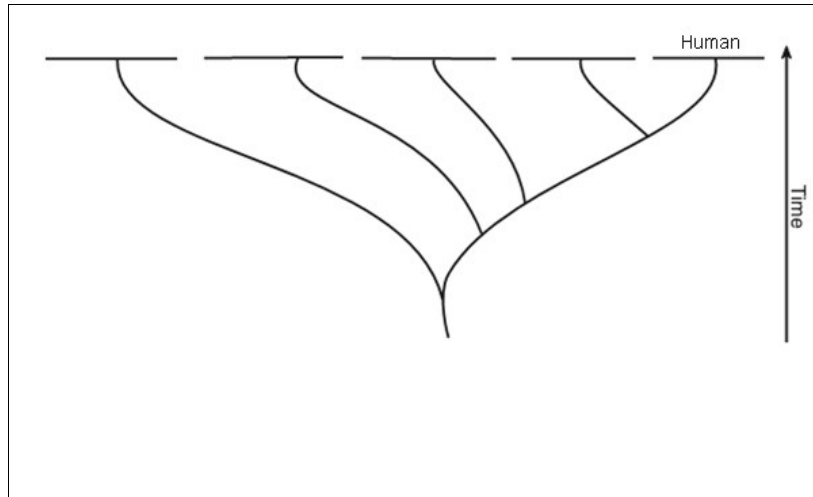
Data Base File Number: 203

Regents Date

June2009

61 6/18/2009 LABS

Answer 3



evolution

391. Some evolutionary pathways are represented in the diagram shown. An inference that can be made from information in the diagram is that

- (1) many of the descendants of organism B became extinct
- (2) organism B was probably much larger than any of the other organisms represented
- (3) most of the descendants of organism B successfully adapted to their environment and have survived to the present time
- (4) the letters above organism B represent members of a single large population with much biodiversity

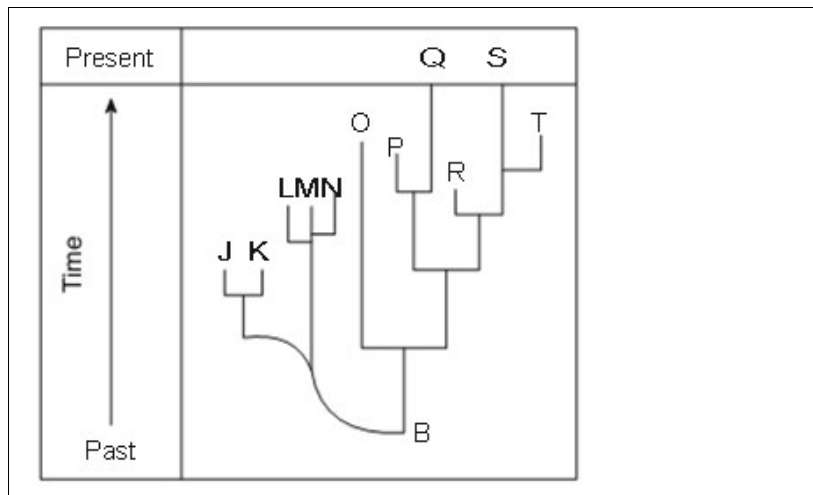
Data Base File Number: 192

Regents Date

June2009

36 6/18/2009 S4K3

Answer 1



evolution

392. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents possible evolutionary pathways of certain organisms. Which species is most closely related to species L?

- (1) E
- (2) F
- (3) G
- (4) I

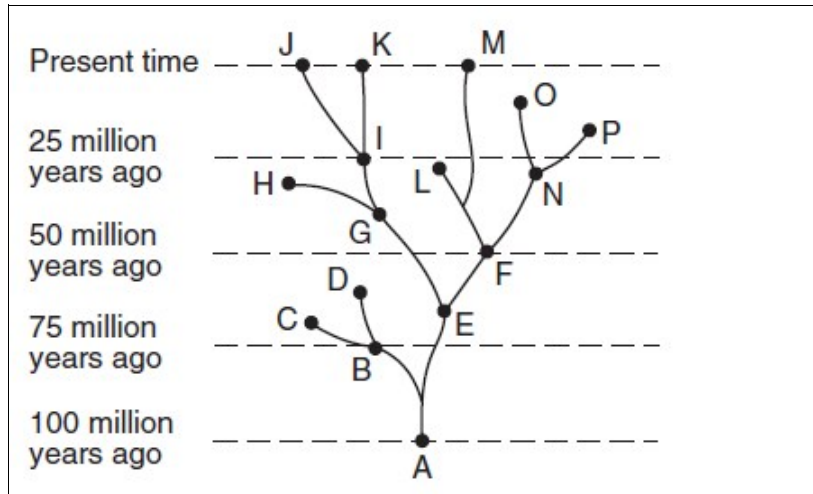
Data Base File Number: 368

Regents Date

Aug2011

39 8/18/2011 S4K3

Answer 2



evolution

393. Base your answers to this question on the graph shown and on your knowledge of biology. The graph shows the number of species that became extinct from 1800 to 2000. It also shows estimates of the number of species that will become extinct between 2000 and 2020. The number of species that became extinct between the years 1950 and 2000 is approximately

- (1) 5,000
- (2) 12,000
- (3) 22,000
- (4) 37,000

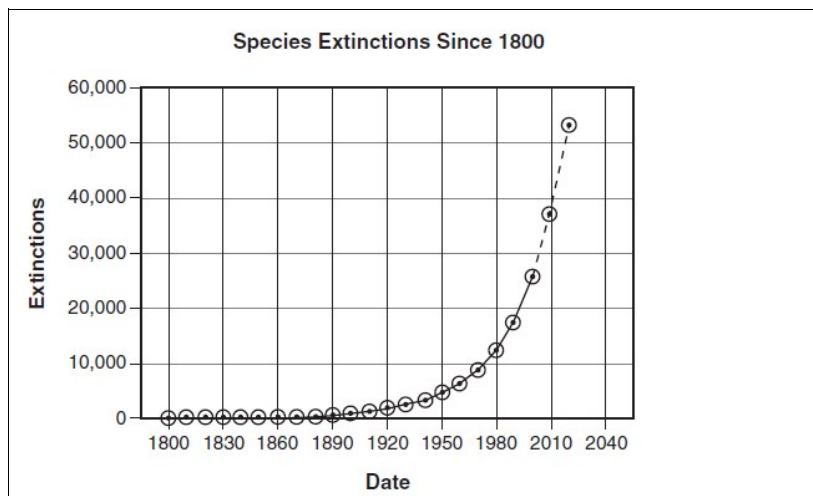
Data Base File Number: 373

Regents Date

Aug2011

49 8/18/2011 S4K7

Answer 3



evolution

394. Base your answers to this question on the diagram that shows variations in the beaks of finches in the Galapagos Islands and on your knowledge of biology. The diversity of species seen on the Galapagos Islands is mostly due to

- (1) gene manipulation by scientists
- (2) gene changes resulting from mitotic cell division
- (3) natural selection
- (4) selective breeding

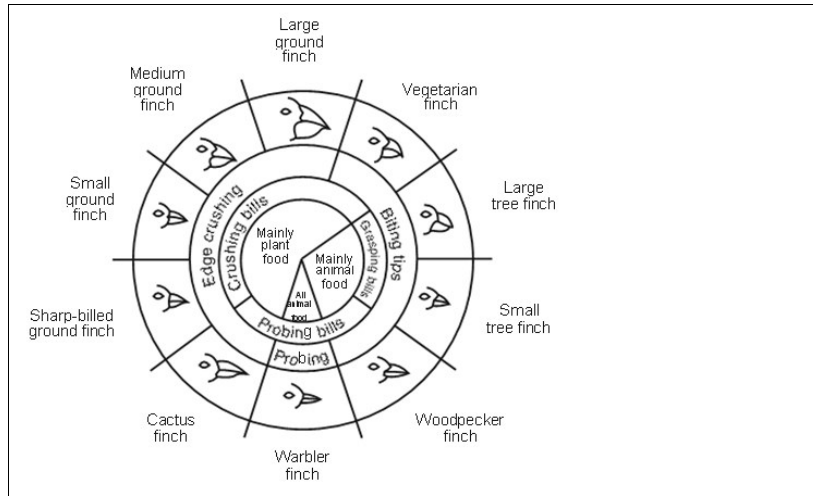
Data Base File Number: 210

Regents Date

June 2009

71 6/18/2009 **LABS**

Answer 3



evolution

395. The diagrams shown represents the bones of the forelimbs of two animals alive today that most likely evolved from a common ancestor. Members of the original ancestral population were isolated into two groups by natural events. If these two animals did have a common ancestor, which statement would best explain why there are differences in the bones?.

- (1) Changes occurred to help the animals return to their original environment.
- (2) Changes contributed to the survival of the organisms in their new environment.
- (3) Changes helped reduce competition within each group.
- (4) Changes indicate the species are evolving to be more like the ancestral species.

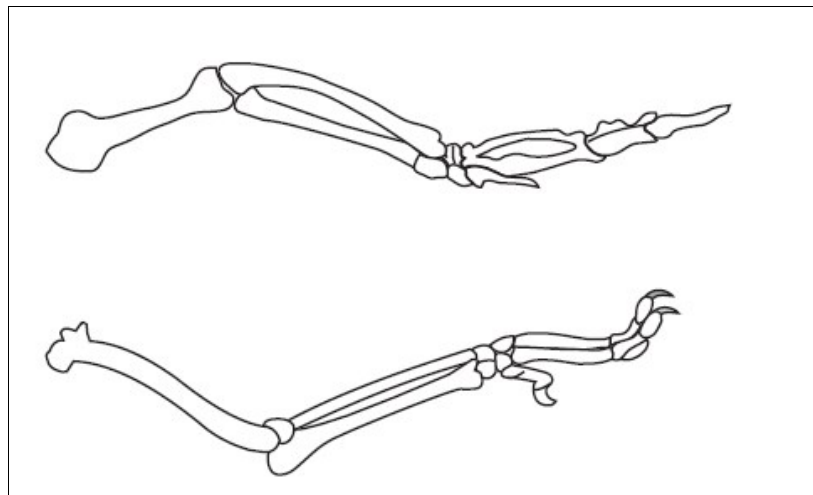
Data Base File Number: 219

Regents Date

Aug 2009

38 8/13/2009 **S4K3**

Answer 2



evolution

396. Which species in the chart shown is most likely to have the fastest rate of evolution?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 193

Regents Date

June 2009

37 6/18/2009 **S4K3**

Answer 4

Species	Reproductive Rate	Environment
A	slow	stable
B	slow	changing
C	fast	stable
D	fast	changing

evolution / finches

397. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows the VARIATIONS in Beaks of Galapagos Islands Finches. The only finch that is completely carnivorous has a beak adapted for

- (1) probing, only
- (2) probing and edge crushing
- (3) probing and biting
- (4) biting and edge crushing

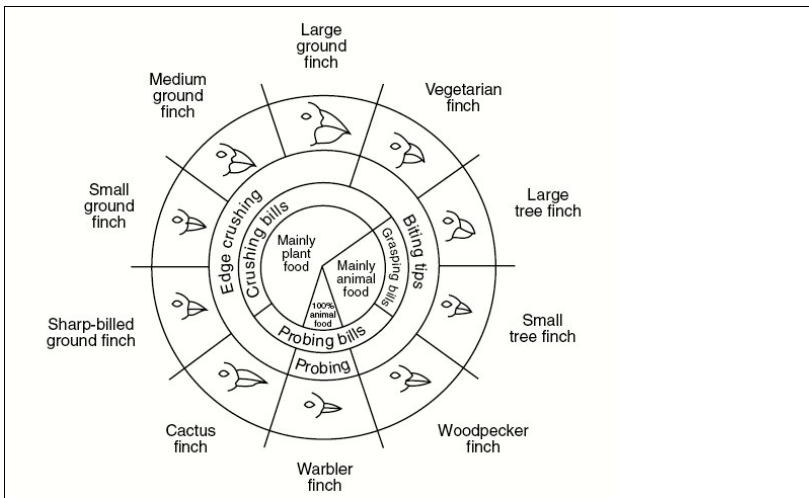
Data Base File Number: 169

Regents Date

Jan 2009

74 1/27/2009 **LABS**

Answer 1



evolution / similarities

398. The diagram shows the bones in the forelimbs of two different vertebrate species. The position and structure of these bones could best be used to make inferences about the

- (1) food preferences of these vertebrate species
- (2) intelligence of these vertebrate species
- (3) history of these vertebrate species
- (4) reproductive behavior of these vertebrate species

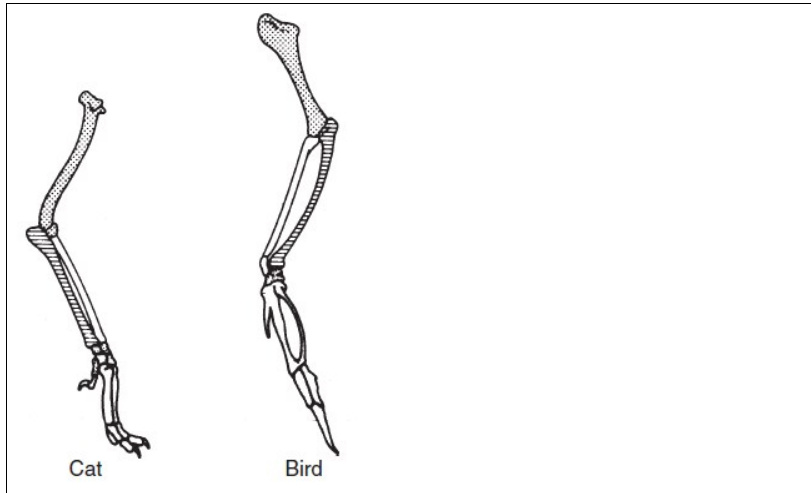
Data Base File Number: 781

Regents Date

Aug2002

18 8/13/2002 S4K3

Answer 3



evolution / similarities

399. Base your answer to this question on the diagram shown and on your knowledge of biology. Letters A through E represent different species of organisms. The arrows represent long periods of geologic time. Which species would most likely show the greatest similarities in their amino acid sequences?

- (1) A and E
- (2) A and B
- (3) B and D
- (4) C and E

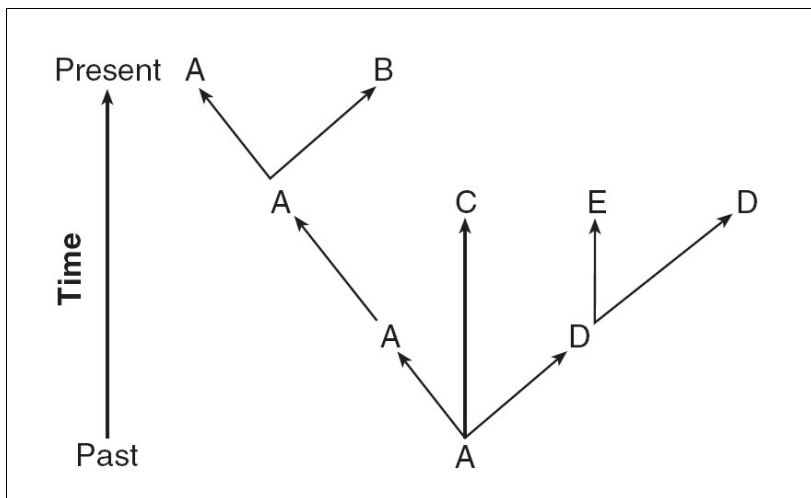
Data Base File Number: 354

Regents Date

June2011

76 6/21/2011 LAB1

Answer 2



evolution / similarities

400. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows the evolutionary relationships of some organisms. Which two organisms would most likely synthesize the most similar enzymes?

- (1) monkey and mouse
- (2) cow and horse
- (3) chimp and rat
- (4) horse and dog

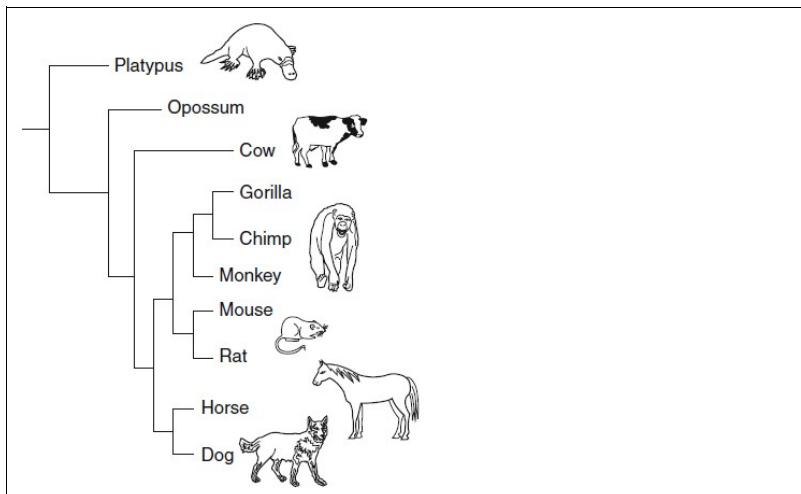
Data Base File Number: 450

Regents Date

Aug2012

76 8/17/2012 LAB1

Answer 4



evolution mechanism

401. The diagram shown represents a process involved in reproduction in some organisms. This process is considered a mechanism of evolution because

- (1) mitosis produces new combinations of inheritable traits
- (2) it increases the chances of DNA alterations in the parent
- (3) it is a source of variation in the offspring produced
- (4) meiosis prevents recombination of lethal mutations

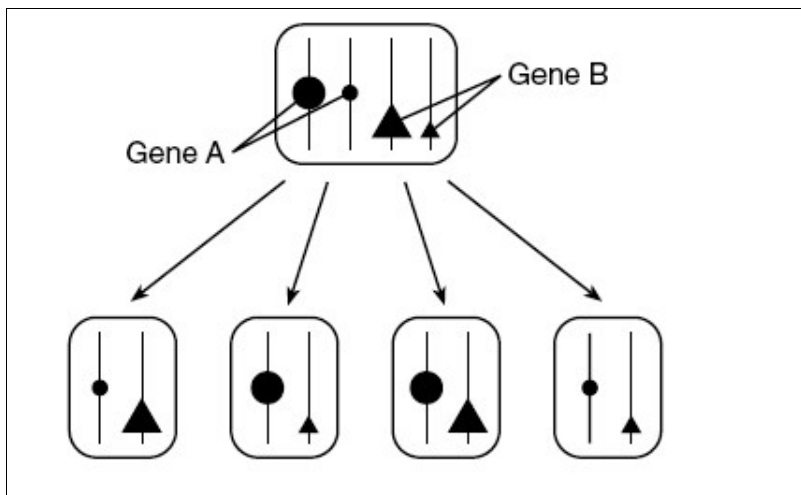
Data Base File Number: 161

Regents Date

Jan2009

41 1/27/2009 S4K2

Answer 3



evolution pathway

402. One possible pathway for the evolution of elephants is represented in the diagram shown. Which statement concerning this pattern of evolution is correct?
- (1) Evolution always results in favorable traits.
 - (2) Evolution does not always result in a species that will survive to present time.
 - (3) Evolution leads to less complex organisms.
 - (4) Evolution results in the same changes in all species.

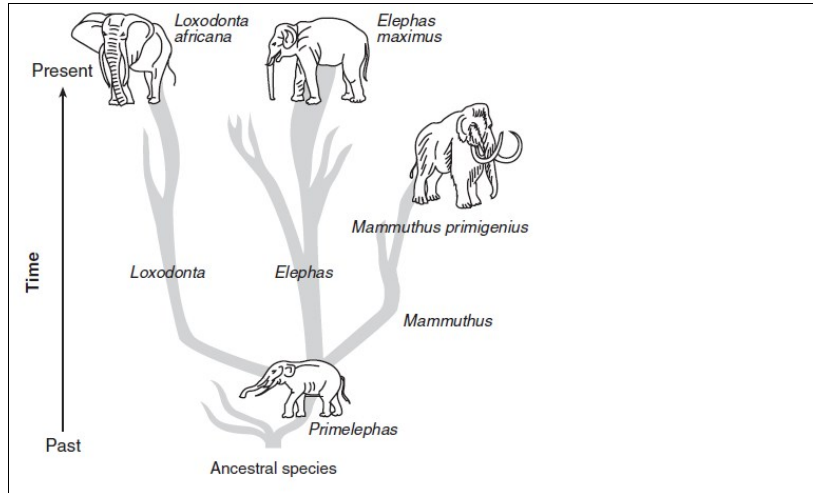
Data Base File Number: 239

Regents Date

Jan2010

36 1/26/2010 S4K3

Answer 2



evolution pathway

403. Base your answer to this question on the diagram that shows some evolutionary pathways. Each letter represents a different species. The most recent ancestor of organisms D and F is
- (1) A
 - (2) B
 - (3) C
 - (4) I

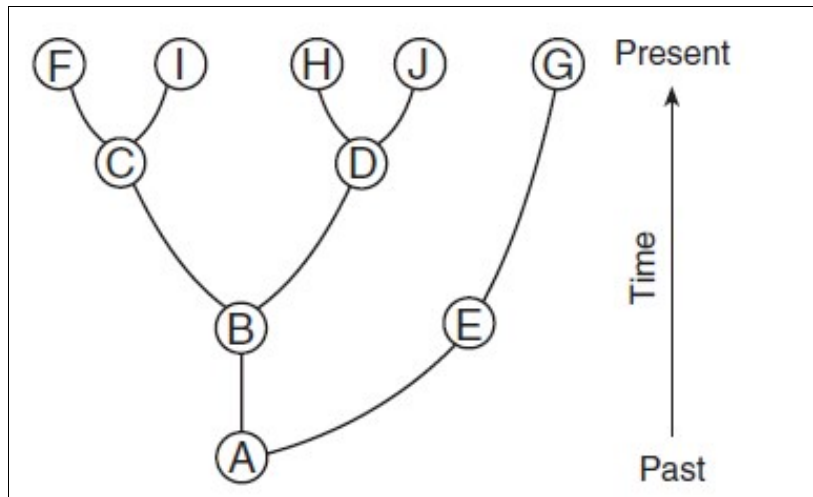
Data Base File Number: 519

Regents Date

Aug2006

36 8/16/2006 S4K3

Answer 1



evolution pathway

404. Base your answer to this question on the diagram that shows some evolutionary pathways. Each letter represents a different species. Which two organisms are most closely related?

- (1) F and I
 (2) F and H
 (3) A and G
 (4) G and J

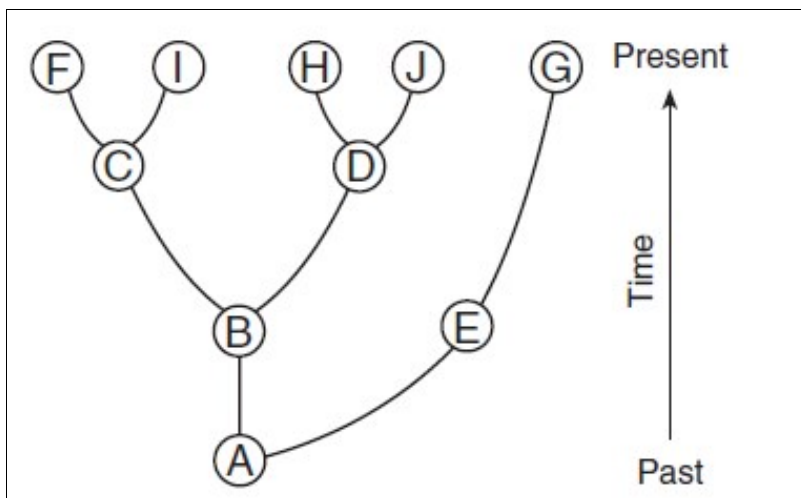
Data Base File Number: 518

Regents Date

Aug2006

35 8/16/2006 S4K3

Answer 1



evolution pathway

405. An evolutionary pathway is represented by the diagram shown. Which statement about evolutionary pathways is most accurate?

- (1) All evolutionary pathways show that life began with autotrophic organisms that soon evolved into heterotrophic organisms.
 (2) Two organisms on the same branch of an evolutionary pathway are more closely related to each other than to those on distant branches.
 (3) All the organisms shown at the ends of evolutionary pathway branch tips are alive today.
 (4) Evolutionary pathways show that evolution is a short-term process.

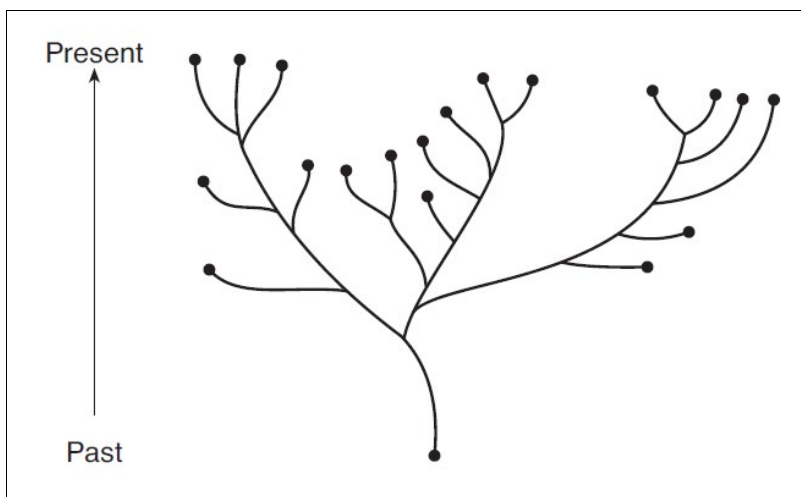
Data Base File Number: 213

Regents Date

Aug2009

29 8/13/2009 S4K3

Answer 2



evolution pathway

406. A current proposal in the field of classification divides life into three broad categories called domains. This idea is illustrated in the diagram shown. Which concept is best supported by this diagram?

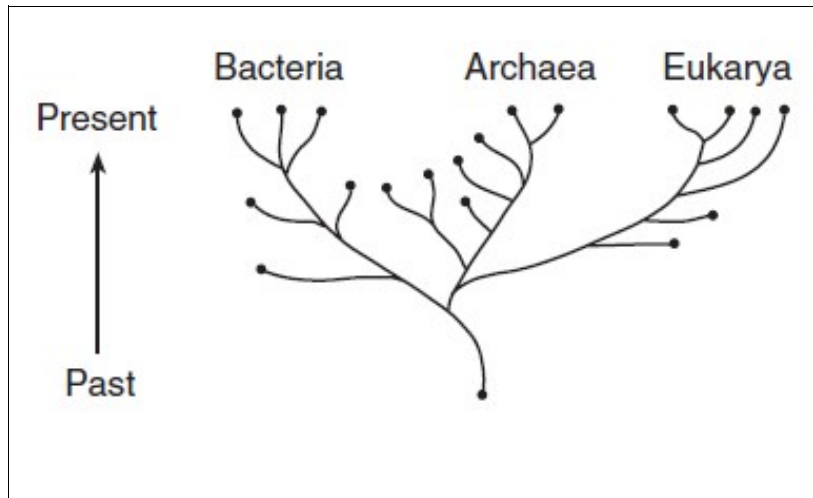
- (1) Evolutionary pathways proceed only in one set direction over a short period of time.
- (2) All evolutionary pathways will eventually lead to present-day organisms.
- (3) All evolutionary pathways are the same length and they all lead to present-day organisms.
- (4) Evolutionary pathways can proceed in several directions with only some pathways leading to present-day organisms.

Data Base File Number: 457

Regents Date

Jan2006
13 1/27/2006 S4K3

Answer 4



evolution pathway

407. Base your answer to this question on the diagram that shows some evolutionary pathways. Each letter represents a different species. If A represents a simple multicellular heterotrophic organism, B would most likely represent

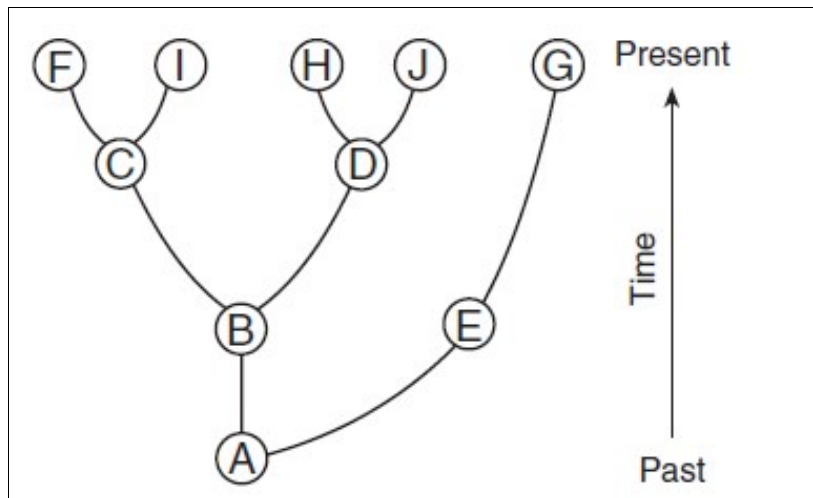
- (1) a single-celled photosynthetic organism
- (2) an autotrophic mammal
- (3) a complex multicellular virus
- (4) another type of simple multicellular heterotroph

Data Base File Number: 520

Regents Date

Aug2006
37 8/16/2006 S4K3

Answer 4



evolution pathway

408. The evolutionary pathways of several species are represented in the diagram shown. Which species was best adapted for survival in changing environmental conditions?

- (1) A
- (2) E
- (3) K
- (4) L

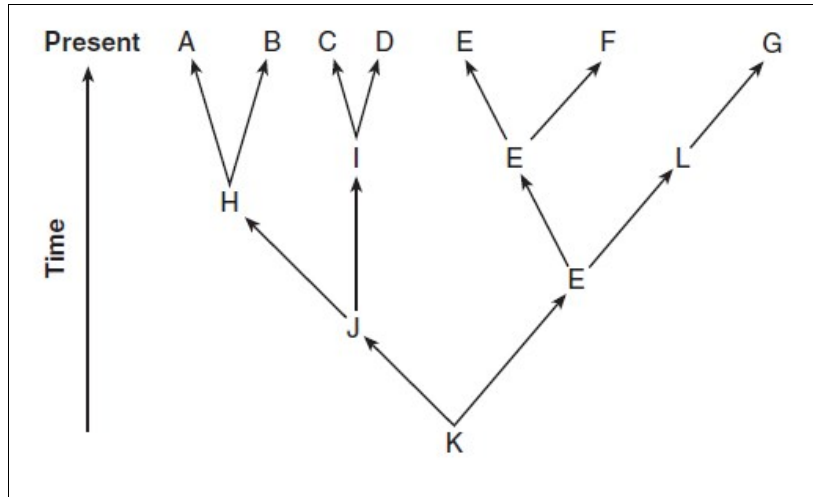
Data Base File Number: 380

Regents Date

Jan2012

20 1/25/2012 S4K3

Answer 2



evolution pathway

409. The evolutionary pathways of ten different species are represented in the diagram below. Which two species are the most closely related?

- (1) C and D
- (2) E and I
- (3) G and J
- (4) A and F

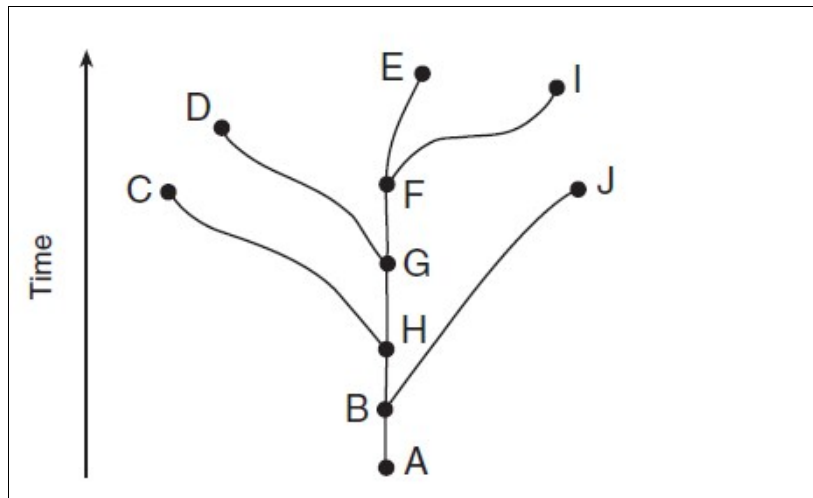
Data Base File Number: 474

Regents Date

June2006

2 6/21/2006 S4K3

Answer 2



evolution pathway

410. The diagram shown illustrates possible evolutionary pathways of some species. Which statement is a valid inference based on the information in the diagram?

- (1) Species A is the common ancestor of all life on Earth.
- (2) Species D is more closely related to species E than to species F.
- (3) Species B is the ancestor of species F.
- (4) Species C is the ancestor of species that exist at the present time.

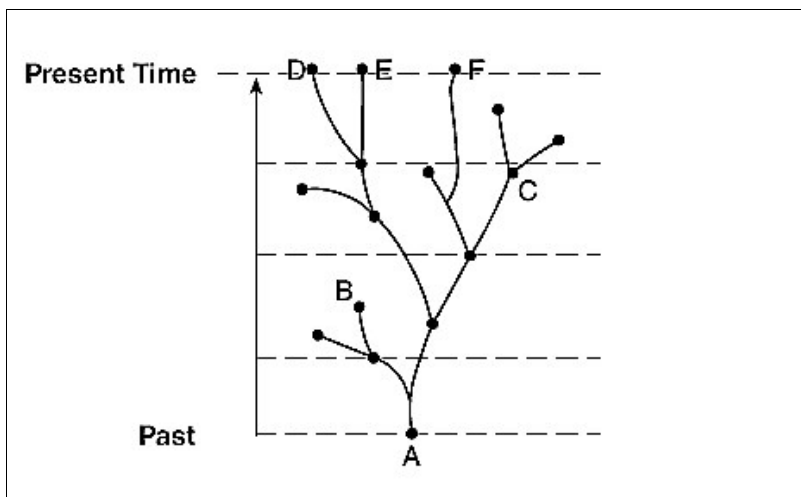
Data Base File Number: 66

Regents Date

Jan2008

17 1/25/2008 S4K3

Answer 2



evolution pathway

411. A diagram of evolutionary pathways of various animal species is shown in the diagram. The pattern of these evolutionary pathways is most likely the result of alterations within which structure?

- (1) vacuole
- (2) cell membrane
- (3) nucleus
- (4) ribosome

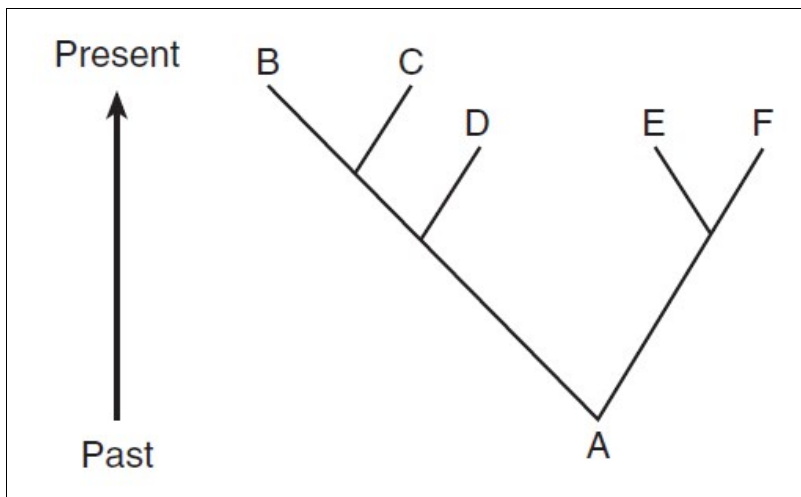
Data Base File Number: 307

Regents Date

Jan2011

16 1/25/2011 S4K3

Answer 3



evolution pathway

412. Information related to the organisms found on Earth during various geological time periods is represented in the chart shown. Which statement concerning the first appearance of the organisms over the time period represented in this chart is most likely correct?

- (1) Life on Earth has remained the same.
- (2) Life on Earth has changed from primitive organisms to more complex organisms.
- (3) Life on Earth began with complex organisms and changed to more complex organisms.
- (4) Life on Earth has changed rapidly.

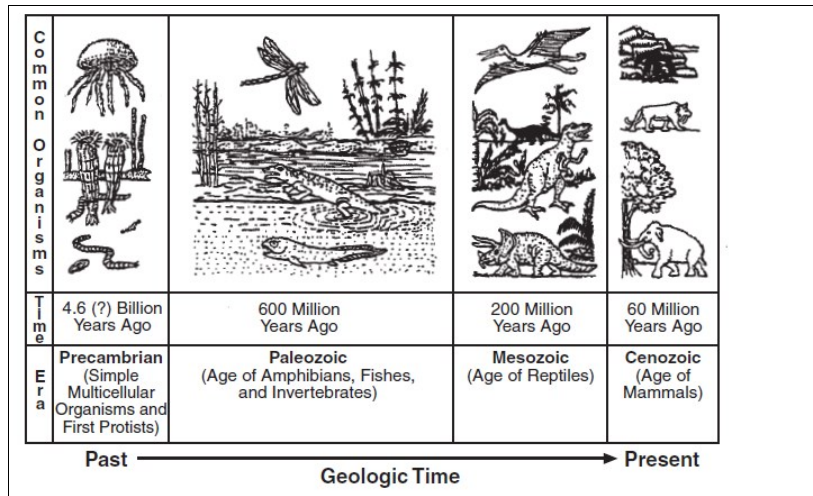
Data Base File Number: 778

Regents Date

Aug2002

14 8/13/2002 S4K3

Answer 2



evolution pathway

413. Some evolutionary pathways are represented in the diagram shown. An inference that can be made from information in the diagram is that

- (1) species E evolved from species G
- (2) species A was probably much larger than all the other species
- (3) species C is a direct descendant of species I
- (4) species J is adapted to the existing environment

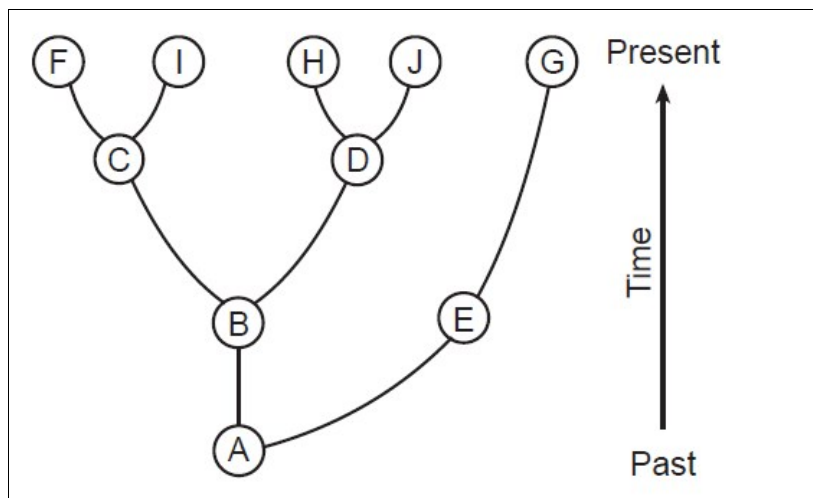
Data Base File Number: 923

Regents Date

Jan2014

37 1/27/2014 S4K3

Answer 4



evolution pathway

414. The diagram shown illustrates a proposed evolutionary path of certain organisms, based on the theory of evolution. Which statement could best be inferred from the information in this diagram?
- (1) Evolution does not involve gradual change.
 - (2) Evolutionary changes can result in extinction.
 - (3) Evolution begins with plants.
 - (4) Evolution produces organisms that all fill the same niche.

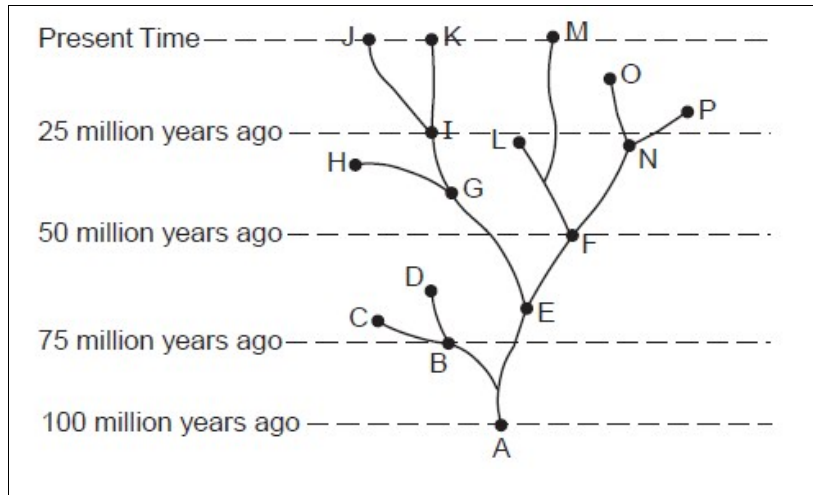
Data Base File Number: 832

Regents Date

Jan2002

14 1/23/2002 S4K3

Answer 2



evolution pathway

415. According to the interpretation of the fossil record by many scientists, during which time interval shown on the time line, as shown, did increasingly complex multicellular organisms appear on Earth?
- (1) A to B
 - (2) B to C
 - (3) C to D
 - (4) D to E

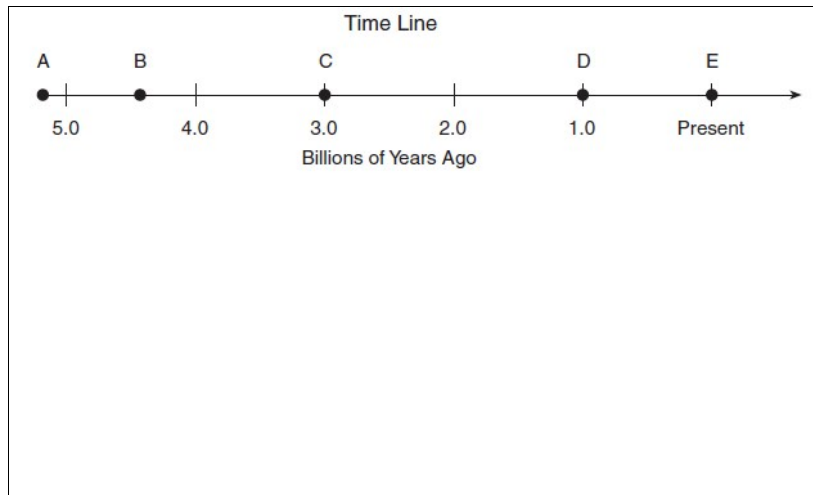
Data Base File Number: 864

Regents Date

Aug2001

21 8/16/2001 S4K3

Answer 4



evolution pathway

416. Base your answer to this question chart shown and on your knowledge of biology. According to most scientists, which sequence best represents the order of biological evolution on Earth?

- (1) A → B → C
- (2) B → C → A
- (3) B → A → C
- (4) C → A → B

Data Base File Number: 664

Regents Date

June 2004

19 6/18/2004 S4K3

Answer 2

A	B	C
The diversity of multicellular organisms increases.	Simple, single-celled organisms appear.	Multicellular organisms begin to evolve.

evolution pathway

417. The four evolutionary trees shown are some possible pathways for the pink land Iguana evolution in the Galapagos Islands. Three species of Iguanas evolved. Which diagram(s) of those shown have a common ancestor for the three species of Iguanas.

- (1) 1, only
- (2) 2, only
- (3) 3, only
- (4) 1, 2, 3, and 4

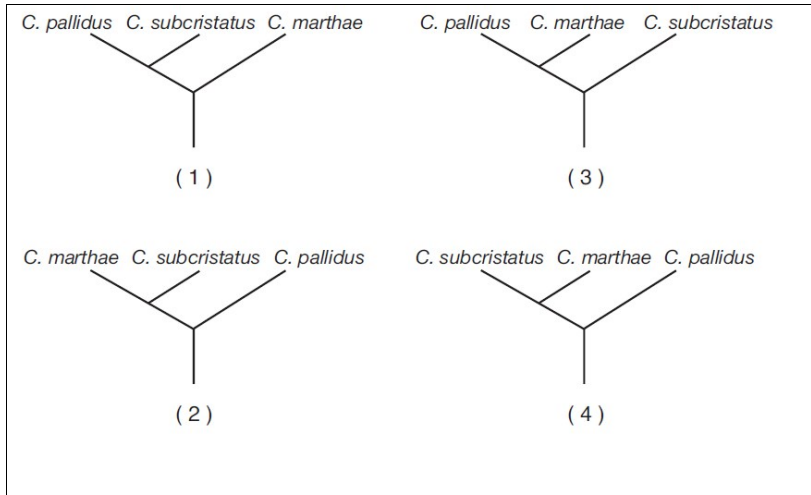
Data Base File Number: 890

Regents Date

June 2013

41 6/11/2013 S4K3

Answer 4



evolution pathway

418. The evolutionary pathways of seven living species are shown in the diagram. Which two species are likely to have the most similar DNA base sequences?

- (1) B and G
- (2) E and G
- (3) B and C
- (4) C and D

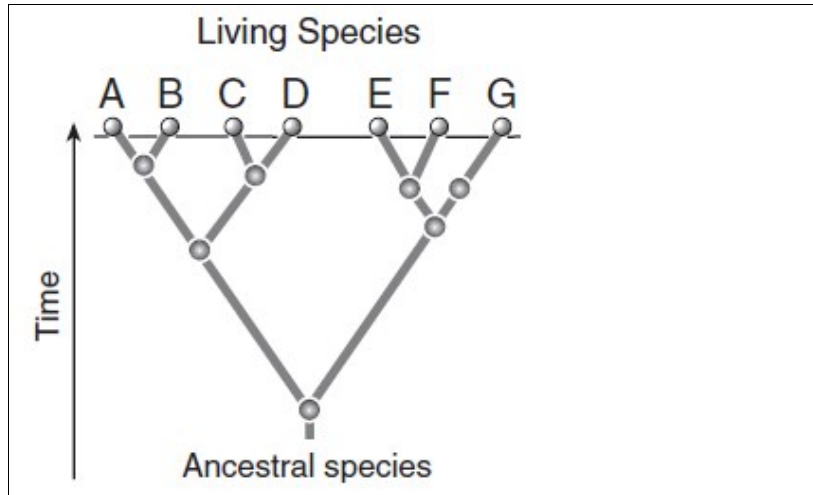
Data Base File Number: 582

Regents Date

Aug2005

14 8/16/2005 S4K3

Answer 4



evolution pathway

419. Base your answer to this question on the diagram shown and on your knowledge of biology. Letters A through J represent different species of organisms. The vertical distances between the dotted lines represent long periods of time in which major environmental changes occurred. Which species was the first to become extinct?

- (1) E
- (2) J
- (3) C
- (4) D

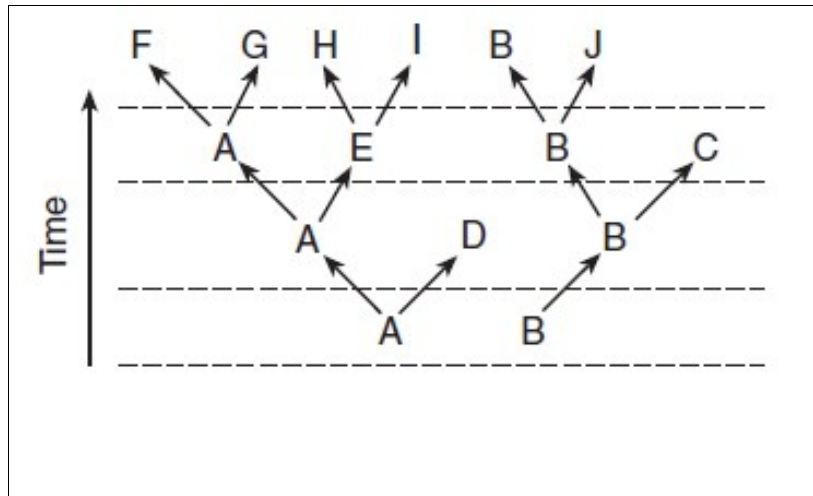
Data Base File Number: 742

Regents Date

June2003

43 6/19/2003 S4K3

Answer 4



evolution pathway

420. Base your answer to this question on the diagram shown and on your knowledge of biology. Letters A through J represent different species of organisms. The vertical distances between the dotted lines represent long periods of time in which major environmental changes occurred. Which species appears to have been most successful in surviving changes in the environment over time?

- (1) A
- (2) B
- (3) C
- (4) H

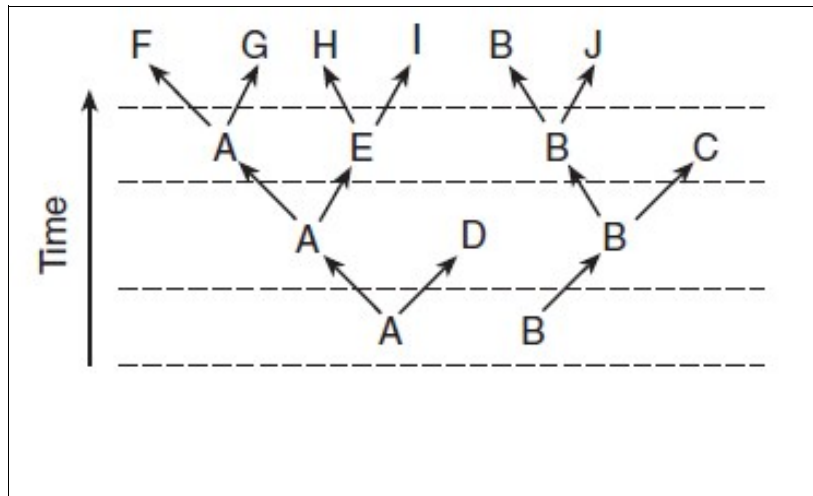
Data Base File Number: 743

Regents Date

June 2003

44 6/19/2003 **S4K3**

Answer 2



evolutionary change

421. According to some scientists, patterns of evolution can be illustrated by the diagrams shown. Which statement best explains the patterns seen in these diagrams?

- (1) The organisms at the end of each branch can be found in the environment today.
- (2) The organisms that are living today have all evolved at the same rate and have undergone the same kinds of changes.
- (3) Evolution involves changes that give rise to a variety of organisms, some of which continue to change through time while others die out.
- (4) These patterns cannot be used to illustrate the evolution of extinct organisms.

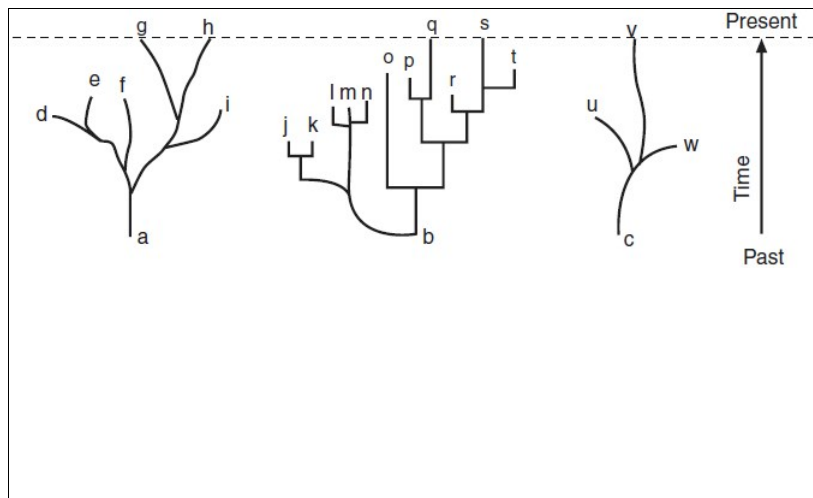
Data Base File Number: 709

Regents Date

Jan 2003

13 1/30/2003 **S4K3**

Answer 3



evolutionary change

422. Organism X appeared on Earth much earlier than organism Y. Many scientists believe organism X appeared between 3 and 4 billion years ago, and organism Y appeared approximately 1 billion years ago. Which row in the chart shown most likely describes organisms X and Y?

- (1) 1 (3) 3
 (2) 2 (4) 4

Data Base File Number: 734

Regents Date

June2003

17 6/19/2003 S4K3

Answer 3

Row	Organism X	Organism Y
(1)	simple multicellular	unicellular
(2)	complex multicellular	simple multicellular
(3)	unicellular	simple multicellular
(4)	complex multicellular	unicellular

evolutionary relationship

423. The relationship of some mammals is indicated in the diagram. Which statement about the African elephant is correct?

- (1) It is more closely related to the mammoth than it is to the West African manatee.
 (2) It is more closely related to the West Indian manatee than it is to the mastodon.
 (3) It is not related to the Brazilian manatee or the mammoth.
 (4) It is the ancestor of Steller's sea cow.

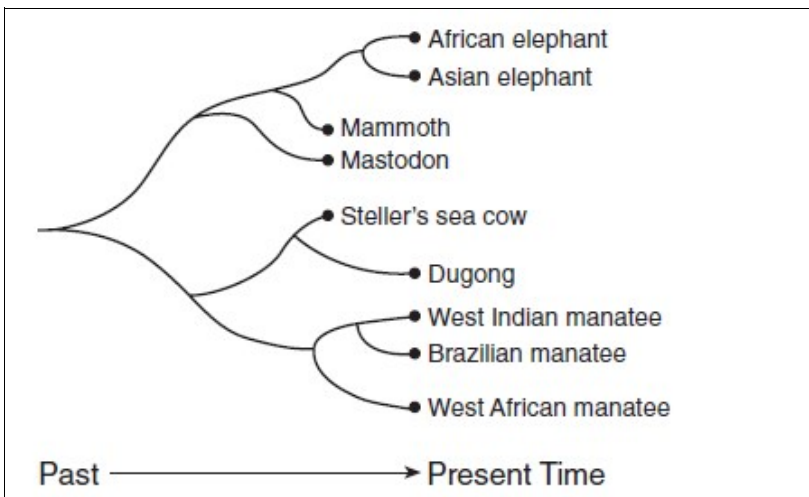
Data Base File Number: 736

Regents Date

June2003

22 6/19/2003 S4K3

Answer 1



evolutionary relationship

424. The bones in the forelimbs of three mammals are shown in the diagram. For these mammals, the number, position, and shape of the bones most likely indicates that they may have

- (1) developed in a common environment
- (2) developed from the same earlier species
- (3) identical genetic makeup
- (4) identical methods of obtaining food

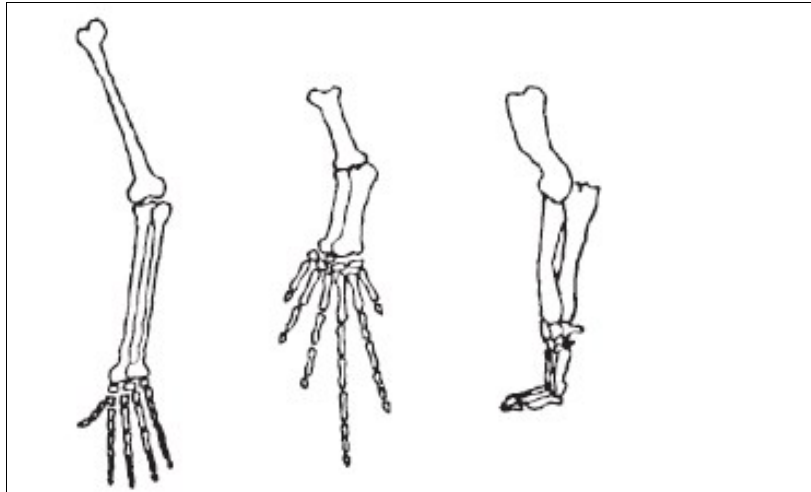
Data Base File Number: 637

Regents Date

Jan2004

14 1/29/2004 S4K3

Answer 2



evolutionary relationship

425. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows an interpretation of relationships based on evolutionary theory. The letters represent different species. The diagram indicates that a common ancestor for species C and E is species

- (1) F
- (2) G
- (3) H
- (4) K

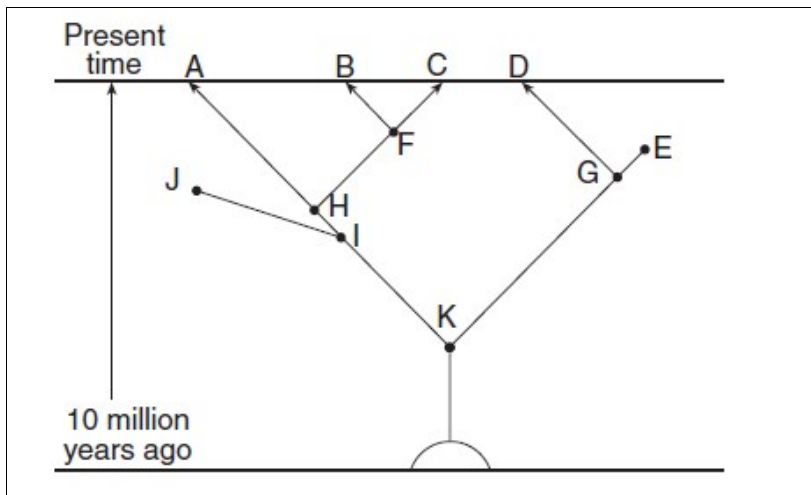
Data Base File Number: 871

Regents Date

Aug2001

55 8/16/2001 S4K3

Answer 4



evolutionary relationship

426. NOTE - Rotate paper to the LEFT to view the diagram. Base your answer to this question on the diagram shown, which represents the relationships between animals in a possible canine family tree, and on your knowledge of biology. According to the diagram, which group of organisms has the most closely related members?

- (1) cats, weasels, and wolves
- (2) bears, raccoons, and hyena dogs
- (3) jackals, foxes, and domestic dogs
- (4) African hunting dogs, hyena dogs, and domestic dogs

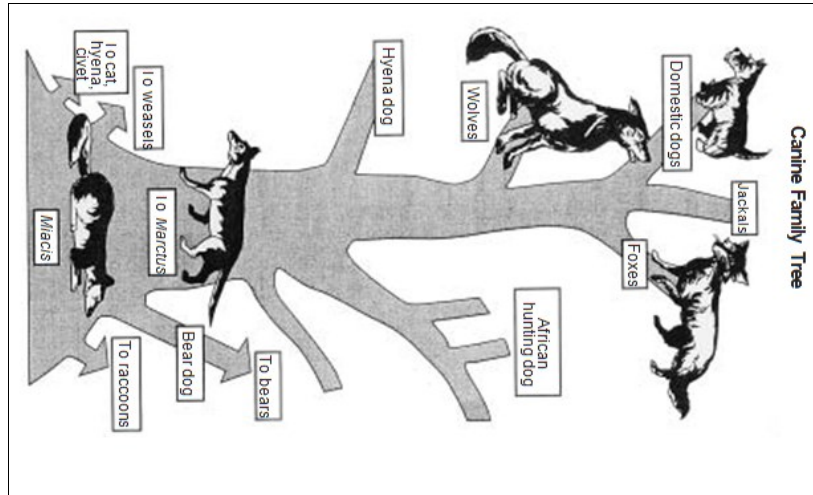
Data Base File Number: 817

Regents Date

June 2002

40 6/19/2002 S4K3

Answer 3



evolutionary relationship

427. Base your answer to this question on the diagram shown and on your knowledge of biology. Letters A through L represent different species of organisms. The arrows represent long periods of geologic time. Which two species are the most closely related?

- (1) J and L
- (2) G and L
- (3) F and H
- (4) F and G

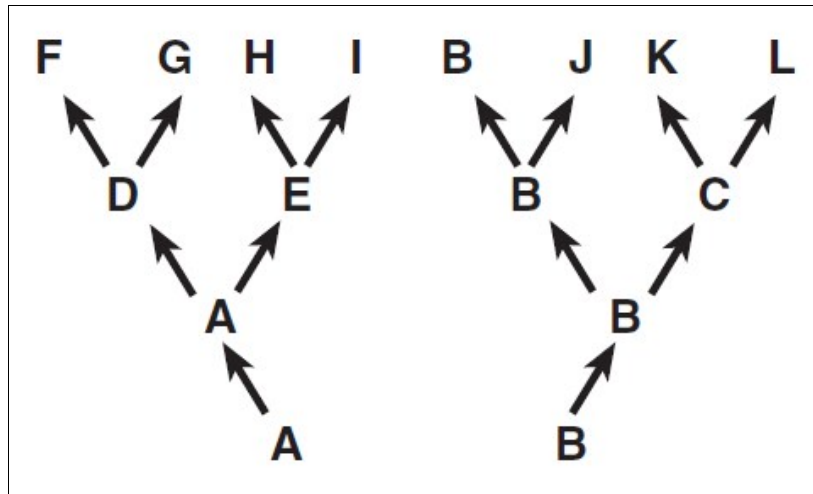
Data Base File Number: 577

Regents Date

June 2005

63 6/22/2005 LAB1

Answer 4



evolutionary tree

428. Base your answer to this question on the information given and on your knowledge of biology. Based on their analysis of the differences in amino acid sequences of one kind of protein, scientists prepared the evolutionary tree shown. According to this diagram, the DNA of which pair of organisms would show the greatest similarity?

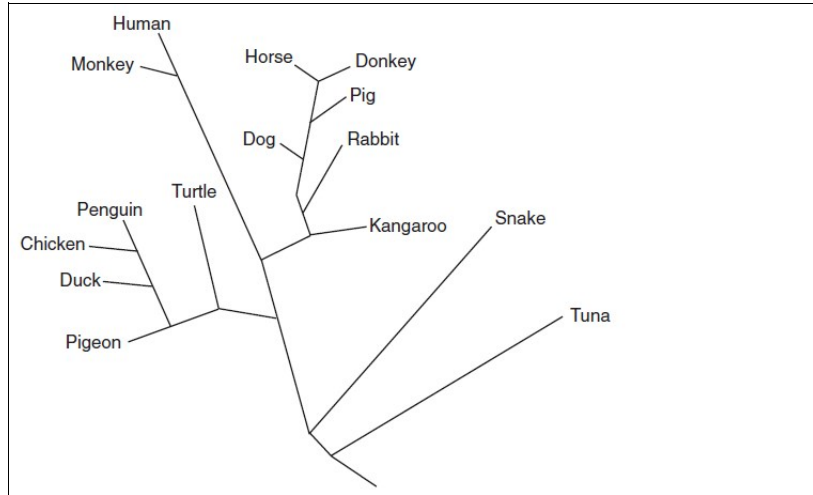
- (1) penguin and turtle
- (2) horse and donkey
- (3) snake and tuna
- (4) turtle and rabbit

Data Base File Number: 551

Regents Date

Jan2005
66 1/28/2005 **LAB1**

Answer 2



evolutionary tree

429. Which statement concerning the evolution of species A, B, C, D, and E is supported by the diagram shown?

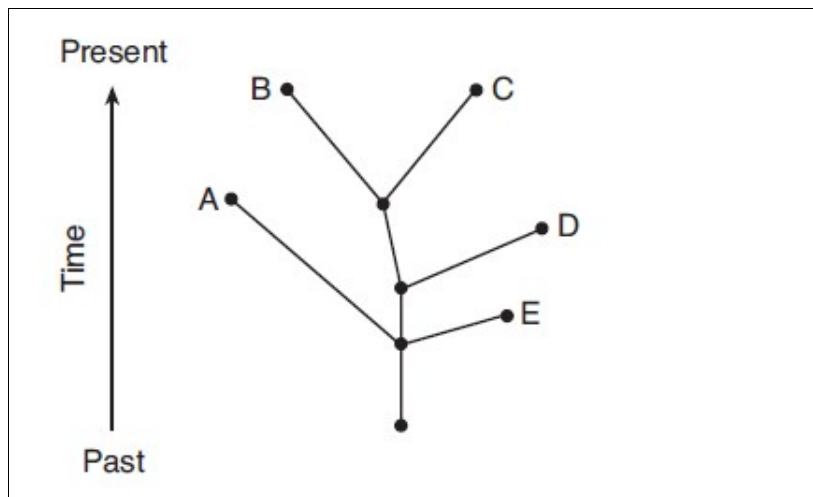
- (1) Species B and C can be found in today's environments.
- (2) Species A and D evolved from E.
- (3) Species A and C can still interbreed.
- (4) Species A, B, and E all evolved from a common ancestor and all are successful today.

Data Base File Number: 256

Regents Date

June2010
14 6/16/2010 **S4K3**

Answer 1



evolutionary tree

430. The diagram shows a branching "tree" representing the evolution of ten different groups of organisms alive today. Which group of organisms is most closely related to the Arthropoda group?

- (1) Coelenterata
- (2) Chordata
- (3) Annelida
- (4) Nematoda

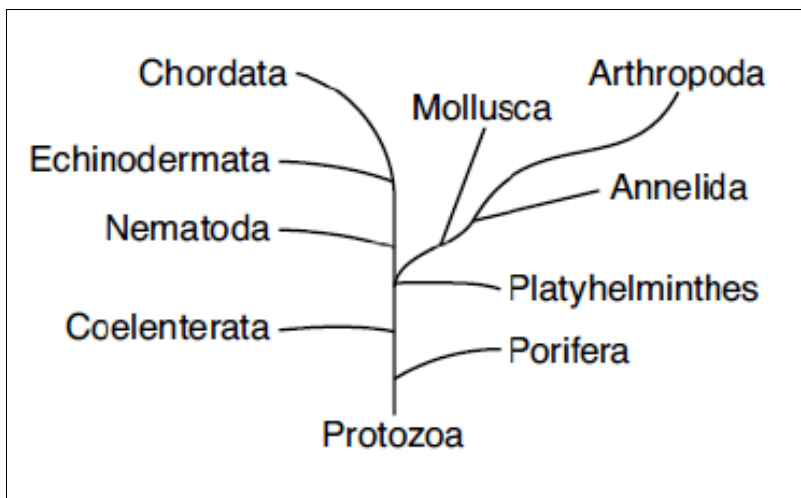
Data Base File Number: 424

Regents Date

June2012

53 6/19/2012 S4K3

Answer 3



evolutionary tree

431. According to the diagram shown, which three species lived on Earth during the same time period?

- (1) robustus, africanus, afarensis
- (2) habilis, erectus, afarensis
- (3) habilis, robustus, boisei
- (4) africanus, boisei, erectus

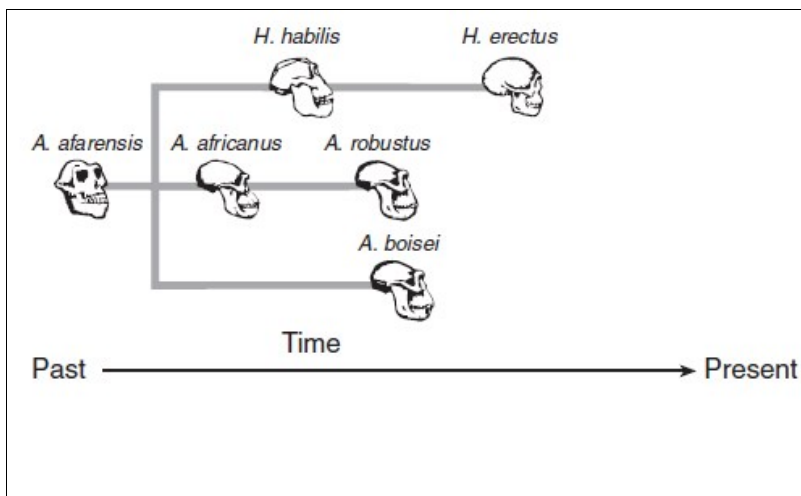
Data Base File Number: 569

Regents Date

June2005

37 6/22/2005 S4K3

Answer 3



evolutionary tree

432. The diagram shows the evolution of some different species of flowers. Which statement about the species is correct?

- (1) Species A, B, C, and D came from different ancestors.
- (2) Species C evolved from species B.
- (3) Species A, B, and C can interbreed successfully.
- (4) Species A became extinct.

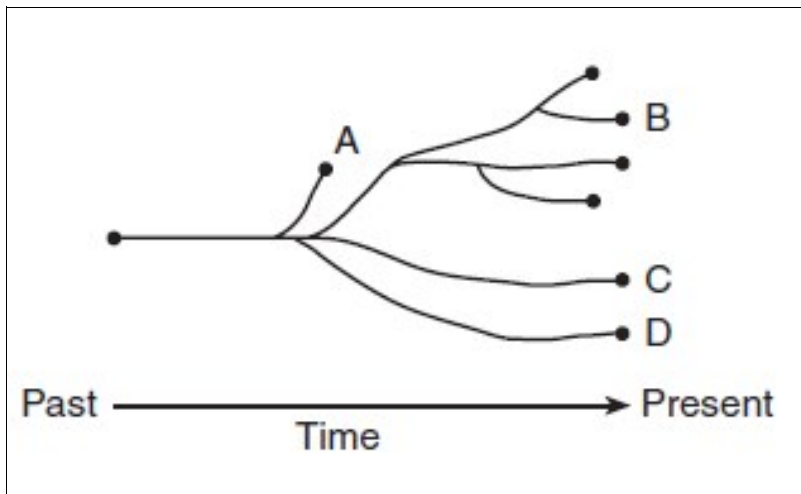
Data Base File Number: 661

Regents Date

June 2004

14 6/18/2004 S4K3

Answer 4



evolutionary tree

433. The diagram shown represents an evolutionary tree. Which statement best describes species E?

- (1) Species D is an ancestor of species E.
- (2) Through natural selection, species E produced increased survival mechanisms.
- (3) Species E had greater success due to patterns of behavior.
- (4) Species E had insufficient adaptive characteristics for survival in a changing environment.

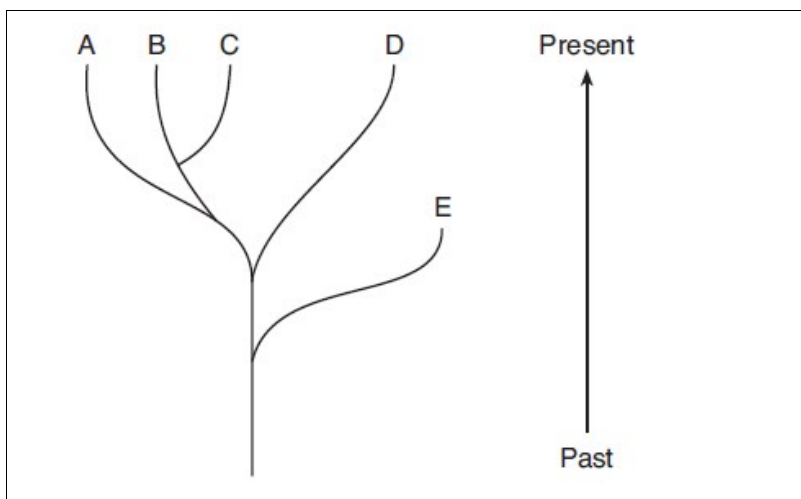
Data Base File Number: 905

Regents Date

Aug 2013

33 8/14/2013 S4K3

Answer 4



extinction

434. Which process is correctly matched with its explanation?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 758

Regents Date

Aug2003

16 8/13/2003 S4K3

Answer 1

	Process	Explanation
(1)	extinction	adaptive characteristics of a species are not adequate
(2)	natural selection	the most complex organisms survive
(3)	gene recombination	genes are copied as a part of mitosis
(4)	mutation	overproduction of offspring takes place within a certain population

feedback

435. The dashed line in the drawing represents.

- (1) a digestive process
- (2) a feedback mechanism
- (3) cellular differentiation
- (4) recycling of organic chemicals

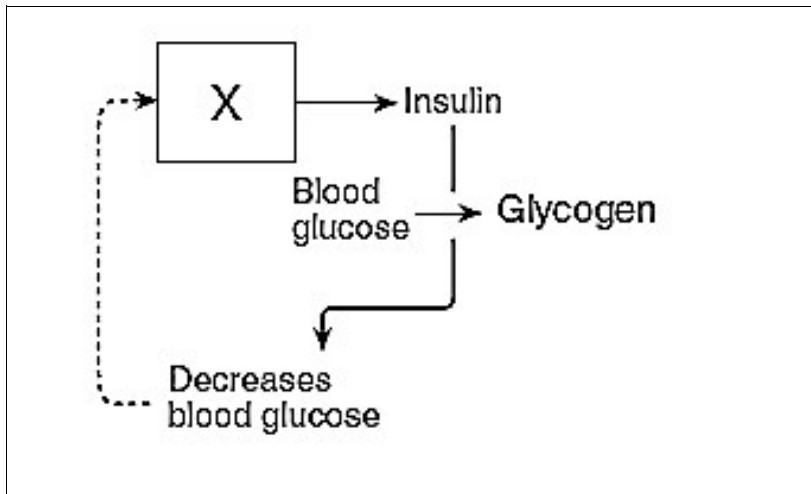
Data Base File Number: 45

Regents Date

June2007

55 6/20/2007 S4K5

Answer 2



feedback

436. Base your answer to this question on the included diagram showing activities in the human body. This diagram illustrates part of

- (1) a feedback mechanism
- (2) an enzyme pathway
- (3) a digestive mechanism
- (4) a pattern of learned behavior

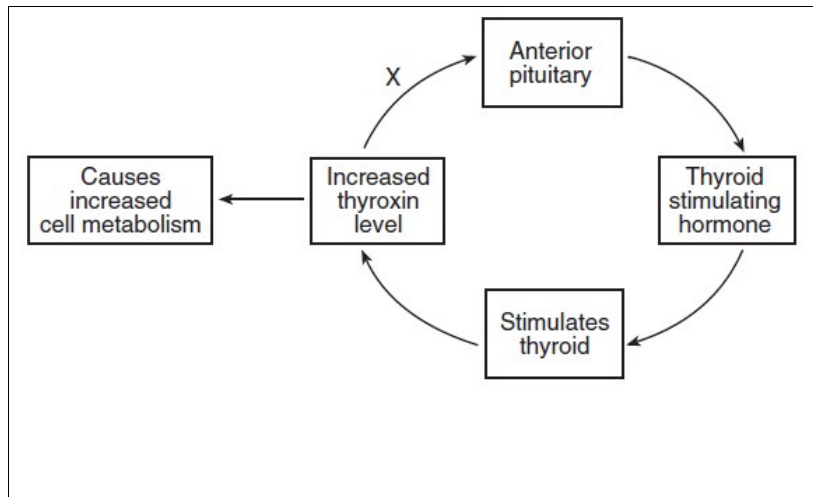
Data Base File Number: 653

Regents Date

Jan2004

60 1/29/2004 S4K5

Answer 1



feedback

437. The diagram shown represents the actions of two hormones in the human body. This diagram best illustrates

- (1) recombination
- (2) feedback
- (3) insertion
- (4) deletion

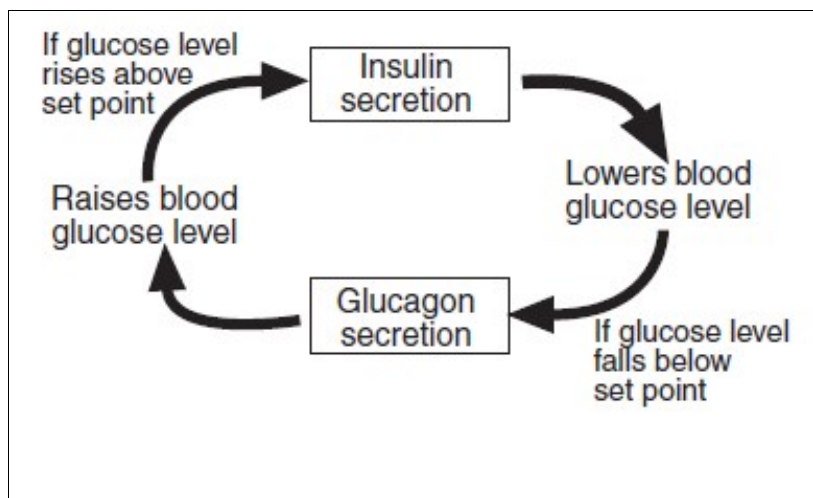
Data Base File Number: 775

Regents Date

Aug2002

6 8/13/2002 S4K5

Answer 2



feedback

438. The diagram shown represents a sequence of events that occurs in the human body throughout the day. These events can best be described as an example of

- (1) an energy cycle
- (2) recycling of inorganic materials
- (3) a feedback mechanism
- (4) a learned behavior

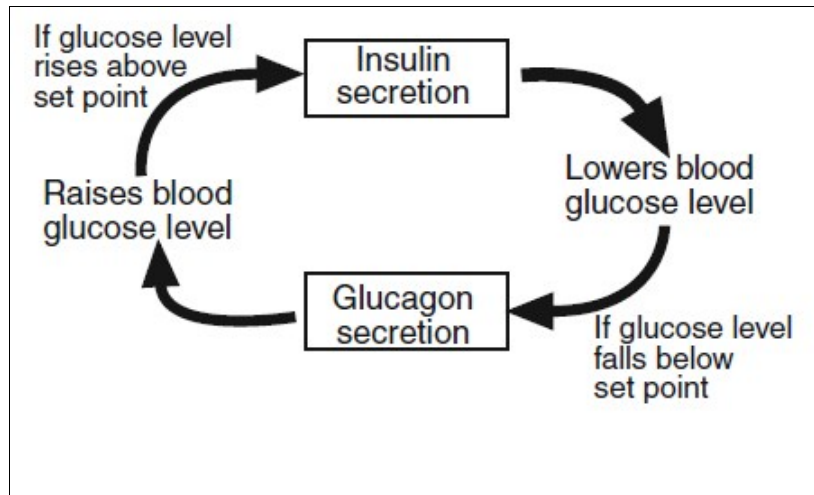
Data Base File Number: 621

Regents Date

Jan2013

42 1/23/2013 S4K5

Answer 3



feedback

439. Base your answers to this question on the diagram shown and on your knowledge of biology. Each arrow in the diagram represents a different hormone released by the pituitary gland that stimulates the gland indicated in the diagram. All structures are present in the same organism. The pituitary gland may release hormone 2 when blood pressure drops. Hormone 2 causes gland B to release a different hormone that raises blood pressure which, in turn, stops the secretion of hormone 2. The interaction of these hormones is an example of

- (1) DNA base substitution
- (2) manipulation of genetic instructions
- (3) a feedback mechanism
- (4) an antigen-antibody reaction

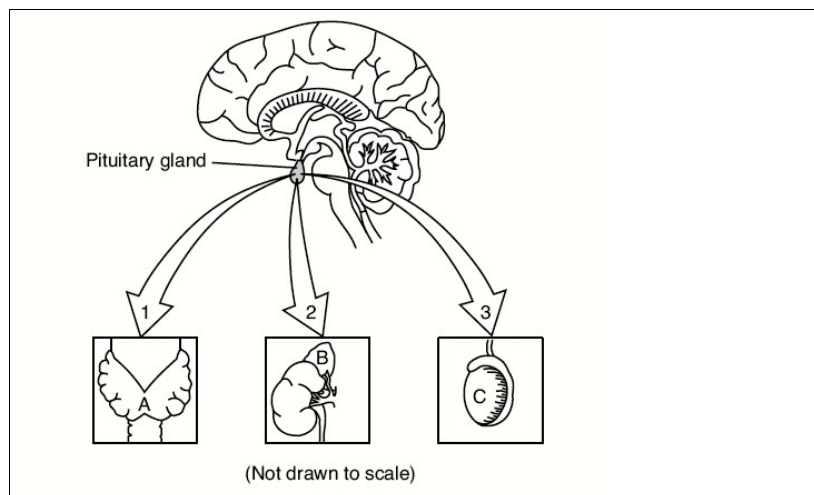
Data Base File Number: 133

Regents Date

Aug2008

38 8/13/2008 S4K5

Answer 3



feedback

440. What is represented by the sequence shown in the diagram?

- (1) a feedback mechanism in multicellular organisms
- (2) an immune response by cells of the pancreas
- (3) differentiation of organic molecules
- (4) the disruption of cellular communication

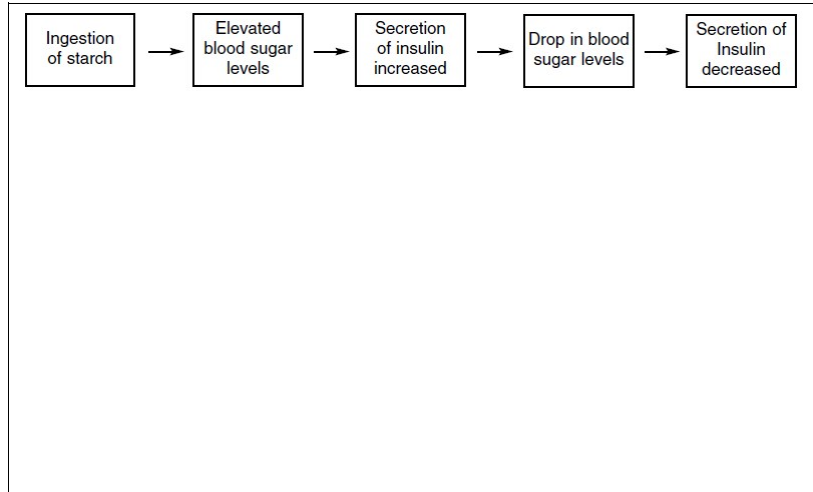
Data Base File Number: 716

Regents Date

Jan2003

27 1/30/2003 S4K5

Answer 1



feedback

441. The diagram shows the interaction between blood sugar levels and pancreatic activity. This process is an example of

- (1) a feedback mechanism maintaining homeostasis
- (2) an immune system responding to prevent disease
- (3) the digestion of sugar by insulin
- (4) the hormonal regulation of gamete production

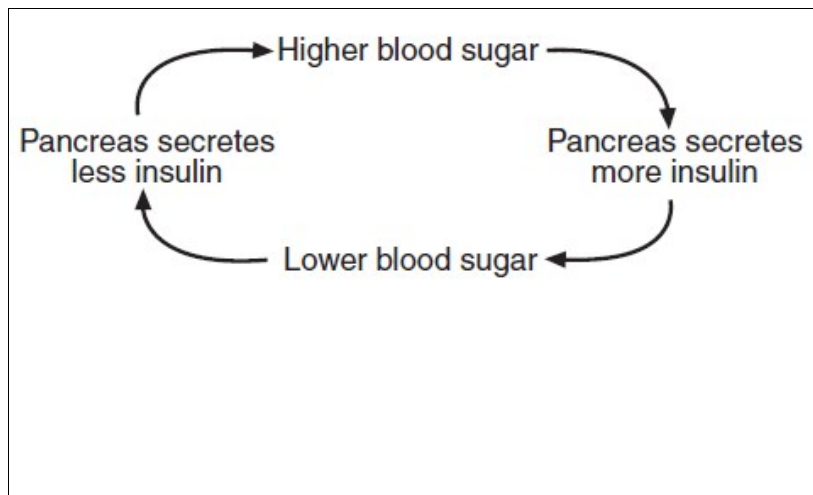
Data Base File Number: 809

Regents Date

June2002

29 6/19/2002 S4K5

Answer 1



feedback

442. Activities in the human body are represented in the diagram shown. Which title would be appropriate for the diagram? ROTATE (Turn) the diagram to the RIGHT to properly view the diagram.

- (1) Rate of Excretion Varies in Response to Amount of Water Taken In
- (2) Feedback Mechanisms Help to Maintain Homeostasis
- (3) Respiratory Rate Responds to an Increase in Muscle Activity
- (4) The Nervous System Responds to Changes in Blood Sugar Levels

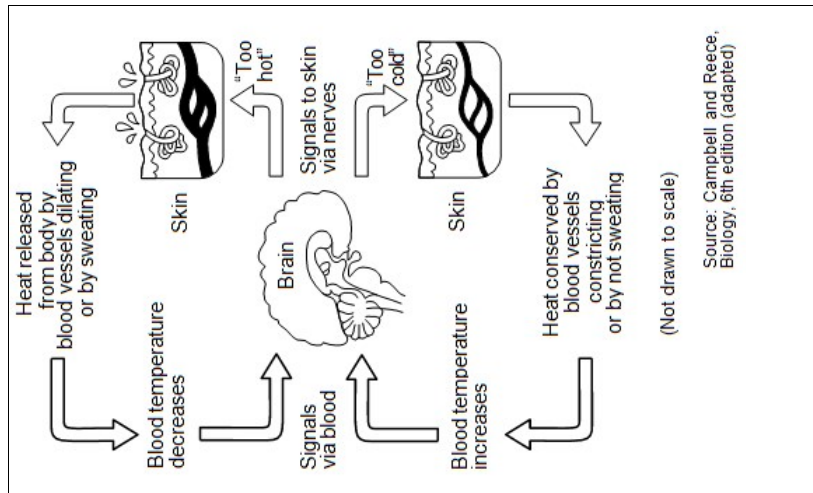
Data Base File Number: 312

Regents Date

Jan2011

31 1/25/2011 S4K5

Answer 2



fermentation

443. A student placed a solution of glucose and yeast in a vacuum bottle and sealed it with a two-hole stopper as shown in the diagram. The temperature of the yeast-glucose solution increased gradually with time, and the color of the indicator was observed and recorded throughout a 2-day period. The purpose of the investigation was most likely to

- (1) study the relationship between temperature and pressure
- (2) demonstrate the release of energy by a chemical process
- (3) show that proteins are produced by yeast
- (4) study autotrophic nutrition in yeast

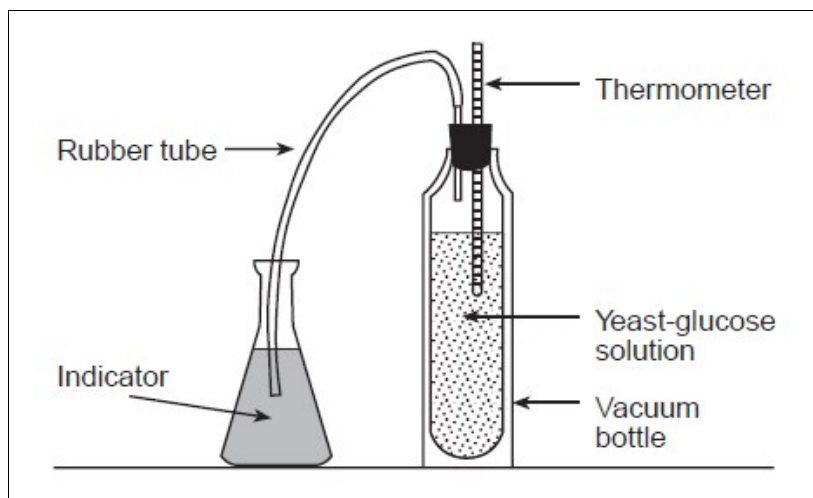
Data Base File Number: 856

Regents Date

June2001

59 6/15/2001 S1K2

Answer 2



fermentation

444. Base your answers to this question on the information given and on your knowledge of biology. - A biology class conducted an experiment to determine the rate of respiration of yeast in bread dough at various temperatures. Bread dough will rise due to the production of carbon dioxide by the yeast present in the dough.

An equal amount of dough was placed in the bottom of each of five graduated cylinders. Each cylinder was then placed in a different water bath to maintain a particular temperature. A diagram of the setup is shown. The amount of expansion of the dough in each cylinder was measured after 15 minutes.

The results are shown in the data table. At which temperature (degrees C) did yeast cells produce the least amount of gas in 15 minutes?

(1) 25

(3) 75

(2) 50

(4) 90

Data Base
File Number:

350

Regents Date

June 2011

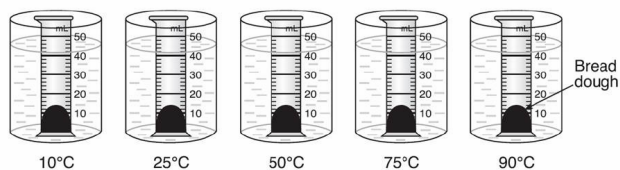
52

6/21/2011

S1K1

Answer

4



The Effect of Temperature on Yeast Respiration

Temperature of Water Bath (°C)	Change in Volume of Bread Dough (mL)
10	4
25	11
50	20
75	25
90	2

fermentation

445. An investigation was carried out and the results are shown in the diagram. Substance X resulted from a metabolic process that produces ATP in yeast (a single-celled fungus). Which statement best describes substance X?

- (1) It is oxygen released by protein synthesis.
- (2) It is glucose that was produced in photosynthesis.
- (3) It is starch that was produced during digestion.
- (4) It is carbon dioxide released by respiration.

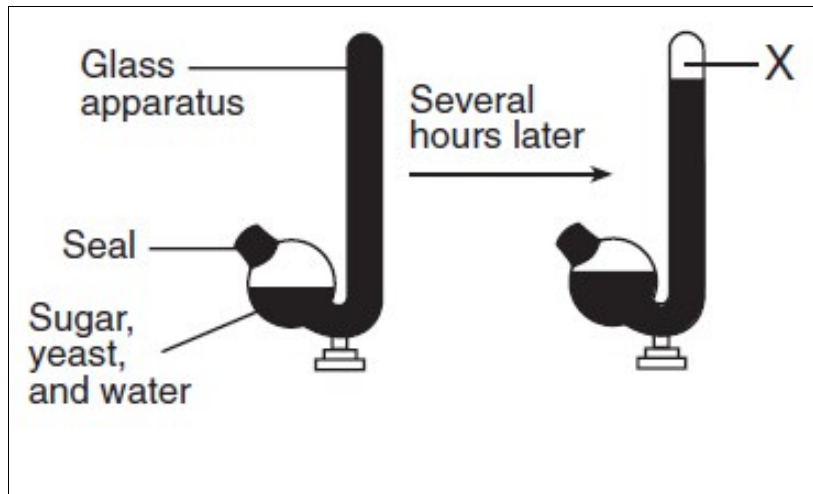
Data Base File Number: 565

Regents Date

June 2005

32 6/22/2005 S4K5

Answer 4



fertilization

446. The diagram shows stages of human reproduction. The direct result of fertilization is represented at

- (1) A
- (2) B
- (3) C
- (4) D

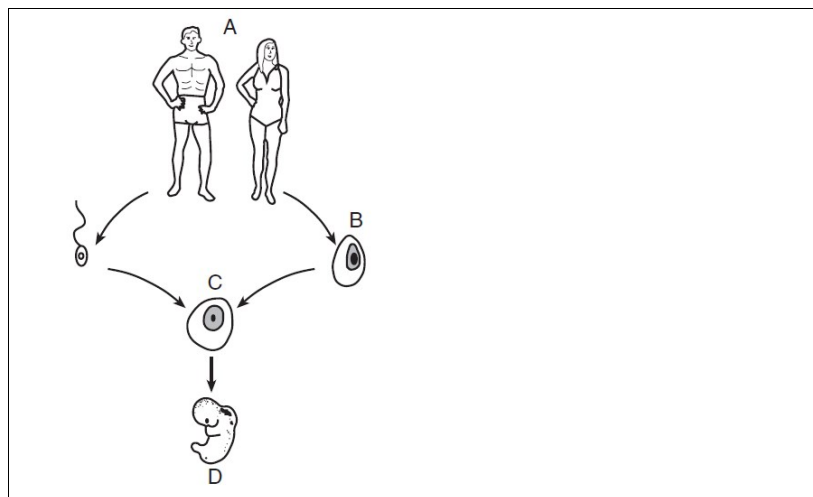
Data Base File Number: 301

Regents Date

Jan 2011

2 1/25/2011 S4K4

Answer 3



fertilization

447. Which diagram correctly represents a step in the normal process of human reproduction?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

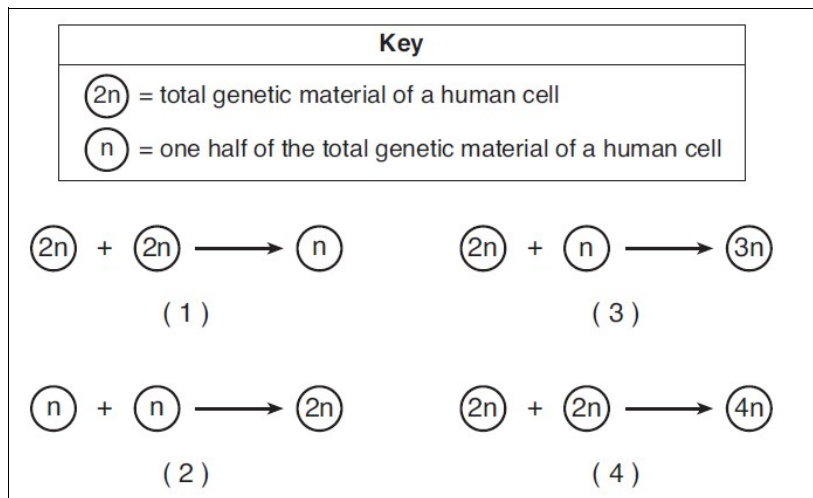
Data Base File Number: 884

Regents Date

June 2013

43 6/11/2013 **S4K2**

Answer 2



fertilization

448. Which diagram best illustrates an event in sexual reproduction that would most directly lead to the formation of a human embryo?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

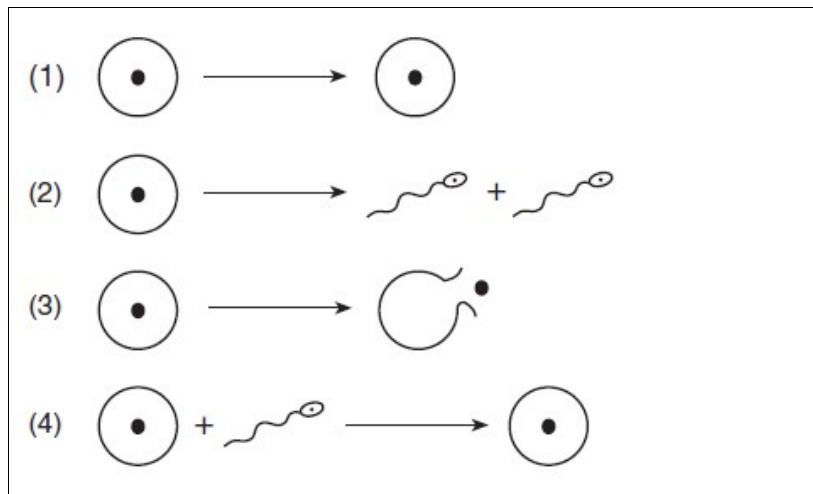
Data Base File Number: 479

Regents Date

June 2006

15 6/21/2006 **S4K4**

Answer 4



food chain

449. The diagram shown illustrates the relationships between organisms in an ecosystem. Which change would most likely reduce the population size of the carnivorous fish?

- (1) an increase in the autotroph populations
- (2) a decrease in the duck population
- (3) an increase in the raccoon population
- (4) a decrease in pathogens of carnivorous fish

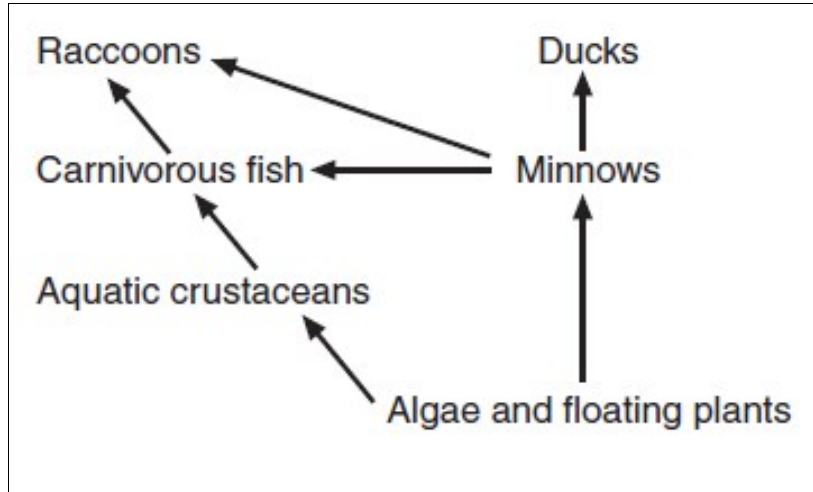
Data Base File Number: 784

Regents Date

Aug2002

33 8/13/2002 S4K6

Answer 3



food chain

450. Base your answer to this question on the table given and on your knowledge of biology. Species A, B, C, and D are all different heterotrophs involved in the same food chain in an ecosystem. The table shows the population of each of these species on one summer day. Which species is most likely an herbivore?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 626

Regents Date

Jan2013

52 1/23/2013 S4K6

Answer 2

Species	Population
A	85
B	847
C	6
D	116

food chain

451. Base your answer to this question on the food chain shown and the information given. The food chain involves organisms in Yellowstone National Park. Wolves in the park were killed or driven off by humans in the 1920s and 1930s. In the winter of 1995, humans released 17 wolves from Canada into the park. A year later, 14 more wolves were released. One possible reason that the wolves were released into the park was to

- (1) eliminate unwanted autotrophs
- (2) reduce an overpopulation of elk
- (3) provide food for small predators
- (4) increase the number of herbivores

Data Base File Number: 393

Regents Date

Jan2012

49 1/25/2012 S4K6

Answer 2

Grasses → Elk → Wolves

food chain

452. Species A, B, C, and D are all different heterotrophs involved in the same food chain in an ecosystem. The chart shows the population of each species at the same time on a summer day. Which statement best describes one of these species of heterotrophs?

- (1) Species A is the most numerous because it can make its own food.
- (2) Species B probably feeds on species D.
- (3) Species C and B interbred to produce species A.
- (4) Species D is most likely the top predator in the food chain.

Data Base File Number: 73

Regents Date

Jan2008

35 1/25/2008 S4K6

Answer 4

Species	Population
A	847
B	116
C	85
D	6

food chain

453. The diagram shows a food chain. If the population of bobcats decreases, what will most likely be the long-term effect on the rabbit population?

- (1) It will increase, only.
- (2) It will decrease, only.
- (3) It will increase and then decrease.
- (4) It will decrease and then increase.

Data Base File Number: 866

Regents Date

Aug2001

29 8/16/2001 S4K7

Answer 3

Grasses → Rabbits → Bobcats

food chain

454. Two food chains are represented in the diagram. Decomposers are important for supplying energy for

- (1) food chain A, only
- (2) food chain B, only
- (3) both food chain A and food chain B
- (4) neither food chain A nor food chain B

Data Base File Number: 42

Regents Date

June2007

42 6/20/2007 S4K6

Answer 4

Food chain A: aquatic plant → insect → frog → hawk
Food chain B: grass → rabbit → hawk

food chain

455. A food chain is illustrated in the diagram shown. The "wavy arrows" most likely indicate
- (1) energy released into the environment as heat
 - (2) oxygen produced by respiration
 - (3) the absorption of energy that has been synthesized
 - (4) the transport of glucose away from the organism

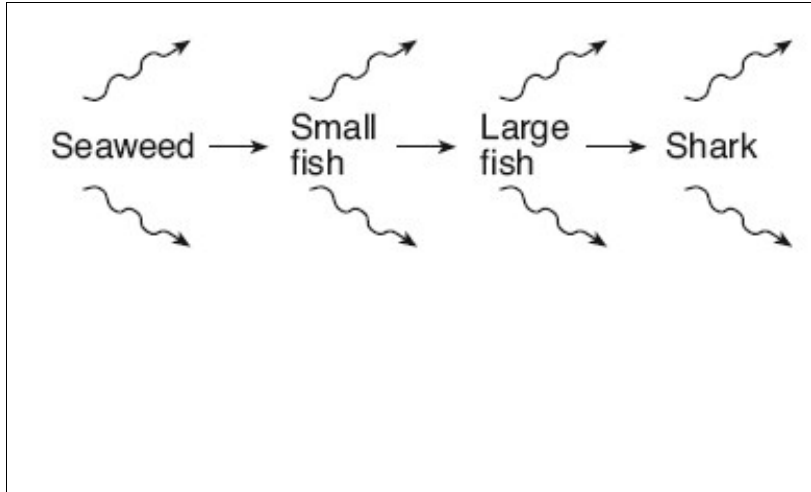
Data Base File Number: 185

Regents Date

June 2009

25 6/18/2009 **S4K6**

Answer 1



food chain

456. The diagram shown represents a food chain made up of organisms found in a field. Which row in the chart correctly identifies characteristics that can be associated with the members of this food chain?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

Data Base File Number: 370

Regents Date

Aug 2011

42 8/18/2011 **S4K1**

Answer 3

The diagram shows a linear food chain: Mouse → Snake → Owl.

Row	Producer	Consumer	Autotroph	Heterotroph
(1)	corn	snake	mouse	owl
(2)	mouse	owl	snake	mouse
(3)	corn	owl	corn	snake
(4)	owl	corn	snake	corn

food chain

457. A food chain is represented. Structures within the rabbit are formed using

- (1) solar energy from the grass
- (2) heat energy lost to the environment
- (3) chemical energy from the hawk
- (4) chemical energy from the grass

Data Base File Number: 921

Regents Date

Jan2014

24 1/27/2014 S4K6

Answer 4

grass → rabbit → hawk

food chain

458. A food chain is represented in the diagram. This food chain contains

- (1) 4 consumers and no producers
- (2) 1 predator, 1 parasite, and 2 producers
- (3) 2 carnivores and 2 herbivores
- (4) 2 predators, 1 herbivore, and 1 producer

Data Base File Number: 97

Regents Date

June2008

27 6/24/2008 S4K6

Answer 4

Grass → Cricket → Frog → Owl

food pyramid

459. An energy pyramid containing autotrophs and other organisms from a food chain is represented by the diagram. Carnivores would most likely be located in

- (1) level I, only
- (2) level I and level II
- (3) level III, only
- (4) level II and level III

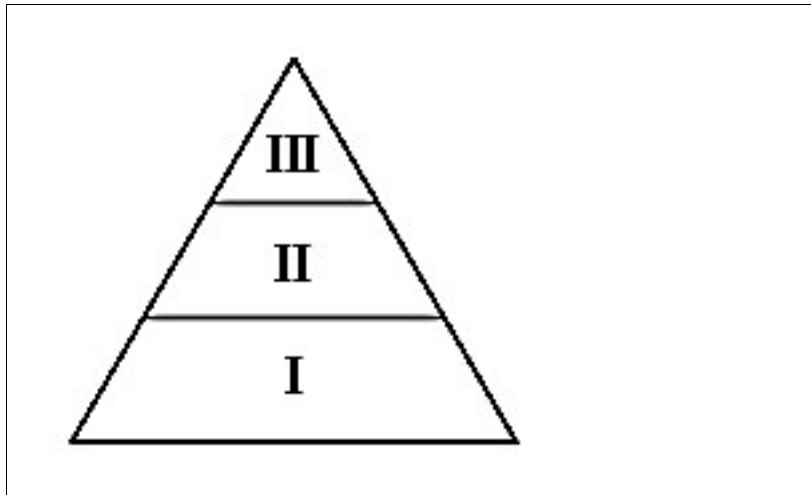
Data Base File Number: 10

Regents Date

Aug2007

24 8/16/2007 S4K6

Answer 3



food pyramid

460. The diagram shown represents a model of a food pyramid. Which statement best describes what happens in this food pyramid?

- (1) More organisms die at higher levels than at lower levels, resulting in less mass at higher levels.
- (2) Energy is lost to the environment at each level, so less mass can be supported at each higher level.
- (3) When organisms die at higher levels, their remains sink to lower levels, increasing the mass of lower levels.
- (4) Organisms decay at each level, and thus less mass can be supported at succeeding higher levels.

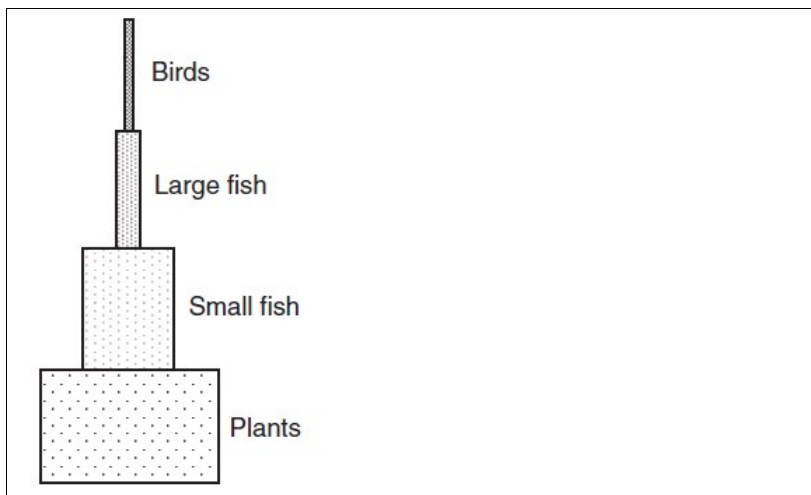
Data Base File Number: 782

Regents Date

Aug2002

27 8/13/2002 S4K6

Answer 2



food pyramid

461. A food pyramid representing relationships in a pond community is shown in the diagram. The energy of the Sun is made available to the pond community through the activities of the organisms at level

- (1) A (3) C
(2) B (4) D

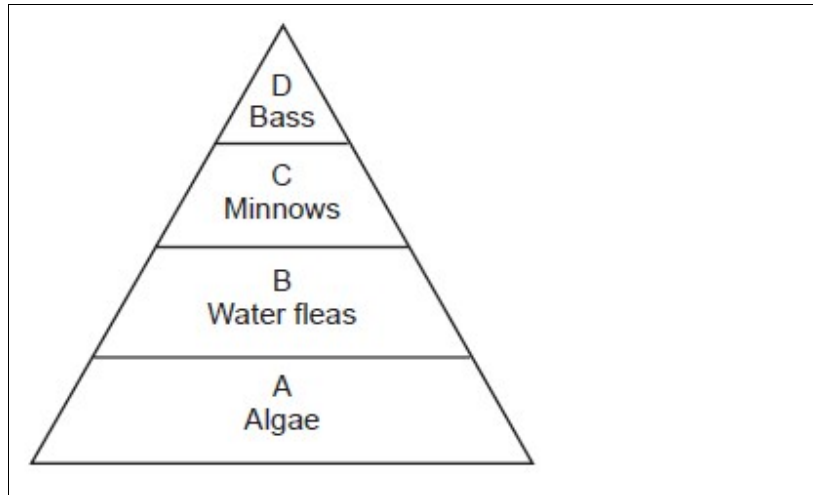
Data Base File Number: 848

Regents Date

June 2001

24 6/15/2001 S4K6

Answer 1



food pyramid

462. Base your answer to this question on the information shown and on your knowledge of biology. The graph represents the amount of energy stored in each level of an energy pyramid. Which level most likely represents the autotrophs in the energy pyramid?

- (1) level 1 (3) level 3
(2) level 2 (4) level 4

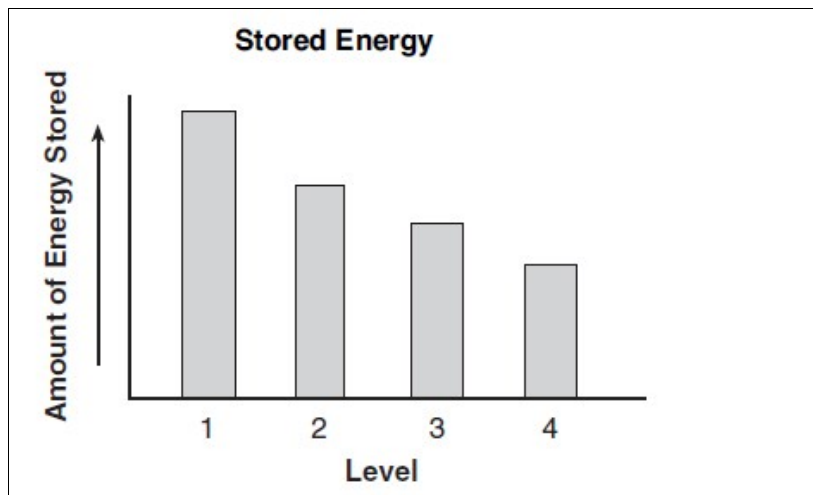
Data Base File Number: 246

Regents Date

Jan 2010

52 1/26/2010 S1K3

Answer 1



food pyramid

463. A diagram frequently used in ecological studies is shown. This diagram can be used to represent the

- (1) dependency of animal survival on physical conditions in an ecosystem
- (2) loss of energy from various groups of organisms in an ecosystem
- (3) competition among species in an ecosystem
- (4) mechanisms that maintain homeostasis in the plants in an ecosystem

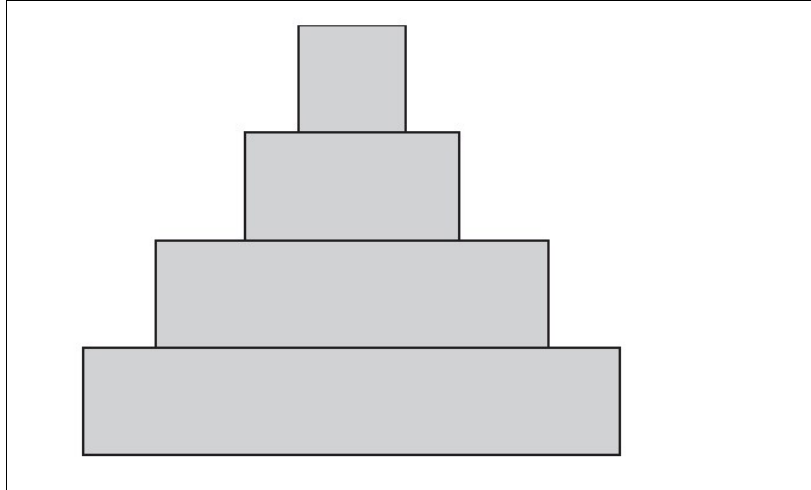
Data Base File Number: 340

Regents Date

June 2011

32 6/21/2011 S4K6

Answer 2



food pyramid

464. The diagram shown represents a food pyramid. The concentration of the pesticide DDT in individual organisms at level D is higher than the concentration in individuals at level A because DDT is

- (1) synthesized by organisms at level D
- (2) excreted by organisms at level A as a toxic waste
- (3) produced by organisms at level C which are eaten by organisms at level D
- (4) passed through levels A, B, and C to organisms at level D

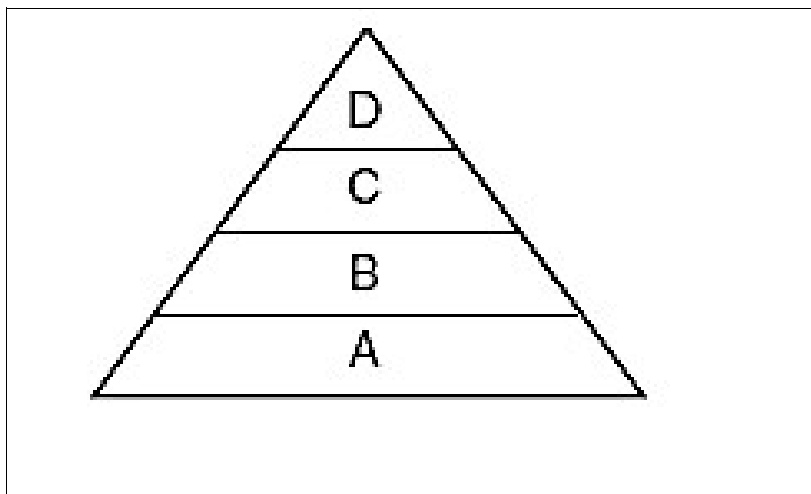
Data Base File Number: 12

Regents Date

Aug 2007

31 8/16/2007 S4K6

Answer 4



food pyramid

465. The diagram shown represents a pyramid of energy in an ecosystem. Which level in the pyramid would most likely contain members of the plant kingdom?

- (1) A
- (2) B
- (3) C
- (4) D

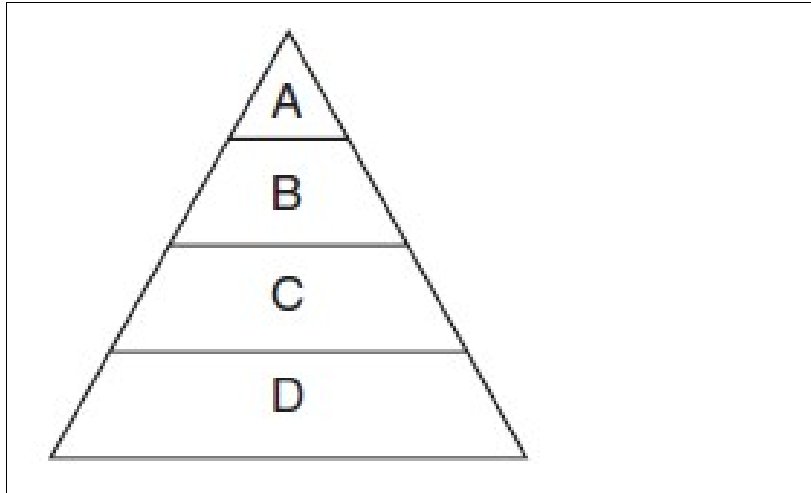
Data Base File Number: 704

Regents Date

Jan2003

2 1/30/2003 S4K1

Answer 4



food web

466. A partial food web is represented in the diagram. Letter "X" most likely represents

- (1) autotrophs
- (2) carnivores
- (3) decomposers
- (4) parasites

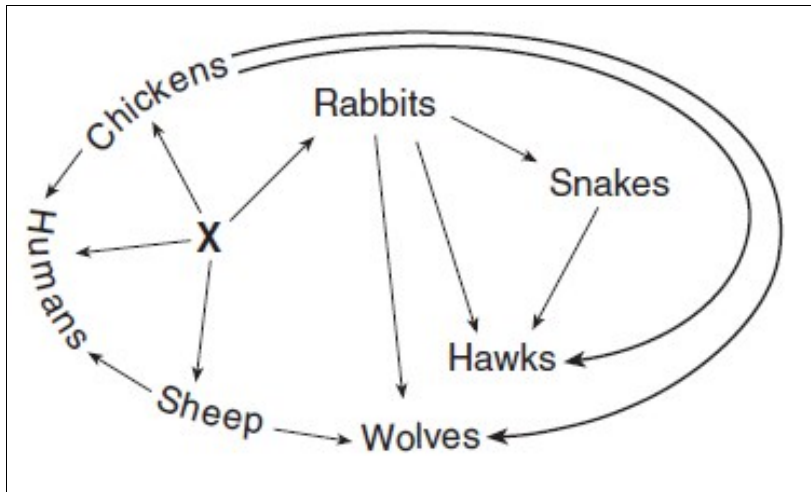
Data Base File Number: 685

Regents Date

Aug2004

2 8/17/2004 S4K1

Answer 1



food web

467. A food web is shown in the diagram. What would happen to the plant population if the number of decomposers decreased?

- (1) The number of plants would increase because there would be more sunlight for photosynthesis.
- (2) The number of plants would stay the same because decomposers are not necessary for plant survival.
- (3) The number of plants would decrease because minerals and nutrients would not be recycled.
- (4) It is impossible to determine what would happen to the plant numbers because there are too many other variables that control plant growth.

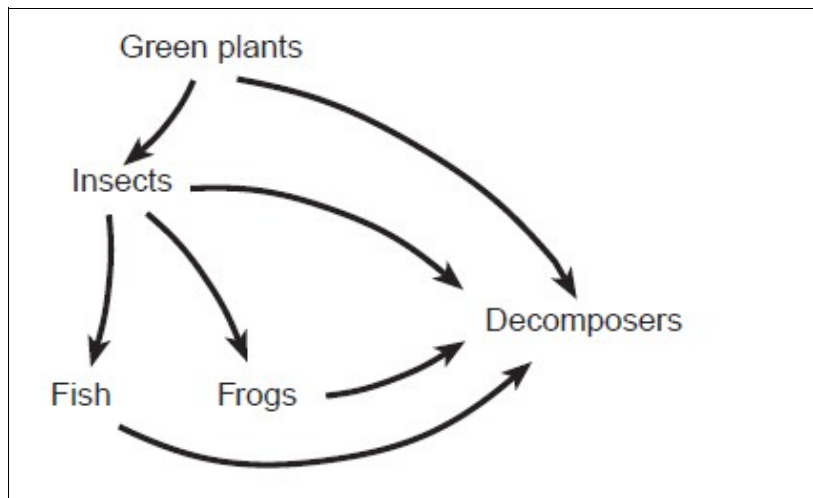
Data Base File Number: 851

Regents Date

June2001

36 6/15/2001 S4K1

Answer 3



food web

468. Base your answer to this question on the food web shown and on your knowledge of biology. A pesticide is sprayed to kill the crickets. What is one effect this spraying might have on the food web?

- (1) Frogs will be reduced.
- (2) Deer will increase.
- (3) Trees will decrease.
- (4) Mice will increase.

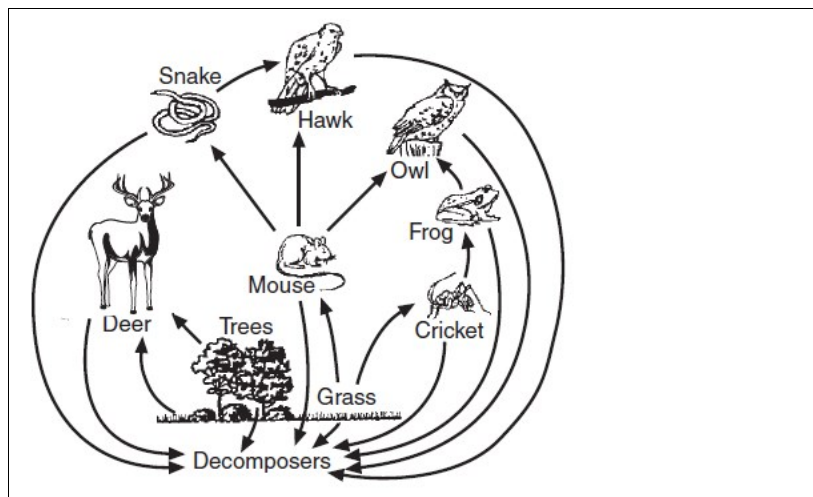
Data Base File Number: 798

Regents Date

Aug2002

70 8/13/2002 S4K7

Answer 1



food web

469. The diagram shown represents a food web. Which species would most likely be a decomposer?

- (1) A
- (2) B
- (3) C
- (4) D

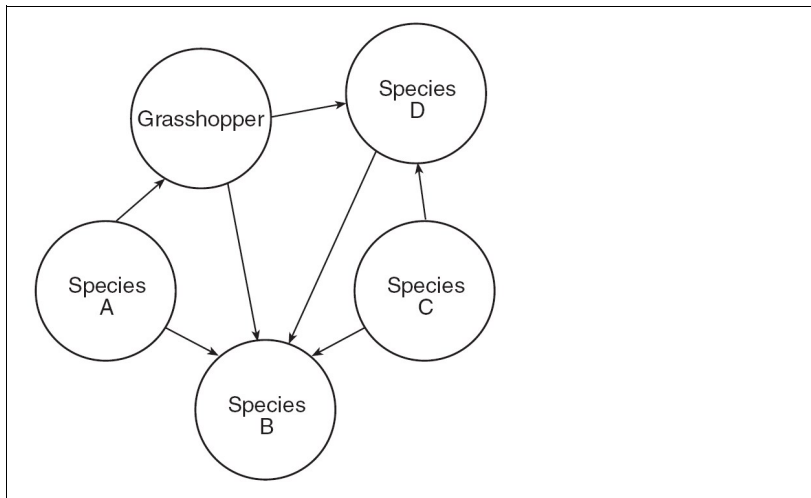
Data Base File Number: 348

Regents Date

June 2011

49 6/21/2011 **S4K1**

Answer 2



food web

470. The diagram shown represents a food web. Two of the herbivores represented in this food web are

- (1) toads and snakes
- (2) deer and mice
- (3) wolves and raccoons
- (4) grasshoppers and toads

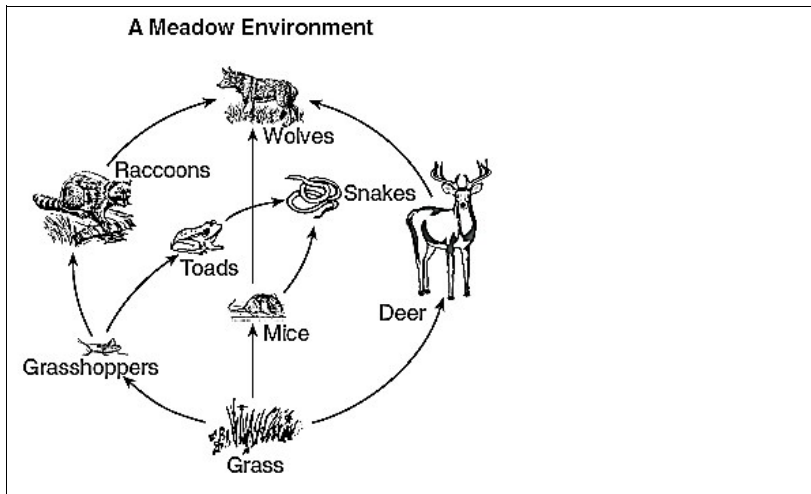
Data Base File Number: 57

Regents Date

Jan 2007

36 1/26/2007 **S4K6**

Answer 2



food web

471. The diagram below represents a food web composed of producers, consumers, and decomposers. Which group would represent the decomposer organisms?

- (1) A
- (2) B
- (3) C
- (4) D

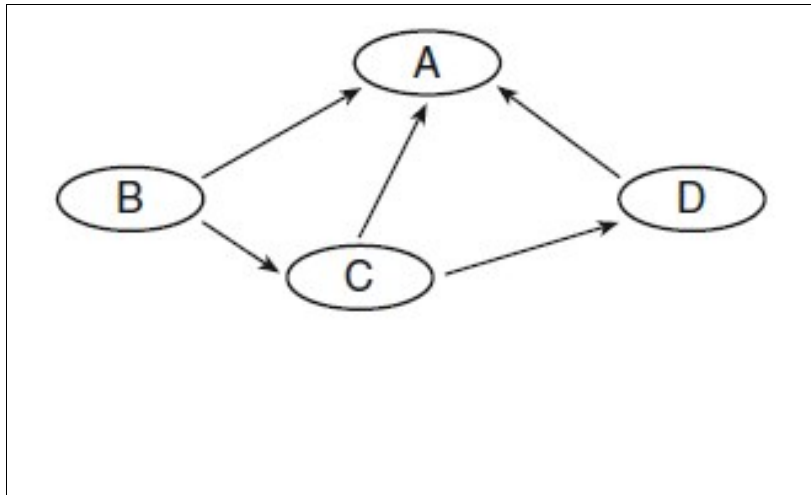
Data Base File Number: 436

Regents Date

Aug2012

34 8/17/2012 S4K1

Answer 1



food web

472. A food web is shown in the diagram. Which organisms feed on BOTH producers and decomposers?

- (1) amphipods
- (2) catfish
- (3) crayfish
- (4) protozoa

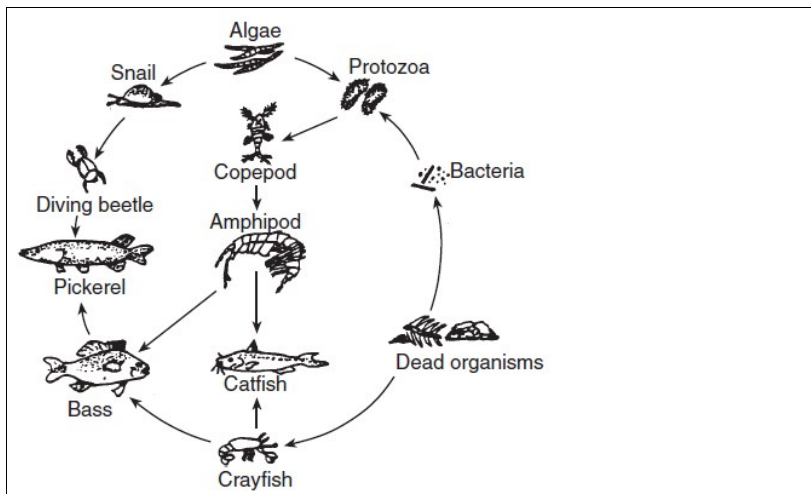
Data Base File Number: 594

Regents Date

Aug2005

40 8/16/2005 S4K6

Answer 4



food web

473. The diagram shown represents a food web. Which organisms are producers?

- (1) decomposers
- (2) trees and grasses
- (3) hawks
- (4) deer

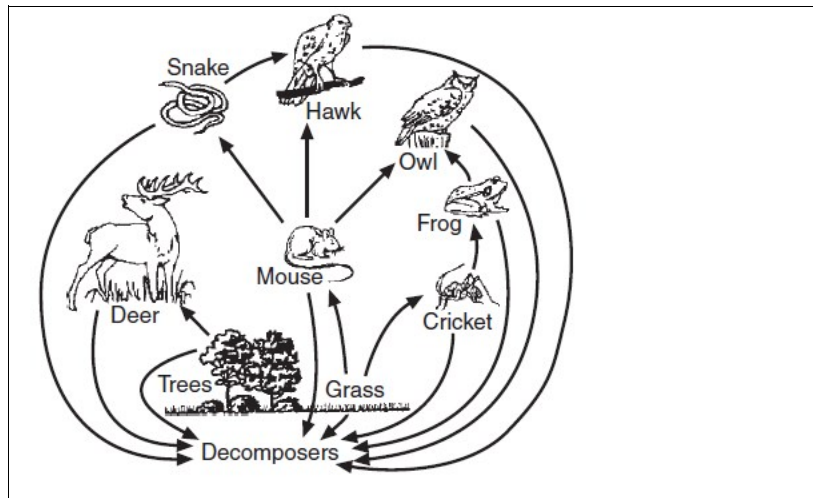
Data Base File Number: 824

Regents Date

June 2002

63 6/19/2002 **S4K1**

Answer 2



food web

474. A food web is represented by the diagram shown. A continuous DECREASE in the size of the rabbit population would most likely cause a DECREASE in which other population?

- (1) frog
- (2) cricket
- (3) grass
- (4) mountain lion

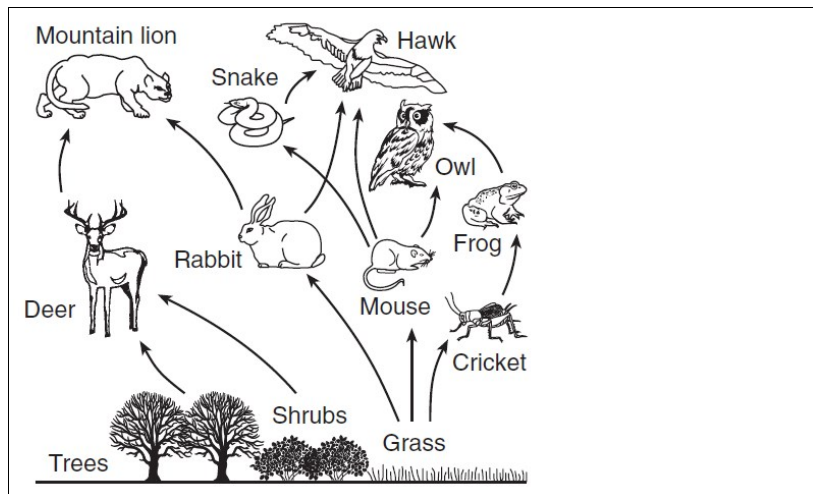
Data Base File Number: 236

Regents Date

Jan 2010

32 1/26/2010 **S4K1**

Answer 4



food web

475. The diagram shown represents a food web. The arrows only point away from "Grasses, shrubs" and not toward them. One biological reason that this is that

- (1) Grasses and shrubs are consumers
- (2) Grasses and shrubs are heterotrophs
- (3) Grasses and shrubs are producers
- (4) Grasses and shrubs are dominant

Data Base File Number: 544

Regents Date

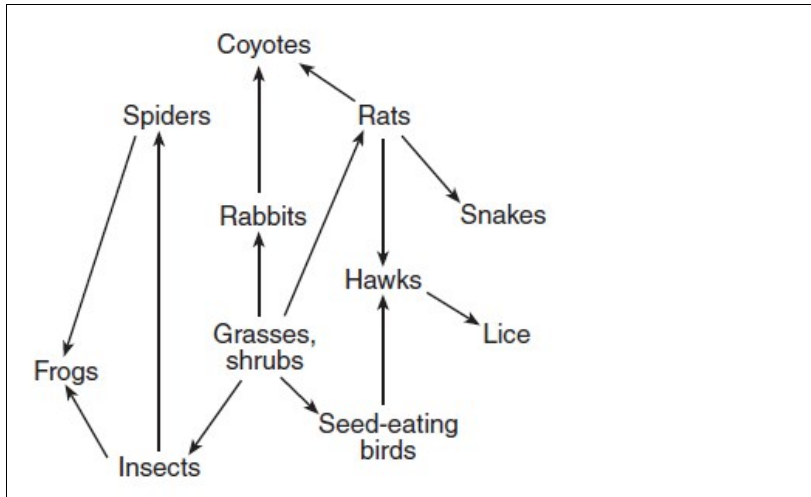
Jan2005

37

1/28/2005

S4K1

Answer 3



food web

476. Base your answer to this question on the food web and graph shown and on your knowledge of biology. The graph represents the interaction of two different populations, A and B, in the food web. Population A is made up of living animals. The members of population B feed on these living animals. The members of population B are most likely

- (1) scavengers
- (2) autotrophs
- (3) predators
- (4) parasites

Data Base File Number: 677

Regents Date

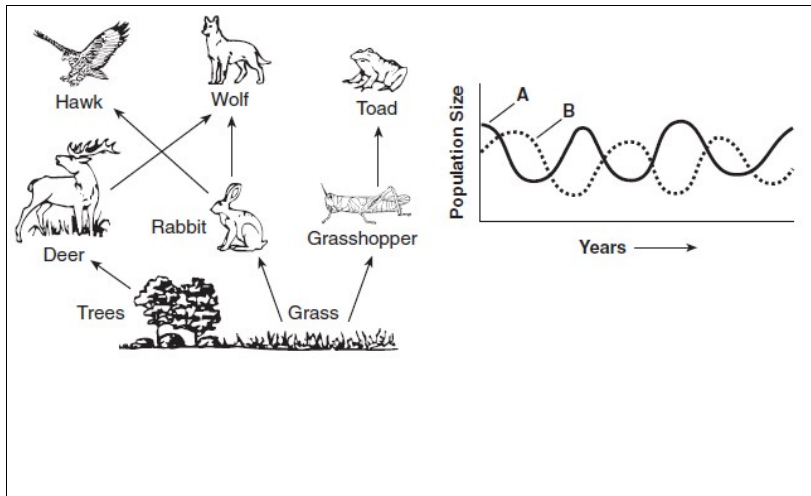
June2004

47

6/18/2004

S4K6

Answer 3



food web

477. The diagram shown represents a food web. Which organisms are correctly paired with their nutritional roles?

- (1) hawk - decomposer; insect-eating bird - parasite
- (2) mouse - autotroph; flower seed - heterotroph
- (3) mountain lion - predator; bark beetle - herbivore
- (4) grasshopper - carnivore; grass - autotroph

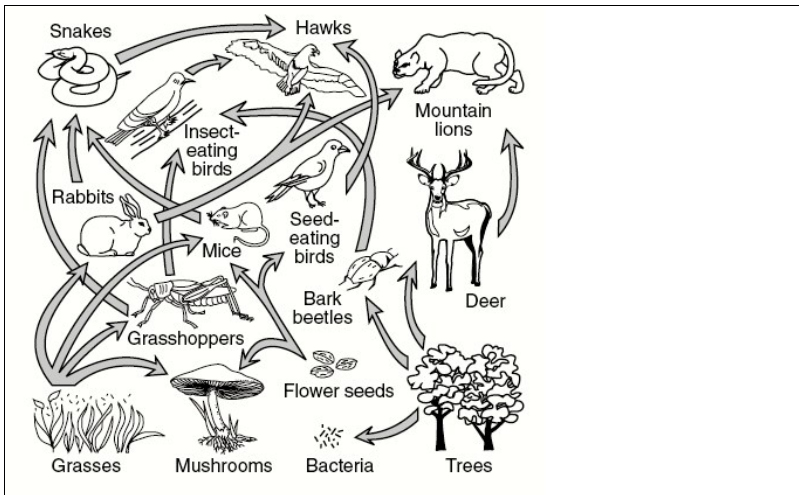
Data Base File Number: 149

Regents Date

Jan2009

9 1/27/2009 S4K1

Answer 3



food web

478. A food web is represented by the diagram shown, Which population in this food web would most likely be NEGATIVELY affected by an increase in the mouse population?

- (1) snake
- (2) rabbit
- (3) wolf
- (4) hawk

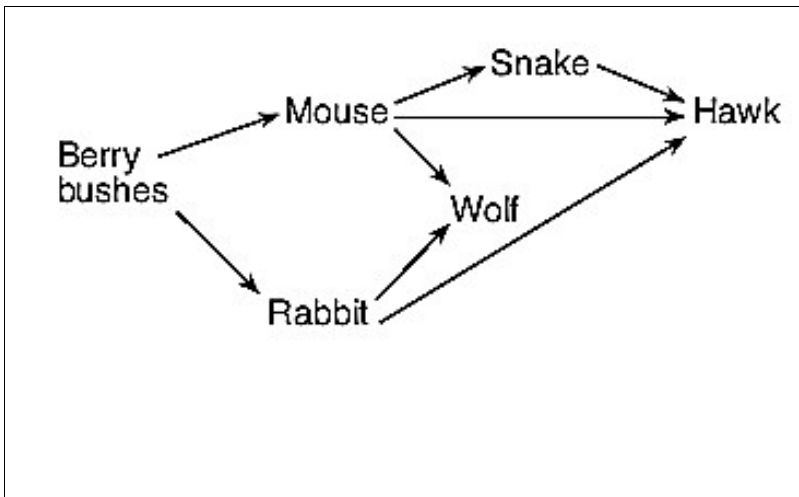
Data Base File Number: 69

Regents Date

Jan2008

25 1/25/2008 S4K6

Answer 2



food web

479. The graph shown represents the amount of available energy at successive nutrition levels in a particular food web. The X's in the diagram represent the amount of energy that was most likely

- (1) changed into inorganic compounds
- (2) retained indefinitely by the herbivores
- (3) recycled back to the producers
- (4) lost as heat to the environment

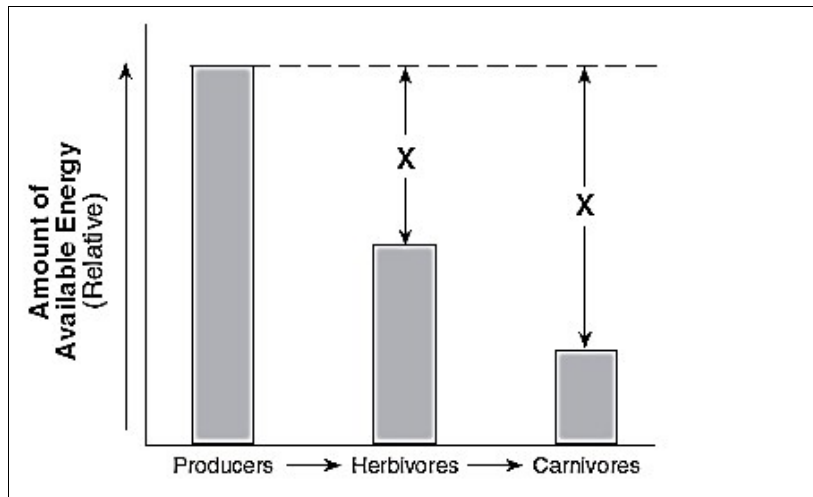
Data Base File Number: 30

Regents Date

June 2007

27 6/20/2007 S4K6

Answer 4



food web

480. Nutritional relationships between organisms are shown in the diagram given. The mouse population would most likely DECREASE if there were

- (1) an increase in the frog and tree populations
- (2) a decrease in the snake and hawk populations
- (3) an increase in the number of decomposers in the area
- (4) a decrease in the amount of available sunlight

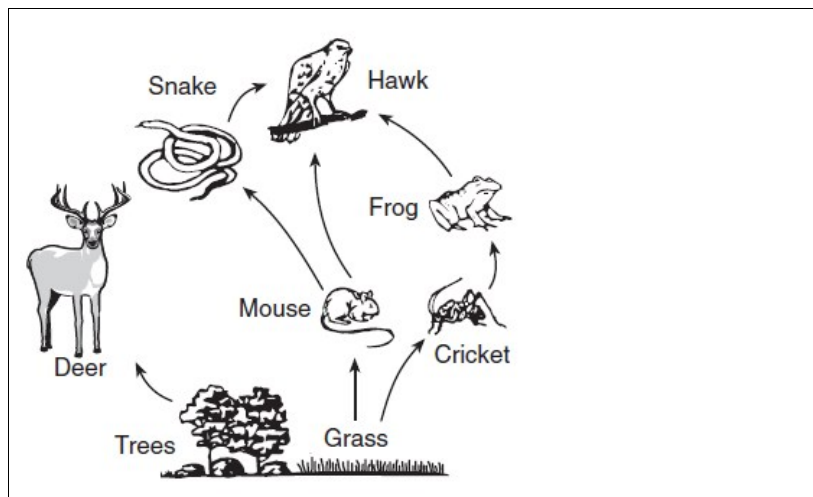
Data Base File Number: 459

Regents Date

Jan 2006

25 1/27/2006 S4K6

Answer 4



food web

481. Base your answers to this questions on the food web shown and on your knowledge of biology. Which organisms are carnivores?

- (1) grass and trees (2) mouse, rabbit, and cricket (3) deer and mountain lion (4) frog, snake, and hawk

Data Base File Number: 321

Regents Date

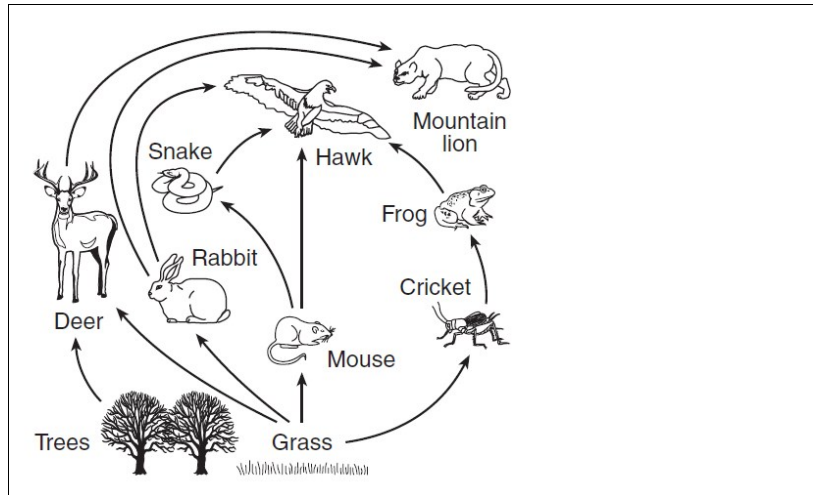
Jan2011

42

1/25/2011

S4K6

Answer 4



food web

482. The diagram shown represents a food web. Which statement regarding organisms in this food web is correct?

- (1) There would be more snakes than pocket gophers. (2) There would be more coyotes than rabbits. (3) There would be more insects than insect-eating birds. (4) There would be more hawks than seed-eating birds.

Data Base File Number: 908

Regents Date

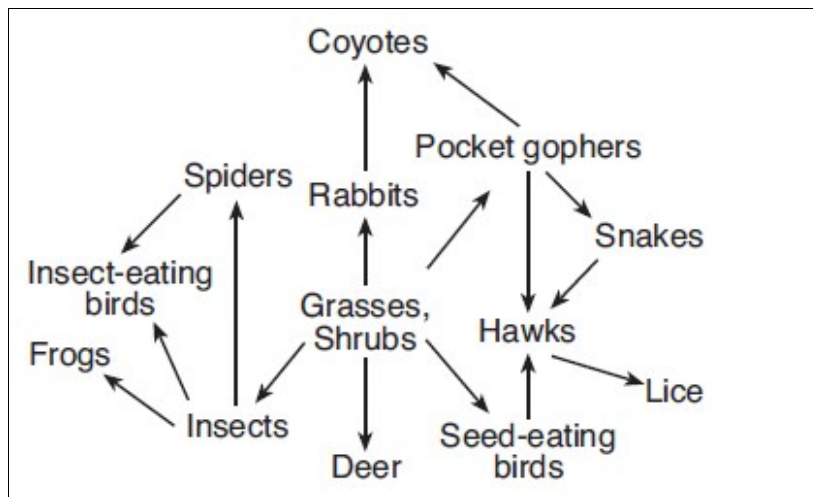
Aug2013

36

8/14/2013

S4K1

Answer 3



food web

483. A food web is represented in the diagram. Which statement best describes energy in this food web?

- (1) The energy content of level B depends on the energy content of level C.
- (2) The energy content of level A depends on energy provided from an abiotic source.
- (3) The energy content of level C is greater than the energy content of level A.
- (4) The energy content of level B is transferred to level A.

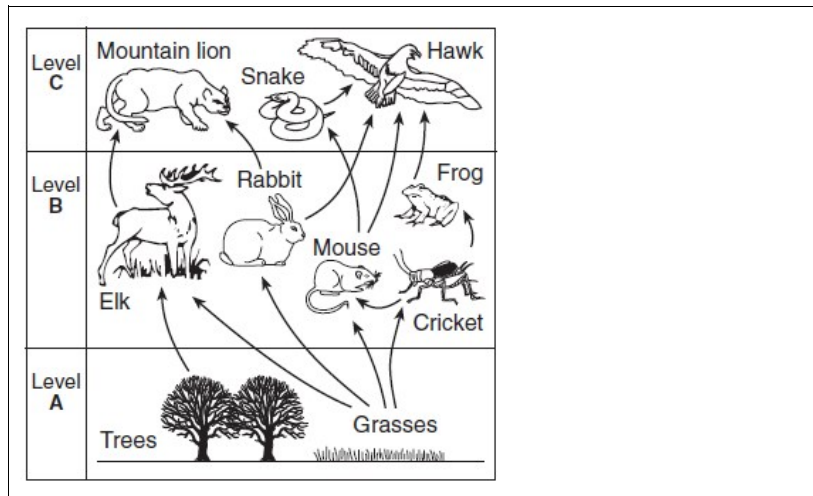
Data Base File Number: 477

Regents Date

June 2006

11 6/21/2006 S4K1

Answer 2



food web

484. A food web is represented in the diagram shown. When water used to cool machinery is returned to a river, it raises the river water temperature. This causes a sharp decline in small invertebrate populations. Based on the food web, a likely consequence of this change would be

- (1) an increase in the number of clams
- (2) a decrease in the number of water plants
- (3) an increase in the number of crabs
- (4) a decrease in the number of crayfish

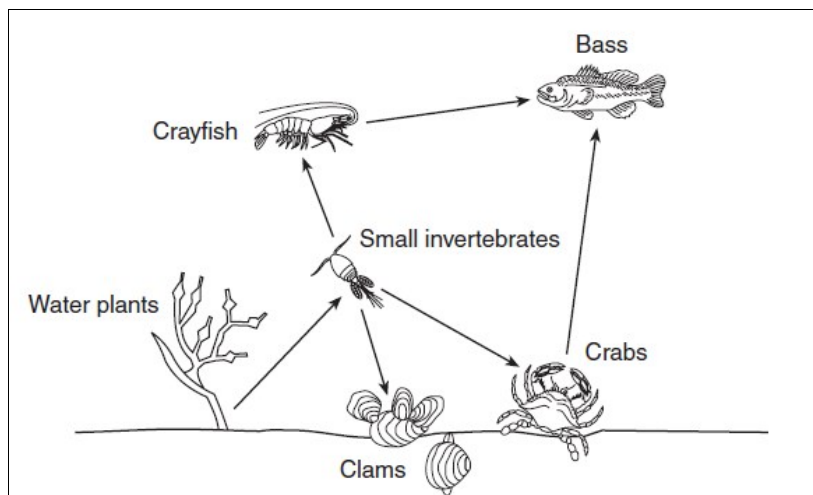
Data Base File Number: 371

Regents Date

Aug 2011

43 8/18/2011 S4K1

Answer 4



food web

485. Base your answer to this question on the diagram shown, which represents a pond food web, and on your knowledge of biology. Which statement best describes what will most likely happen if the amphipod population is removed from this food web?

- (1) Population sizes of species at feeding levels both before and after amphipods will decrease.
- (2) Population sizes of species at feeding levels both before and after amphipods will increase.
- (3) Population sizes of species at feeding levels after amphipods will increase and before amphipods will decrease.
- (4) Population sizes of species at feeding levels after amphipods will decrease and before amphipods will increase.

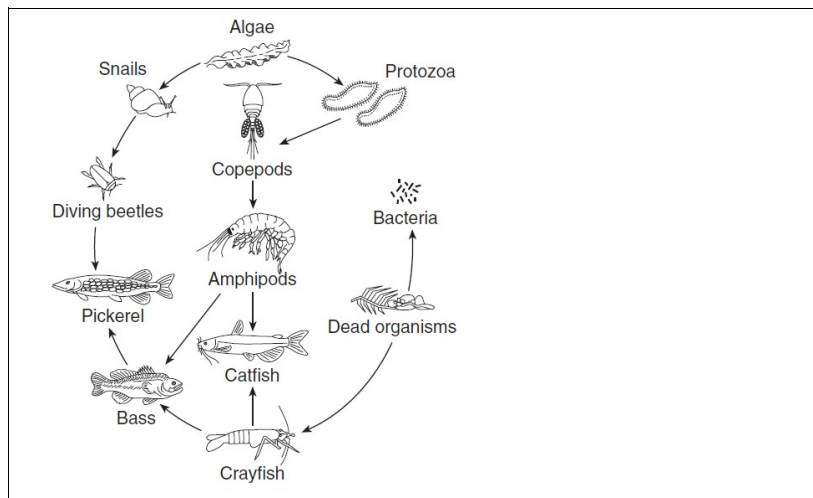
Data Base File Number: 289

Regents Date

Aug2010

40 8/18/2010 S4K1

Answer 4



food web

486. A food web is represented in the diagram shown. Which organisms are correctly paired with their roles in this food web?

- (1) mountain lions, bark beetles -- producers; hawks, mice -- heterotrophs
- (2) snakes, grasshoppers -- consumers; mushrooms, rabbits -- autotrophs
- (3) all birds, deer -- consumers; grasses, trees -- producers
- (4) seeds, bacteria -- decomposers; mice, grasses -- heterotrophs

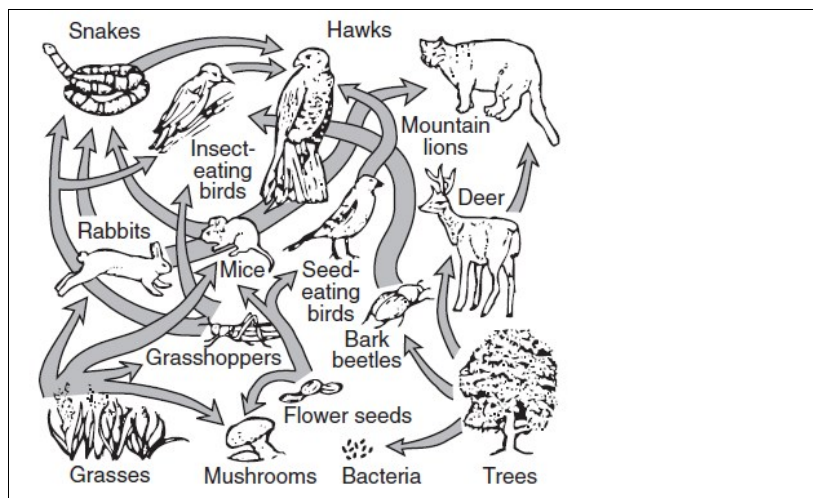
Data Base File Number: 642

Regents Date

Jan2004

25 1/29/2004 S4K6

Answer 3



food web

487. Base your answer to this question on the diagram of a food web as shown and on your knowledge of biology. If the population of mice is reduced by disease, which change will most likely occur in the food web?

- (1) The cricket population will increase.
- (2) The snake population will increase.
- (3) The grasses will decrease.
- (4) The deer population will decrease.

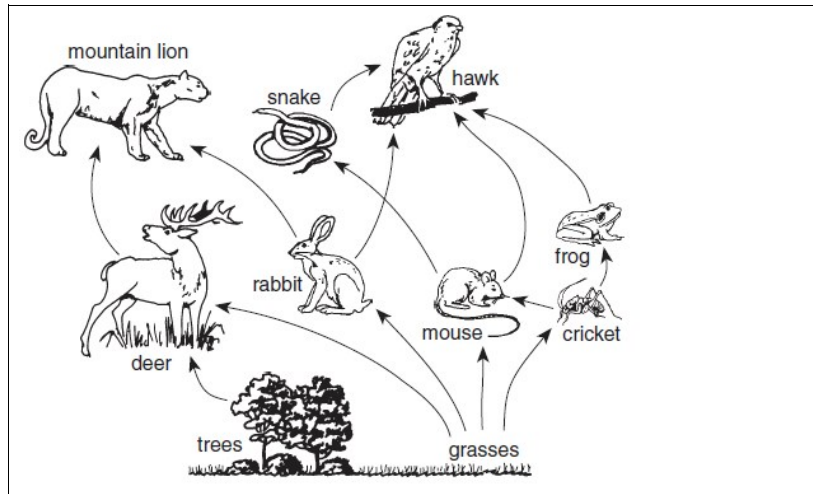
Data Base File Number: 721

Regents Date

Jan2003

50 1/30/2003 S4K6

Answer 1



fossil fuel

488. Base your answers to this question on the information in the table and on your knowledge of biology. Each year, a New York State power agency provides its customers with information about some of the fuel sources used in generating electricity. The table shown applies to the period of 2002-2003. In order to decrease the use of fossil fuels, the power agency should

- (1) decrease the use of coal and hydro (water)
- (2) increase the use of solar and hydro (water)
- (3) increase the use of oil and nuclear
- (4) increase the use of oil and coal

Data Base File Number: 108

Regents Date

June2008

43 6/24/2008 S4K7

Answer 2

Fuel Source	Percentage of Electricity Generated
hydro (water)	86
coal	5
nuclear	4
oil	1
solar	0

Galapagos Finches

489. Base your answer to this question on the information and chart shown and on your knowledge of biology. The Galapagos Islands are home to many different species of finches. Three finch species, their relative beak sizes, and their food preferences are represented in the chart shown. All three species live on the same island. Which statement is correct concerning the nutritional preferences of these finches?

- (1) The three species do not compete for food because they eat different types of foods.
- (2) The vegetarian and cactus finches compete for food because they both feed on producers.
- (3) The vegetarian and warbler finches compete for food because they both live in trees.
- (4) The three species of finches compete for food because their beaks are similar in shape and size.

Data Base
File Number:

936

Regents Date

Jan2014







81

1/27/2014

LAB3

Answer

1

Name	Foods
Vegetarian finch <i>Platyspiza crassirostris</i> 	Buds, leaves, fruit of trees 
Warbler finch <i>Certhidea olivacea</i> 	Flying and ground-dwelling insects 
Cactus finch <i>Geospiza scandens</i> 	Cactus flowers and nectar 

Galapagos Finches

490. Base your answer to this question on the information and diagram given and on your knowledge of biology. Average beak sizes of the seed-eating medium ground finch on one of the Galapagos Islands are shown in the diagram below. During wet years, all types of seeds are abundant. The medium ground finch prefers to eat small seeds that are easy to crush. However, during droughts (dry years), when small seeds are not as abundant, they eat the larger seeds on the island. How might an extended period of drought influence the ground finch population?

- (1) The birds with smaller beaks would be more numerous.
- (2) The birds with larger beaks would be more numerous.
- (3) Drought decreases seed availability, but has no influence on the ground finch.
- (4) Drought increases seed availability, and all ground finches would be more numerous.

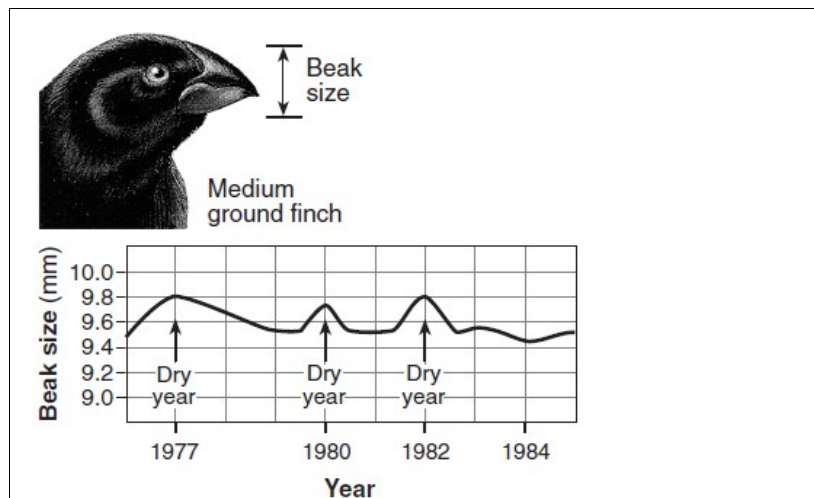
Data Base File Number: 375

Regents Date

Aug2011

73 8/18/2011 LAB3

Answer 2



Galapagos Finches

491. Base your answer to this question the diagram shown and on your knowledge of biology. There are a number of islands in the Galapagos that these finches could possibly inhabit. Why would each island not be expected to have all of the species shown?

- (1) Some islands have a large number of predators.
- (2) Some islands have no water.
- (3) Each island has its own set of environmental conditions which might not provide food or shelter for some species.
- (4) Some islands do not have a large enough land mass to support more than one type of finch.

Data Base File Number: 935

Regents Date

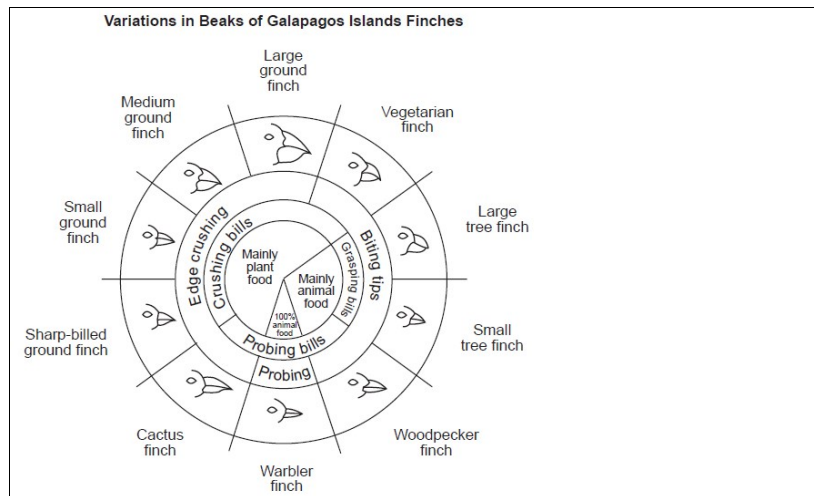
Jan2014

80

1/27/2014

LAB3

Answer 3



Galapagos Finches

492. The diagram shows variations in beak sizes and shapes for several birds on the Galapagos Islands. Galapagos finches evolved partly due to

- (1) cloning and recombination
- (2) migration and selective breeding
- (3) mutation and asexual reproduction
- (4) variation and competition

Data Base File Number: 603

Regents Date

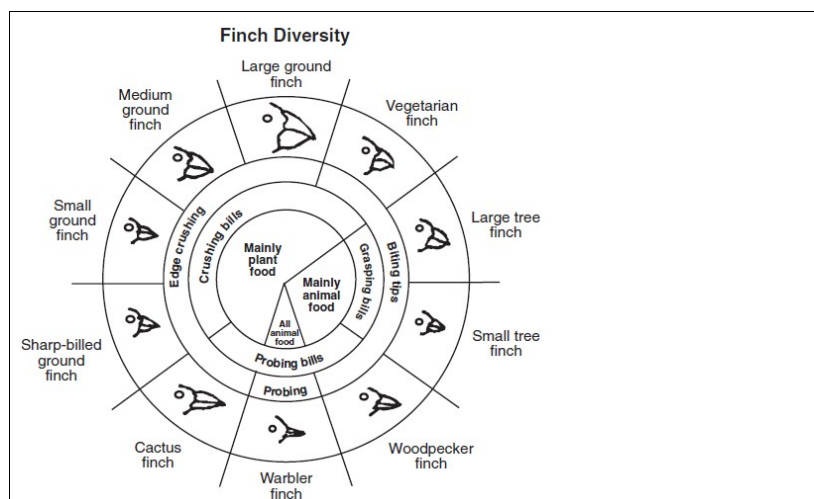
Aug2005

72

8/16/2005

LAB3

Answer 4



Galapagos Finches

493. Base your answer to this question on the information in the diagram shown and on your knowledge of biology. Small ground finches and medium ground finches live on an island with abundant plant and animal food. The differences observed in the bird beaks are most likely due to

- (1) asexual reproduction of these finch species
- (2) the selection for different shaped beaks that best suit different niches
- (3) the genetic recombination associated with mitotic cell division
- (4) the genetic engineering of the DNA of each of these species

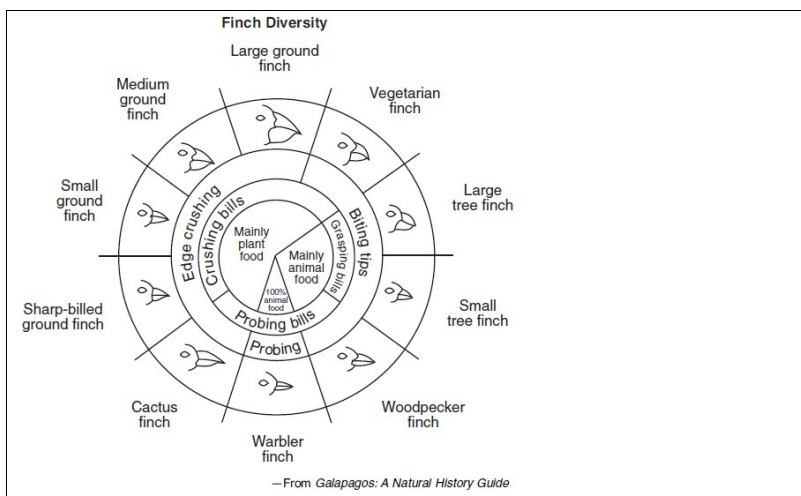
Data Base File Number: 299

Regents Date

Aug2010

71 8/18/2010 LABS

Answer 2



Galapagos Finches

494. Base your answer to this question on the diagram shown and on your knowledge of biology. On an island populated by both warbler finches and small tree finches, there is a significant decrease in the amount of animal food. Which finch population would DECREASE more?

- (1) large ground finch
- (2) warbler finch
- (3) small ground finch
- (4) large tree finch

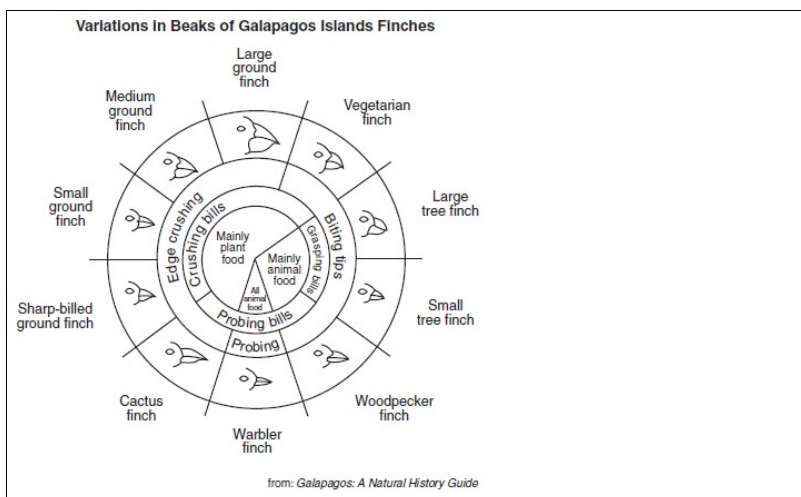
Data Base File Number: 399

Regents Date

Jan2012

83 1/25/2012 LAB3

Answer 2



Galapagos Finches

495. Base your answers to this question on the chart shown and on your knowledge of biology. Which finches would be most like the ancestral finch?

- (1) large ground finches
- (2) cactus finches
- (3) warbler finches
- (4) large tree finches

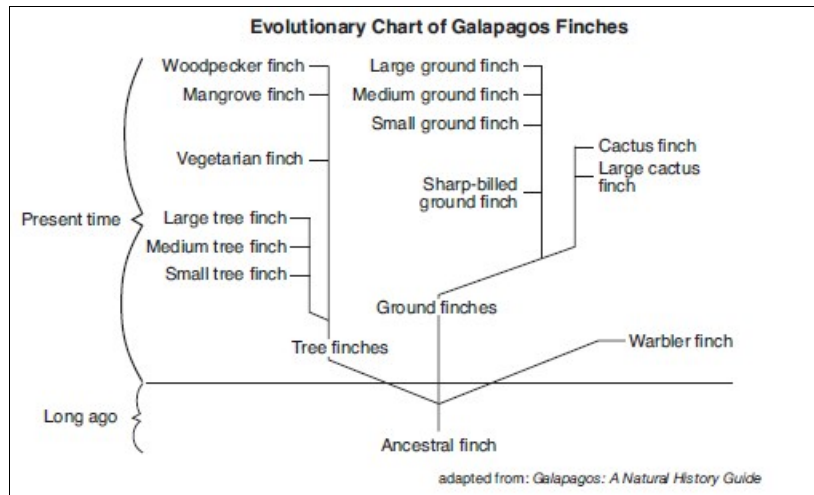
Data Base File Number: 916

Regents Date

Aug2013

81 8/14/2013 LAB3

Answer 3



Galapagos Finches

496. Base your answer to this question on the diagram shown and on your knowledge of biology. Which species of finch has an edge-crushing bill that can also probe into plants for food?

- (1) cactus finch
- (2) sharp-billed ground finch
- (3) warbler finch
- (4) large ground finch

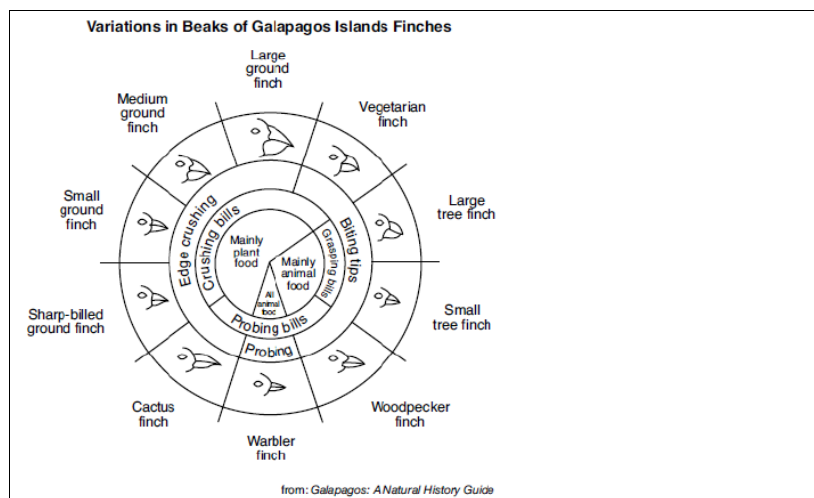
Data Base File Number: 427

Regents Date

June2012

75 6/19/2012 LAB3

Answer 1



Galapagos finches

497. Base your answer to this question on the finch diversity chart shown, which contains information concerning the finches found on the Galapagos Islands. Which bird would most likely compete for food with the large tree finch?

- (1) woodpecker finch or small tree finch
- (2) warbler finch
- (3) small ground finch
- (4) large ground finch

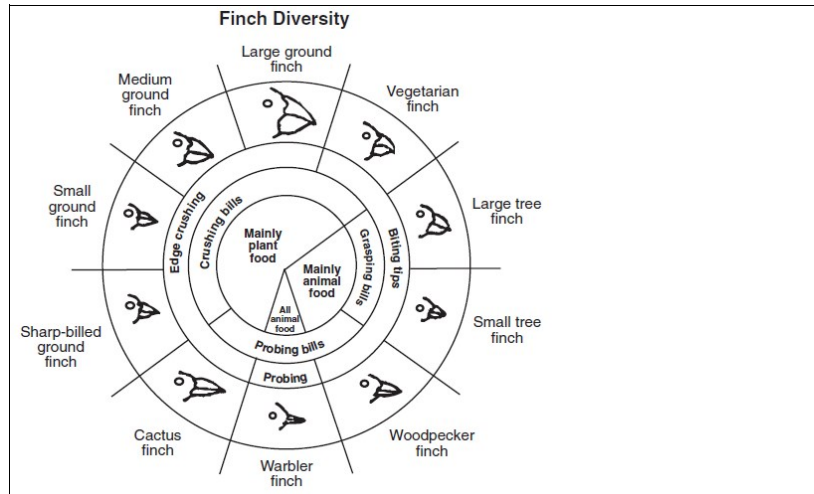
Data Base File Number: 531

Regents Date

Aug2006

68 8/16/2006 LAB3

Answer 1



Galapagos Islands

498. Base your answer to this question on the diagram shown and on your knowledge of biology. Which two finches could temporarily occupy the same niche?

- (1) large ground finch and warbler finch
- (2) vegetarian tree finch and medium ground finch
- (3) large insectivorous tree finch and woodpecker finch
- (4) small insectivorous tree finch and cactus ground finch

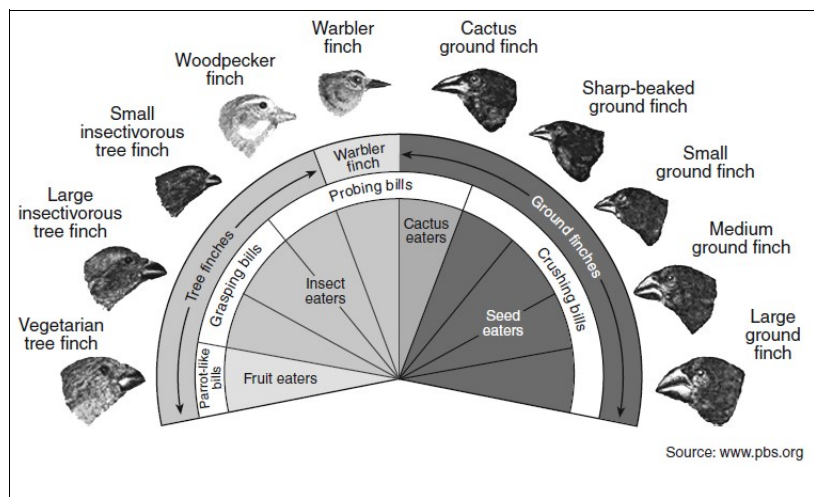
Data Base File Number: 449

Regents Date

Aug2012

75 8/17/2012 LAB3

Answer 3



gametes

499. The fruit fly represented in the diagram shown has unusual, curled wings that formed after exposure to radiation. In order for the fly to pass this trait on to its offspring, a change had to occur in

- (1) the blood cells of the fly
- (2) the gametes of the fly
- (3) all of the body cells of the fly
- (4) the muscles of the fly

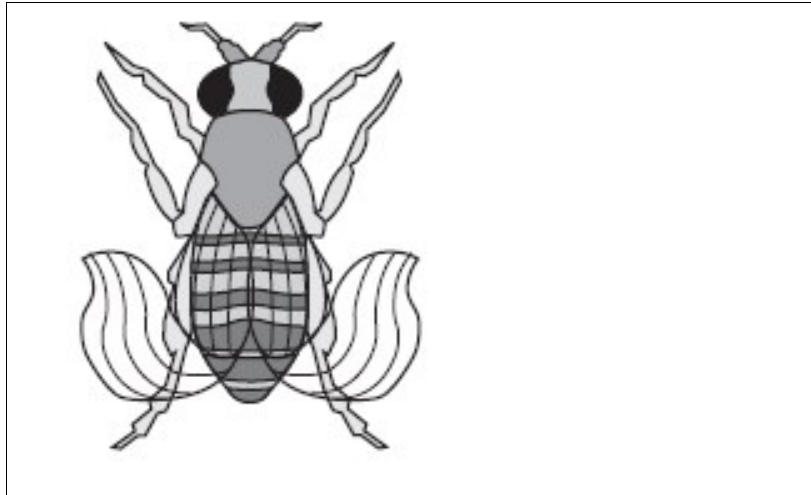
Data Base File Number: 901

Regents Date

Aug2013

13 8/14/2013 S4K3

Answer 2



gametes

500. The arrows in the diagram illustrate processes in the life of a species that reproduces sexually. Which processes result directly in the formation of cells with half the amount of genetic material that is characteristic of the species?

- (1) 1 and 2
- (2) 2 and 3
- (3) 3 and 4
- (4) 4 and 5

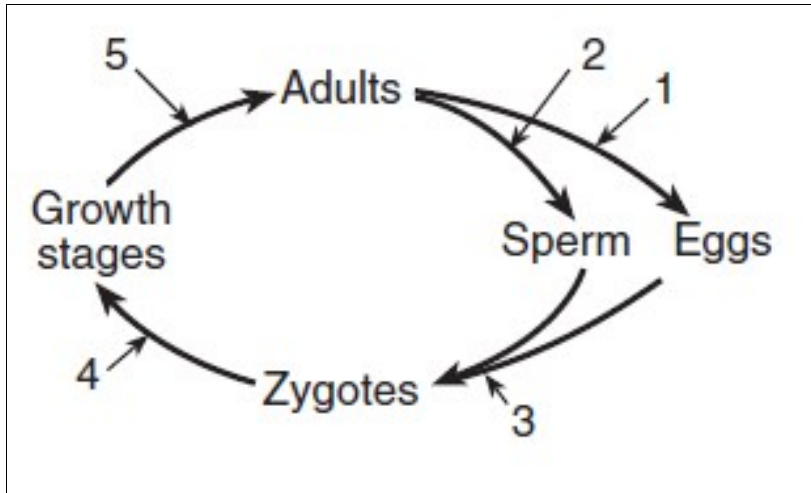
Data Base File Number: 687

Regents Date

Aug2004

9 8/17/2004 S4K2

Answer 1



gel electrophoresis

501. Base your answer to this question on the information given and on your knowledge of biology. Scientists found members of a plant species they did not recognize. They wanted to determine if the unknown species was related to one or more of four known species, A, B, C, and D. The relationship between species can be determined most accurately by comparing the results of gel electrophoresis of the DNA from different species. The chart below represents the results of gel electrophoresis of the DNA from the unknown plant species and the four known species. The unknown species is most closely related to which of the four known species?

- (1) A
- (2) B
- (3) C
- (4) D

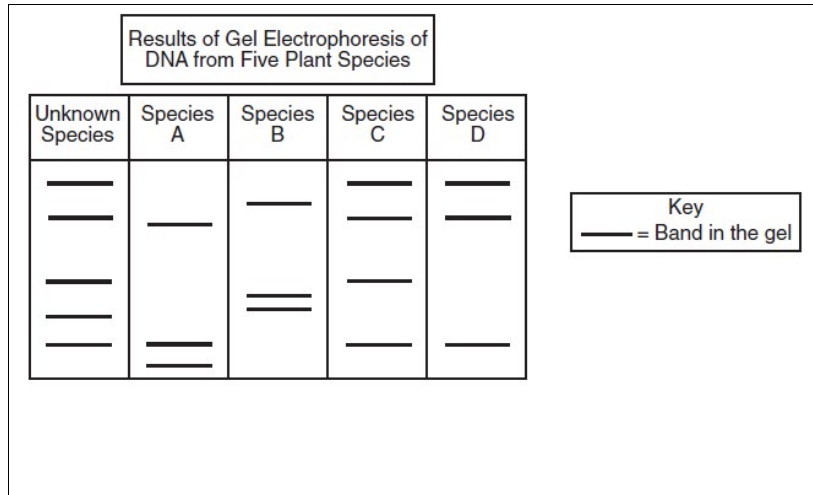
Data Base File Number: 469

Regents Date

Jan2006

62 1/27/2006 LAB1

Answer 3



gel electrophoresis

502. Base your answer to this question on the information and diagram shown and on your knowledge of biology. The diagram shows the results of a test that was done using DNA samples from three bears of different species. Each DNA sample was cut into fragments using a specific enzyme and placed in the wells as indicated below. The DNA fragments were then separated using gel electrophoresis. Which TWO bears are most closely related?

- (1) 1 and 2
- (2) 2 and 3
- (3) 1 and 3
- (4) 1, 2, and 3 are all closely related.

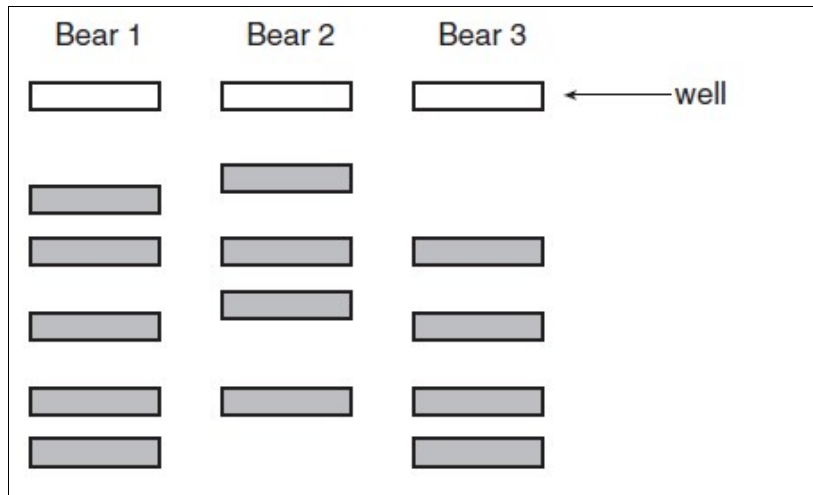
Data Base File Number: 682

Regents Date

June2004

61 6/18/2004 LAB1

Answer 3



gel electrophoresis

503. A student performed a gel electrophoresis experiment. The results are represented in the diagram shown. Compared to the fragments at the top of the gel, the fragments at the lower end are

- (1) larger, and move slower
- (2) larger, and move faster
- (3) smaller, and move faster
- (4) smaller, and move slower

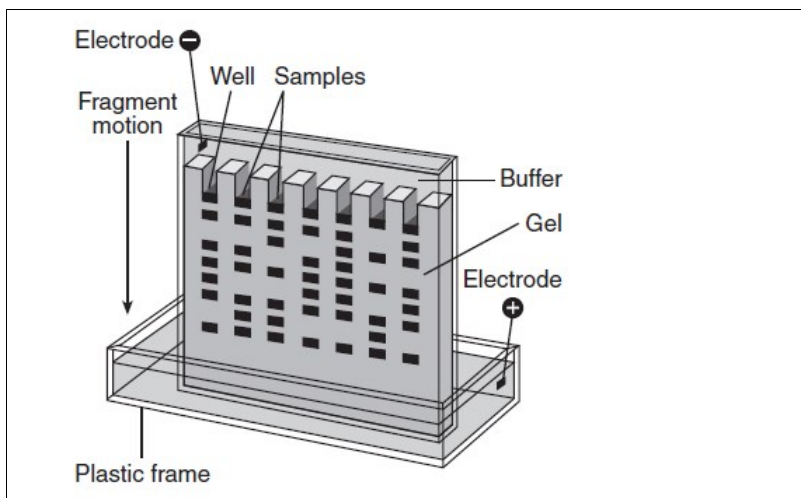
Data Base File Number: 398

Regents Date

Jan2012

82 1/25/2012 LAB1

Answer 3



gel electrophoresis

504. Base your answers to questions 83 through 85 on the information below and on your knowledge of biology.

As part of a laboratory technique, DNA samples taken from four plants were separated. The results are represented in the diagram shown. What lab technique was being used?

- (1) paper chromatography
- (2) gel electrophoresis
- (3) dry electrophoresis
- (4) plain chromatography

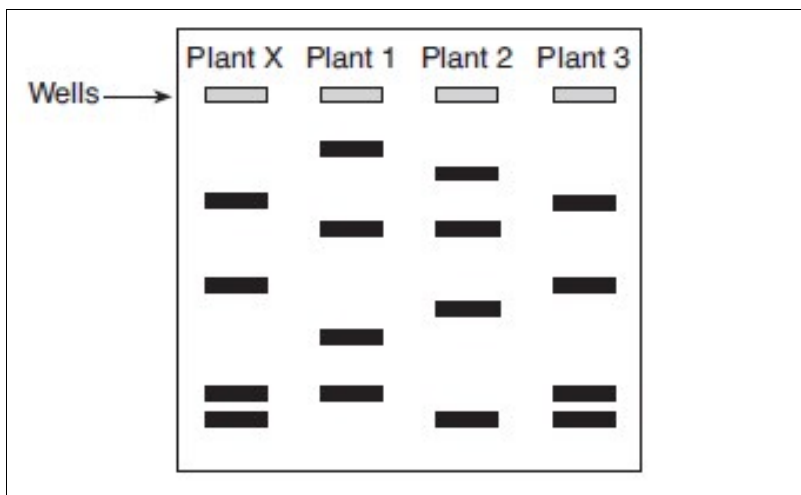
Data Base File Number: 917

Regents Date

Aug2013

83 8/14/2013 LAB1

Answer 2



gel electrophoresis

505. Base your answer to this question on the information and diagram shown and on your knowledge of biology. The four wells represented in the diagram were each injected with fragments that were prepared from DNA samples using identical techniques. This laboratory procedure is known as

- (1) cloning
- (2) gel electrophoresis
- (3) chromatography
- (4) use of a dichotomus key

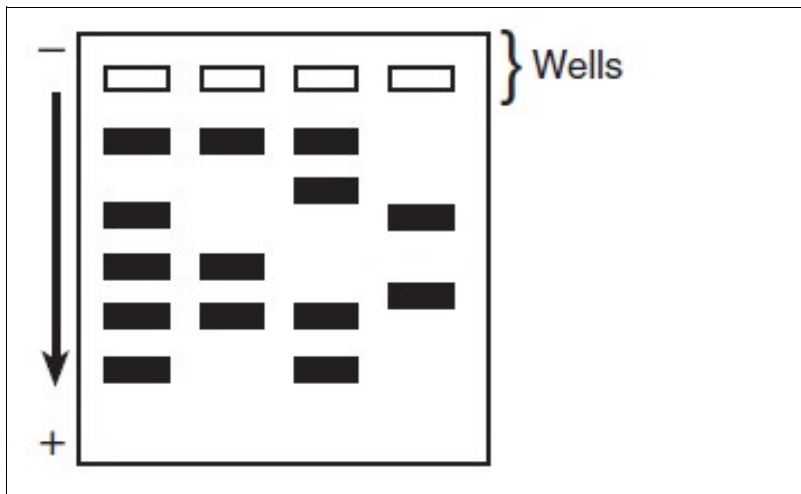
Data Base File Number: 578

Regents Date

June2005

69 6/22/2005 LAB1

Answer 2



gel electrophoresis

506. Base your answer to this question on the diagram shown that illustrates the results of a laboratory technique and on your knowledge of biology. The results of which laboratory technique are represented in the diagram?

- (1) chromatography
- (2) manipulation of genes
- (3) genetic engineering
- (4) gel electrophoresis

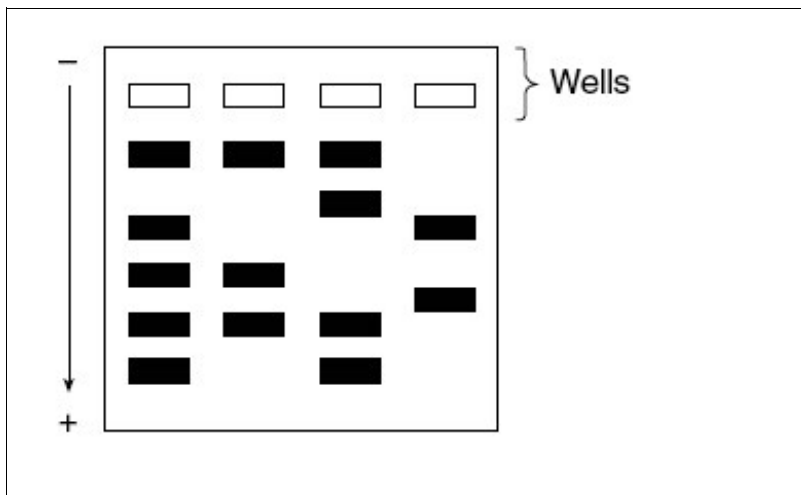
Data Base File Number: 167

Regents Date

Jan2009

69 1/27/2009 LABS

Answer 4



gel electrophoresis

507. Base your answer to this question on the information given, the diagram shown, and your knowledge of biology. A change in hemoglobin, a protein found in red blood cells, causes sickle-cell disease. Hemoglobin samples from different individuals can be compared by using a specific technique. The protein banding patterns of three samples are shown in the diagram. What technique was used to produce these results?

- (1) paper chromatography
- (2) gel electrophoresis
- (3) active transport
- (4) electron microscopy

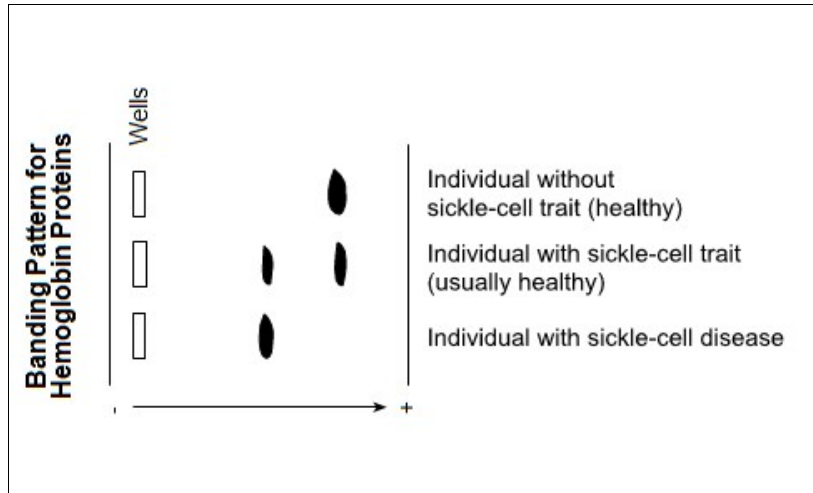
Data Base File Number: 379

Regents Date

Aug2011

84 8/18/2011 LAB1

Answer 2



gel electrophoresis

508. Base your answer to this question on the information and diagram shown and on your knowledge of biology. The diagram represents some of the steps in a procedure used in a specific laboratory activity. Samples of DNA from an eye-color gene of four individuals, W, X, Y, and Z, were cut into pieces using a type of chemical. The results of this procedure are shown. The diagram represents the results of the procedure known as

- (1) cloning
- (2) chromatography
- (3) gel electrophoresis
- (4) protein sequencing

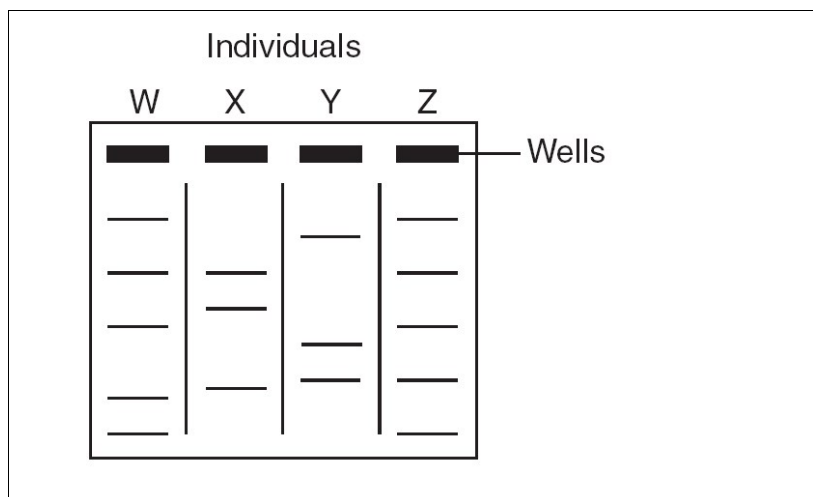
Data Base File Number: 355

Regents Date

June2011

81 6/21/2011 LAB1

Answer 3



gene alteration

509. The diagram shown represents a change that occurred in a pair of chromosomes during the formation of an egg cell. The letters represent genes on the pair of chromosomes. The alteration that occurred will most likely

- (1) be passed on to every cell that develops from the egg cell
- (2) change the chromosome number of the body cells that develop from the egg cell
- (3) convert sex cells into body cells
- (4) trigger the production of pathogens

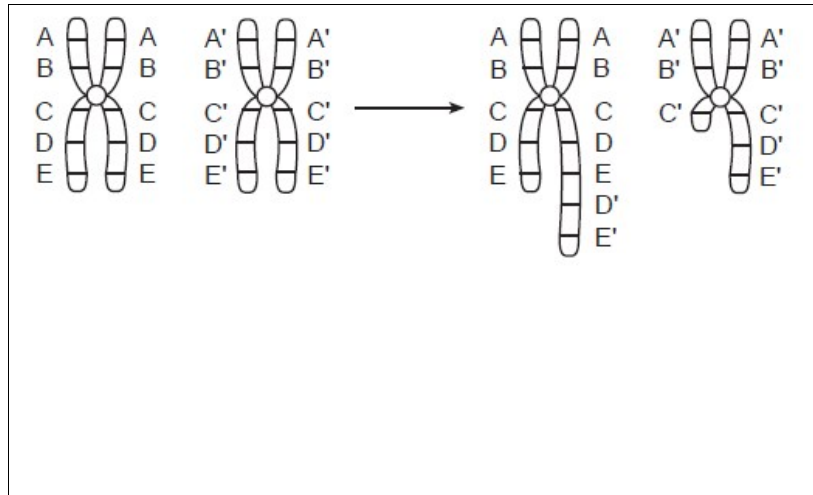
Data Base File Number: 845

Regents Date

June 2001

11 6/15/2001 S4K2

Answer 1



gene combinations

510. The letters in the diagram shown represent genes on a particular chromosome. Gene B contains the code for an enzyme that cannot be synthesized unless gene A is also active. Which statement best explains why this can occur?

- (1) A hereditary trait can be determined by more than one gene.
- (2) Genes are made up of double-stranded segments of DNA.
- (3) All the genes on a chromosome act to produce a single trait.
- (4) The first gene on each chromosome controls all the other genes on the chromosome.

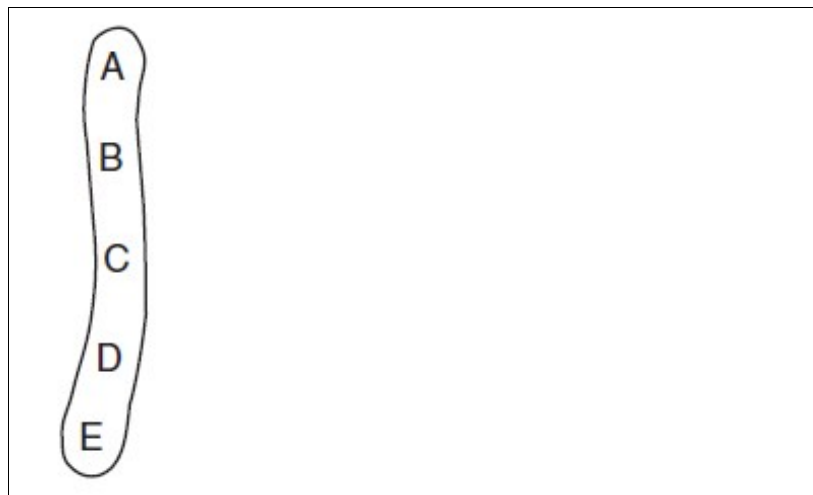
Data Base File Number: 777

Regents Date

Aug 2002

13 8/13/2002 S4K2

Answer 1



gene expression

511. Base your answer to this question on the information shown and on your knowledge of biology. Color in peppered moths is controlled by genes. A light-colored variety and a dark-colored variety of a peppered moth species exist in nature. The moths often rest on tree trunks, and several different species of birds are predators of this moth. Before industrialization in England, the light-colored variety was much more abundant than the dark-colored variety and evidence indicates that many tree trunks at that time were covered with light-colored lichens. Later, industrialization developed and brought pollution which killed the lichens leaving the tree trunks covered with dark-colored soot. The results of a study made in England are shown in the graph. Which conclusion can best be drawn from the information given?

- (1) The trait for dark coloration better suits the peppered moth for survival in non-polluted environments.
- (2) The trait for light coloration better suits the peppered moth for survival in polluted environments.
- (3) The variation of color in the peppered moth has no influence on survival of the moth.
- (4) A given trait may be a favorable adaptation in one environment, but not in another environment.

Data Base File Number: 649

Regents Date

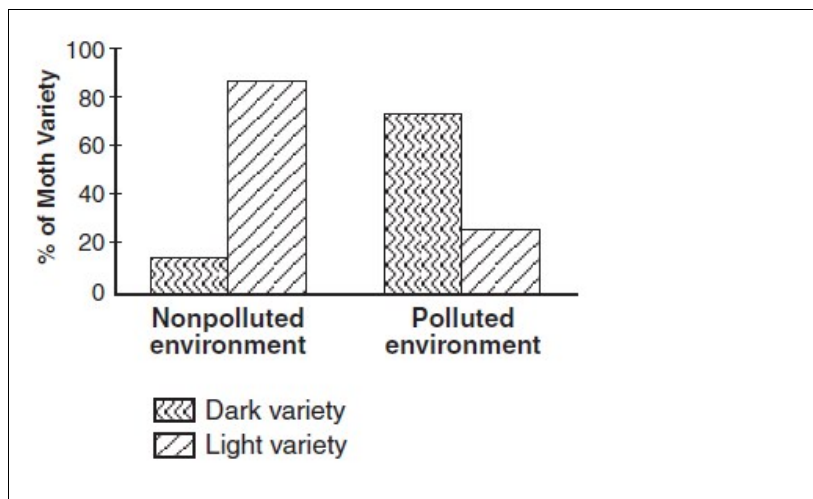
Jan2004

50

1/29/2004

S1K3

Answer 4



gene expression

512. The diagram shown represents genetic material. The expression of the section labeled X may be modified by

- (1) temperature, only
- (2) asexual reproduction
- (3) the environment
- (4) pH, only

Data Base File Number: 407

Regents Date

June2012

13 6/19/2012 **S4K2**

Answer 3



gene expression

513. The chart shows relationships between genes, the environment, and coloration of tomato plants. Which statement best explains the final appearance of these tomato plants?

- (1) The expression of gene A is not affected by light.
- (2) The expression of gene B varies with the presence of light.
- (3) The expression of gene A varies with the environment.
- (4) Gene B is expressed only in darkness.

Data Base File Number: 656

Regents Date

June2004

8 6/18/2004 **S4K2**

Answer 3

Inherited Gene	Environmental Condition	Final Appearance
A	Light	Green
B	Light	White
A	Dark	White
B	Dark	White

gene expression

514. Which statement best explains the change shown in the diagram?

- (1) Gene expression in an organism can be modified by interactions with the environment.
- (2) Certain rabbits produce mutations that affect genes in specific areas of the body.
- (3) Sorting and recombination of genes can be influenced by very cold temperatures.
- (4) Molecular arrangement in existing proteins can be altered by environmental factors.

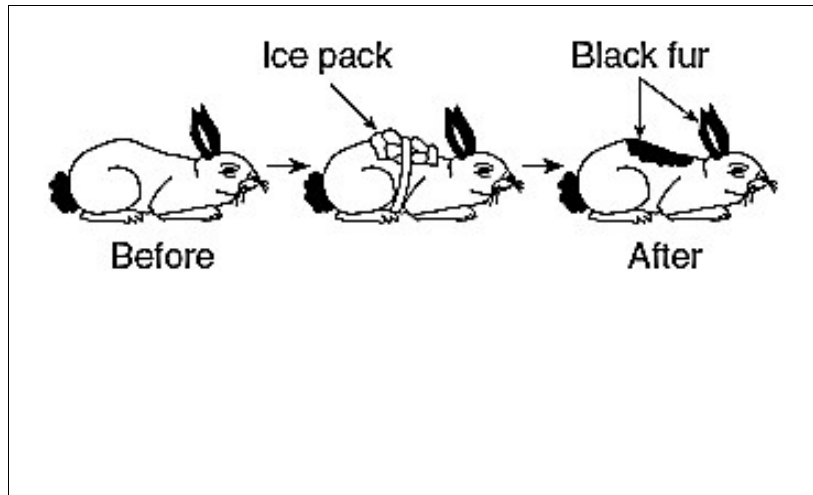
Data Base File Number: 48

Regents Date

Jan2007

6 1/26/2007 S4K1

Answer 1



gene expression

515. The table shown indicates a reproductive pattern in some sea turtles when eggs develop in areas with differing temperatures. The sex of turtle offspring is most probably

- (1) determined only by genes inherited from the parent turtles
- (2) controlled entirely by the location where the young are raised
- (3) a result of genetic information being influenced by environmental conditions
- (4) an identical pattern to the reproductive pattern found in humans

Data Base File Number: 907

Regents Date

Aug2013

35 8/14/2013 S4K4

Answer 3

Temperature (°C)	Offspring Produced
below 23	usually none
23–27	mostly males
28–30	50/50 males: females
31–33	mostly females
above 33	usually none

gene expression

516. The cells that make up leaves on a tree are genetically identical, yet the leaves often have different shapes and sizes, as shown in the diagram. Which statement best explains this difference in leaf appearance?

- (1) The leaves at the top of the tree get more sunlight, causing the genes in their cells to be expressed differently.
- (2) The genes in the cells of leaves at the top of the tree are destroyed by sunlight, causing the leaves to stop growing.
- (3) The leaves near the bottom of the tree have more genes related to leaf size, causing them to grow larger.
- (4) The genes in the cells of leaves near the bottom of the tree increase in number, causing them to grow even larger.

Data Base File Number: 336

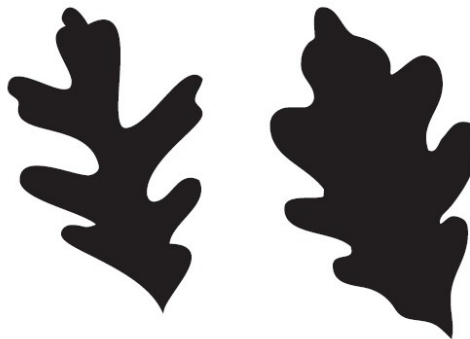
Regents Date

June2011

13 6/21/2011 S4K2

Answer 1

Leaves of White Oak (*Quercus alba*)



Top leaves

Bottom leaves

gene expression

517. The diagram shown represents the change in a sprouting onion bulb when sunlight is present and when sunlight is no longer available. Which statement best explains this change?

- (1) Plants need oxygen to survive.
- (2) Environmental conditions do not alter characteristics.
- (3) Plants produce hormones.
- (4) The environment can influence the expression of certain genetic traits.

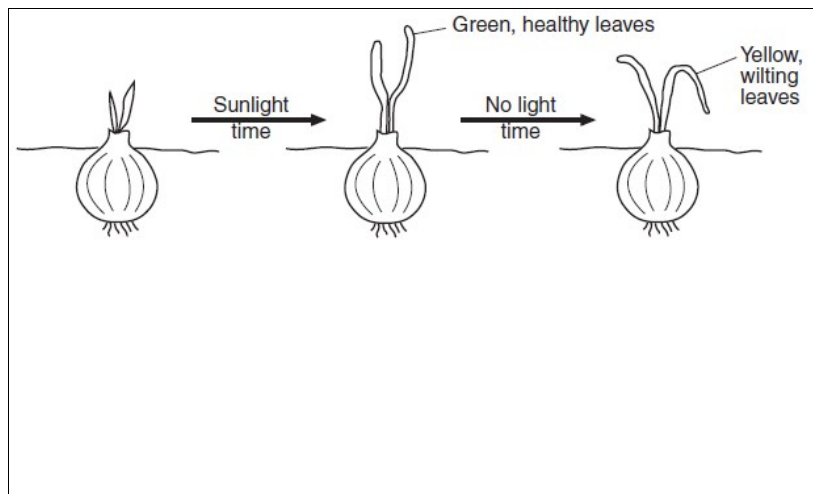
Data Base File Number: 802

Regents Date

June2002

9 6/19/2002 S4K2

Answer 4



gene expression

518. Two different types of cells from an organism are shown in the diagram. How can two different types of cells function differently in the same organism even though they both contain the same genetic instructions?

- (1) The cells are mutations.
- (2) The chromosome number is different.
- (3) Different cells express different genes.
- (4) Different cells adapt to different functions.

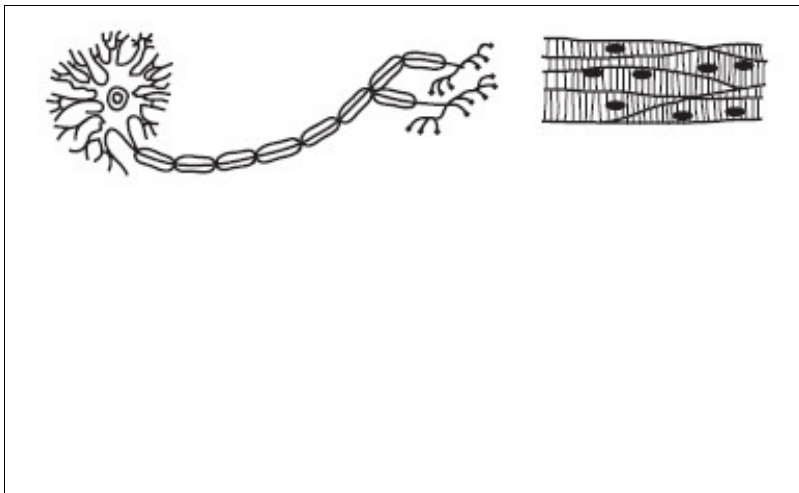
Data Base File Number: 745

Regents Date

June2003

46 6/19/2003 S4K2

Answer 3



gene expression

519. Base your answer to this question on the information given and on your knowledge of biology. A student grew ten tomato plants from seed. Each plant received the same amount of water, sunlight and nutrients. After three weeks, the heights of the ten plants were measured in centimeters (cm). The results are shown in the table. What is one likely reason for differences in the heights of the plants.

- (1) differences in genes
- (2) more fertilizer for the higher plants
- (3) more water for higher plants
- (4) some plants were in the shade

Data Base File Number: 445

Regents Date

Aug2012

44 8/17/2012 LABA

Answer 1

Tomato plant A = 5 cm	Tomato plant F = 9 cm
Tomato plant B = 3 cm	Tomato plant G = 7 cm
Tomato plant C = 3 cm	Tomato plant H = 5 cm
Tomato plant D = 3 cm	Tomato plant I = 3 cm
Tomato plant E = 5 cm	Tomato plant J = 7 cm

gene mutation

520. The diagrams shown represent portions of the genes that code for wing structure in two organisms of the same species. Gene 1 was taken from the cells of a female with normal wings, and gene 2 was taken from the cells of a female with abnormal wings. The abnormal wing structure was most likely due to

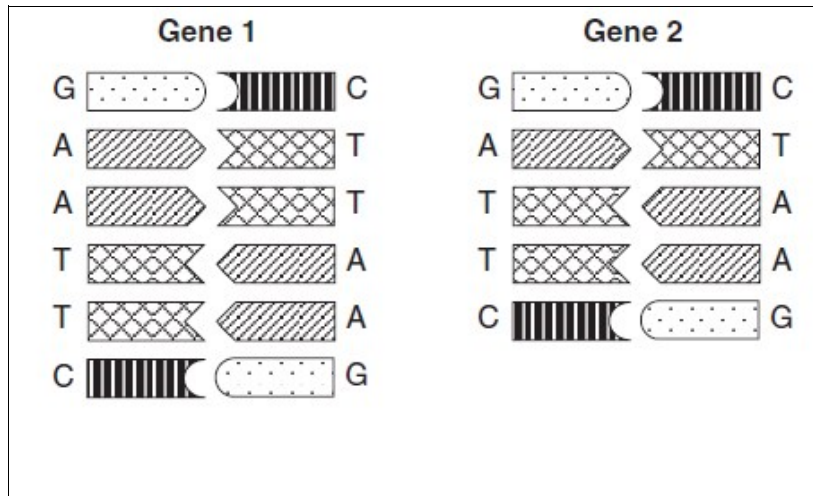
- (1) an insertion
- (2) a substitution
- (3) a deletion
- (4) normal replication

Data Base File Number: 861

Regents Date

Aug2001
8 8/16/2001 S4K2

Answer 3



gene mutation

521. A sample of body cells and samples of sex cells received from four members of a species are screened for the presence of a specific gene mutation. The results of the gene-testing procedure conducted on the cells are shown in the table. Which species member would be unlikely to pass the gene mutation on to its offspring?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 417

Regents Date

June2012
40 6/19/2012 S4K3

Answer 4

Species Member Tested	Type of Cells Tested and the Result (+ = mutation present, - = mutation absent)		
	Body Cells	Sperm	Egg
1	+		+
2	+	+	
3	-		+
4	+	-	

gene size

522. The chart shown compares the size of three structures: a gene, a nucleus, and a chromosome. Based on this information, structure A would most likely be a

- (1) chromosome that is part of structure C
- (2) chromosome that contains structures B and C
- (3) nucleus that contains both structure B and structure A
- (4) gene that is part of structure B

Data Base File Number: 264

Regents Date

June 2010

37 6/16/2010 S4K2

Answer 4

Size	Structure
smallest in size	A
↓	B
greatest in size	C

gene splicing

523. The diagram below represents one technique used in biotechnology. The organic compound used to cut the bacterial DNA so that the human DNA could be inserted is a

- (1) molecular base
- (2) carbohydrate
- (3) specific enzyme
- (4) hormone

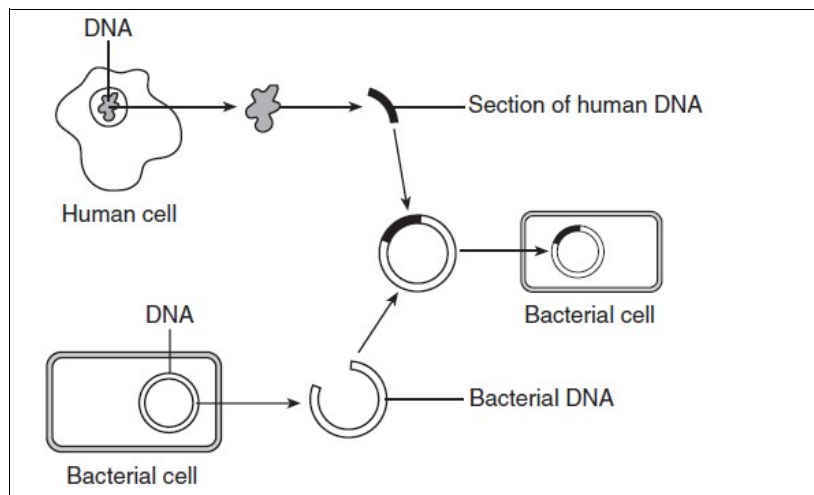
Data Base File Number: 242

Regents Date

Jan 2010

40 1/26/2010 S4K2

Answer 3



gene splicing

524. The diagram shown represents a technique currently used by scientists in the field of biotechnology. Which statement describes a possible outcome of this technique?

- (1) The bacterium is able to produce a human hormone.
- (2) It allows the bacterium to grow in humans, since it contains a human gene.
- (3) It allows humans to become immune to an infection from this type of bacteria.
- (4) The bacterium can now produce human cells identical to cells of the DNA donor.

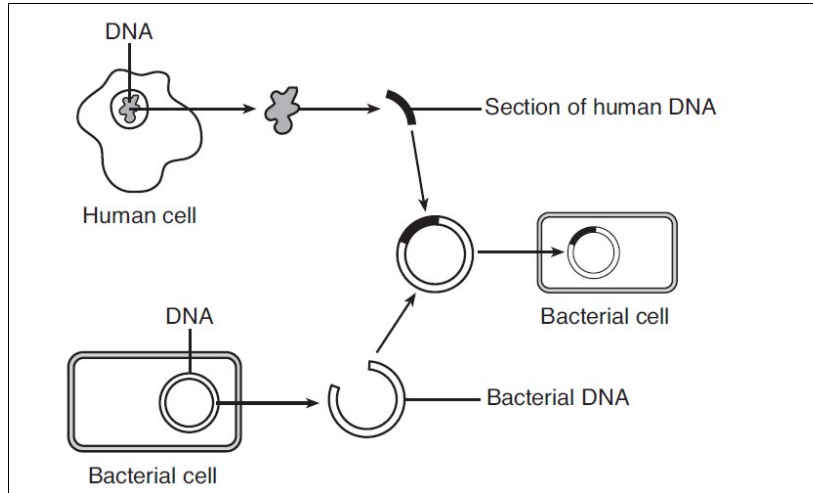
Data Base File Number: 212

Regents Date

Aug2009

12 8/13/2009 S4K2

Answer 1



gene splicing

525. The diagram shown represents a technique used in some molecular biology laboratories. Which phrase best describes a possible result of this process?

- (1) the production of gametes having both human and bacterial DNA
- (2) the production of a human hormone by the bacterial cell
- (3) the introduction of a pathogen into a human cell
- (4) the separation of DNA fingerprints in the bacterial cell

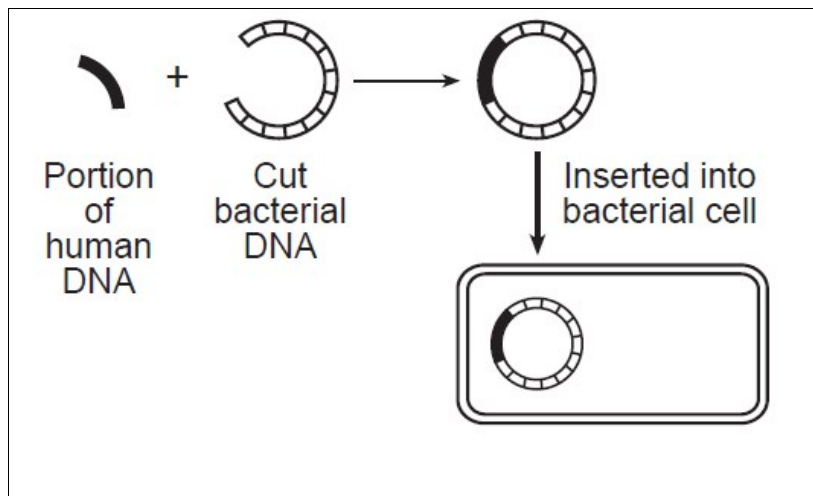
Data Base File Number: 924

Regents Date

Jan2014

38 1/27/2014 S4K2

Answer 2



genetic code

526. Note: ROTATE test paper to the RIGHT to view the diagram. The process represented in the diagram occurs in many cells. The main function of this process is to

- (1) provide an exact copy of the genetic code
- (2) ensure genetic variation in a species
- (3) synthesize cellular proteins
- (4) produce antibodies to combat disease

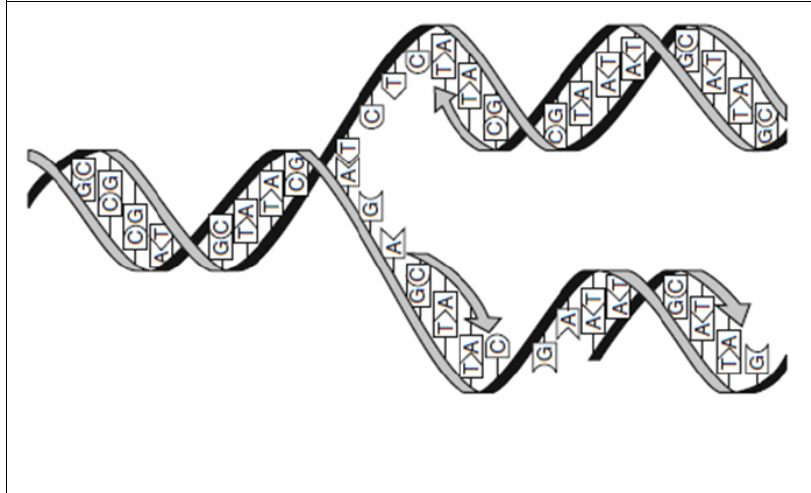
Data Base File Number: 606

Regents Date

Jan2013

8 1/23/2013 S4K2

Answer 1



genetic code

527. NOTE: YOU CANNOT COMPLETE THIS QUESTION WITHOUT THE "UNIVERSAL GENETIC CODE CHART". THIS CHART WILL BE PROVIDED TO YOU FOR REFERENCE. ---- Base your answer to this question on the Universal Genetic Code Chart, PROVIDED FOR YOU, and on your knowledge of biology. Some DNA, RNA, and amino acid information from four similar sequences of four plant species is shown in the chart, on the test paper. Using the information given, what would be the missing mRNA base sequence for species B in the chart given IN this question?

- (1) GLY THR TYR VAL HIS
- (2) ACG ACG UAU GUC CAU
- (3) GLY THR TYR VAL GLN
- (4) CCG TGC ATA CAG GTA

Data Base File Number: 499

Regents Date

June2006

63 6/21/2006 LAB1

Answer 2

Species A	DNA base sequence	CCG	TGC	ATA	CAG	GTA
	mRNA base sequence	GGC	ACG	UAU	GUC	CAU
	Amino acid sequence	GLY	THR	TYR	VAL	HIS
Species B	DNA base sequence	TGC	TGC	ATA	CAG	GTA
	mRNA base sequence	---	---	---	---	---
	Amino acid sequence	THR	THR	TYR	VAL	HIS
Species C	DNA base sequence	CCG	TGC	ATA	CAG	GTT
	mRNA base sequence	GGC	ACG	UAU	GUC	CAA
	Amino acid sequence	---	---	---	---	---
Species D	DNA base sequence	CCT	TGT	ATG	CAC	GTC
	mRNA base sequence	GGA	ACA	UAC	GUG	CAG
	Amino acid sequence	GLY	THR	TYR	VAL	GLN

genetic engineering

528. The diagram shown represents a technique used in biotechnology. The name of this technique is known as

- (1) gel electrophoresis
- (2) spectroscopy analysis
- (3) active transport
- (4) genetic engineering

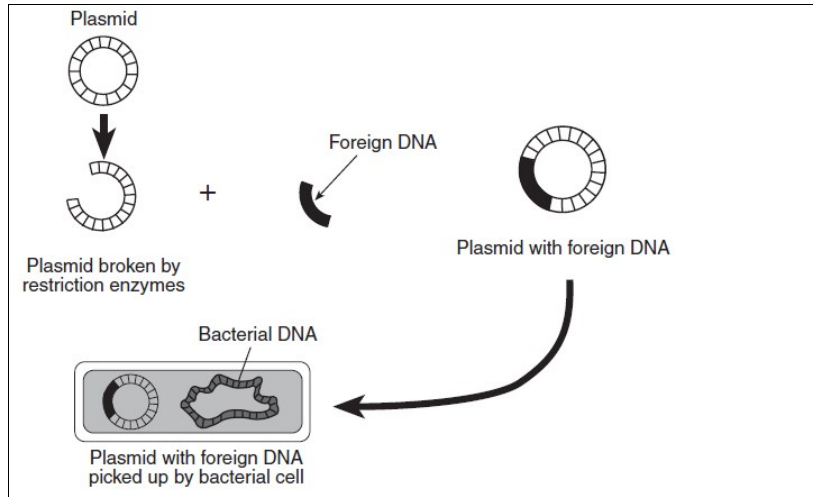
Data Base File Number: 793

Regents Date

Aug2002

55 8/13/2002 S4K2

Answer 4



genetic engineering

529. NOTE: ROTATE the diagram to the left for proper orientation. QUESTION: The diagram shown represents the process used in 1996 to clone the first mammal, a sheep named Dolly. Which statement concerning Dolly is correct?

- (1) Gametes from sheep A and sheep B were united to produce Dolly.
- (2) The chromosome makeup of Dolly is identical to that of sheep A.
- (3) Both Dolly and sheep C have identical DNA.
- (4) Dolly contains genes from sheep B and sheep C.

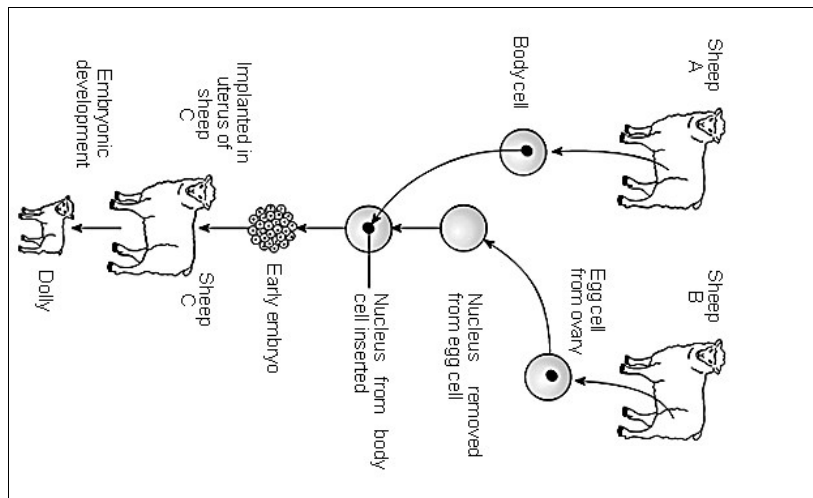
Data Base File Number: 187

Regents Date

June2009

31 6/18/2009 S4K2

Answer 2



genetic engineering

530. Two methods of reproduction are represented in the diagram shown. How does the DNA in the offspring produced by these methods compare to the DNA in the original organism?

- (1) The offspring contain half the original number of chromosomes in each method.
- (2) The DNA in the offspring is genetically identical to that of the original organism in both methods.
- (3) The offspring produced by method A contain twice the original number of genes, while those produced by method B contain half the original number of genes
- (4) The number of DNA bases is less than that of the original organism in method A, but more than the original number in method B.

Data Base File Number:

385

Regents Date

Jan2012

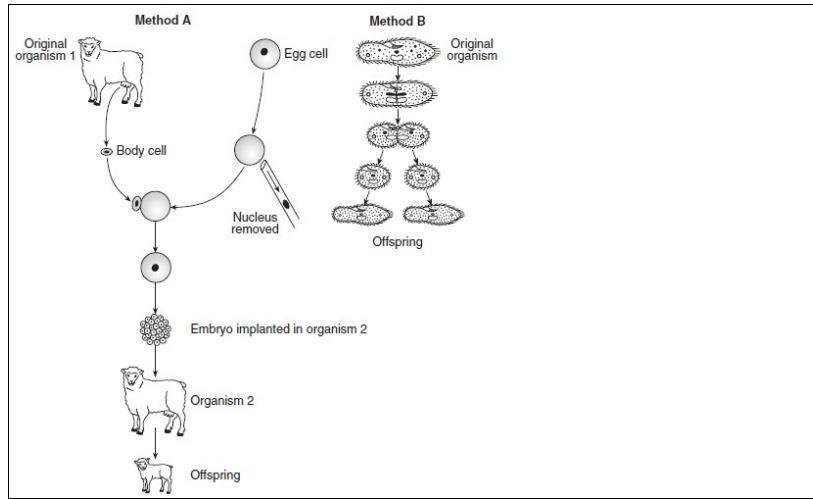
34

1/25/2012

S4K4

Answer

2



genetic engineering

531. A product of genetic engineering technology is represented in the diagram shown. Which substance was needed to join the insulin gene to the bacterial DNA as shown?

- (1) a specific carbohydrate
- (2) a specific enzyme
- (3) hormones
- (4) antibodies

Data Base File Number:

556

Regents Date

June2005

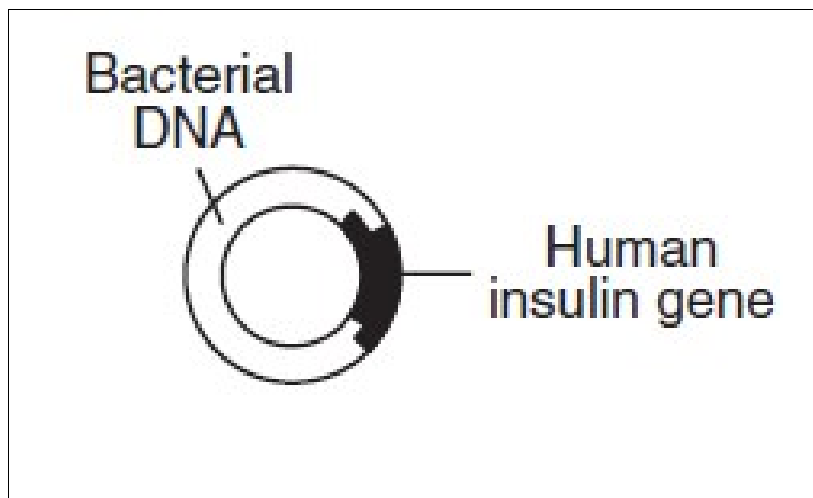
8

6/22/2005

S4K2

Answer

2



genetic engineering

532. Bacteria that are removed from the human intestine are genetically engineered to feed on organic pollutants in the environment and convert them into harmless inorganic compounds. Which row in the table shown best represents the most likely negative and positive effects of this technology on the ecosystem?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 510

Regents Date

Aug2006

25 8/16/2006 S4K7

Answer 2

Row	Negative Effect	Positive Effect
(1)	Inorganic compounds interfere with cycles in the environment.	Human bacteria are added to the environment.
(2)	Engineered bacteria may out-compete native bacteria.	The organic pollutants are removed.
(3)	Only some of the pollutants are removed.	Bacteria will make more organic pollutants.
(4)	The bacteria will cause diseases in humans.	The inorganic compounds are buried in the soil.

genetic engineering

533. The diagram shown represents a common laboratory technique in molecular genetics. One common use of this technology is the

- (1) production of a human embryo to aid women who are unable to have children
- (2) change of single-celled organisms to multicellular organisms
- (3) introduction of a toxic substance to kill bacterial cells
- (4) production of hormones or enzymes to replace missing human body chemicals

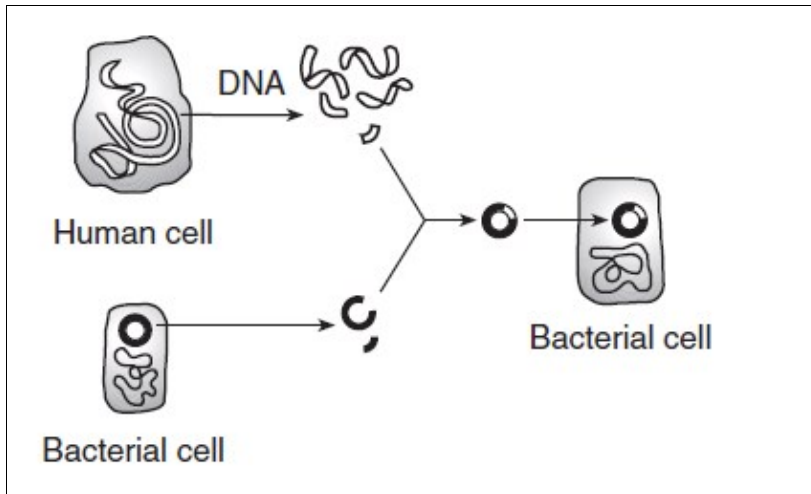
Data Base File Number: 455

Regents Date

Jan2006

8 1/27/2006 S4K2

Answer 4



genetic engineering

534. The diagram shown represents a technique used in some molecular biology laboratories This technique is a type of

- (1) chromatography
- (2) gel electrophoresis
- (3) direct harvesting
- (4) genetic engineering

Data Base File Number: 255

Regents Date

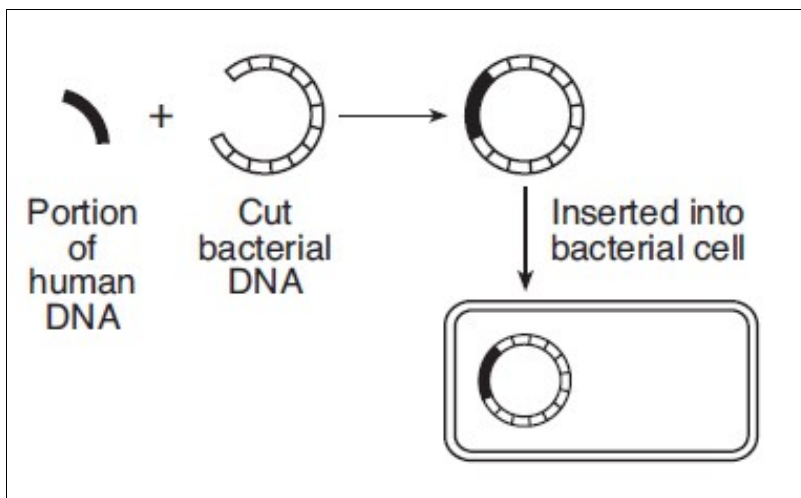
June2010

12

6/16/2010

S4K2

Answer 4



genetic engineering

535. Which statement would most likely be used to describe the procedure represented in the diagram shown?

- (1) Enzymes are used to assemble an insulin gene, which is then attached to bacterial DNA.
- (2) Bacterial DNA is cut from a human DNA strand and inserted into a human cell to form an insulin gene.
- (3) The insulin gene is cut out of a human DNA strand using an enzyme and inserted into bacterial DNA, resulting in a combination of different DNA segments.
- (4) A gene is deleted from bacterial DNA to produce an insulin gene, which is then inserted into human DNA.

Data Base File Number: 314

Regents Date

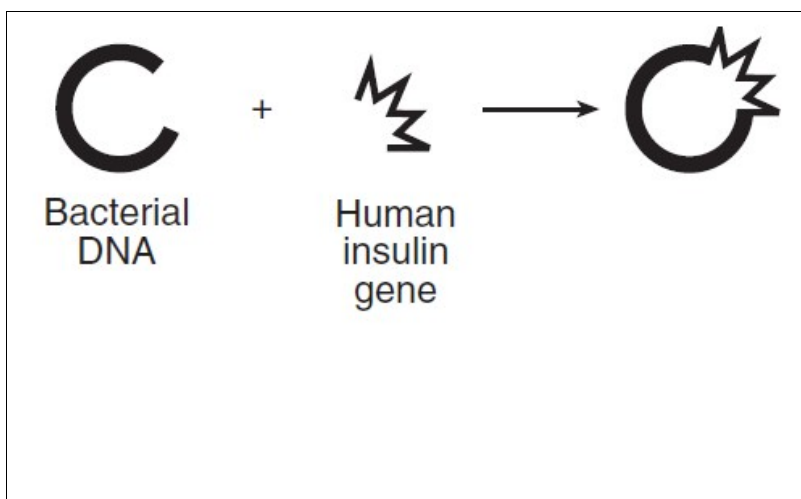
Jan2011

34

1/25/2011

S4K2

Answer 3



genetic engineering

536. Base your answer to this question on the diagram shown which illustrates some steps in genetic engineering, and on your knowledge of biology. What is the result of step 3?

- (1) a new type of molecular base is formed
- (2) different types of minerals are joined together
- (3) DNA from the bacterial cell is cloned
- (4) DNA from different organisms is joined together

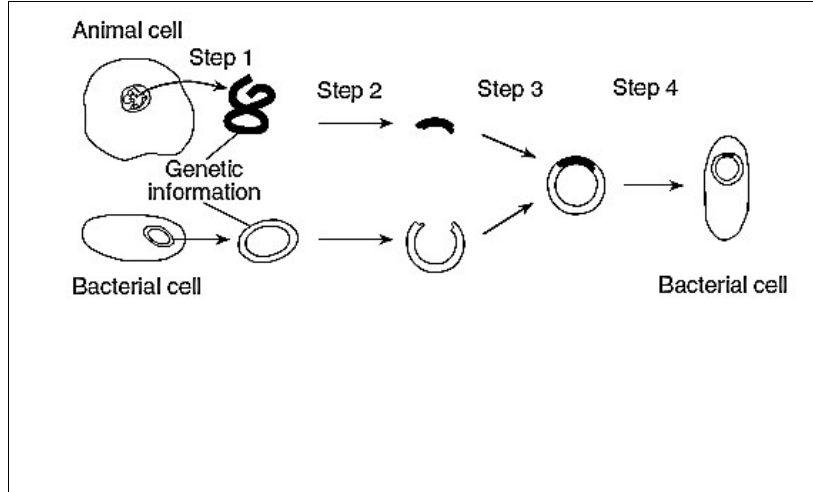
Data Base File Number: 19

Regents Date

Aug2007

49 8/16/2007 S4K2

Answer 4



genetic engineering

537. Steps in a reproductive process used to produce a sheep with certain traits are listed in the proceduew shown. Which sheep would be most genetically similar to sheep D?

- (1) sheep A, only
- (2) sheep B, only
- (3) both sheep A and B
- (4) both sheep A and C

Data Base File Number: 478

Regents Date

June2006

14 6/21/2006 S4K4

Answer 2

Step 1 — The nucleus was removed from an unfertilized egg taken from sheep A.
Step 2 — The nucleus of a body cell taken from sheep B was then inserted into this unfertilized egg from sheep A.
Step 3 — The resulting cell was then implanted into the uterus of sheep C.
Step 4 — Sheep C gave birth to sheep D.

genetic engineering

538. Which process is illustrated in the diagram?

- (1) chromatography
- (2) direct harvesting
- (3) meiosis
- (4) genetic engineering

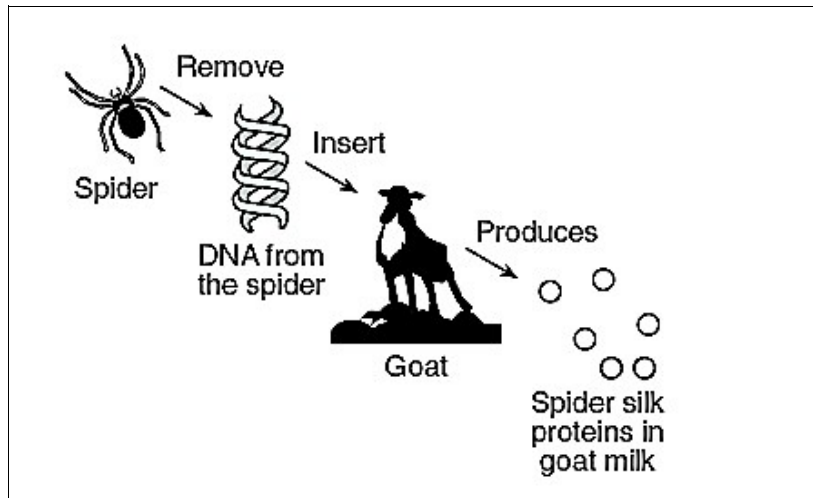
Data Base File Number: 49

Regents Date

Jan2007

10 1/26/2007 S4K2

Answer 4



genetic engineering

539. Which set of terms correctly identifies the procedure shown in the diagram and a substance produced by this procedure?

- (1) selective breeding -- growth hormone
- (2) cloning -- antibiotics
- (3) genetic engineering -- insulin
- (4) replicating -- glucose

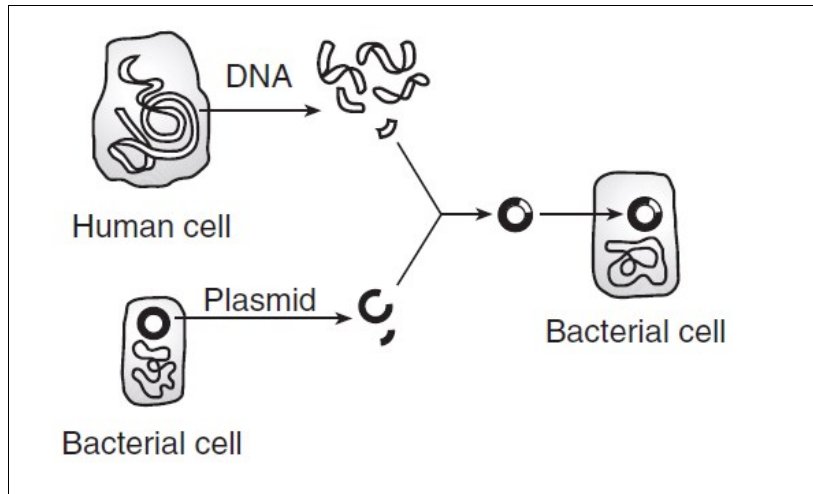
Data Base File Number: 283

Regents Date

Aug2010

33 8/18/2010 S4K2

Answer 3



genetic engineering

540. A laboratory technique is represented in the diagram shown. Letter A represents a process in which DNA from Cell 1 is combined with DNA from Cell 2. Which specific chemicals are needed to successfully carry out the process shown at A to insert the joined DNA into Cell 3?

- (1) receptor molecules
- (2) carbohydrates
- (3) enzymes
- (4) starch molecules

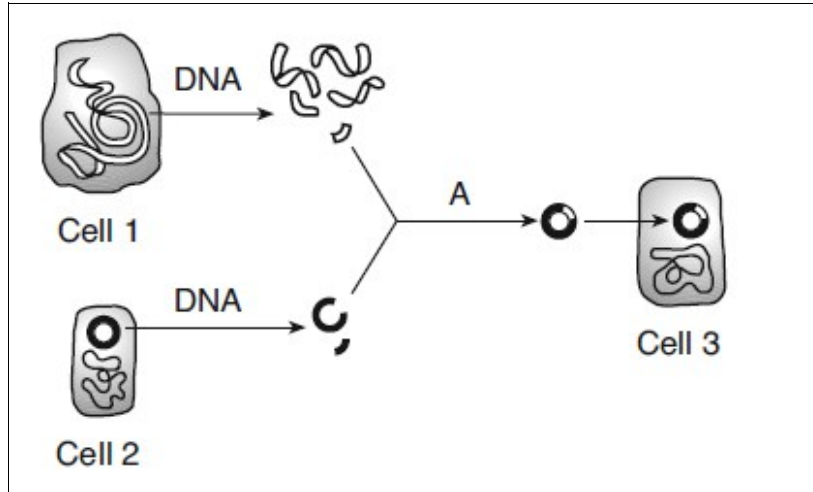
Data Base File Number: 406

Regents Date

June 2012

12 6/19/2012 S4K2

Answer 3



genetic engineering

541. The diagrams shown represent some steps in a procedure used in biotechnology. Letters X and Y represent the

- (1) hormones that stimulate the replication of bacterial DNA
- (2) biochemical catalysts involved in the insertion of genes into other organisms
- (3) hormones that trigger rapid mutation of genetic information
- (4) gases needed to produce the energy required for gene manipulation

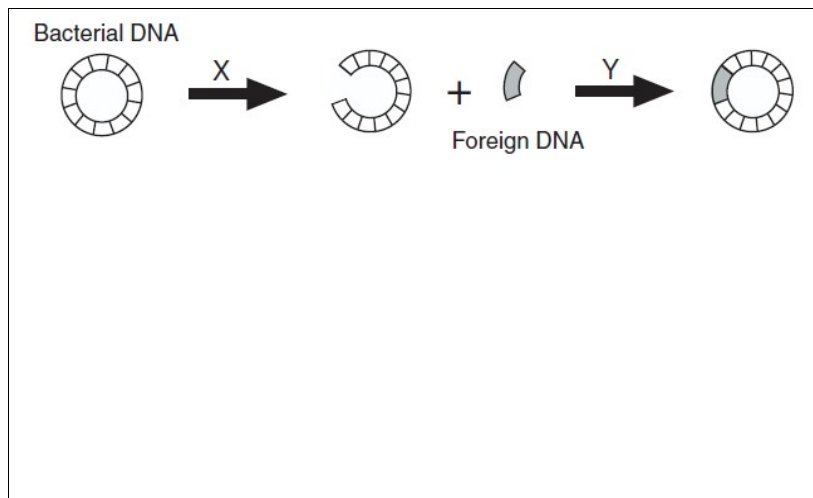
Data Base File Number: 708

Regents Date

Jan 2003

12 1/30/2003 S4K2

Answer 2



genetic engineering

542. In some people, the lack of a particular enzyme causes a disease. Scientists are attempting to use bacteria to produce this enzyme for the treatment of people with the disease. Which row in the chart shown best describes the sequence of steps the scientists would most likely follow?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 180

Regents Date

June 2009

10 6/18/2009 S4K2

Answer 3

Row	Step A	Step B	Step C	Step D
(1)	identify the gene	insert the gene into a bacterium	remove the gene	extract the enzyme
(2)	insert the gene into a bacterium	identify the gene	remove the gene	extract the enzyme
(3)	identify the gene	remove the gene	insert the gene into a bacterium	extract the enzyme
(4)	remove the gene	extract the enzyme	identify the gene	insert the gene into a bacterium

genetic engineering

543. A laboratory technique is represented in the diagram shown. Which knowledge was needed to develop this technique?

- (1) knowledge of sexual reproduction in plants
- (2) knowledge of the structure of starch molecules
- (3) knowledge of the development of embryos
- (4) knowledge of the structure of a DNA molecule

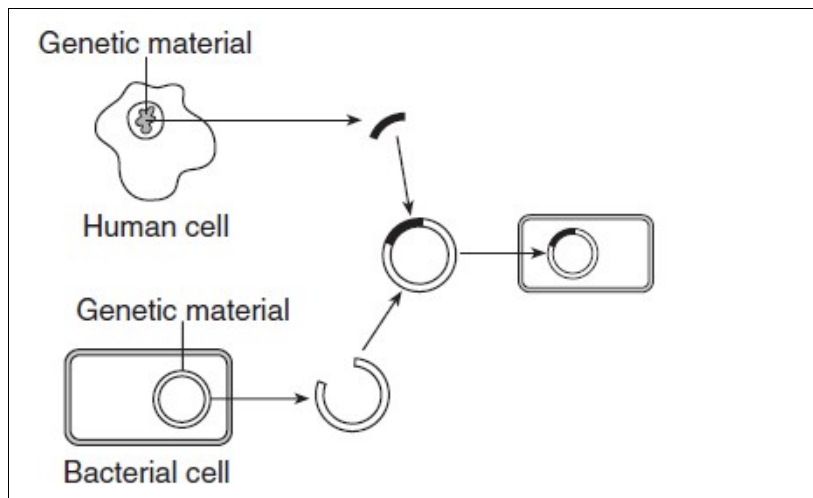
Data Base File Number: 366

Regents Date

Aug 2011

31 8/18/2011 S1K1

Answer 4



genetic variation

544. Which process usually results in offspring that exhibit new genetic variations?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

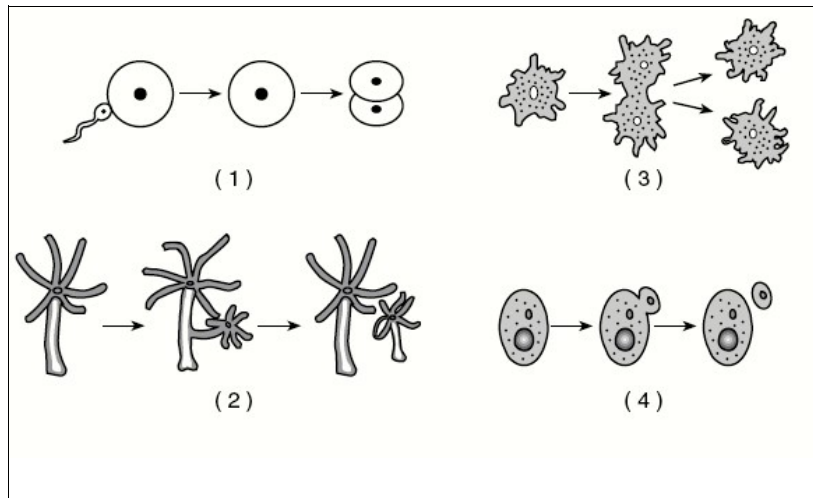
Data Base File Number: 150

Regents Date

Jan2009

10 1/27/2009 **S4K2**

Answer 1



genetic variation

545. A small village that is heavily infested with mosquitoes was sprayed with an insecticide once a week for several months. Changes in the size of the mosquito population are shown in the graph. One way that the population of mosquitoes present 7 months after spraying differs genetically from the population of mosquitoes present before the spraying began is

- (1) Seven months later, there is a higher frequency in the population of the gene for resistance to the insecticide.
- (2) The mosquitos have eaten the insecticide.
- (3) All the mosquitos have been killed.
- (4) Seven months later, the mosquitos ignore the presence of the insecticide.

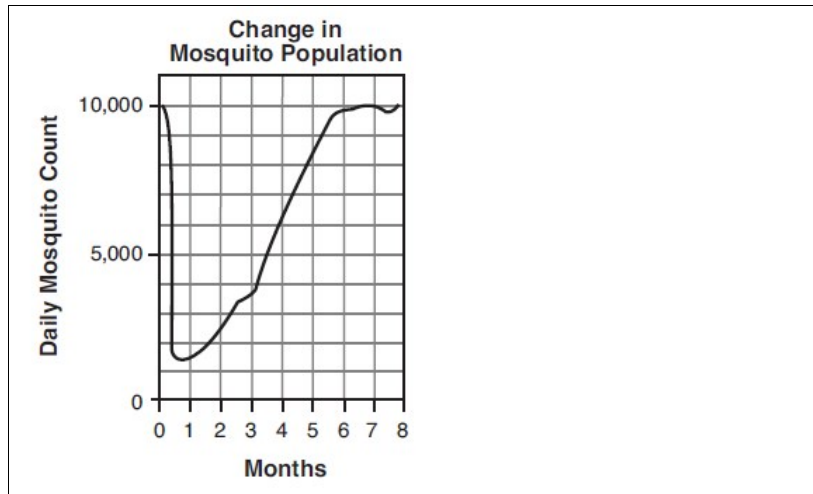
Data Base File Number: 423

Regents Date

June2012

42 6/19/2012 **S4K3**

Answer 1



global warming

546. Base your answer to this question on the information given in the table and on your knowledge of biology. A reporter conducted a number of ON-THE-STREET interviews with people selected at random. The reporter found that many people gave responses similar to those of the person quoted in the table shown. Which statement is best supported by these interviews?

- (1) Many people are very aware of the possible effects of global warming.
- (2) Many people care more about their personal comforts than about the possible effects of global warming.
- (3) Many people are willing to sacrifice to reduce the possible effects of global warming.
- (4) Many people are now taking action to reduce the possible effects of global warming.

Data Base File Number: 288

Regents Date

Aug2010

38 8/18/2010 S4K7

Answer 2

Question	Response of Person Interviewed
Would you be concerned if winters in this area became more severe and the cost of plowing and sanding snowy roads increased?	Of course I would be concerned. I can't afford higher taxes!
Would you be willing to pay more for a car that has better fuel economy if it would benefit the environment?	No! Cars that would use less gasoline would have to be much smaller. I like my big car—and besides that, it's safer.
If droughts became more common, would you be upset if you had to pay more for your food at the grocery store or a restaurant?	Definitely. My weekly food bill is too high already!
Would it bother you if the sea level increased a foot or two, causing many lowland areas to flood?	Not really. People could always move to higher ground. But I wouldn't want to see my taxes go up because we have to spend more on aid to help them move.
Are you concerned about global warming?	Not really. It doesn't affect me.

glucose levels

547. Base your answer to this question on the information given, the data table shown and on your knowledge of biology. Diabetes is a disease characterized by consistently high blood glucose levels (at or above 126 mg/100 mL) as a result of hormone deficiency. For a study of diabetes, blood glucose levels from individual A and individual B were recorded each hour over a 5-hour period following a meal. The results are shown in the data table. Which individual most likely has diabetes?

- (1) A
- (2) B
- (3) both A and B
- (4) neither A nor B

Data Base File Number: 392

Regents Date

Jan2012

44 1/25/2012 S4K5

Answer 1

Hours	Individual A	Individual B
0	135	90
1	175	122
2	200	110
3	185	87
4	165	85
5	150	90

glucose levels

548. The blood glucose range for a healthy adult is 65-104 mg/dL. Which graph best illustrates normal blood glucose levels in a healthy adult over the course of a day?

- (1) 1
(2) 2

- (3) 3
(4) 4

Data Base File Number: 910

Regents Date

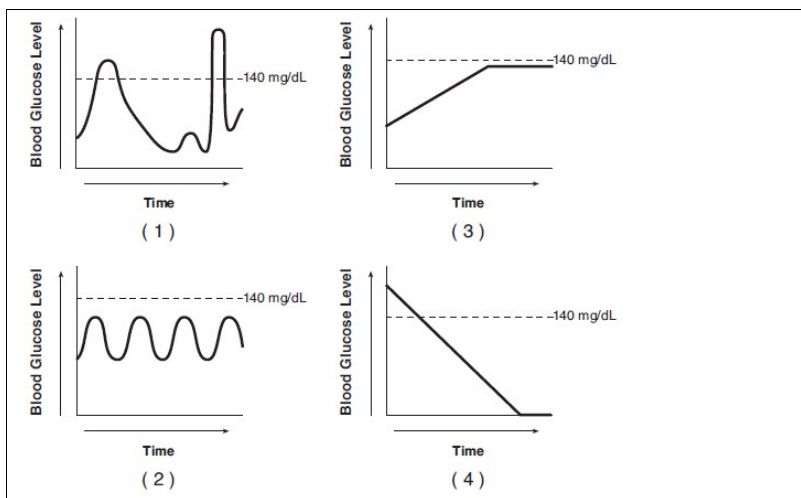
Aug2013

40

8/14/2013

S4K5

Answer 2



glucose test

549. Part of a laboratory procedure is shown in the diagram. This setup would most likely be involved in a procedure to

- (1) stain specimens while making a wet mount
(2) test for the presence of glucose using an indicator

- (3) separate pigments in a mixture
(4) determine the pH of solutions

Data Base File Number: 328

Regents Date

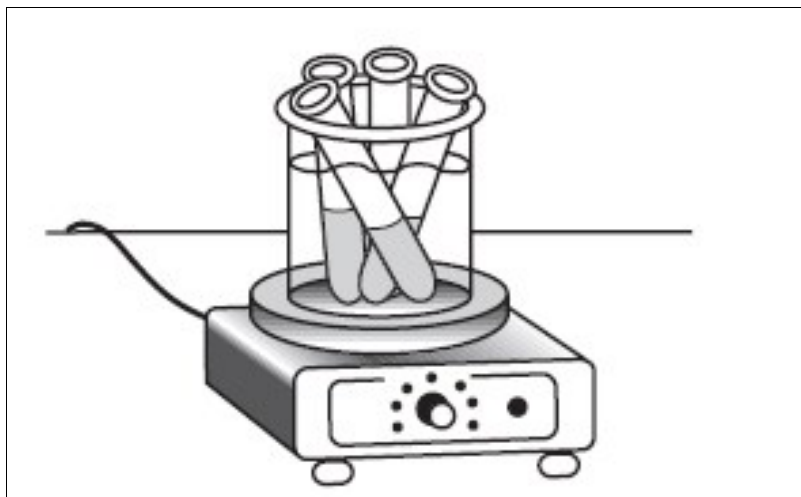
Jan2011

71

1/25/2011

LABS

Answer 2



graph

550. Refer to the graph shown. The empty (white) boxes on the grid represent data collected from SITE 1. The circles (black) represent data collected from SITE 2. Compounds containing phosphorous that are dumped into the environment can upset ecosystems because phosphorous acts as a fertilizer. The graph shows measurements of phosphorous concentrations taken during the month of June at two different sites from 1991 to 1997. Which statement represents a valid inference based on the information in the graph?

- (1) There was no decrease in the amount of compounds containing phosphorous dumped at site2 during the period from 1991 to 1997.
- (2) Pollution controls may have been put into operation at site 1 in 1995.
- (3) There was most likely no vegetation present near site 2 from 1993 to 1994.
- (4) There was a greater variation in phosphorous concentration at site 1 than there was at site 2.

Data Base File Number:

58

Regents Date

Jan2007

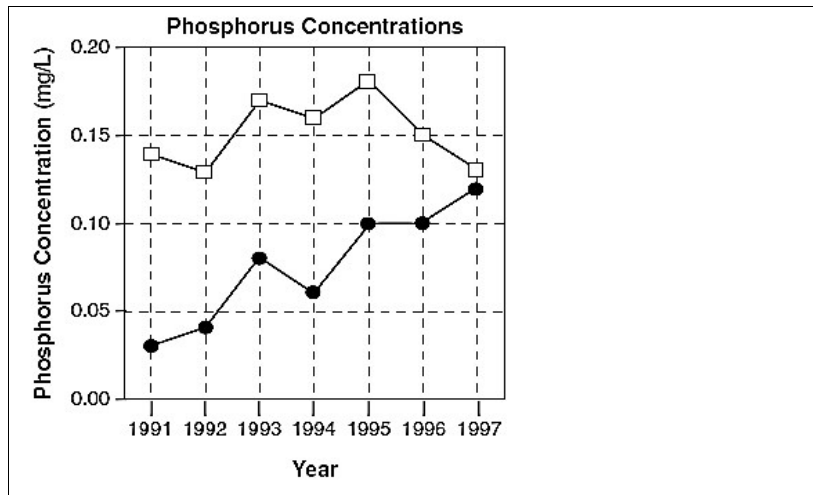
37

1/26/2007

S4K7

Answer

2



graph

551. Base your answer to this question on the information given, the graph shown and on your knowledge of biology. What effect did the pH change in these Adirondack Lakes have on lake trout, brown trout, smallmouth bass, and mussels?

- (1) The pH changes had no effect on the species named.
- (2) There are not as many trout, bass and mussels.
- (3) The species named increased in numbers.
- (4) The species named migrated to another lake.

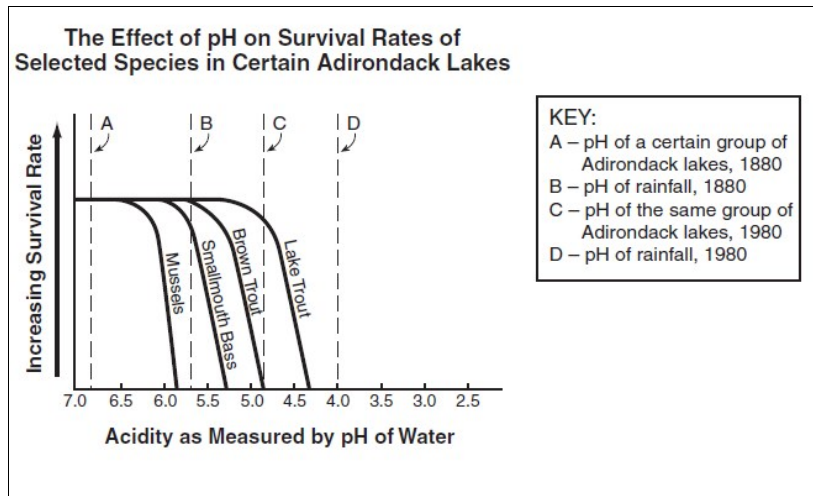
Data Base File Number: 467

Regents Date

Jan2006

51 1/27/2006 S4K7

Answer 2



graph

552. IMPORTANT NOTE: Turn your paper to the LEFT to properly view the diagram. A student measures his pulse rate while he is watching television and records it. Next, he walks to a friend's house nearby and when he arrives, measures and records his pulse rate again. He and his friend then decide to run to the mall a few blocks away. On arriving at the mall, the student measures and records his pulse rate once again. Finally, after sitting and talking for a half hour, the student measures and records his pulse rate for the last time.

Which graph best illustrates the expected changes in his pulse rate according to the activities described above?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

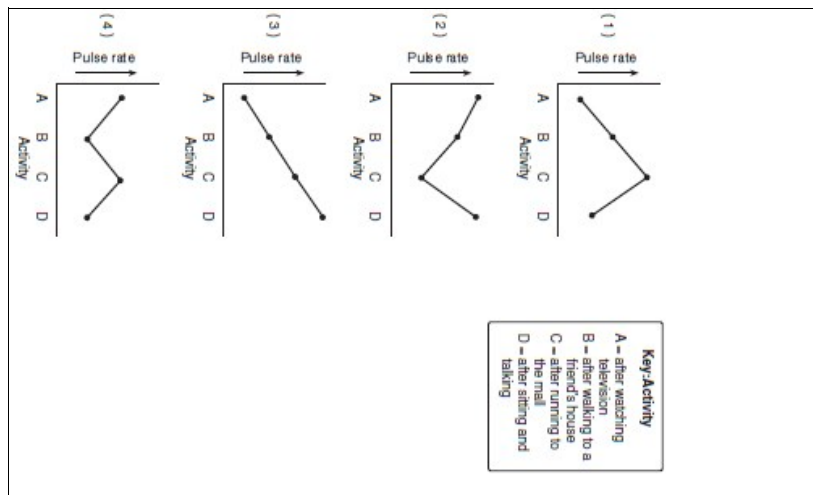
Data Base File Number: 683

Regents Date

June2004

66 6/18/2004 LAB2

Answer 1



graph

555. Base your answer to this question on the information and graph shown and on your knowledge of biology. Students were asked to design a lab that investigated the relationship between exercise and heart rate. Heart rate was determined by recording the pulse rate in beats per minute. The students hypothesized that increased exercise results in an increased heart rate. The class results for the experiment are shown in the graph. Which statement is best supported by the graph?

- (1) Before exercising, the average pulse rate was 65; four minutes after exercising, the average pulse rate was 65.
- (2) After four minutes of exercising, the average pulse rate was 120; two minutes after exercising, the average pulse rate was 120.
- (3) While exercising, the highest average pulse rate was 150; before exercising, the average pulse rate was 65.
- (4) Two minutes before exercising, the average pulse rate was 80; after two minutes of exercise, the average pulse rate was 140.

Data Base File Number: 915

Regents Date

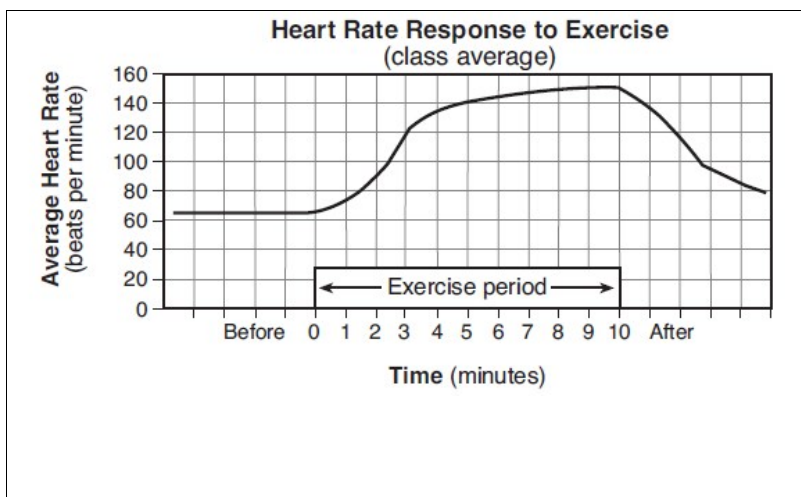
Aug2013

73

8/14/2013

LAB2

Answer 3



graph

556. For over 100 years scientists have monitored the carbon dioxide concentrations in the atmosphere in relation to changes in the atmospheric temperature. The graphs show the data collected for these two factors. According to the data collected, what happened to the atmospheric temperature, over time, as the carbon dioxide levels in the atmosphere increased?

- (1) The atmospheric temperature increased.
- (2) The atmospheric temperature decreased.
- (3) The atmospheric temperature remained the same.
- (4) No conclusion can be made based on the data shown.

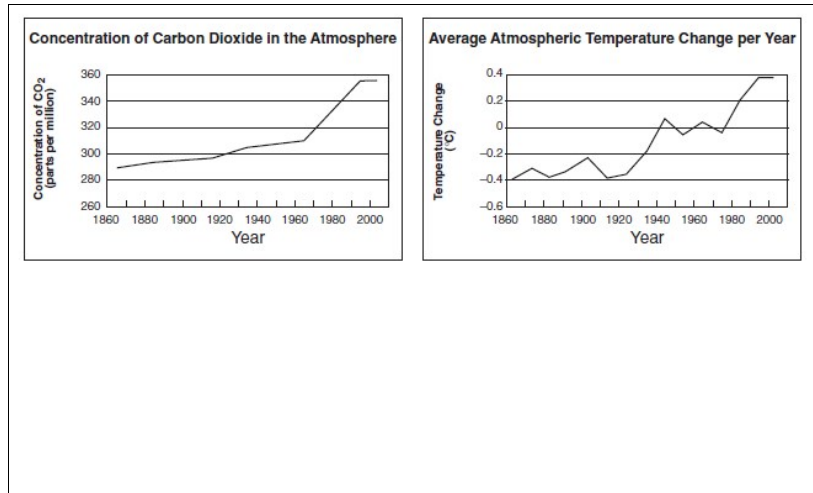
Data Base File Number: 576

Regents Date

June 2005

58 6/22/2005 S4K7

Answer 1



graph

557. A student studied how the amount of oxygen affects ATP production in muscle cells. The data for amount X are shown in the graph. If the student supplies the muscle cells with LESS oxygen in a second trial of the investigation, a bar placed on the graph to represent the results of this trial would most likely be

- (1) shorter than bar X and placed to the left of bar X
- (2) shorter than bar X and placed to the right of bar X
- (3) taller than bar X and placed to the left of bar X
- (4) taller than bar X and placed to the right of bar X

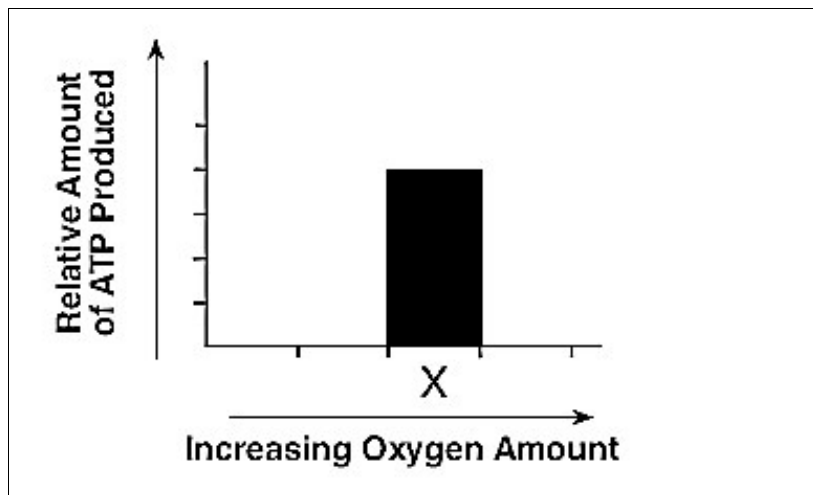
Data Base File Number: 71

Regents Date

Jan 2008

33 1/25/2008 S1K3

Answer 1



graph

558. Base your answer to this question on the graph shown and on your knowledge of biology. The graph illustrates a single species of bacteria grown at various pH levels. Which statement is supported by data from this graph?

- (1) All species of bacteria can grow well at pH 7.
- (2) This type of bacterium would grow well at pH 7.5.
- (3) This type of bacterium would grow well at pH 2.
- (4) Other types of bacteria can grow well at pH 4.

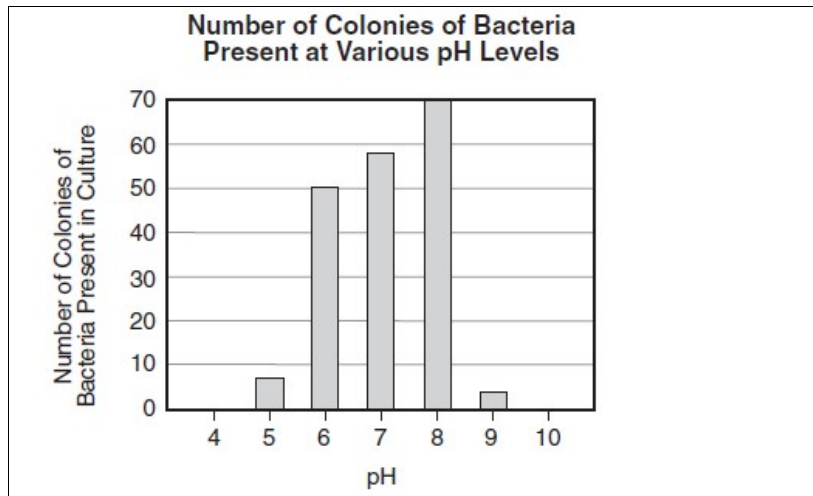
Data Base File Number: 741

Regents Date

June2003

38 6/19/2003 S1K3

Answer 2



graph

559. Base your answer to this question on the information in the data table and on your knowledge of biology. An insect known as a sawfly is found in evergreen forests in North America. Sawfly cocoons are the main source of food for shrews (small mammals) and some bird species. Scientists studied 1-acre plots in various parts of a state to determine the average number of sawfly cocoons, shrews, and robins. The data collected are shown in the table. What is the average number of shrews per acre when the average number of sawfly cocoons is 500,000?

- (1) 10
- (2) 15
- (3) 20
- (4) 25

Data Base File Number: 835

Regents Date

Jan2002

36 1/23/2002 LABA

Answer 2

Average Number of Sawfly Cocoons per Acre (in thousands)	Average Number of Shrews per Acre	Average Number of Robins per Acre
100	5.0	0
300	7.5	0.5
600	19.0	0.8
900	23.5	1.0
1200	23.5	1.3

graph

560. The graph shows the effect of moisture on the number of trees per acre of five tree species. Which observation best represents information shown in the graph?

- (1) All five species grow in the same habitat.
- (2) The American elm grows in the widest range of moisture conditions.
- (3) Red oaks can grow in wetter conditions than black willows.
- (4) Sugar maples can grow anywhere black oaks can grow.

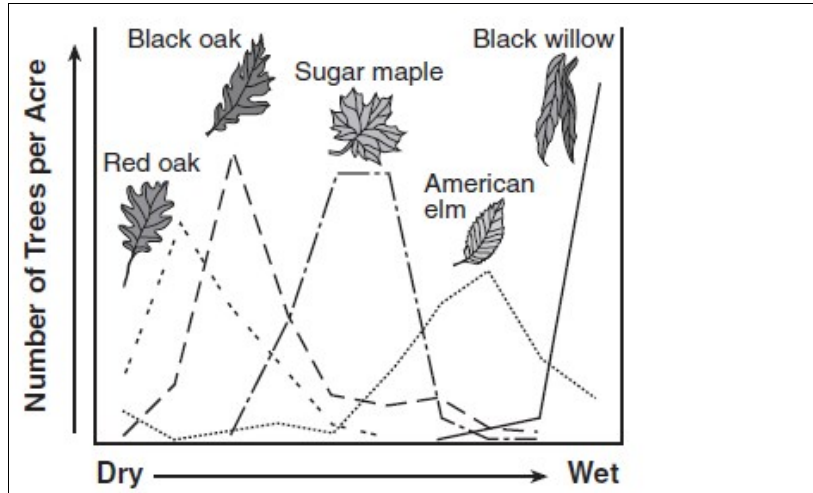
Data Base File Number: 487

Regents Date

June 2006

31 6/21/2006 S4K1

Answer 2



graph

561. The graph shows the results of an action of the enzyme catalase on a piece of meat. Evidence of enzyme activity is indicated by bubbles of oxygen. Which statement best summarizes the activity of catalase shown in the graph?

- (1) The enzyme works better at 10°C than at 50°C.
- (2) The enzyme works better at 5°C than at 65°C.
- (3) The enzyme works better at 35°C than at either temperature extreme.
- (4) The enzyme works at the same level in all environments.

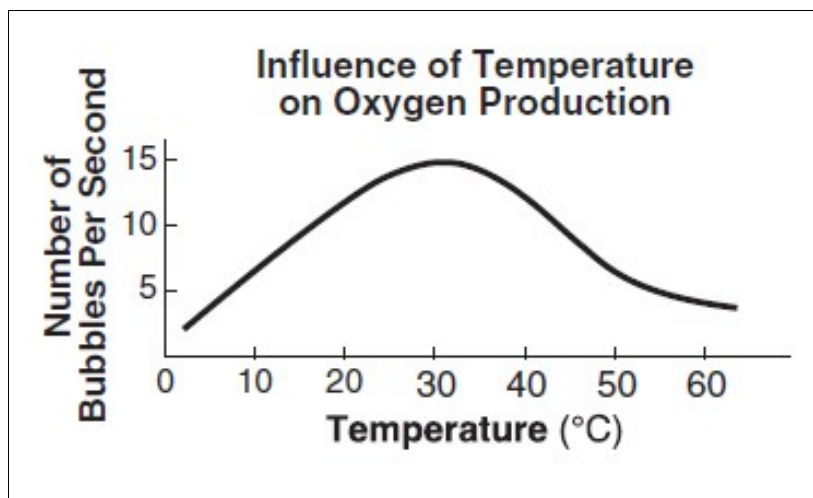
Data Base File Number: 388

Regents Date

Jan 2012

39 1/25/2012 S4K3

Answer 3



graph

562. Base your answer to this question on the graph shown and on your knowledge of biology. The greatest difference between the incidence of measles and the incidence of bacterial pneumonia occurred in

- (1) 1940
- (2) 1950
- (3) 1960
- (4) 1970

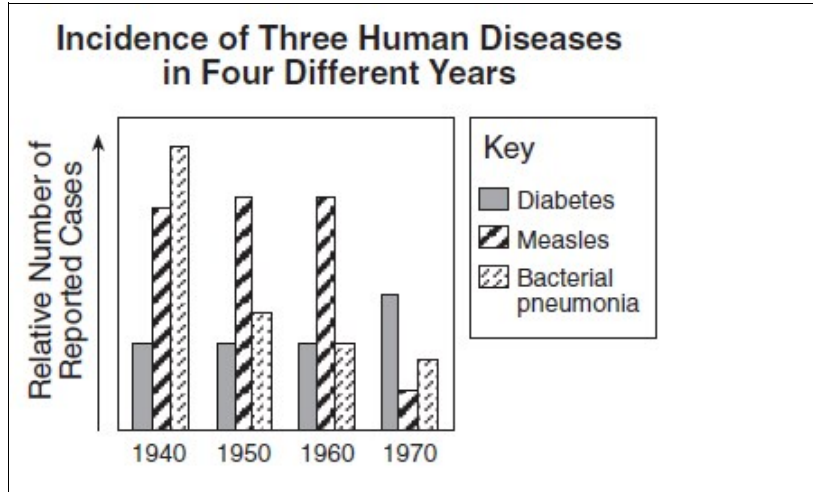
Data Base File Number: 590

Regents Date

Aug2005

35 8/16/2005 S1K1

Answer 3



graph

563. Base your answer to this question on the graphs shown. The graphs show changes in the number of aspen trees and the beaver population in an area over a 50-year period. What is the relationship that exists between the number of aspen trees and the beaver populations in this region during the first 15 years?

- (1) Beaver and aspen tree numbers remain in dynamic equilibrium.
- (2) As the beaver numbers increased, the number of aspen trees decreased.
- (3) Beaver numbers and aspen tree numbers remained stationary.
- (4) The data do not support any conclusion.

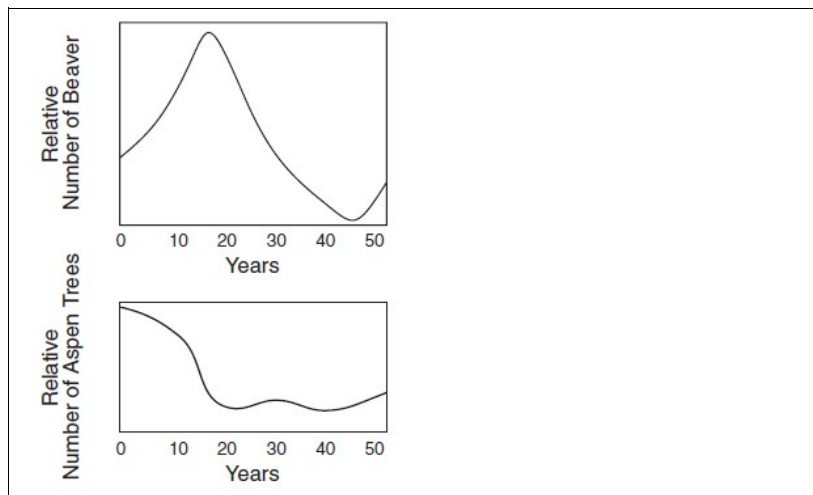
Data Base File Number: 596

Regents Date

Aug2005

41 8/16/2005 S4K6

Answer 2



graph

564. Which line in the graph shown best illustrates an effect of the carbon dioxide level in the blood on breathing rate before, during, and after a period of exercise?

- (1) A
- (2) B
- (3) C
- (4) D

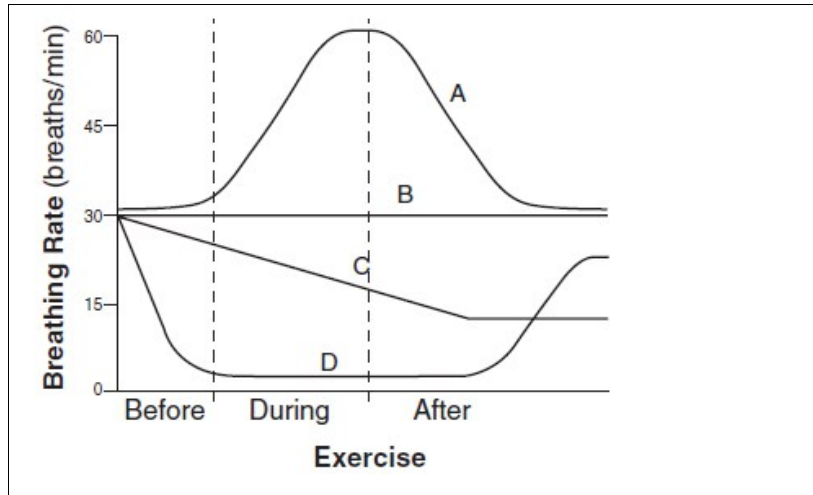
Data Base File Number: 764

Regents Date

Aug2003

36 8/13/2003 S4K1

Answer 1



graph

565. A study was done on three different fish species living in a pond in New York State. The influence of temperature on the growth rates of the fish populations is shown in the graph. In this pond where these fish live, temperature is a

- (1) limiting factor
- (2) heredity factor
- (3) source of ATP
- (4) source of solar energy

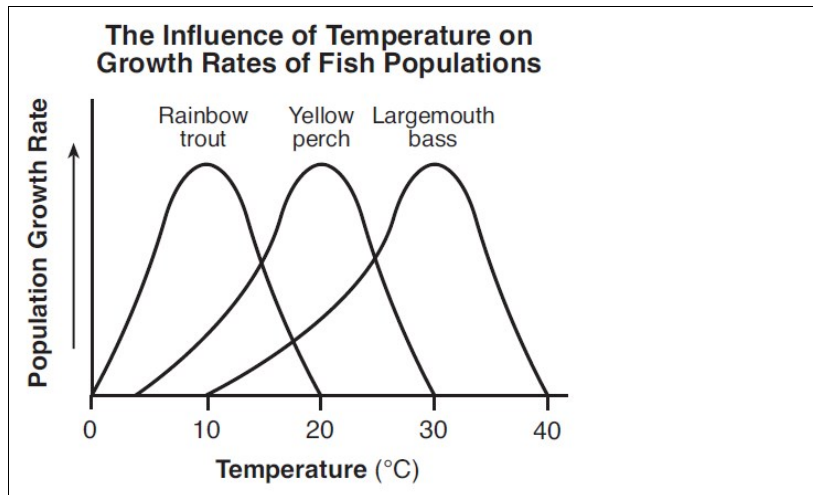
Data Base File Number: 876

Regents Date

June2013

23 6/11/2013 S4K6

Answer 1



graph

566. A graph of the population growth of two different species is shown. Which conclusion can be drawn from information in the graph?

- (1) Oxygen concentration affects population sizes of different species in the same manner.
- (2) Species A requires a high oxygen concentration for maximum population growth.
- (3) Species B requires a high oxygen concentration to stimulate population growth.
- (4) Low oxygen concentration does not limit the population size of either species observed.

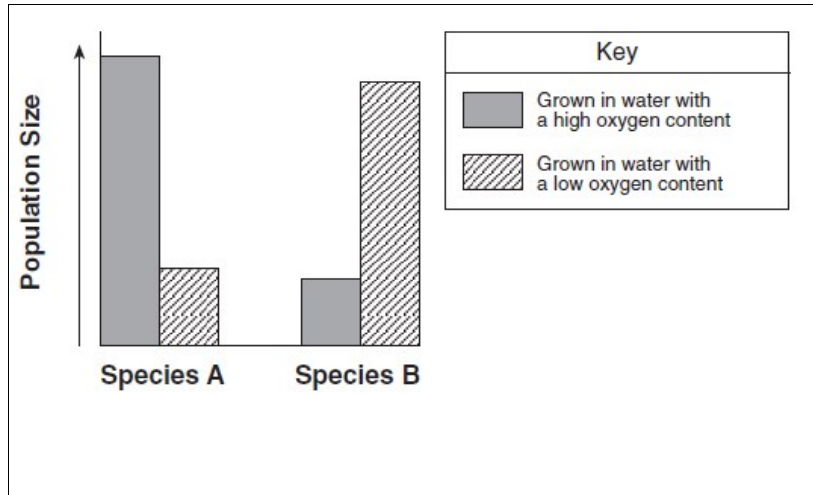
Data Base 495
File Number:

Regents Date

June 2006

43 6/21/2006 S4K6

Answer 2



graph

567. The graph shows the populations of two species of ants. Ants of species 2 have a thicker outer covering than the ants of species 1. The outer covering of an insect helps prevent excessive evaporation of water. Which statement would best explain the population changes shown in the graph?

- (1) The food sources for species 1 increased while the food sources for species 2 decreased from January through November.
- (2) Disease killed off species 1 beginning in May.
- (3) The weather was hotter and dryer than normal from April through September.
- (4) Mutations occurred from April through September in both species, resulting in both species becoming better adapted to the environment.

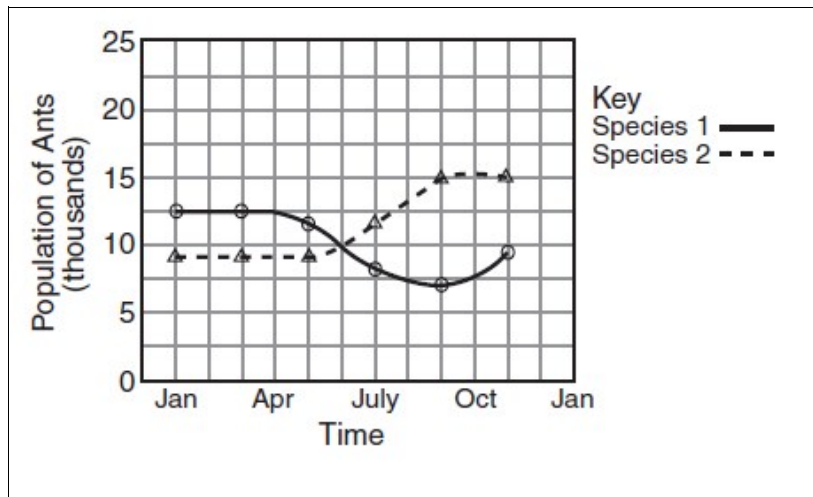
Data Base File Number: 691

Regents Date

Aug2004

34 8/17/2004 S4K3

Answer 3



graph

568. Thrips are insects that feed on the pollen and flowers of certain plants. The size of a thrip population depends on the number of flowers available. Which graph best represents changes in a population of thrips if winter was longer than usual and the summer was too cool and dry for many flowers to bloom?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

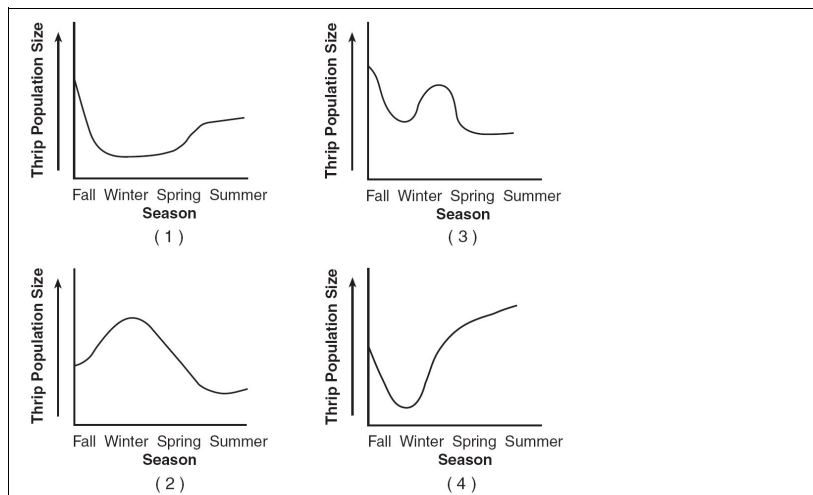
Data Base File Number: 344

Regents Date

June2011

40 6/21/2011 S4K1

Answer 1



greenhouse gases

569. The table shows the abundance of some greenhouse gases in the atmosphere. According to the table, which greenhouse gas is the most abundant?

- (1) carbon dioxide
(2) methane
(3) nitrous oxide
(4) other gases

Data Base File Number: 268

Regents Date

June2010

44 6/16/2010 S4K7

Answer 1

Abundance of Some Atmospheric Greenhouse Gases

Greenhouse Gases	Abundance (%)
carbon dioxide (CO ₂)	99.438
methane (CH ₄)	0.471
nitrous oxide (N ₂ O)	0.084
other gases (CFCs, etc.)	0.007
Total	100.000

growth curve

570. The graph shown indicates the growth of a population of bacteria over a period of 80 hours. Which statement best describes section II of the graph?

- (1) The population has reached the carrying capacity of the environment.
(2) The rate of reproduction is slower than in section I,
(3) The population is greater than the carrying capacity of the environment.
(4) The rate of reproduction exceeds the death rate,

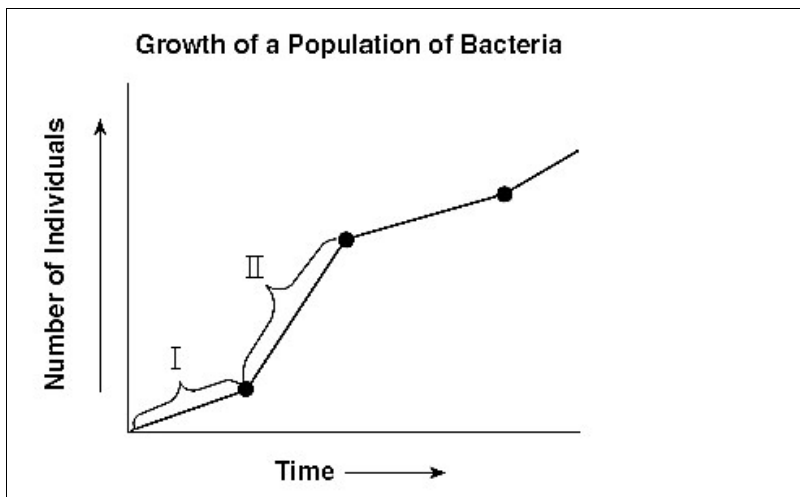
Data Base File Number: 37

Regents Date

June2007

34 6/20/2007 S1K3

Answer 4



habitats

571. Information concerning nests built in the same tree by two different bird species over a ten-year period is shown in the table. What inference best describes these two species?

- (1) They most likely do not compete for nesting sites because they occupy different niches.
- (2) They do not compete for nesting sites because they have the same reproductive behavior.
- (3) They compete for nesting sites because they build the same kind of nest.
- (4) They compete for nesting sites because they nest in the same tree at the same time.

Data Base File Number: 38

Regents Date

June2007

36 6/20/2007 S4K6

Answer 1

Distance of Nest Above Ground (m)	Total Number of Nests Built by Two Different Species	
	A	B
less than 1	5	0
1–5	10	0
6–10	5	0
over 10	0	20

heart rate

572. As part of an experiment, the heart rate of a person at rest was measured every hour for 7 hours. The data are shown in the table. Answer this question based on the data in the table. What is the relationship between the heart rate in beats/min and the hours of rest from hour 1 to hour 7 as shown in the chart ?

- (1) The heart rate dropped.
- (2) The heart rate increased.
- (3) The heart rate stayed the same.
- (4) The heart rate will increase if the activity of the person increases.

Data Base File Number: 143

Regents Date

Aug2008

73 8/13/2008 LABS

Answer 1

Data Table

Hour	Heart Rate (beats/min)
1	72
2	63
3	61
4	61
5	60
6	63
7	68

herbivores

573. Note: The question from the diagram is REPEATED here for easier reading. Question: Gardeners sometimes use slug traps to capture and kill slugs. These traps were tested in a garden with a large slug population. Organisms found in the trap after one week are shown in the table. How many organisms in the trap were herbivores.

- (1) 5
- (2) 9
- (3) 22
- (4) 99

Data Base File Number: 18

Regents Date

Aug2007

41 8/16/2007 S4K6

Answer 3

Gardeners sometimes use slug traps to capture and kill slugs. These traps were tested in a garden with a large slug population. Organisms found in the trap after one week are shown in the table below.

Organisms in Trap	
Organism	Number in Trap
slugs	8
snails	1
aphids	13
centipedes	1
ground beetles	98

heredity

574. Base your answer to this question on the diagram shown, which provides information related to heredity, and on your knowledge of biology. Which molecules are represented by box B?

- (1) bases
- (2) proteins
- (3) amino acids
- (4) simple sugars

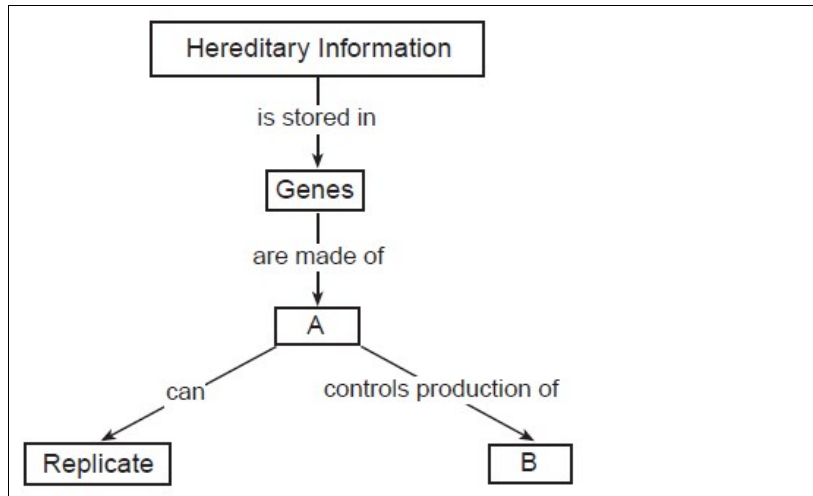
Data Base File Number: 836

Regents Date

Jan2002

45 1/23/2002 S4K2

Answer 2



heterotroph

575. The chart shown contains both autotrophic and heterotrophic organisms. Organisms that carry out only heterotrophic nutrition are found in

- (1) row A, only
- (2) row B, only
- (3) Rows A and B
- (4) Rows A and C

Data Base File Number: 89

Regents Date

June 2008

1 6/24/2008 S4K1

Answer 1

A	owl	cat	shark
B	mouse	corn	dog
C	squirrel	bluebird	alga

heterotroph

576. The diagram shown represents a woodpecker finch. This bird may best be described as

- (1) a decomposer that most likely feeds on nectar (a sugary liquid) from flowers
- (2) a heterotroph that may eat insects and is more closely related to a robin than to an earthworm
- (3) a scavenger that feeds on animals and reproduces asexually
- (4) an autotroph that probes tree bark for insects and is pathogenic

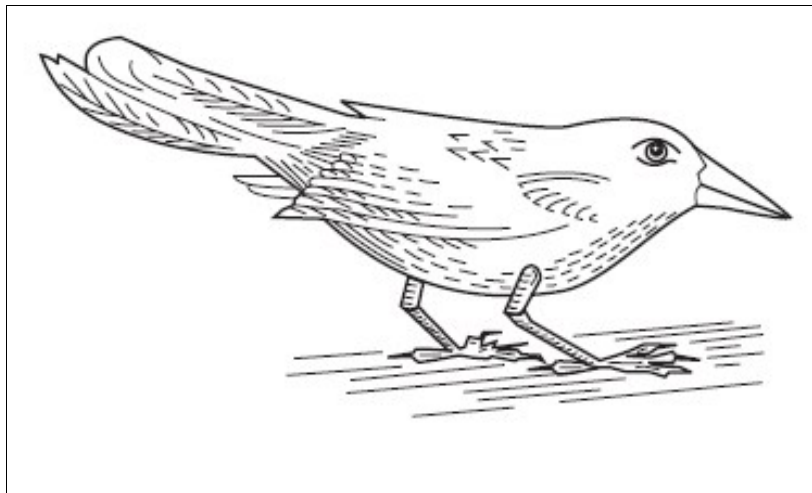
Data Base File Number: 358

Regents Date

Aug 2011

2 8/18/2011 S4K1

Answer 2



homeostasis

577. Diagram A represents a microscopic view of the lower surface of a leaf. Diagram B represents a portion of the human body. What are the correct functions of X in Diagram A, and X in Diagram B?
- (1) controls water loss and controls insulin production
 - (2) controls photosynthesis and controls water absorption
 - (3) controls starch manufacture and controls bile production
 - (4) controls starch storage and controls waste storage

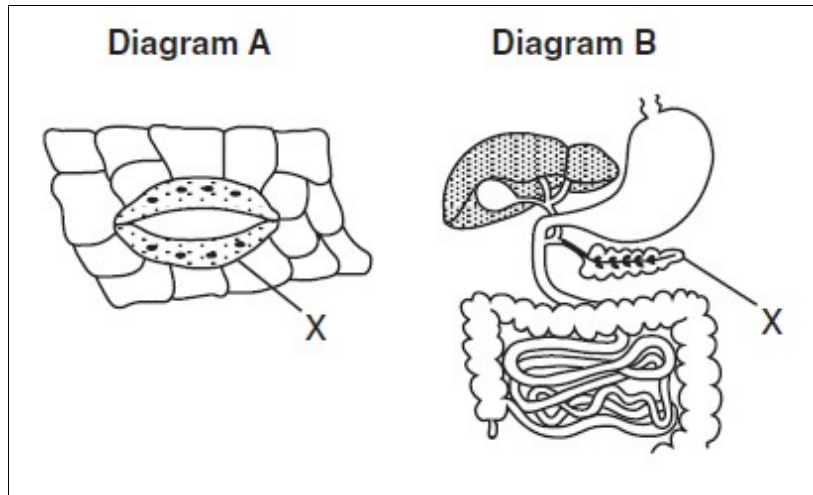
Data Base File Number: 750

Regents Date

June 2003

57 6/19/2003 S4K5

Answer 1



homeostasis

578. The graph shows the relationship between kidney function and arterial pressure in humans. How would a steady decrease in arterial pressure affect homeostasis in the human?
- (1) the kidneys will increase the rate of filtration
 - (2) the carbon dioxide level in the blood would increase
 - (3) the rate of filtration by the kidneys would be reduced
 - (4) the blood would clot in the kidneys

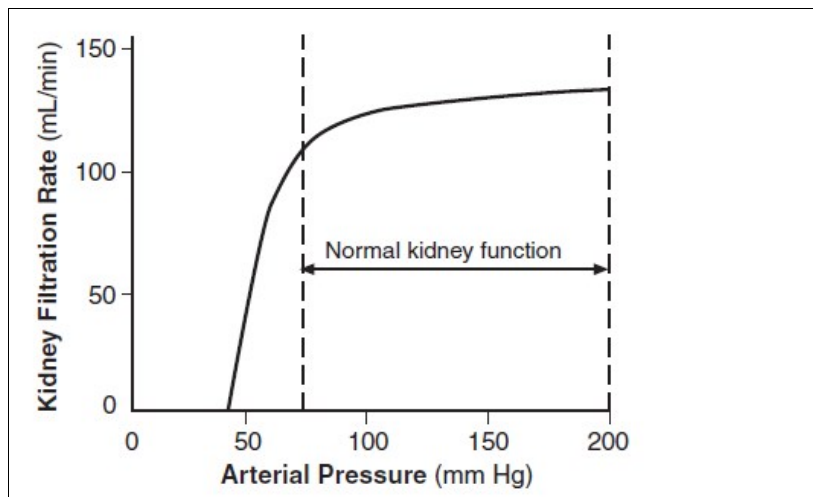
Data Base File Number: 821

Regents Date

June 2002

55 6/19/2002 S4K1

Answer 3



homeostasis

579. The data table shown compares blood flow in various human body structures, both at rest and during strenuous exercise. Base your answer to this question on the data shown in the table and on your knowledge of biology. Which structure shown in the table helps the most to maintain homeostasis in the body during strenuous exercise by greatly increasing the blood supply, containing oxygen and nutrients to cells in the body?

- (1) heart
(2) skeletal muscle
(3) digestive organs
(4) cannot be determined by the data in the chart

Data Base File Number: 85

Regents Date

Jan2008

71 1/25/2008 LABS

Answer 1

Structure	Blood Flow at Rest (mL/min)	Blood Flow During Strenuous Exercise (mL/min)
heart	250	750
skeletal muscle	1200	12,500
digestive organs	1400	600

homeostasis

580. The diagram shown represents an activity that occurs in the human body. This diagram best illustrates:

- (1) active transport
(2) maintenance of homeostasis
(3) synthesis of nutrients
(4) differentiation

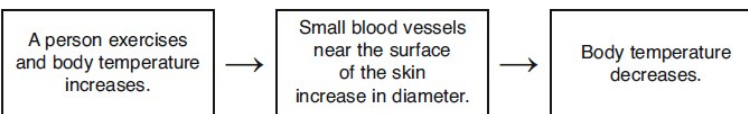
Data Base File Number: 404

Regents Date

June2012

10 6/19/2012 S4K5

Answer 2



homeostasis

581. The diagram shown illustrates some functions of the pituitary gland. The pituitary gland secretes substances that, in turn, cause other glands to secrete different substances. Which statement best describes events shown in the diagram?

- (1) Secretions provide the energy needed for metabolism.
- (2) The raw materials for the synthesis of secretions come from nitrogen.
- (3) The secretions of all glands speed blood circulation in the body.
- (4) Secretions help the body to respond to changes from the normal state

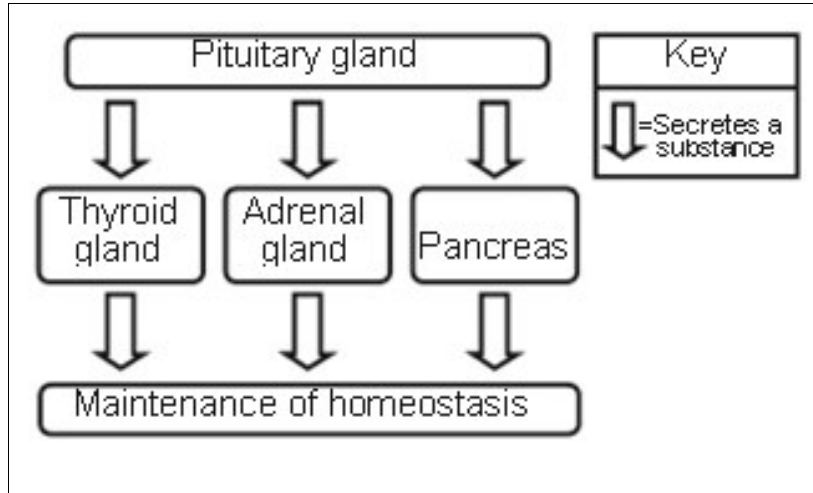
Data Base File Number: 189

Regents Date

June2009

33 6/18/2009 S4K5

Answer 4



homeostasis

582. Base your answer to this question diagram shown and on your knowledge of biology. What term does letter X most likely represent?

- (1) homeostasis
- (2) excretion
- (3) photosynthesis
- (4) digestion

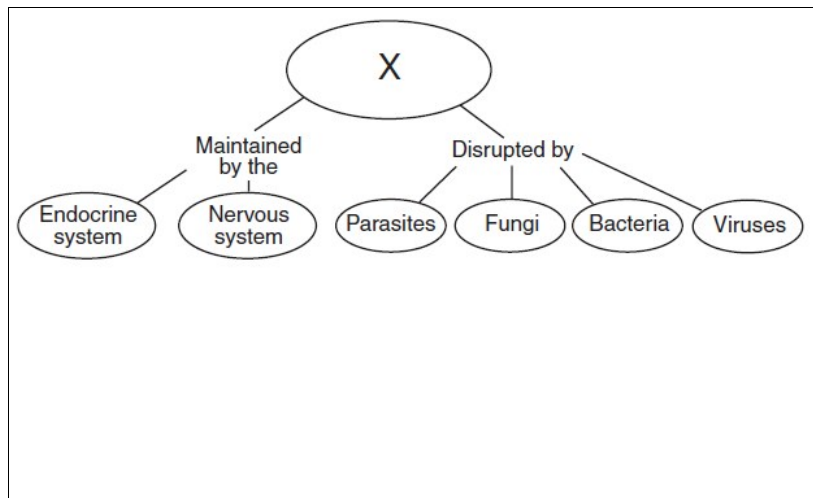
Data Base File Number: 675

Regents Date

June2004

42 6/18/2004 S4K5

Answer 1



homeostasis

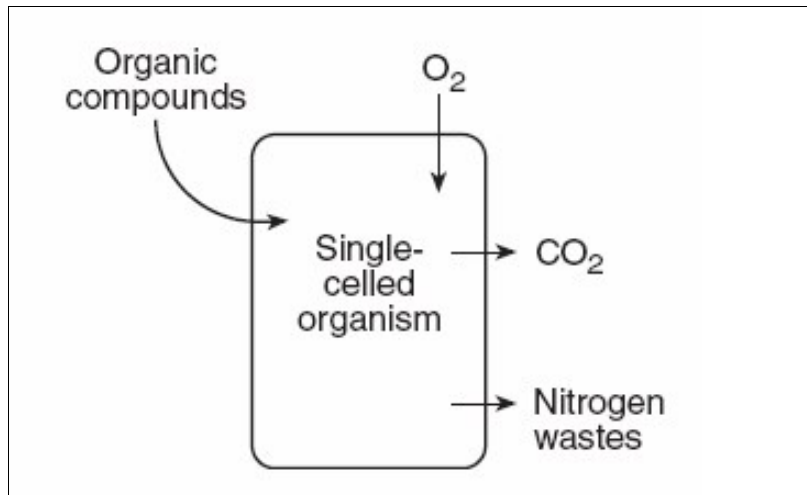
583. The arrows in the diagram indicate the movement of materials into and out of a single-celled organism. The movements indicated by all the arrows are directly involved in
- (1) the maintenance of homeostasis
 - (2) respiration, only
 - (3) excretion only
 - (4) the digestion of proteins

Data Base File Number: 1

Regents Date

Aug2007
7 8/16/2007 S4K1

Answer 1



homeostasis

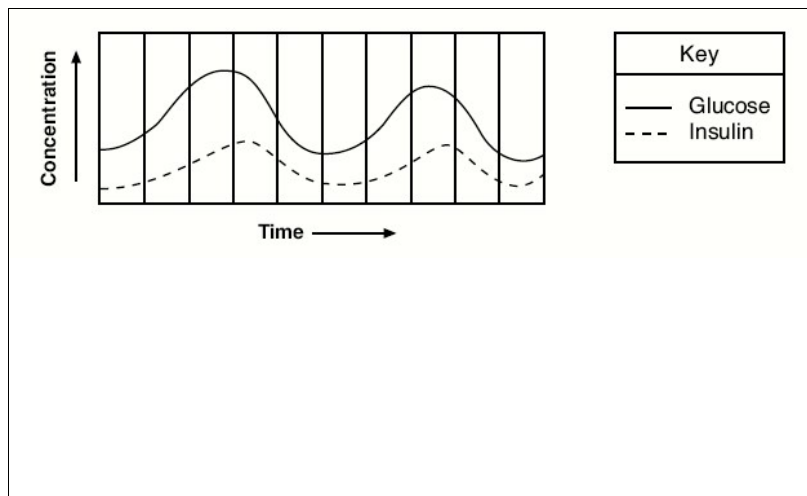
584. The graph shows the levels of glucose and insulin in the blood of a human over a period of time. This graph represents
- (1) an allergic reaction
 - (2) an antigen-antibody reaction
 - (3) maintenance of homeostasis
 - (4) autotrophic nutrition

Data Base File Number: 124

Regents Date

Aug2008
23 8/13/2008 S4K5

Answer 3



homeostasis

585. Some processes that occur in a cell are listed in the chart. Which processes will all living organisms use to maintain homeostasis?

- (1) A and B, only
- (2) B and C, only
- (3) C and A, only
- (4) A, B, and C

Data Base File Number: 898

Regents Date

Aug2013

3 8/14/2013 S4K1

Answer 4

A. utilize energy
B. detect changes in the environment
C. rearrange and synthesize chemical compounds

homeostasis

586. Two organisms are represented in the diagram. Which statement concerning organism A and organism B is correct?

- (1) Organism A contains tissues while organism B lacks tissues.
- (2) Organism A and organism B have the same organs.
- (3) Organism A and organism B have structures that allow them to maintain homeostasis.
- (4) Organism A lacks structures that maintain a dynamic equilibrium, while organism B has these structures.

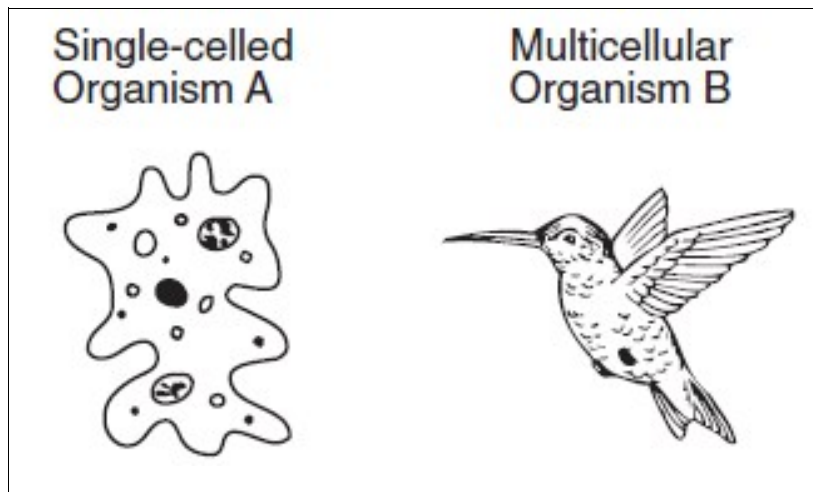
Data Base File Number: 756

Regents Date

Aug2003

13 8/13/2003 S4K1

Answer 3



homeostasis

587. The arrows in the diagram shown indicate the movement of materials into and out of a single celled organism. The movements indicated by all the arrows are directly involved in

- (1) the maintenance of homeostasis
- (2) photosynthesis, only
- (3) excretion, only
- (4) the digestion of minerals

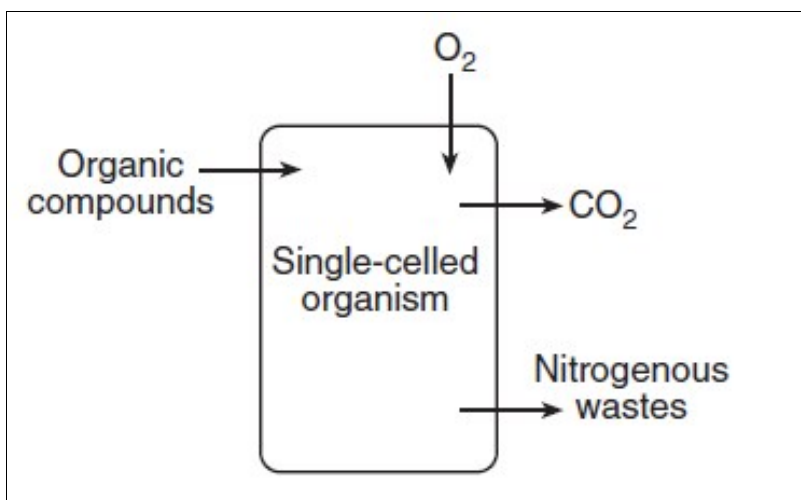
Data Base File Number: 655

Regents Date

June2004

7 6/18/2004 S4K1

Answer 1



homeostasis

588. Base your answer to this question on the diagram shown and on your knowledge of biology. In a cell, a variety of structures perform specific functions and interact to maintain homeostasis. The diagram shown represents a typical cell with three cell structures labeled 1, 2, and 3. Which of the following match the labeled part with it's function?

- (1) 1 -- ribosome -- site of protein synthesis
- (2) 2 --nucleus -- control of cell processes
- (3) 3 -- mitochondrion -- ATP production
- (4) all of the above are correctly matched.

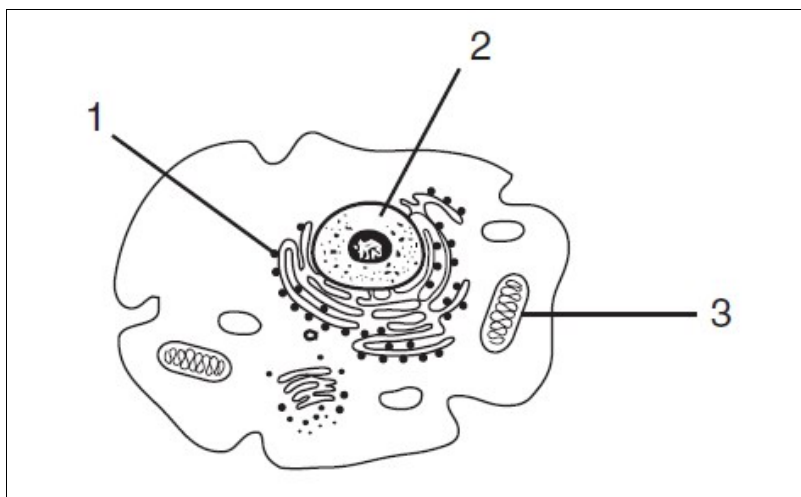
Data Base File Number: 295

Regents Date

Aug2010

56 8/18/2010 S4K1

Answer 4



homologous structures

589. Base your answer to this question on the diagram shown and on your knowledge of biology. The similarities of the bones labeled A provide evidence that

- (1) the organisms may have evolved from a common ancestor
- (2) all species have one kind of bone structure
- (3) the cells of the bones contain the same type of mutations
- (4) all structural characteristics are the same in animals

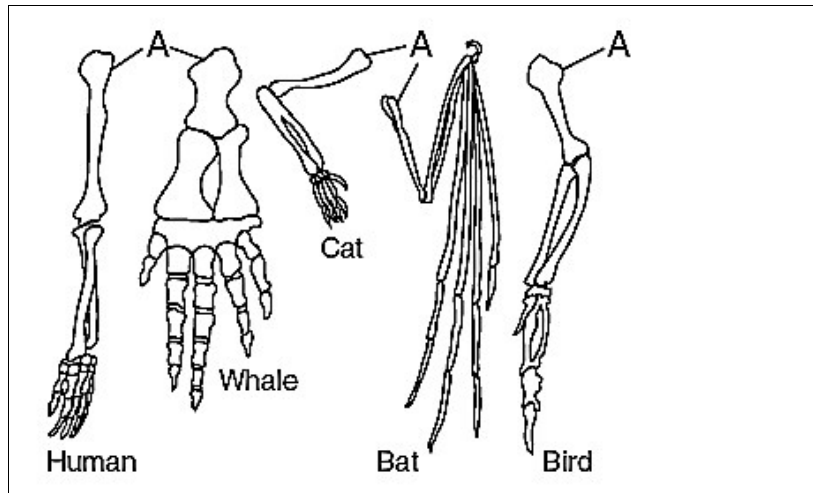
Data Base File Number: 59

Regents Date

Jan2007

39 1/26/2007 S4K3

Answer 1



hormone

590. The diagram shown represents a function of the thyroid gland. What is one effect of an increasing level of TSH-releasing factor?

- (1) TSH is released
- (2) TSH is not released
- (3) TSH slows down thyroid activity
- (4) TSH controls the hypothalamus

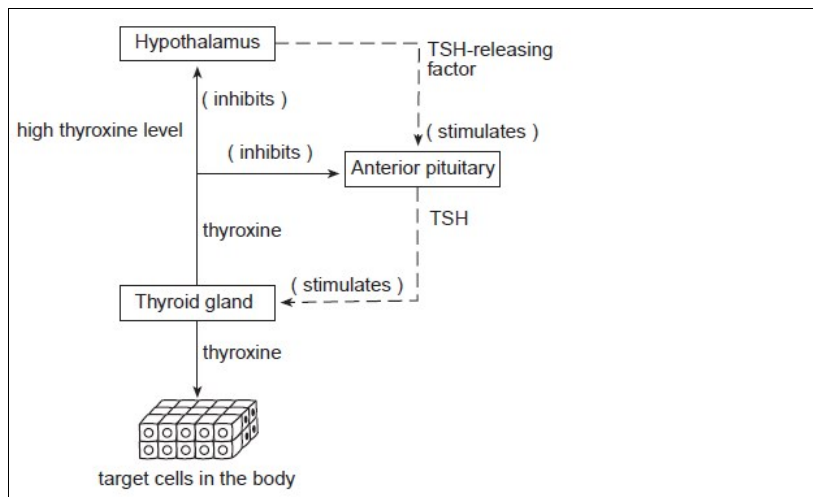
Data Base File Number: 854

Regents Date

June2001

49 6/15/2001 S1K3

Answer 2



hormone

591. The diagram shown represents an interaction between parts of an organism. The term chemicals in this diagram represents

- (1) starch molecules
- (2) DNA molecules
- (3) hormone molecules
- (4) receptor molecules

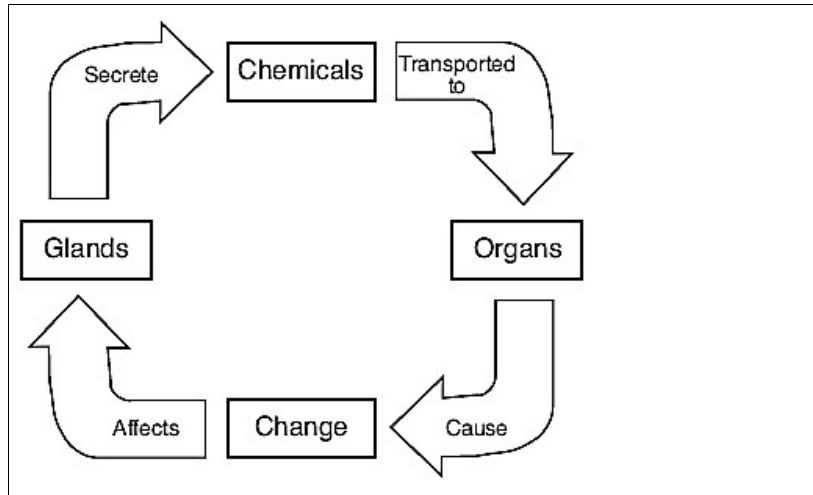
Data Base File Number: 100

Regents Date

June 2008

35 6/24/2008 S4K1

Answer 3



hormone

592. Base your answer to this question on the information, diagram, and table shown and on your knowledge of biology. A student wanted to test the hypothesis that rooting hormones will stimulate the production of new roots at a faster rate than would take place without rooting hormones. Two stem cuttings of equal length, similar to the one shown AT THE LEFT, were taken from a rose, a begonia, and a geranium plant. The cut end of one cutting from each plant was dipped into the hormone and then planted in wet sand. The other cutting from each plant was planted in wet sand without dipping it into the hormone. All cuttings were maintained in identical environmental conditions. At the end of 4 weeks, all the cuttings were removed from the sand and the lengths of the roots that had developed were measured. The results are summarized in the data table AT THE RIGHT. The effect of the rooting hormone on the production of new roots was most likely due to the influence of the hormone on the process of

- (1) photosynthesis
- (2) meiosis
- (3) mitosis
- (4) excretion


Data Base File Number: 789

Regents Date

Aug 2002

47 8/13/2002 S4K4

Answer 3



Plant Cutting	Total Length of Roots in Centimeters	
	Treated with Hormone	Untreated
Begonia	1.50	1.00
Geranium	0.75	0.50
Rose	0.00	0.00

hormone

593. The diagram shown represents cells and hormones present in the human body. Which statement correctly describes an interaction between the hormones and the cells?
- (1) Hormone A is synthesized by cell 2 and targets cell 1.
 - (2) Hormone B bonds with both cell 1 and cell 2.
 - (3) Specific reactions carried out by cell 1 are regulated by hormone C.
 - (4) The specialized receptor molecules on cell 1 secrete hormone B.

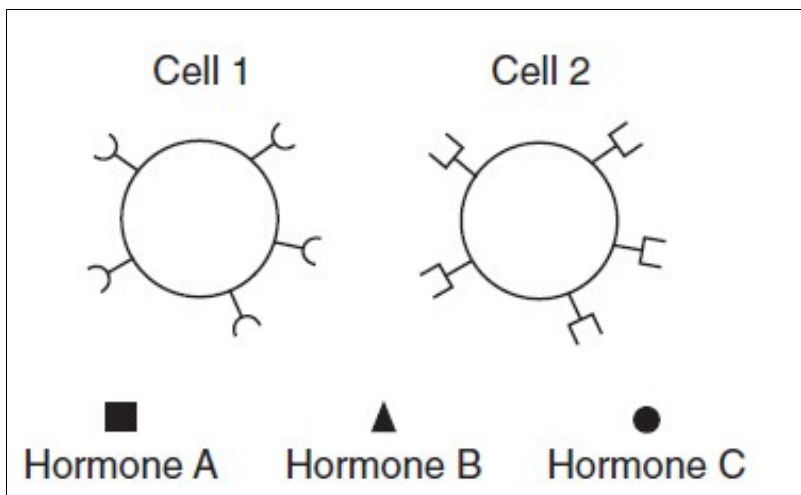
Data Base File Number: 386

Regents Date

Jan2012

36 1/25/2012 S4K1

Answer 3



hormones / human

594. The data in the table shown indicates the presence of specific reproductive hormones in blood samples taken from three individuals. An X in the hormone column indicates a positive lab test for the appropriate levels for normal reproductive functioning in that individual. Which processes could occur in individual 3?
- (1) production of sperm, only
 - (2) production of sperm and production of eggs
 - (3) production of eggs and embryonic development
 - (4) production of eggs, only

Data Base File Number: 53

Regents Date

Jan2007

30 1/26/2007 S4K4

Answer 1

Individuals	Hormones Present		
	Testosterone	Progesterone	Estrogen
1		X	X
2			X
3	X		

hormones / human female

595. The graph shows the relative concentrations of certain hormones in the blood during the human female reproductive cycle. Which hormone has the lowest concentration on which day?

- (1) hormone A on day 4
- (2) hormone B on day 2
- (3) hormone C on day 12
- (4) hormone D on day 20

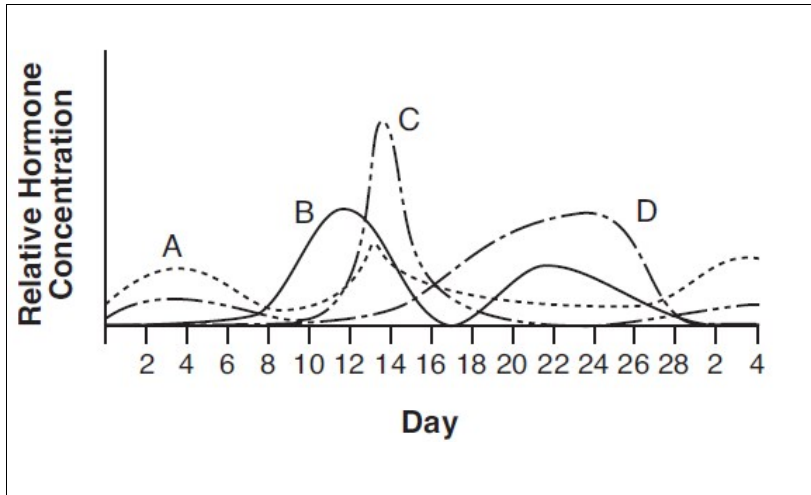
Data Base File Number: 221

Regents Date

Aug2009

40 8/13/2009 S1K3

Answer 2



hormones / human female

596. The graph shows the different concentrations of female reproductive hormones A, B, C, and D over a 28-day cycle. Although the data used to make this graph was originally entered in a data table, most scientists prefer to see the information in the form of a graph because

- (1) the information in a graph is more accurate than the information in a data table
- (2) it is easier to see relationships between variables in a graph than in a data table
- (3) it is possible to put more information in a graph than in a data table
- (4) only graphs can be used to predict future trends

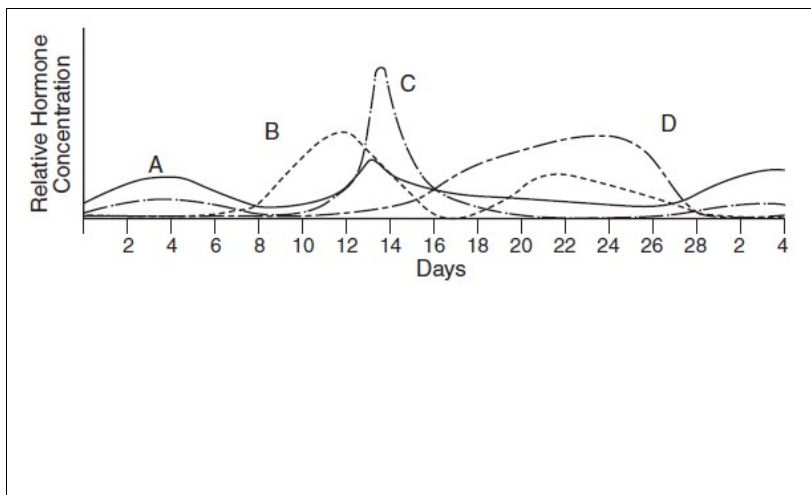
Data Base File Number: 538

Regents Date

Jan2005

26 1/28/2005 4.3

Answer 2



human growth

597. Which graph best illustrates the change in the human population over the past 2000 years?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

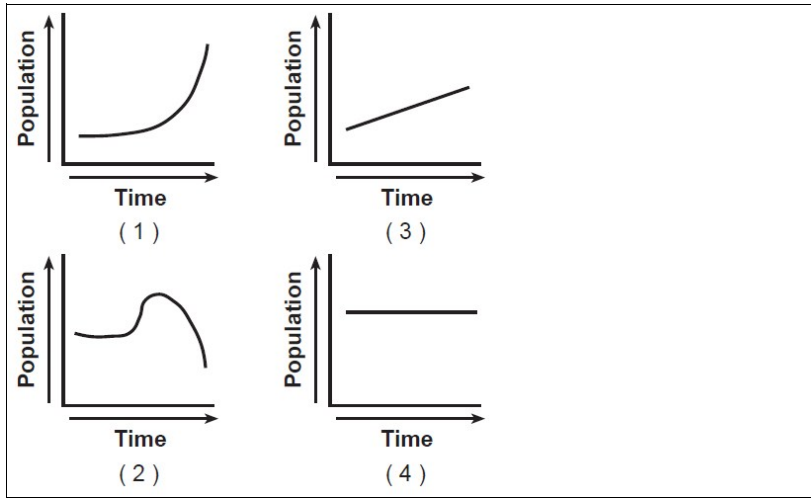
Data Base File Number: 922

Regents Date

Jan2014

25 1/27/2014 S4K7

Answer 1



human impact

598. Which phrase would be appropriate for area A in the chart shown?

- (1) produces radioactive waste
- (2) results in greater biodiversity
- (3) provides light from radioactive substances
- (4) reduces dependence on fossil fuels

Data Base File Number: 645

Regents Date

Jan2004

29 1/29/2004 S4K5

Answer 1

Technological Device	Positive Impact	Negative Impact
Nuclear power plant	Provides efficient, inexpensive energy	A

human impact

599. Which concept is best represented in the diagram shown ?

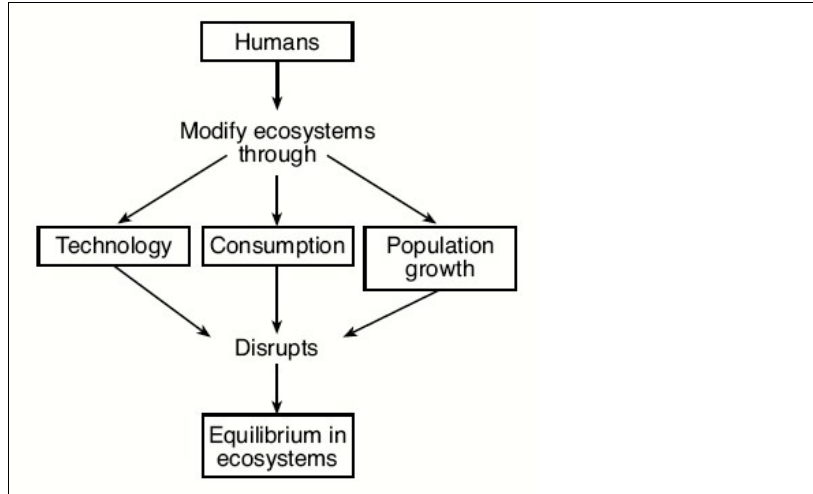
- (1) Human actions are a threat to equilibrium in ecosystems.
- (2) Equilibrium in ecosystems requires that humans modify ecosystems.
- (3) Equilibrium in ecosystems directly affects how humans modify ecosystems.
- (4) Human population growth is the primary reason for equilibrium in ecosystems.

Data Base File Number: 125

Regents Date

Aug2008
24 8/13/2008 **S4K5**

Answer 1



human impact

600. Base your answers to this question on the information and food web below and on your knowledge of biology. The organisms in the food web below live near large cattle ranches. Over many years, mountain lions occasionally killed a few cattle. One year, a few ranchers hunted and killed many mountain lions to prevent future loss of their cattle. Later, ranchers noticed that animals from this food web were eating large amounts of grain from their fields. Which two specific populations most likely increased in number after the mountain lion population decreased?

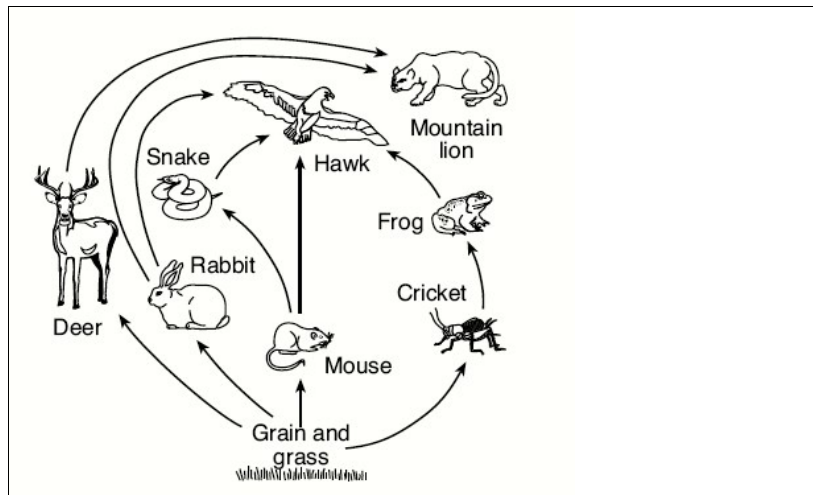
- (1) rabbit and deer
- (2) rabbit and snake
- (3) hawk and frog
- (4) mouse and hawk

Data Base File Number: 141

Regents Date

Aug2008
59 8/13/2008 **S4K7**

Answer 1



human impact

601. In which row in the chart below is a human action correctly paired with its environmental impact?

(1) 1

(3) 3

(2) 2

(4) 4

Data Base File Number: 405

Regents Date

June 2012

11 6/19/2012 S4K7

Answer 3

Row	Human Action	Environmental Impact
(1)	deforestation	increased biodiversity
(2)	population growth	increased number of species
(3)	industrialization	increased global temperature
(4)	overharvesting	increased mineral resources

human impact

602. The chart shown summarizes the effect of commercial fishing on a local Atlantic cod population over a 9-year period. According to the chart, it can be concluded that

(1) the number of fishing boats has less effect on the local cod population than pollution

(3) an increase in fishing boats has had a positive impact on cod population growth

(2) more fishing boats make the cod population estimates more accurate

(4) commercial fishing is having a negative effect on the local cod population

Data Base File Number: 619

Regents Date

Jan 2013

40 1/23/2013 S4K7

Answer 4

Year	Number of Commercial Fishing Boats	Estimated Population of Atlantic Cod (in thousands)
1995	4	14.0
1997	6	12.5
1999	12	11.5
2001	14	9.0
2003	17	4.5

human impact

603. Base your answer to this question on the information given and on your knowledge of biology. Throughout the world, in nearly every ecosystem, there are animal and plant species present that were introduced into the ecosystem by humans or transported to the ecosystem as a result of human activities. Some examples are listed in the chart shown. What is one reason that an introduced species might be very successful in a new environment.

- (1) There is no competition.
(2) There is more competition.
(3) Competition remains the same.
(4) There are no predators.

Data Base File Number: 140

Regents Date

Aug2008

56 8/13/2008 S4K7

Answer 1

Examples of Introduced Species
Table with 2 columns: Organism, New Location. Rows include: purple loosestrife (plant) - wetlands in New York State, zebra mussel - Great Lakes, brown tree snake - Guam.

human impact

604. Base your answer to this question on the information and graph shown. Reducing toxic chemicals released into the environment often requires laws. When making decisions about whether or not to support the passing of such laws, individuals must weigh the benefits against the potential risks if the law is not passed. The amounts of toxic chemicals released into the environment of New York State over a ten-year period are shown in the graph. Why did the amount of toxic chemicals released remain relatively constant between 1995 and 1997?

- (1) The environment reached a saturation level of toxic waste.
- (2) The existing laws regarding the release of toxic wastes were strictly enforced.
- (3) Toxic wastes were recycled in nature.
- (4) Companies releasing toxic wastes voluntarily reduced the total amounts of toxic wastes released.

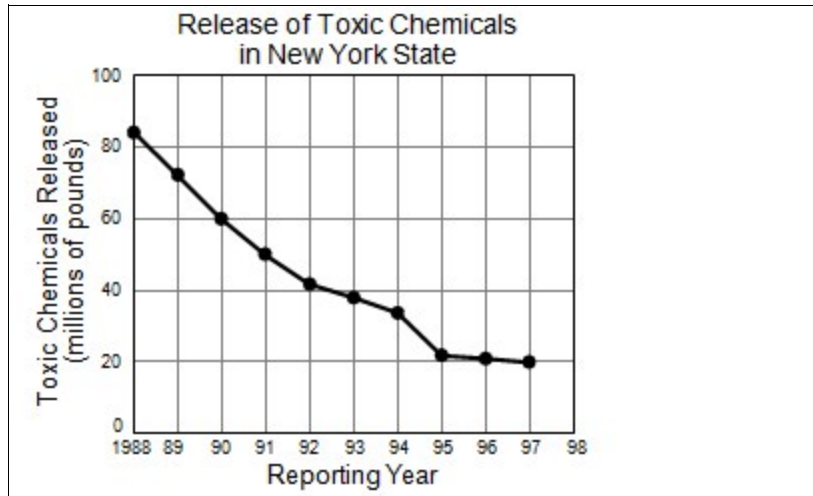
Data Base File Number: 681

Regents Date

June 2004

56 6/18/2004 S4K7

Answer 2



human impact

605. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram identifies four groups that can have an effect on air quality in New York State. Which of the following could cause air-quality problems that affect New York State?

- (1) acid rain
- (2) global warming
- (3) smog
- (4) All of the above could be correct.

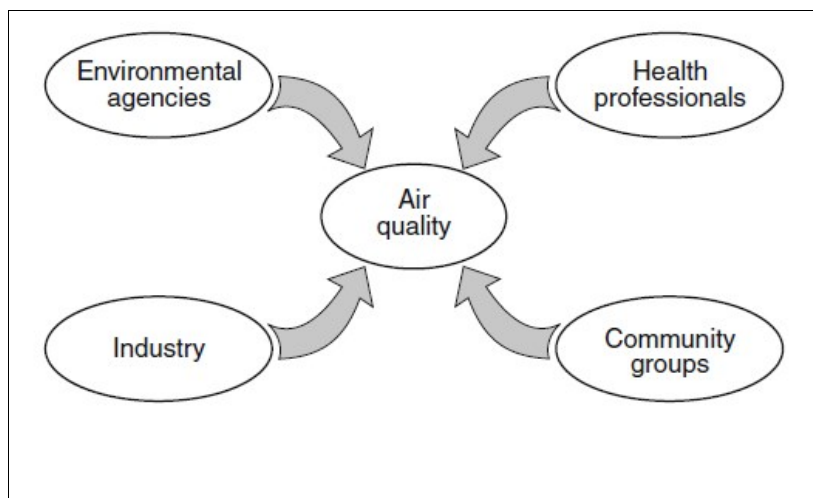
Data Base File Number: 448

Regents Date

Aug 2012

71 8/17/2012 S4K7

Answer 4



human impact

606. Base your answer to this question on the information given, the data table shown, and on your knowledge of biology. Birds colliding with aircraft either on the ground or in the air create problems for the Air Force. An organization known as BASH (Bird Aircraft Strike Hazard) studied the impact of birds colliding with aircraft. In 2001, there were 3854 bird collisions reported at a total cost to the Air Force of over 31 million dollars in damage --- approximately eight thousand dollars per collision. August, September, and October were the busiest months with 1442 collisions. Nearly 50% of all these collisions occurred in the airfield environment, an environment that can most easily be controlled. The top five species of birds involved in these collisions are listed in the data table as shown. The bird species causing the least amount of damage to aircraft is species

(1) A

(3) C

(2) B

(4) D or E

Data Base 269
File Number:

Regents Date

June 2010

46 6/16/2010 S1K3

Answer 4

Top Five Bird Species Involved in Collisions in 2001

Type of Bird	Number of Collisions
American mourning dove (species A)	123
horned lark (species B)	100
barn swallow (species C)	83
American cliff swallow (species D)	55
American robin (species E)	55

Source of data: Bird Aircraft Strike Hazard by Matt Granger, <http://www.find.articles.com>

human life cycle

607. Base your answer to this question on the information in the diagram and on your knowledge of biology.- The diagram shown, represents some stages in the life cycle of humans. The numbers in the diagram represent various processes in the cycle. How do processes 1 and 2 affect the amount of genetic information provided by a parent to its offspring.

- (1) Each egg or sperm will carry the identical amounts of genetic information contained in the parent's body cells.
- (2) Each egg or sperm will carry only half of the genetic information contained in the parent's body cells.
- (3) Each egg or sperm will carry one-fourth of the genetic information contained in the parent's body cells.
- (4) Each egg or sperm will carry double the genetic information contained in the parent's body cells.

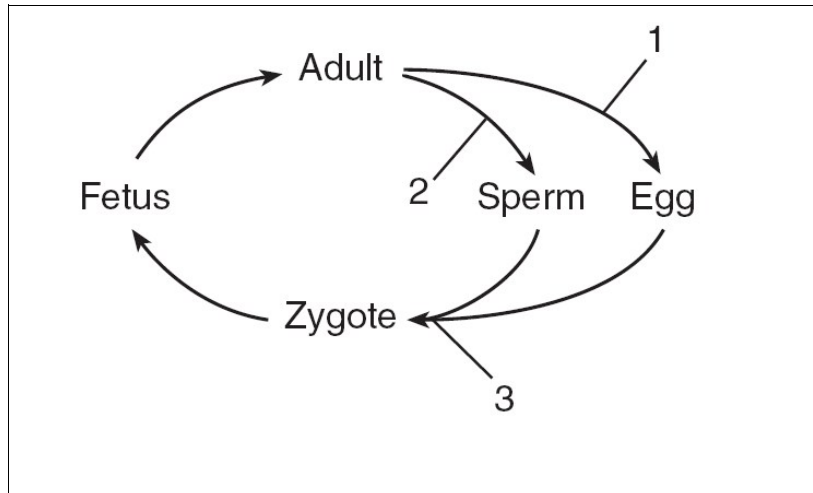
Data Base File Number: 351

Regents Date

June 2011

67 6/21/2011 S4K4

Answer 2



human organs

608. Base your answer to this questions on the diagram shown and on your knowledge of biology. Structure B represents

- (1) cells, only
- (2) cells and tissues, only
- (3) an organ with cells and tissues
- (4) a complete system with organs, tissues, and cells

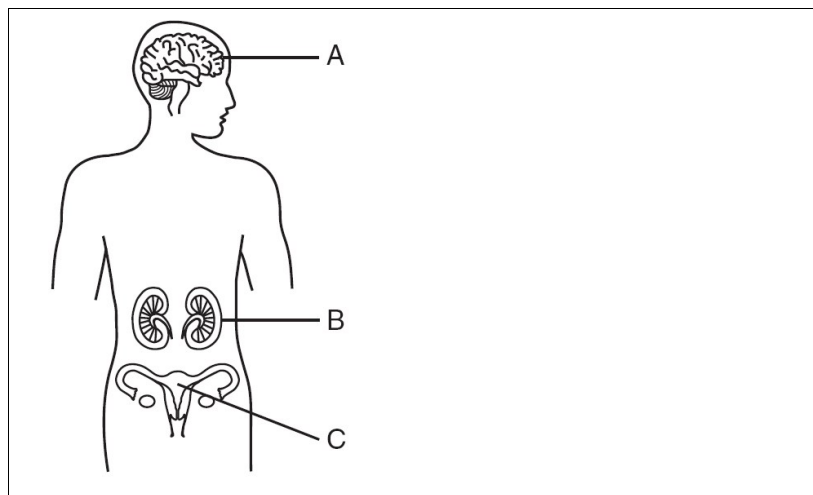
Data Base File Number: 343

Regents Date

June 2011

38 6/21/2011 S4K1

Answer 3



human reproduction

609. The diagram shown represents a process that occurs during human reproduction. The process represented by the arrow will ensure that the

- (1) zygote contains a complete set of genetic information
- (2) gametes contain a complete set of genetic information
- (3) zygote contains half of the genetic information
- (4) gametes contain half of the genetic information

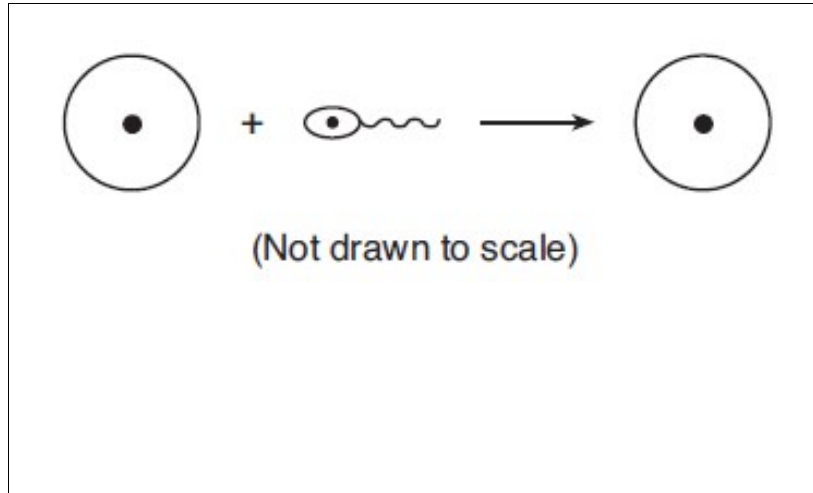
Data Base File Number: 257

Regents Date

June 2010

15 6/16/2010 S4K4

Answer 1



human reproduction

610. The diagram shown represents processes involved in human reproduction. Which row in the chart shown correctly identifies the processes represented by the letters in the diagram?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 563

Regents Date

June 2005

30 6/22/2005 S4K4

Answer 2

Row	A	B	C	D
(1)	mitosis	meiosis	fertilization	differentiation
(2)	meiosis	meiosis	fertilization	differentiation
(3)	meiosis	mitosis	differentiation	fertilization
(4)	mitosis	mitosis	differentiation	fertilization

human reproduction

611. The human female reproductive system is represented in the diagram shown. Which structure in the diagram produces gametes?

- (1) A
- (2) B
- (3) C
- (4) D

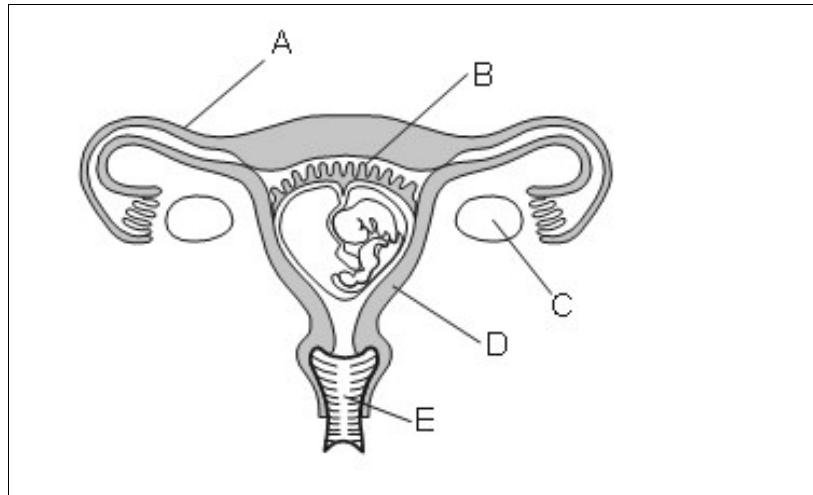
Data Base File Number: 201

Regents Date

June 2009

51 6/18/2009 S4K4

Answer 3



human reproduction

612. The human female reproductive system is represented in the diagram shown. Production of gametes and support of the fetus normally occur in structures

- (1) 1 and 2
- (2) 2 and 4
- (3) 3 and 5
- (4) 4 and 5

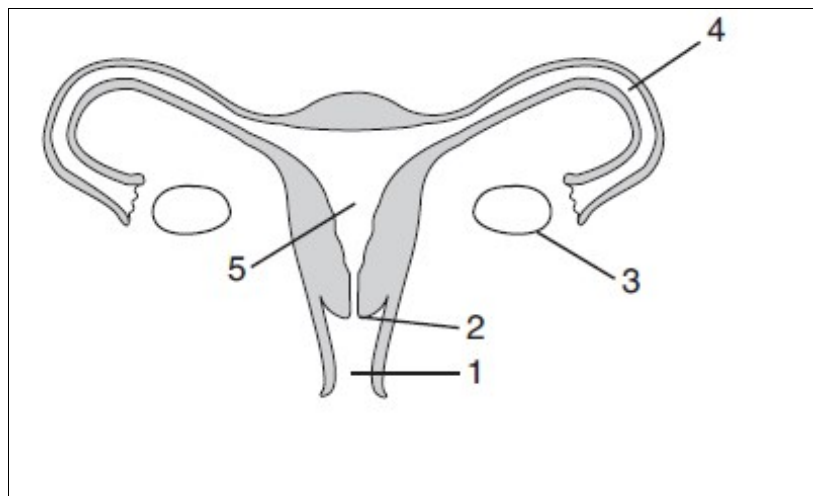
Data Base File Number: 258

Regents Date

June 2010

18 6/16/2010 S4K4

Answer 3



human reproduction

613. The diagram shown represents part of a human reproductive system. One of the functions of this part of the system is to
- (1) supply essential nutrients to the offspring in the form of milk
 - (2) provide nutritional support for the embryo
 - (3) provide a structure that allows the mixing of maternal and fetal blood
 - (4) produce specialized proteins used in the production and release of sperm

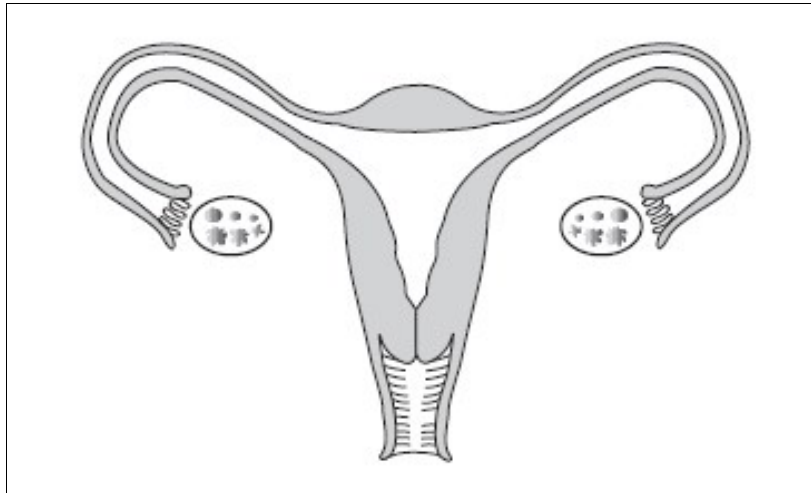
Data Base File Number: 363

Regents Date

Aug2011

15 8/18/2011 S4K4

Answer 2



human response

614. Which row in the chart shown contains an event that is paired with an appropriate response in the human body?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

Data Base File Number: 117

Regents Date

Aug2008

9 8/13/2008 S4K1

Answer 1

Row	Event	Response
(1)	a virus enters the bloodstream	increased production of antibodies
(2)	fertilization of an egg	increased levels of testosterone
(3)	dehydration due to increased sweating	increased urine output
(4)	a drop in the rate of digestion	increased respiration rate

human systems

615. Which row in the chart correctly shows what systems A, B, and C provide for the human body?

- (1) Row 1
- (2) Row 2
- (3) Row 3
- (4) Row 4

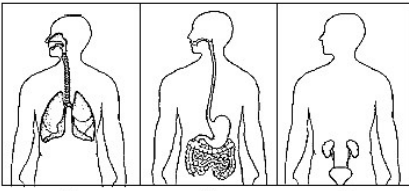
Data Base File Number: 2

Regents Date

Aug2007

5 8/16/2007 S4K1

Answer 3



A B C

Which row in the chart below correctly shows what systems A, B, and C provide for the human body?

Row	System A	System B	System C
(1)	blood cells	glucose	hormones
(2)	oxygen	absorption	gametes
(3)	gas exchange	nutrients	waste removal
(4)	immunity	coordination	carbon dioxide

human systems

616. Shown in the diagram are representations of SIX human body systems. Which systems are paired CORRECTLY?

- (1) Pair 1 - Muscle and digestive
- (2) Pair 2 - Respiratory and circulatory
- (3) Pair 3 - Circulatory and muscle
- (4) Pair 1 - Muscle and nerve

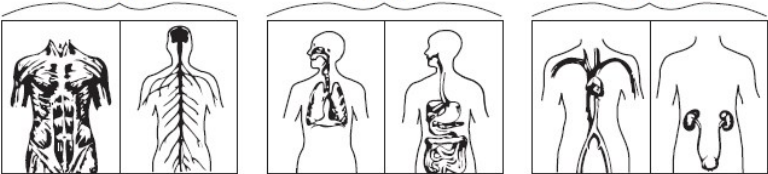
Data Base File Number: 696

Regents Date

Aug2004

48 8/17/2004 S4K1

Answer 4



Pair 1 Pair 2 Pair 3

human systems

617. In the diagram of a single-celled organism as shown, the arrows indicate various activities taking place. Which systems perform these same activities in humans?
- (1) digestive, circulatory, and immune
 - (2) excretory, respiratory, and reproductive
 - (3) respiratory, excretory, and digestive
 - (4) respiratory, nervous, and endocrine

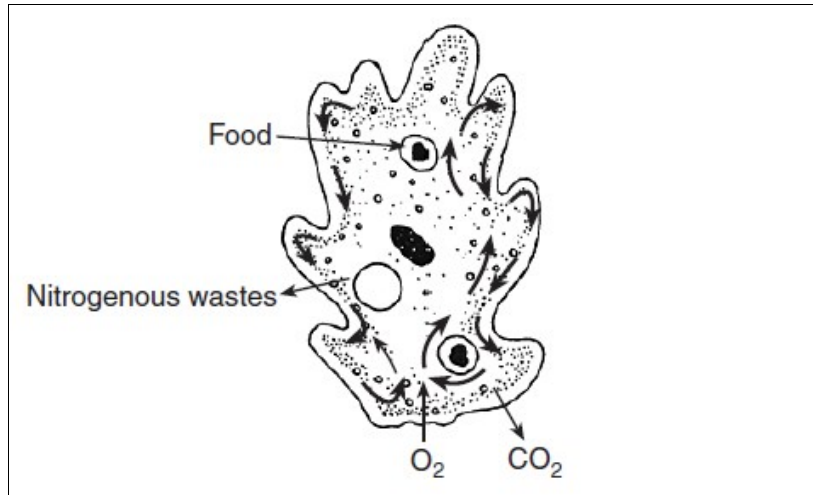
Data Base File Number: 686

Regents Date

Aug2004

5 8/17/2004 S4K1

Answer 3



hypothesis

618. An experimental setup is shown in the diagram below. Which hypothesis would most likely be tested using this setup?
- (1) Green water plants release a gas in the presence of light.
 - (2) Roots of water plants absorb minerals in the absence of light.
 - (3) Green plants need light for cell division
 - (4) Plants grow best in the absence of light.

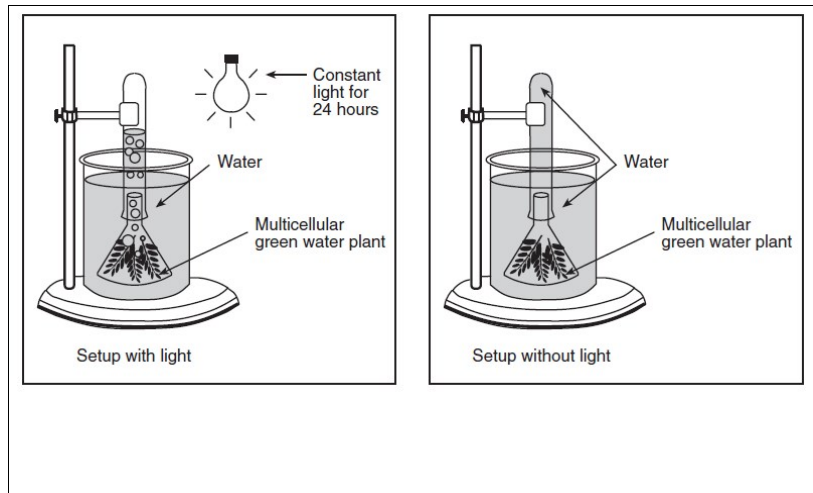
Data Base File Number: 493

Regents Date

June2006

39 6/21/2006 S1K2

Answer 1



hypothesis

619. Base your answer to this question on the experimental setup shown. The tubing connected to both flask setups used in the experiment provides oxygen to the solution. What is a possible hypothesis for the experiment?

- (1) Potassium helps plants grow.
- (2) Potassium is not needed by plants for proper growth.
- (3) Plants lacking potassium will not be green
- (4) ANY of the above choices could be a hypothesis.

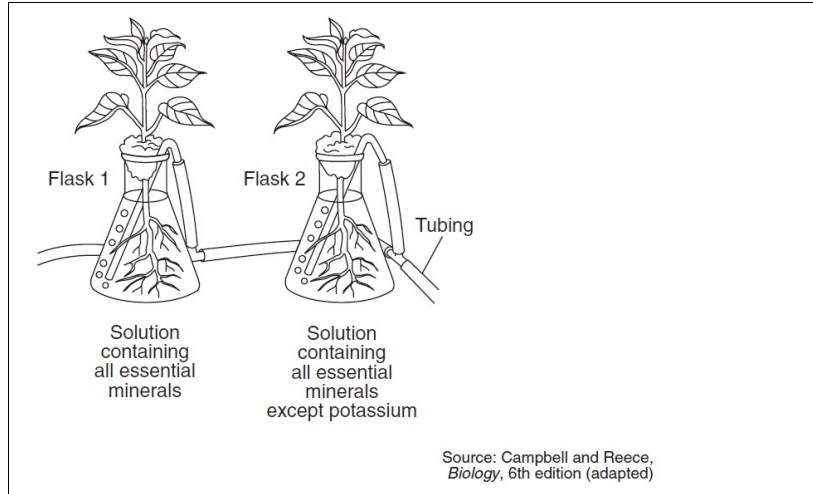
Data Base File Number: 327

Regents Date

Jan2011

56 1/25/2011 **S1K2**

Answer 4



hypothesis

620. A student hypothesized that lettuce seeds would not sprout (germinate) unless they were exposed to darkness. The student planted 10 lettuce seeds under a layer of soil and scattered 10 lettuce seeds on top of the soil. The data collected are shown in the table. One way to improve the validity of these results would be to

- (1) conclude that darkness is necessary for lettuce seed germination
- (2) conclude that light is necessary for lettuce seed germination
- (3) revise the hypothesis
- (4) repeat the experiment

Data Base File Number: 753

Regents Date

Aug2003

4 8/13/2003 **S1K2**

Answer 4

Seed Treatment	Number of Seeds Germinated
Planted under soil	9
Scattered on top of soil	8

hypothesis

621. Base your answers to this question on the information given and on your knowledge of biology. Euglena are single-celled organisms that live in ponds. All euglena have chloroplasts and can make their own food. They can also take in food from the environment. The diagram shown represents a euglena. An experiment was set up to determine the effect of nitrates, a pollutant, on the number of chloroplasts present in euglena. Five tanks were set up, each with euglena and a different concentration of nitrate solution: 0%, 0.5%, 1.0%, 1.5%, and 2.0%. The tanks were placed in a sunny location where each tank received the same amount of light. Which statement is a possible hypothesis for this experiment that could be supported by the results of this experiment?

- (1) If the average number of chloroplasts in euglena decreases, will less nitrate be needed in each tank?
- (2) If the nitrate concentration is increased, then the euglena will have a lower average number of chloroplasts.
- (3) If the number of euglena in a tank increases, will more nitrates be produced?
- (4) If the nitrate concentration is decreased, then more light will reduce the average number of chloroplasts in euglena.

Data Base File Number: 384

Regents Date

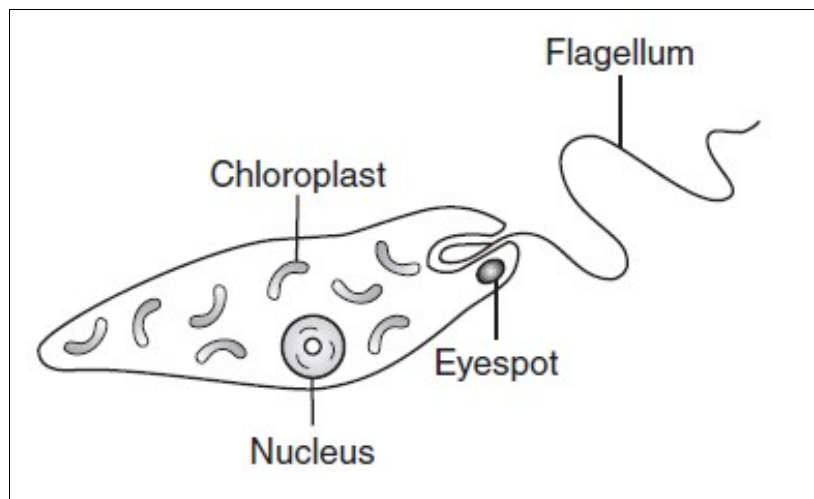
Jan2012

31

1/25/2012

S1K2

Answer 2



hypothesis

622. A student hypothesized that lettuce seeds would not germinate (begin to grow) unless they were covered with soil. The student planted 10 lettuce seeds under a layer of soil and scattered 10 lettuce seeds on top of the soil. The data collected are shown in the table. To improve the reliability of these results, the student should

- (1) conclude that darkness is necessary for lettuce seed germination
- (2) conclude that light is necessary for lettuce seed germination
- (3) revise the hypothesis
- (4) repeat the experiment using a larger sample size

Data Base File Number: 816

Regents Date

June 2002

39 6/19/2002 S1K3

Answer 4

Seed Treatment	Number of Seeds Germinated
Planted under soil	9
Scattered on top of soil	8

immune system

623. The diagram shown represents how HIV, the virus that causes AIDS, interacts with a certain type of white blood cell called a helper T-cell. What is one possible result of the cellular activity represented in the diagram?

- (1) Immune responses of an infected individual will be weakened.
- (2) The red blood cells of a person infected with AIDS will no longer be able to make antibodies.
- (3) This virus will strengthen future immune responses against blood-related diseases.
- (4) Immune responses will prevent the spread of AIDS in humans.

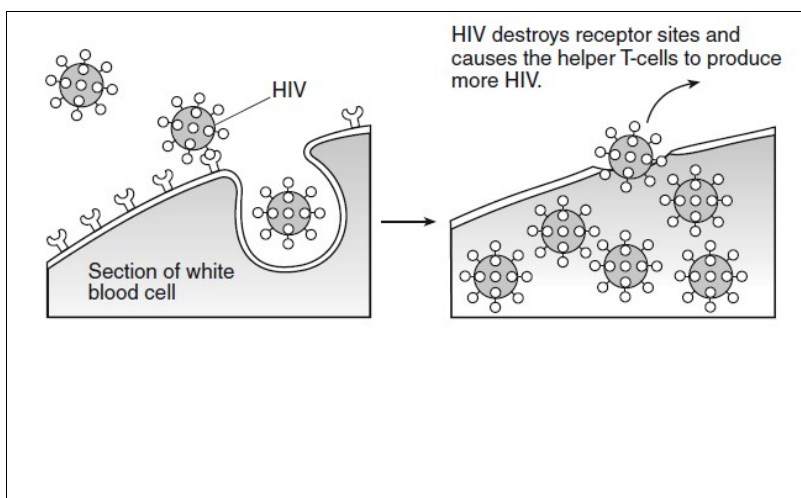
Data Base File Number: 617

Regents Date

Jan 2013

38 1/23/2013 S4K5

Answer 1



immune system

624. Base your answer to this question on the information given and on your knowledge of biology. Beware of Dust Mites. Quietly lurking within our mattresses, under our beds, and inside sofas and carpets are creatures too small to be seen without a microscope. Dust mites are arthropods closely related to spiders, scorpions, and ticks. They feed on the dead skin cells regularly shed by humans and their animal pets. The average human sheds about 10 grams of dead skin a week. Cats and dogs create even more dander for dust mites to eat. The mites also eat pollen, fungi, and bacteria. They do not drink water but absorb it from the air. Dust mites do not carry diseases and are harmless to most people. It's their bathroom habits that make some of us itch and sneeze. Many people develop severe allergies to dust mite feces (wastes). If you lie on a rug where dust mites live, you might develop itchy red bumps on your skin. Breathe in dust containing their feces and you might have more serious symptoms, such as difficulty breathing or a severe asthma attack. Dust mites thrive in warm, humid environments -- eating and nesting in dust-collecting bedding, fabric, and carpet. Think about this! A typical mattress can contain anywhere from 100,000 to 10 million dust mites. Nearly 100,000 dust mites can live in one square yard of carpet. During a process called sensitization, a person's immune system mistakenly identifies the inhaled dust mite waste as an invader. The next time the person is exposed to the dust mite waste, the immune system launches an allergic reaction. An allergic reaction occurs when the immune system

- (1) does not respond to pathogens
- (2) maintains homeostasis
- (3) responds to usually harmless environmental substances
- (4) undergoes rapid, uncontrolled cell division

Data Base File Number: 422

Regents Date

June 2012

49 6/19/2012 S4K5

Answer 3



immune system

625. The diagram shown represents what can happen when homeostasis in an organism is threatened. Which statement provides a possible explanation for these events?

- (1) Antibiotics break down harmful substances by the process of digestion
- (2) Some specialized cells mark and other cells engulf microbes during immune reactions.
- (3) Embryonic development of essential organs occurs during pregnancy.
- (4) Cloning removes abnormal cells produced during differentiation.

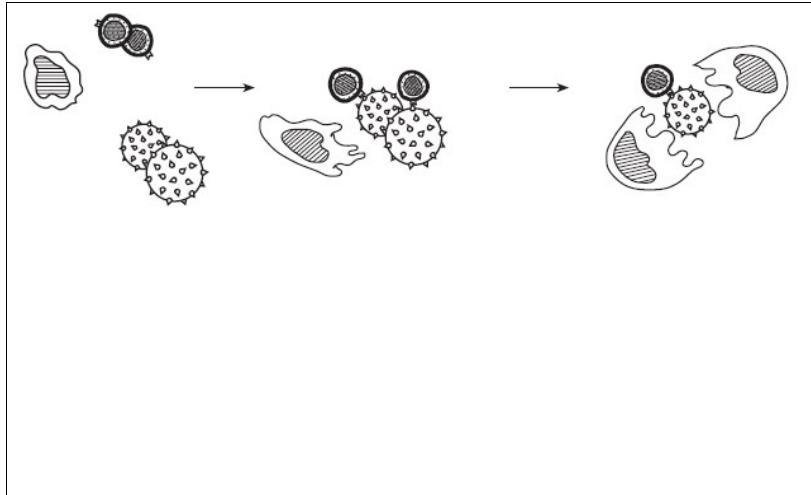
Data Base File Number: 665

Regents Date

June 2004

20 6/18/2004 S4K5

Answer 2



immune system

626. The diagram shown represents one possible immune response that can occur in the human body. The structures that are part of the immune system are represented by

- (1) A, only
- (2) A and C, only
- (3) B and C, only
- (4) A, B, and C.

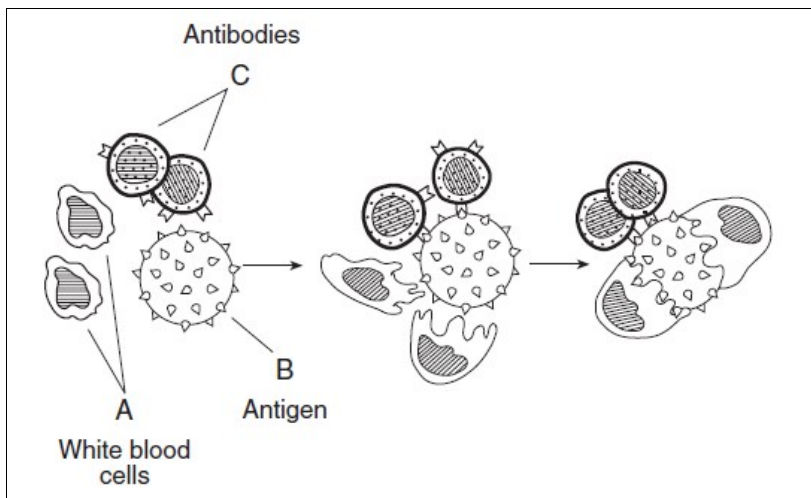
Data Base File Number: 761

Regents Date

Aug 2003

29 8/13/2003 S4K5

Answer 2



independent variable

627. Base your answer to this question on the information given and on your knowledge of biology. Three students each added equal volumes of pond water to four beakers and placed each beaker in a different water bath. Each student maintained the water baths at temperatures shown in the data table. The students then added an equal number of water fleas to each of their four beakers. After one hour, the students used microscopes to determine the average heart rate of the water fleas. The procedure was repeated for a total of three trials at each temperature. The results of the investigation are summarized in the data table. The independent variable in this investigation is the

- (1) number of trials
- (2) number of water fleas
- (3) temperature of the water
- (4) average heart rate

Data Base File Number: 676

Regents Date

June 2004

43 6/18/2004 S1K3

Answer 3

Water Temperature (°C)	Average Water Flea Heart Rate (beats/minute)
5	40
15	119
25	205
35	280

inference

628. Which statement can best be inferred based on the information in the diagram shown?

- (1) Natural selection occurs only as a result of mutations.
- (2) Natural selection requires a minimum of 5 million years to occur.
- (3) Each new species that develops continues to exist through present time.
- (4) Some species that are no longer successful in their environment may become extinct.

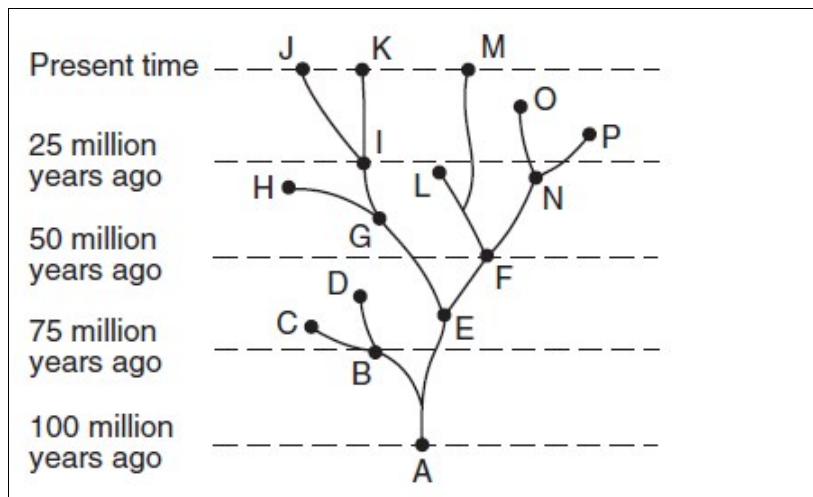
Data Base File Number: 369

Regents Date

Aug 2011

40 8/18/2011 S4K3

Answer 4



inference

629. Base your answer to this question on the data table and your knowledge of biology. To determine which colors of light are best used by plants for photosynthesis, three types of underwater green plants of similar mass were subjected to the same intensity of light of different colors for the same amount of time. All other environmental conditions were kept the same. After 15 minutes, a video camera was used to record the number of bubbles of gas each plant gave off in a 30-second period of time. Each type of plant was tested six times. The average of the data for each plant type is shown in the table. Which statement is a valid inference based on the data?

- (1) Each plant carried on photosynthesis best in a different color of light.
- (2) Red light is better for photosynthesis than blue light.
- (3) These types of plants make food at the fastest rates with red and blue light.
- (4) Water must filter out red and green light.

Data Base File Number: 673

Regents Date

June 2004

40 6/18/2004 **S1K3**

Answer 3

Plant Type	Red Light	Yellow Light	Green Light	Blue Light
<i>Elodea</i>	35	11	5	47
<i>Potamogeton</i>	48	8	2	63
<i>Utricularia</i>	28	9	6	39

inference

630. Base your answer to this question on the information and chart shown and on your knowledge of biology. It has been hypothesized that a chemical known as BW prevents colds. To test this hypothesis, 20,000 volunteers were divided into four groups. Each volunteer took a white pill every morning for one year. The contents of the pill taken by the members of each group are shown in the chart. Which statement is a valid inference based on the results?

- (1) Sugar reduced the number of colds.
- (2) Sugar increased the number of colds.
- (3) BW is always effective in the prevention of colds.
- (4) BW may not be effective in the prevention of colds.

Data Base File Number: 690

Regents Date

Aug2004

32 8/17/2004 S1K1

Answer 4

Group	Number of Volunteers	Contents of Pill	% Developing Colds
1	5,000	5 grams of sugar	20
2	5,000	5 grams of sugar 1 gram of BW	19
3	5,000	5 grams of sugar 3 grams of BW	21
4	5,000	5 grams of sugar 9 grams of BW	15

insulin

631. Base your answer to this question on the information and data table shown and on your knowledge of biology. The results of blood tests for two individuals are shown in the data table. The blood glucose level before breakfast is normally 80-90 mg/100 mL of blood. A blood glucose level above 110 mg/10 mL of blood indicates a failure in a feedback mechanism. Injection of chemical X, a chemical normally produced in the body, may be required to correct this problem. What is chemical "X"?

- (1) glucose
- (2) ATP
- (3) DNA
- (4) insulin

Data Base File Number: 466

Regents Date

Jan2006

39 1/27/2006 S4K1

Answer 4

Data Table

Time	Blood Glucose (mg/100 mL)	
	Individual 1	Individual 2
7:00 a.m.	90	150
7:30 a.m.	120	180
8:00 a.m.	140	220
8:30 a.m.	110	250
9:00 a.m.	90	240
9:30 a.m.	85	230
10:00 a.m.	90	210
10:30 a.m.	85	190
11:00 a.m.	90	170

insulin

632. The graph shows changes in the concentrations of glucose and insulin in the blood of a human over a period of time. Which statement correctly explains these changes?
- (1) High glucose levels cause more insulin to be released.
 - (2) High insulin levels cause more glucose to be released.
 - (3) Low glucose levels cause more insulin to be released.
 - (4) Low insulin levels cause more glucose to be released.

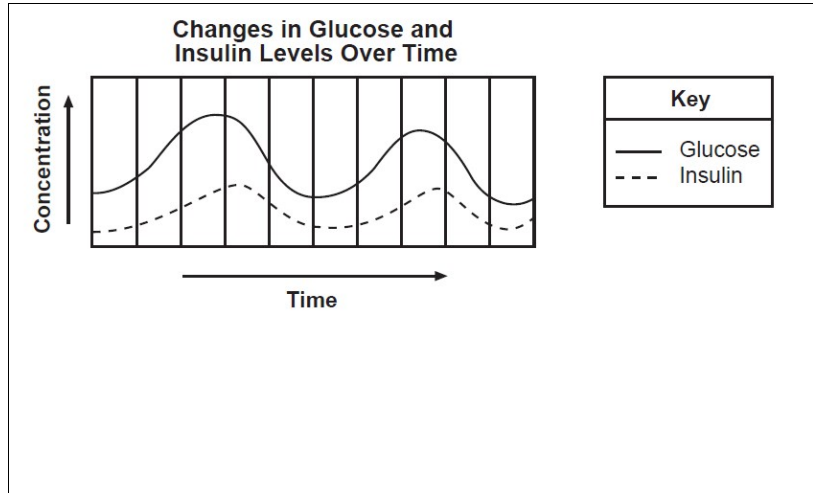
Data Base File Number: 927

Regents Date

Jan2014

42 1/27/2014 S4K5

Answer 1



key

633. A series of investigations was performed on four different plant species. The results of these investigations are recorded in the data table shown. Based on these data, which two plant species appear to be most closely related?
- (1) A and B
 - (2) A and C
 - (3) A and D
 - (4) B and C

Data Base File Number: 111

Regents Date

June2008

71 6/24/2008 LABS

Answer 2

Plant Species	Seeds	Leaves	Pattern of Vascular Bundles (structures in stem)	Type of Chlorophyll Present
A	round/small	needle-like	scattered bundles	chlorophyll a and b
B	long/pointed	needle-like	circular bundles	chlorophyll a and c
C	round/small	needle-like	scattered bundles	chlorophyll a and b
D	round/small	needle-like	scattered bundles	chlorophyll b

lab

634. Which laboratory procedure is represented in the diagram shown?

- (1) placing a coverslip over a specimen
- (2) removing a coverslip from a slide
- (3) adding stain to a slide without removing the coverslip
- (4) reducing the size of air bubbles under a coverslip

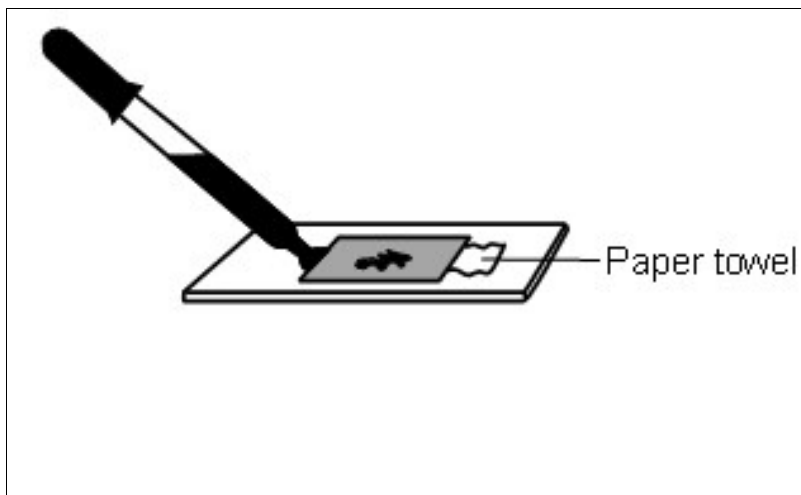
Data Base File Number: 99

Regents Date

June 2008

31 6/24/2008 LABS

Answer 3



lab technique

635. The diagram shows a student heating some test tubes with chemicals in them during a laboratory activity. Why would putting stoppers in the test tubes be dangerous?

- (1) The stoppers could "pop" out of the heated tubes and possibly injure someone.
- (2) One or more test tubes could explode.
- (3) Pressure "build up" in the test tubes could cause an explosion in which pieces of glass from the test tubes could injure the student.
- (4) All of the above are correct.

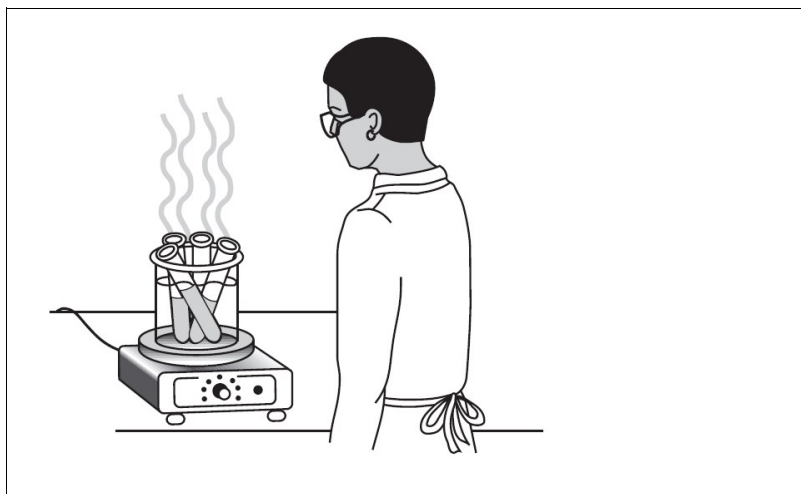
Data Base File Number: 357

Regents Date

June 2011

85 6/21/2011 LAB5

Answer 4



lab technique

636. A laboratory technique is illustrated in the diagram shown. The technique of lowering the coverslip at an angle is used to
- (1) make organelles more visible
 - (2) reduce the formation of air bubbles
 - (3) make the specimen transparent
 - (4) reduce the size of the specimen

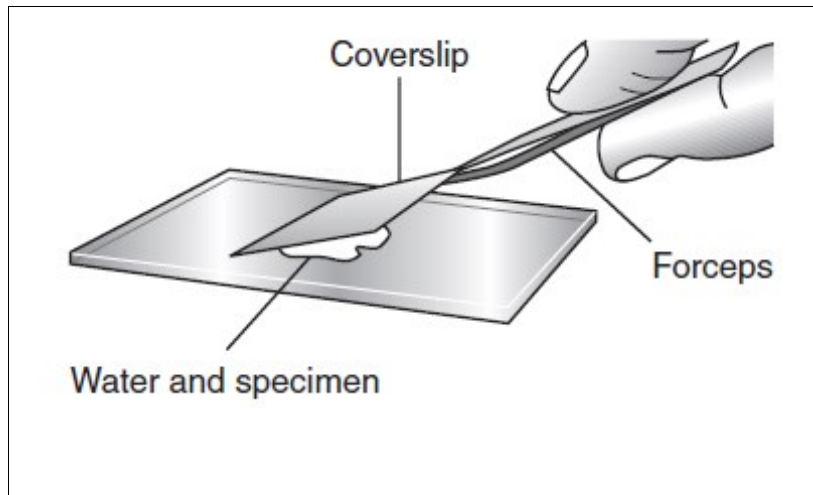
Data Base File Number: 250

Regents Date

Jan2010

75 1/26/2010 LABS

Answer 2



laboratory procedure

637. A diagram of a peppered moth is shown. A student wants to measure the length of the wingspan. Which measurement, of those given, could be an estimate of the length of the wingspan?
- (1) 3 centimeters
 - (2) 3 grams
 - (3) 3 milliliters
 - (4) 3 kilometers

Data Base File Number: 434

Regents Date

Aug2012

31 8/17/2012 LABA

Answer 1



leaf / starch content

638. Which statement best describes the starch content of two leaves taken from the same plant shown in the chart?

- (1) Neither leaf contains starch
- (2) Both leaves contain the same amount of starch.
- (3) Leaf A contains more starch than leaf B.
- (4) Leaf B contains more starch than leaf A.

Data Base File Number: 222

Regents Date

Aug2009

41 8/13/2009 S4K6

Answer 4

Leaf A	taken from plant in the dark for 48 hours
Leaf B	taken from plant in bright light for 48 hours

male reproduction

639. The diagram shown represents a human reproductive system. Meiosis occurs within structure

- (1) A
- (2) B
- (3) C
- (4) D

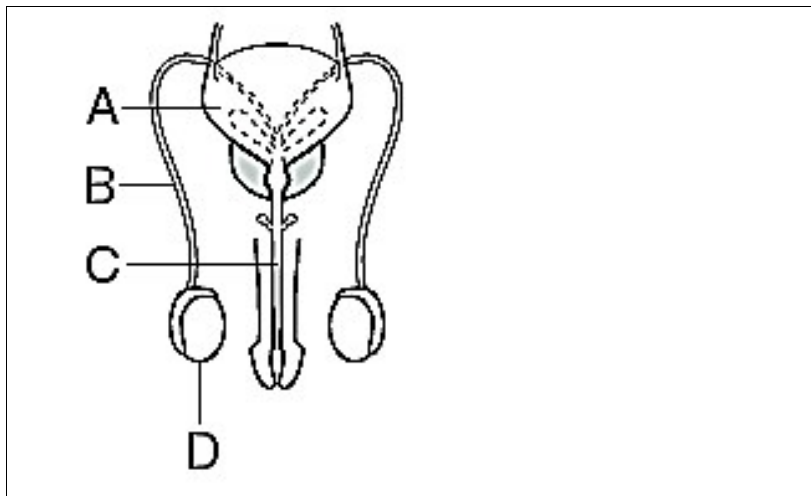
Data Base File Number: 50

Regents Date

Jan2007

17 1/26/2007 S4K4

Answer 4



male reproduction

640. The diagram shows a system in the human male. Base your answer on the diagram and on your knowledge of biology. Which structures aid in the transport of sperm by secreting fluid?

- (1) A and H
- (2) B and E
- (3) C and D
- (4) D and H

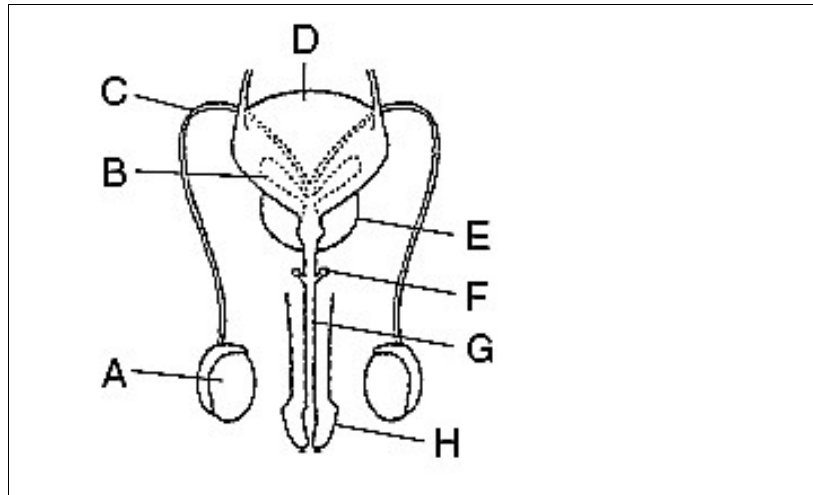
Data Base File Number: 41

Regents Date

June2007

40 6/20/2007 S4K4

Answer 2



male sex organs

641. The diagram shown represents the human male reproductive system. Which pair of letters indicates a structure that produces gametes and a structure that makes possible the delivery of gametes for internal fertilization, respectively?

- (1) A and D
- (2) B and D
- (3) C and A
- (4) D and C

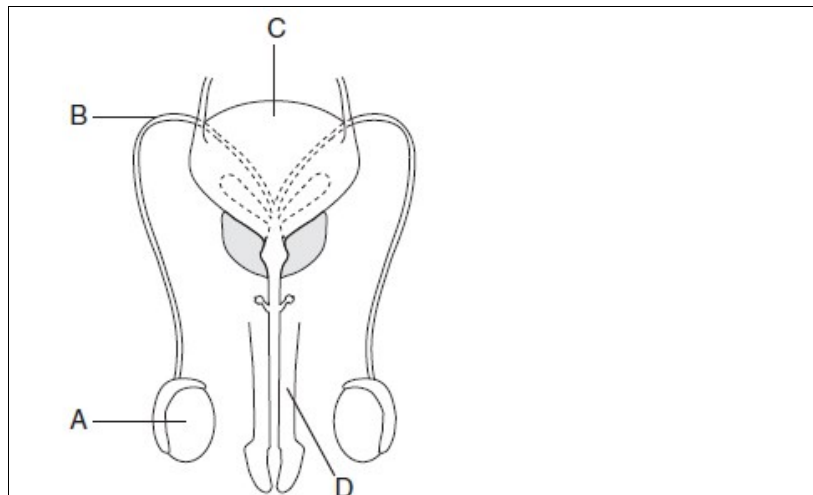
Data Base File Number: 807

Regents Date

June2002

22 6/19/2002 S4K4

Answer 1



male sex organs

642. Some body structures of a human male are represented in the diagram shown. An obstruction in the structures labeled X would directly interfere with

- (1) transfer of sperm to a female
- (2) production of sperm
- (3) production of urine
- (4) transfer of urine to the external environment

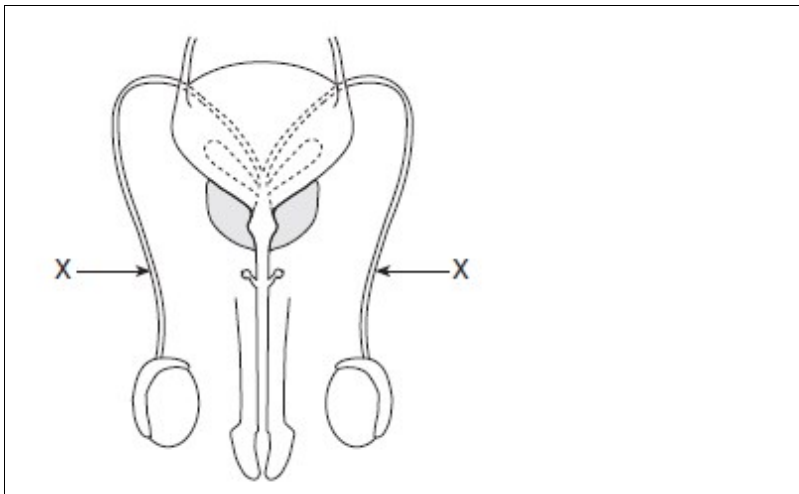
Data Base File Number: 662

Regents Date

June 2004

17 6/18/2004 S4K4

Answer 1



male sex organs

643. The diagram shown represents a system in the human body. The primary function of structure X is to

- (1) produce energy needed for sperm to move
- (2) provide food for the sperm to carry to the egg
- (3) produce and store urine
- (4) form gametes that may be involved in fertilization

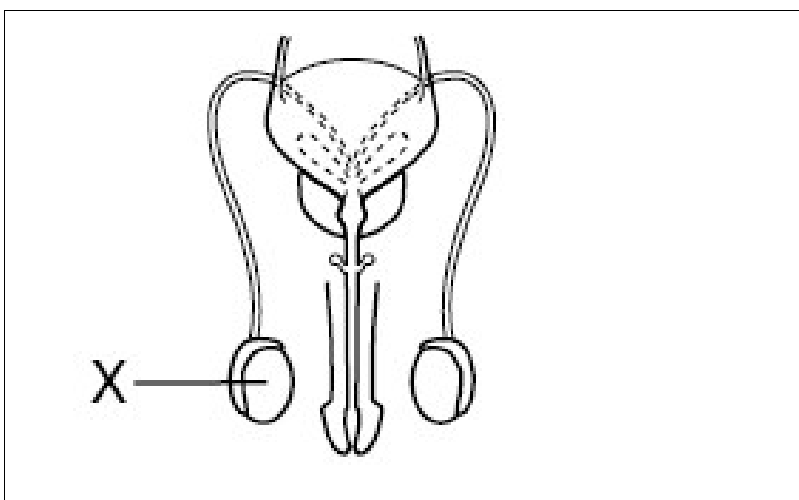
Data Base File Number: 152

Regents Date

Jan 2009

19 1/27/2009 S4K2

Answer 4



measurement

644. The diagram shown represents the measurement of a biological specimen. What is the approximate length of the specimen in millimeters?

- (1) 25 mm
- (2) 30 mm
- (3) 35 mm
- (4) 40 mm

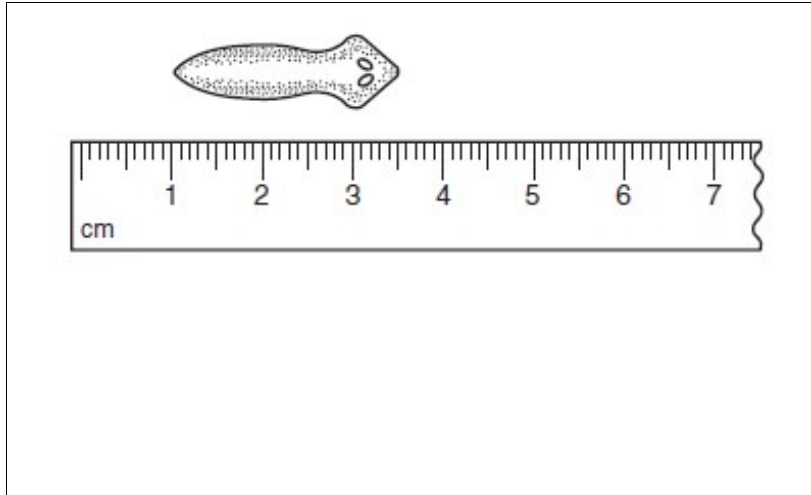
Data Base File Number: 391

Regents Date

Jan2012

43 1/25/2012 LABA

Answer 1



meiosis

645. Some cells involved in the process of reproduction are represented in the diagram shown. The process of meiosis formed

- (1) cell 1, only
- (2) cells 1 and 2
- (3) cell 3, only
- (4) cells 2 and 3

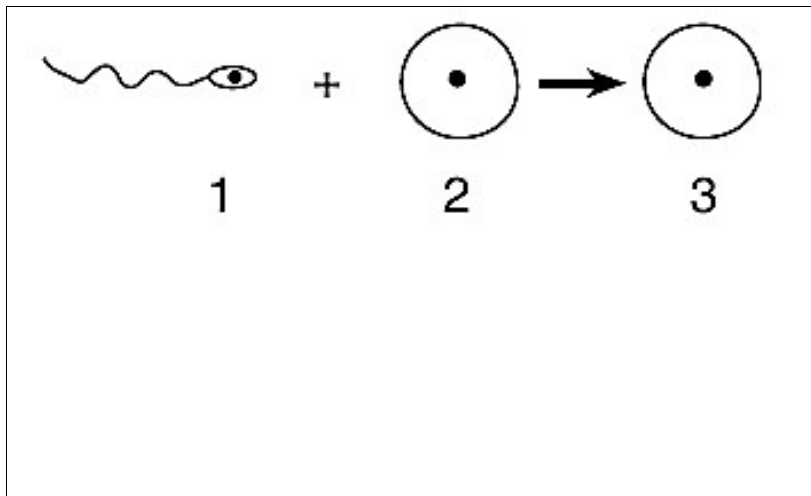
Data Base File Number: 93

Regents Date

June2008

17 6/24/2008 S4K4

Answer 2



meiosis

646. The diagram shown represents stages in the process of reproduction and development in an animal. Cells containing only half of the genetic information characteristic of this species are found at

- (1) A
- (2) B
- (3) C
- (4) D

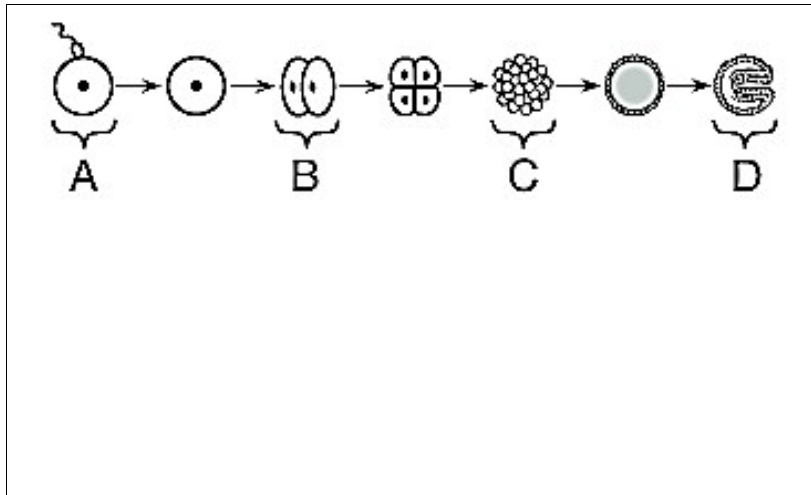
Data Base File Number: 67

Regents Date

Jan2008

18 1/25/2008 S4K4

Answer 1



meiosis

647. An incomplete diagram of meiosis in the ovary of an animal is shown. How many chromosomes are in the cell labeled "A"?

- (1) 6
- (2) 12
- (3) 3
- (4) 4

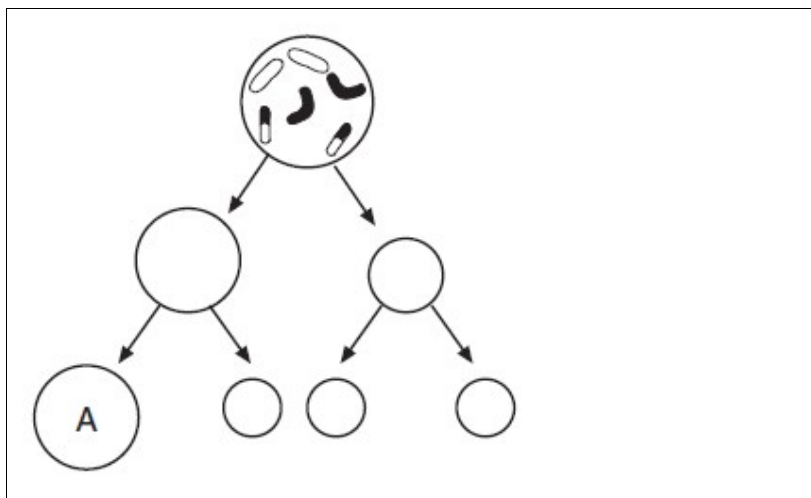
Data Base File Number: 795

Regents Date

Aug2002

61 8/13/2002 S4K4

Answer 3



meiosis

648. Which row in the chart below indicates the correct process for each event indicated?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 364

Regents Date

Aug2011

16 8/18/2011 S4K4

Answer 4

Row	Formation of Egg	Formation of Sperm	Growth of Embryo
(1)	mitosis	mitosis	meiosis
(2)	mitosis	meiosis	mitosis
(3)	meiosis	mitosis	meiosis
(4)	meiosis	meiosis	mitosis

meiosis

649. The diagram shown represents structures found in a human female. Which process results in the formation of structure X?

- (1) mitosis
- (2) meiosis
- (3) recombination
- (4) cloning

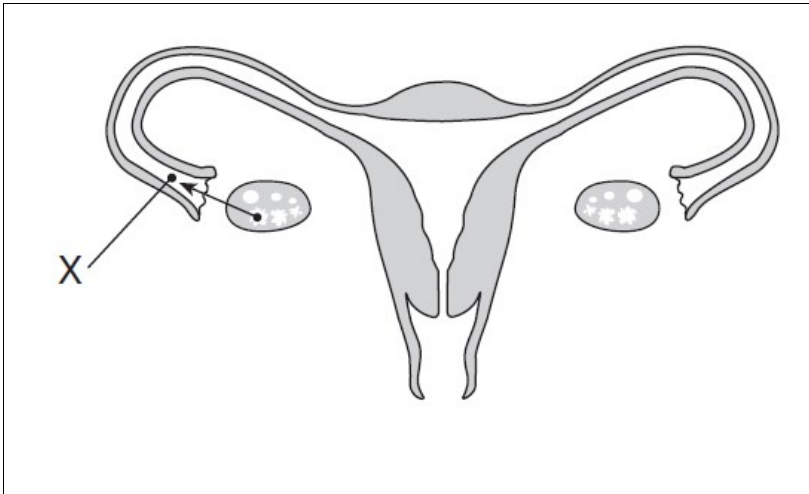
Data Base File Number: 284

Regents Date

Aug2010

34 8/18/2010 S4K4

Answer 2



meiosis

650. Which diagram best represents part of the process of sperm formation in an organism that has a normal chromosome number of eight?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

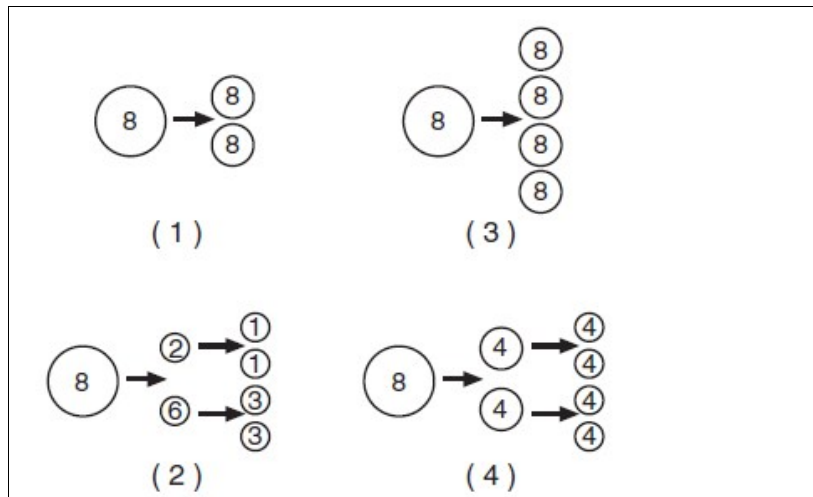
Data Base File Number: 806

Regents Date

June 2002

19 6/19/2002 S4K4

Answer 4



meiosis

651. Part of a process necessary for reproduction in complex organisms is represented in the diagram. Step C results in the production of

- (1) four zygotes that will develop into embryos
- (2) embryonic cells that could unite and develop into an organism
- (3) four cells that will recombine to form two offspring
- (4) gametes that could be involved in the formation of a zygote.

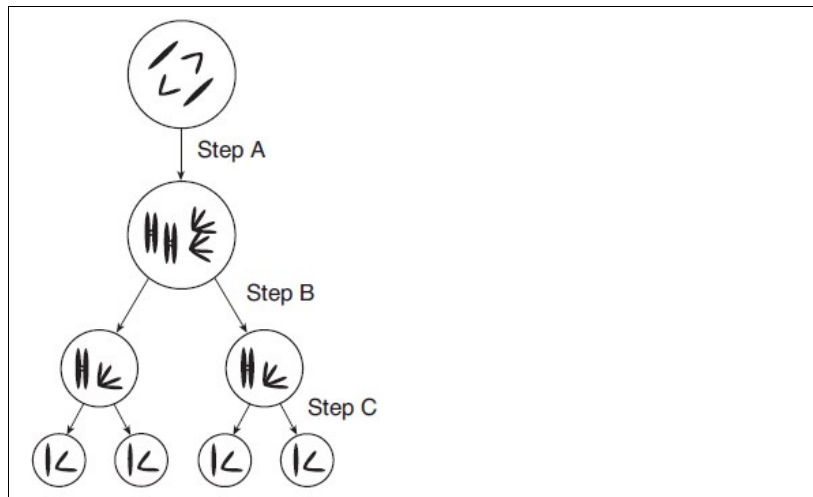
Data Base File Number: 904

Regents Date

Aug 2013

32 8/14/2013 S4K4

Answer 4



meiosis

652. The diagram shown represents the genetic contents of cells before and after a specific reproductive process. This process is considered a mechanism of evolution because it

- (1) decreases the chance for new combinations of inheritable traits in a species
- (2) decreases the probability that genes can be passed on to other body cells
- (3) increases the chance for variations in offspring
- (4) increases the number of offspring an organism can produce

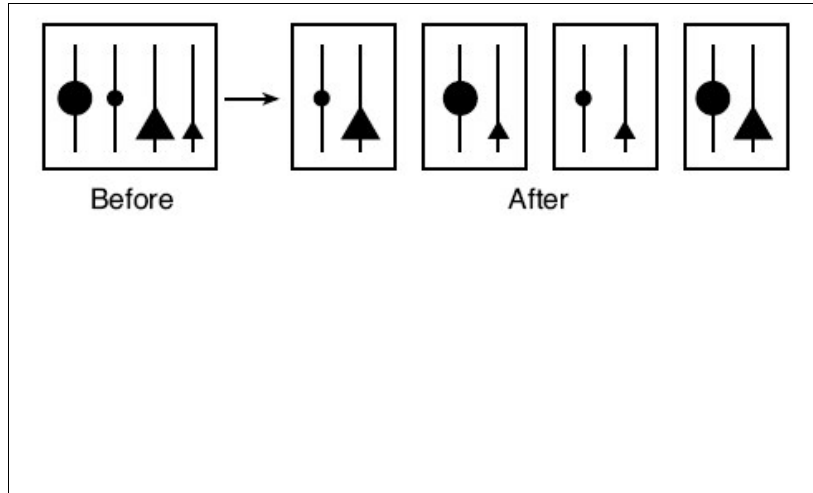
Data Base File Number: 119

Regents Date

Aug2008

11 8/13/2008 S4K3

Answer 3



meniscus

653. Refer to the diagram shown. How much water should be removed from the graduated cylinder to leave 5 milliliters of water in the cylinder?

- (1) 6 mL
- (2) 7 mL
- (3) 11 mL
- (4) 12 mL

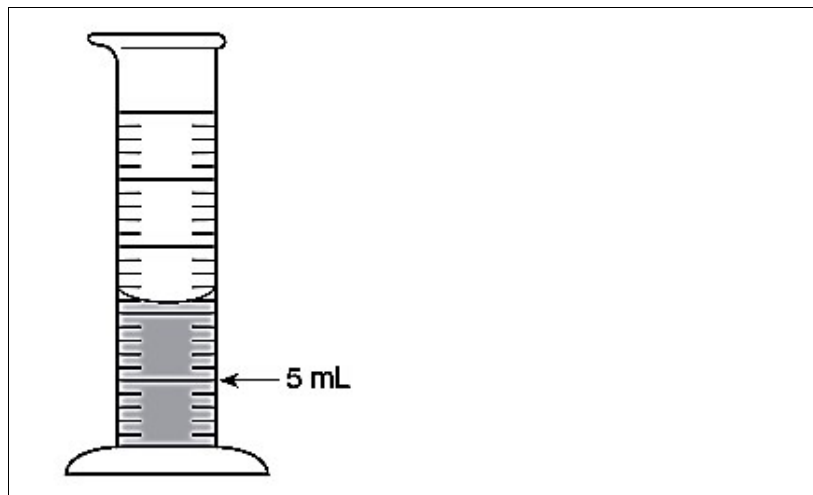
Data Base File Number: 56

Regents Date

Jan2007

35 1/26/2007 LABS

Answer 1



meniscus

654. How much water should be added to the graduated cylinder shown in the diagram to increase the volume to 15 milliliters?

- (1) 11 mL
(2) 10 mL
(3) 3 mL
(4) 4 mL

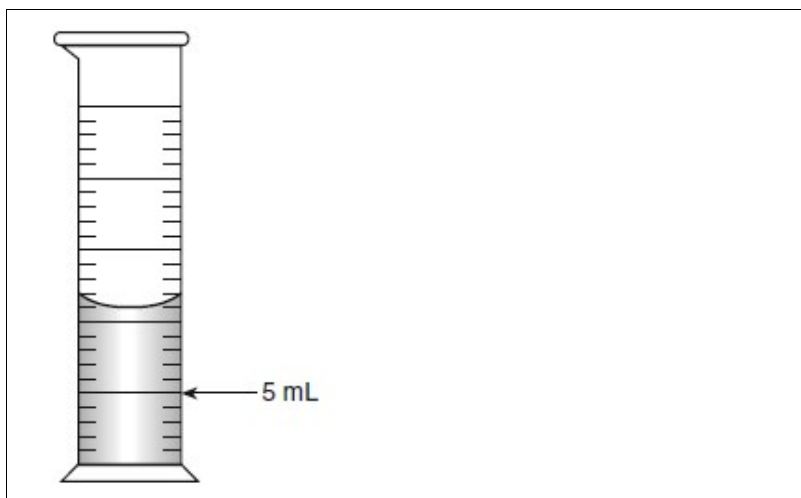
Data Base File Number: 613

Regents Date

Jan2013

31 1/23/2013 LABA

Answer 4



meniscus

655. The diagram shows a portion of a graduated cylinder. What is the volume of the liquid in this cylinder?

- (1) 22 mL
(2) 24 mL
(3) 25 mL
(4) 26 mL

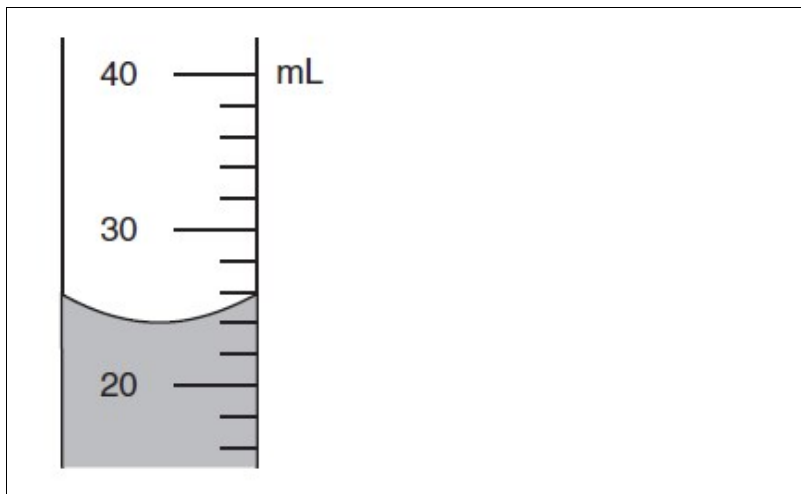
Data Base File Number: 646

Regents Date

Jan2004

37 1/29/2004 LABA

Answer 2



meniscus

656. What is the volume of the liquid in the graduated cylinder shown in the diagram?

(1) 23 mL

(3) 27 mL

(2) 26 mL

(4) 28 mL

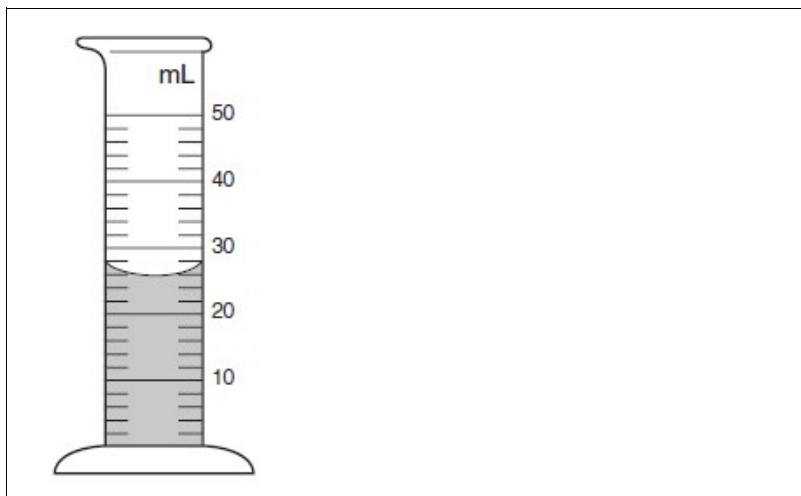
Data Base File Number: 541

Regents Date

Jan2005

34 1/28/2005 LABA

Answer 2



meniscus

657. What is the volume of water represented in the graduated cylinder shown in the diagram?

(1) 10.3 mL

(3) 14.0 mL

(2) 13.0 mL

(4) 15.0 mL

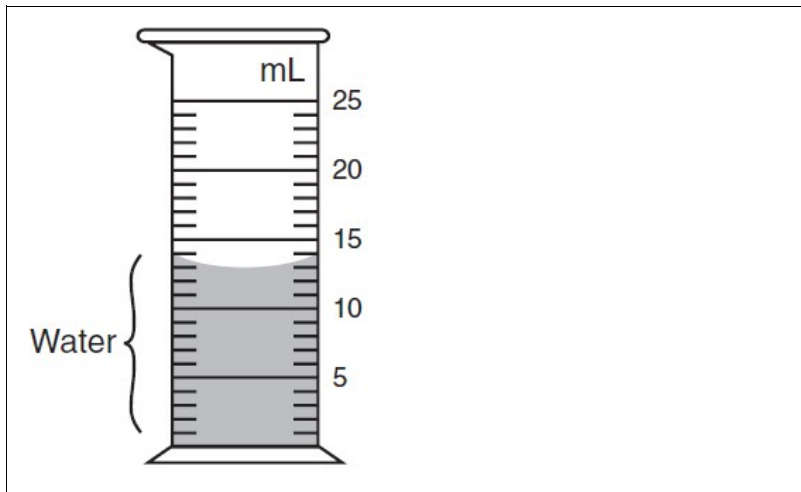
Data Base File Number: 316

Regents Date

Jan2011

36 1/25/2011 LABS

Answer 2



metric measurement

658. A student, using a metric ruler, measured a larva as represented in the diagram shown. What is the length of the larva, in millimeters?

- (1) 15 mm
- (2) 15 cm
- (3) 1.5 cm
- (4) 1.5 inches

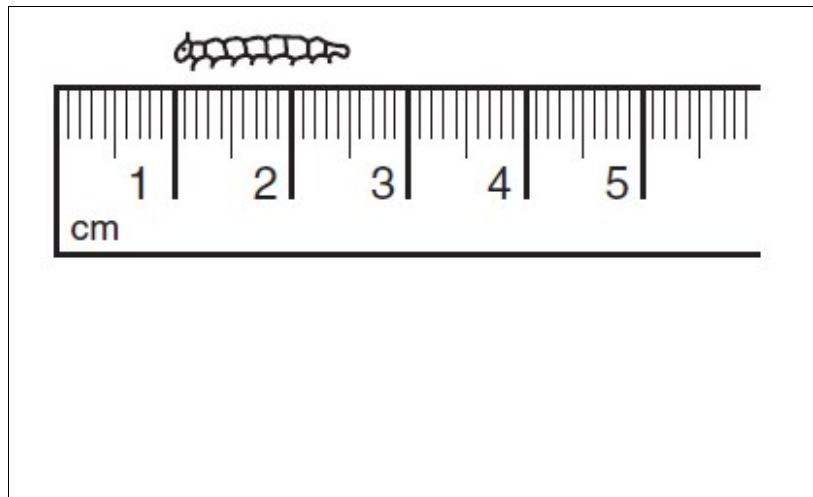
Data Base File Number: 293

Regents Date

Aug2010

51 8/18/2010 LABS

Answer 1



metric measurement

659. A peppered moth and part of a metric ruler are represented in the diagram shown. What is the ratio of body length to wingspan of the peppered moth?

- (1) 1:1
- (2) 2:1
- (3) 1:2
- (4) 2:2

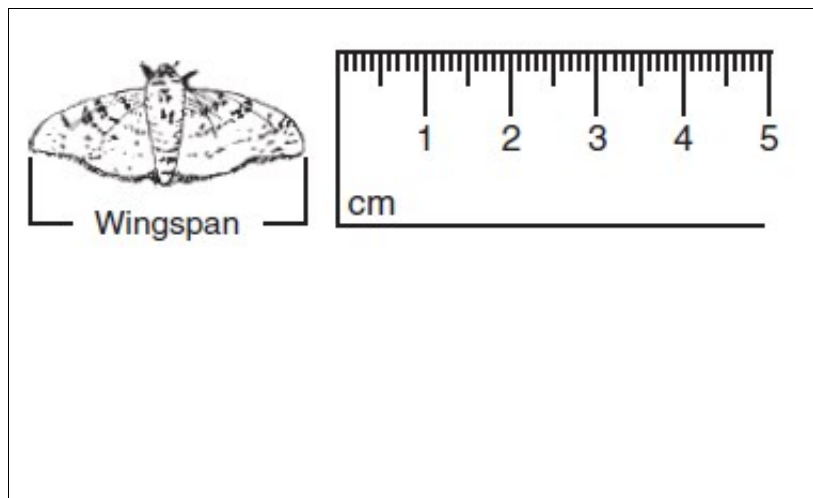
Data Base File Number: 672

Regents Date

June2004

38 6/18/2004 LABA

Answer 3



microscope

660. A student used the low-power objective of a compound light microscope and observed a single-celled organism as shown in the diagram. When he switched to high power, the organism was no longer visible. This most likely happened because switching to high power made the

- (1) field too bright to see the organism
- (2) image too small to be seen
- (3) area of the slide being viewed smaller
- (4) fine-adjustment knob no longer functional

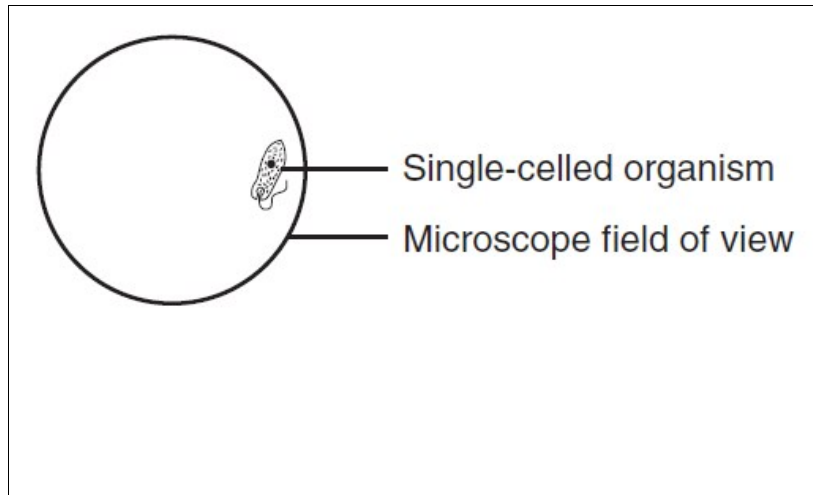
Data Base File Number: 317

Regents Date

Jan2011

38 1/25/2011 LABS

Answer 3



microscope

661. Base your answer to this question on the information given, the diagrams shown and on your knowledge of biology. The drawings shown were made during a laboratory exercise in which a microscope was used to view slides of preserved protozoa. The microscope had a 10× eyepiece and two different objectives. Which statement about the size of the organisms is correct?

- (1) Organism A is larger than organism B.
- (2) Organism B is larger than organism A.
- (3) Organisms A and B are both the same size.
- (4) The relative size of the organisms cannot be determined from the information given.

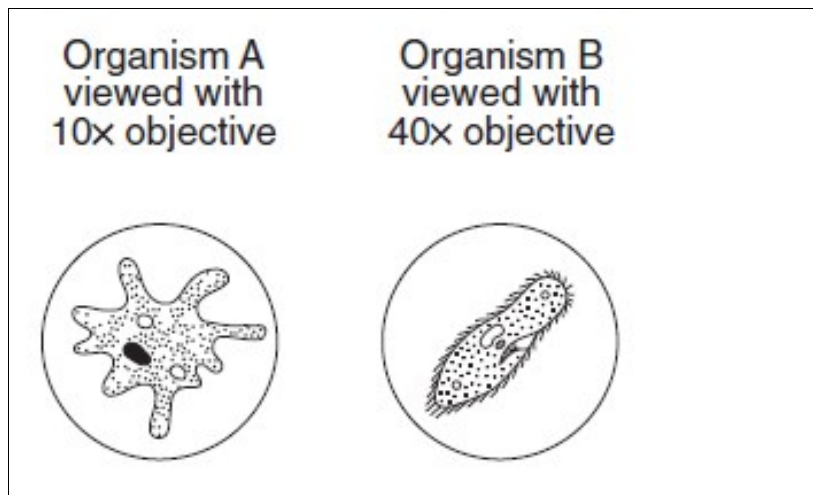
Data Base File Number: 397

Regents Date

Jan2012

81 1/25/2012 LAB5

Answer 1



microscope

662. Base your answer to this question on the diagram of the microscope, as shown, and on your knowledge of biology. Information about which TWO lettered parts is needed in order to determine the total magnification of an object viewed with the microscope in the position shown?

- (1) E and F
- (2) B and C
- (3) A and D
- (4) A and C

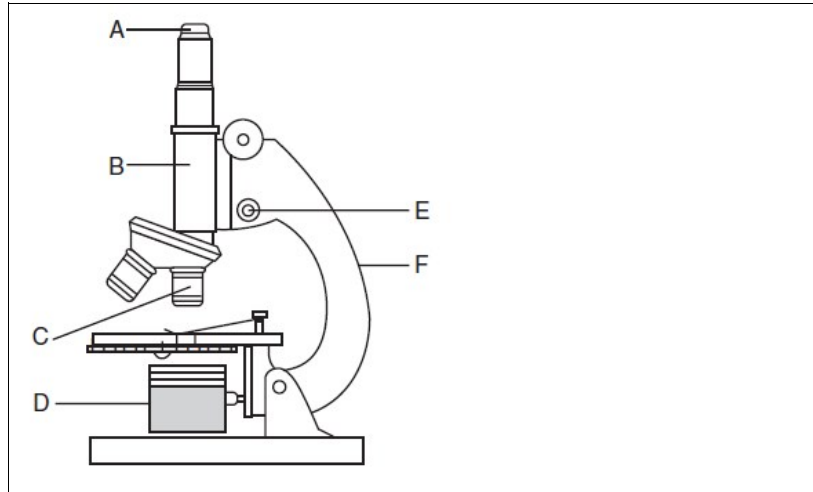
Data Base File Number: 251

Regents Date

Jan2010

75 1/26/2010 LABS

Answer 4



microscope

663. The diagrams show four different onecelled organisms (shaded) in the field of view of the same microscope using different magnifications. Which illustration shows the largest onecelled organism?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

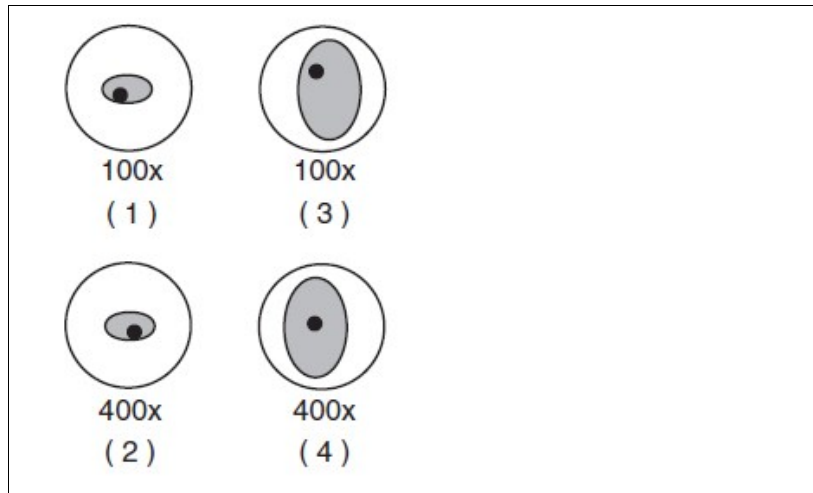
Data Base File Number: 542

Regents Date

Jan2005

35 1/28/2005 LABA

Answer 3



microscope

664. The diagram illustrates what happens when a particular solution is added to a wet-mount slide containing red onion cells being observed using a compound light microscope. Base your answer to this question on the diagram shown and on your knowledge of biology. Identify a process that caused the change in the cells

- (1) osmosis
- (2) diffusion
- (3) passive transport
- (4) All the choices are correct.

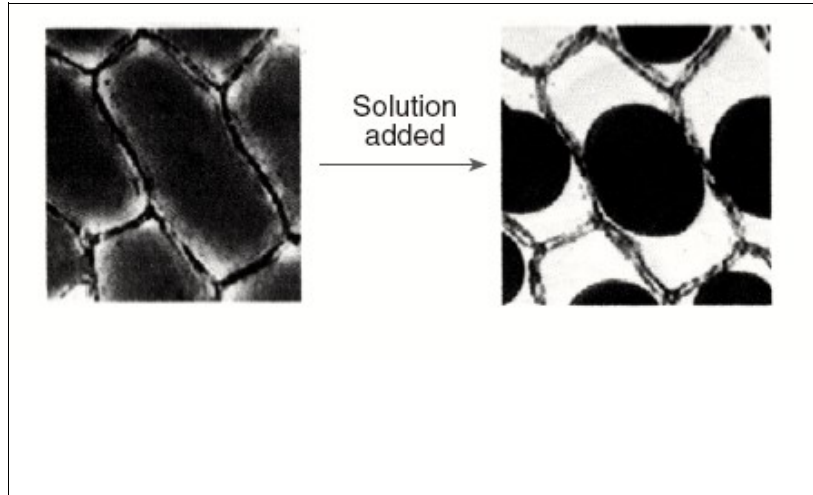
Data Base File Number: 172

Regents Date

Jan2009

79 1/27/2009 LABS

Answer 4



microscope

665. The diagram shown represents a compound light microscope. Several parts have been labeled. In order to make an image brighter, which labeled part of the microscope would most likely be adjusted?

- (1) A
- (2) B
- (3) C
- (4) D

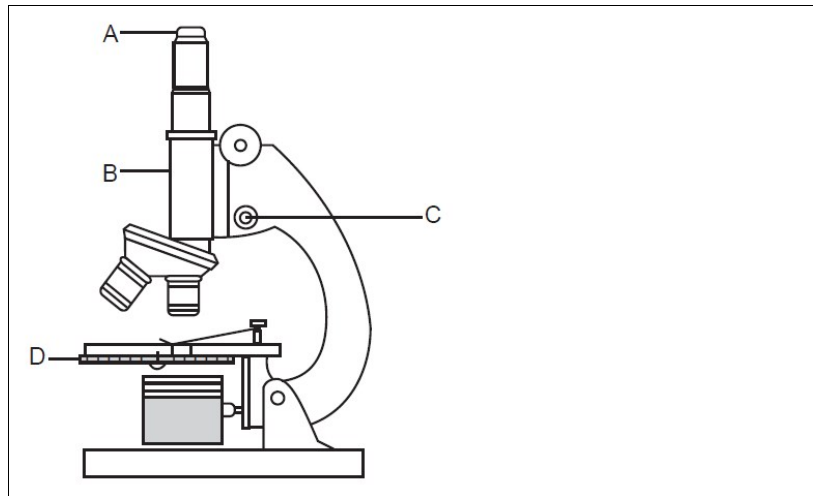
Data Base File Number: 933

Regents Date

Jan2014

74 1/27/2014 LAB5

Answer 4



microscope

666. Base your answer to this question on the diagram of a compound light microscope shown and on your knowledge of biology. What is the total magnification of this microscope using the high-power objective lens?

- (1) 43x
- (2) 53x
- (3) 100x
- (4) 430x

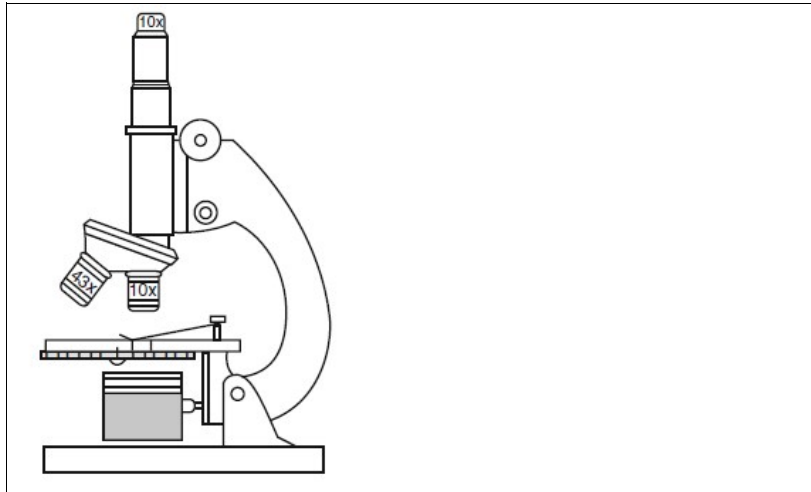
Data Base File Number: 624

Regents Date

Jan2013

49 1/23/2013 LABA

Answer 4



microscope

667. A plant cell in a microscopic field of view is represented in the diagram shown. The width (w) of this plant cell is closest to

- (1) 200 μm
- (2) 800 μm
- (3) 1200 μm
- (4) 1600 μm

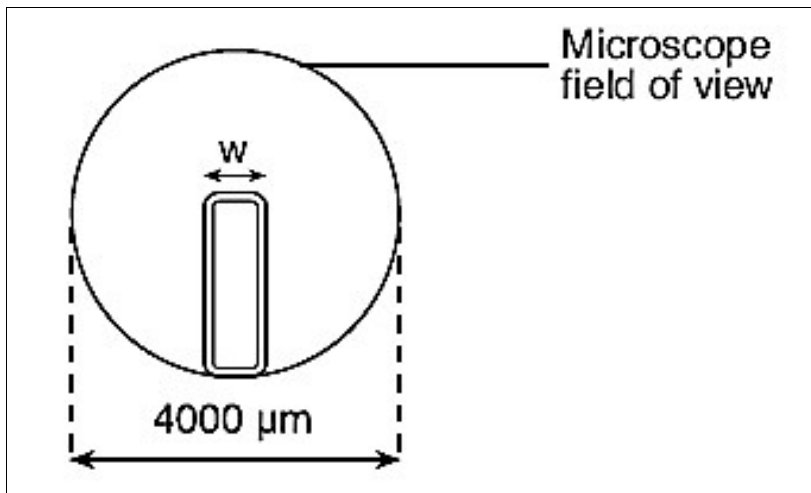
Data Base File Number: 115

Regents Date

June2008

79 6/24/2008 LABS

Answer 2



microscope technique

668. Base your answer to this question on the information shown and on your knowledge of biology. A student observes a red onion cell with a compound light microscope using low, then high power. The two views are represented in the diagram as "A". In diagram "B", which cell position represents where the cell should be located in the low-power field of view to be sure the entire cell will be visible after switching to high power?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

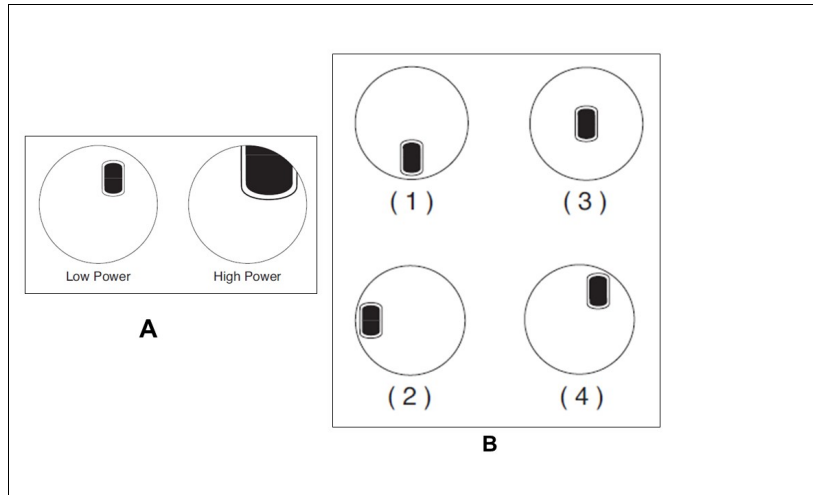
Data Base File Number: 893

Regents Date

June 2013

73 6/11/2013 LAB5

Answer 3



microscope technique

669. The photos show two red onion cells viewed with the high power of a compound light microscope. Describe the steps that could be used to make cell A resemble cell B using a piece of paper towel and an eyedropper or a pipette WITHOUT REMOVING THE COVERSLIP.

- (1) The water (liquid) should be placed along the edge of the coverslip on the same side as the paper towel.
- (2) The water (liquid) should be placed on top of the coverslip.
- (3) The water (liquid) should be placed along the edge of the coverslip opposite the paper towel.
- (4) The water (liquid) should be placed any place on the slide.

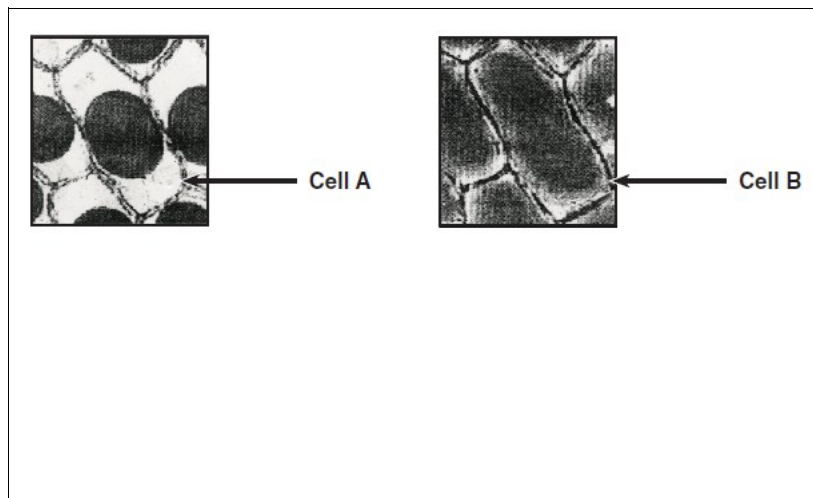
Data Base File Number: 553

Regents Date

Jan 2005

73 1/28/2005 LAB3

Answer 3



mitochondria

670. The diagram shown represents a plant cell. Which process takes place in structure A?

- (1) cellular respiration
- (2) heterotrophic nutrition
- (3) digestion of fats
- (4) protein synthesis

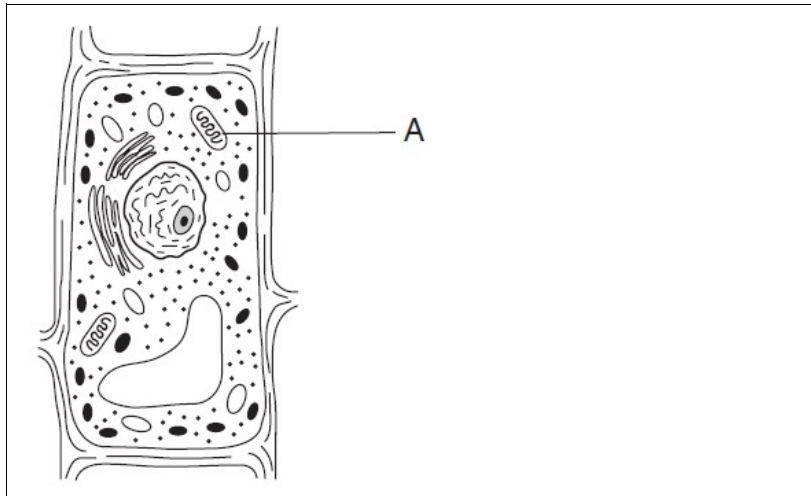
Data Base File Number: 237

Regents Date

Jan2010

34 1/26/2010 **S4K5**

Answer 1



mitochondria

671. NOTE: TURN your paper to the left to PROPERLY orient the diagram. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram compares cell functions with jobs in a factory. What chemical substance produced by the mitochondrion is represented by arrow A?

- (1) DPN
- (2) ATP
- (3) cytochrome-a
- (4) chlorophyll

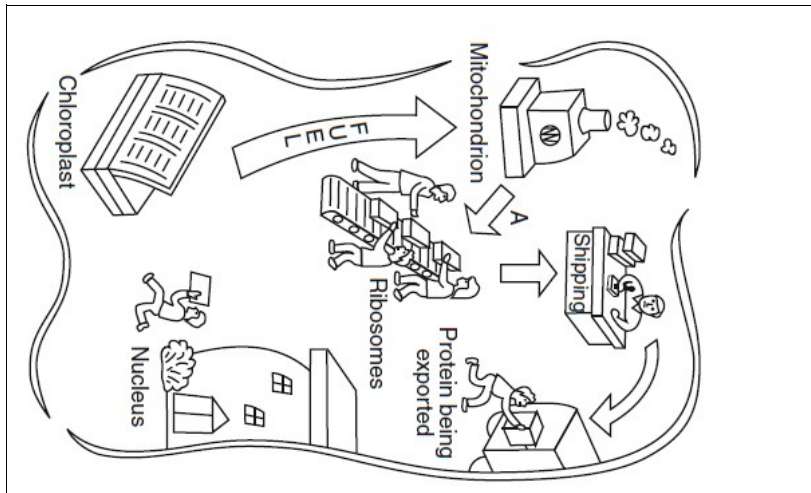
Data Base File Number: 447

Regents Date

Aug2012

53 8/17/2012 **S4K5**

Answer 2



mitochondria

672. Within which structure shown in the diagram are energy-rich organic compounds used to produce ATP?

(1) 1

(3) 3

(2) 2

(4) 4

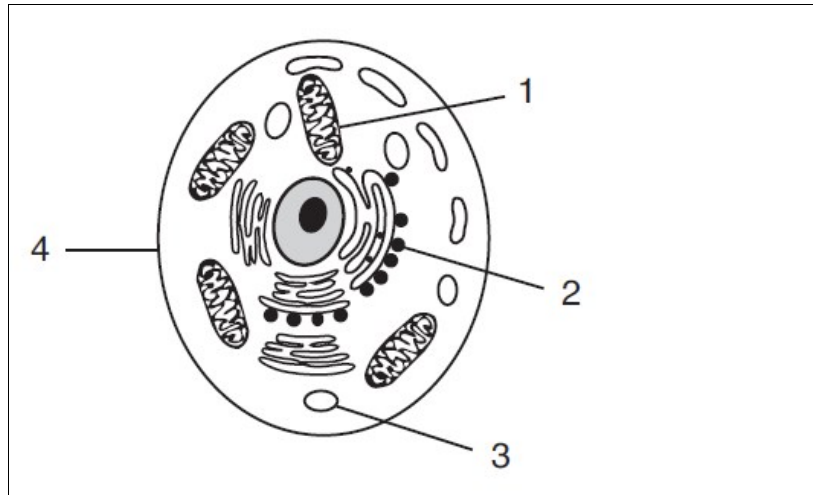
Data Base File Number: 220

Regents Date

Aug2009

39 8/13/2009 S4K5

Answer 1



mitochondria

673. The diagram shown represents a structure involved in cellular respiration. The release of which structure is represented by the arrows?

(1) glucose

(3) carbon dioxide

(2) oxygen

(4) DNA

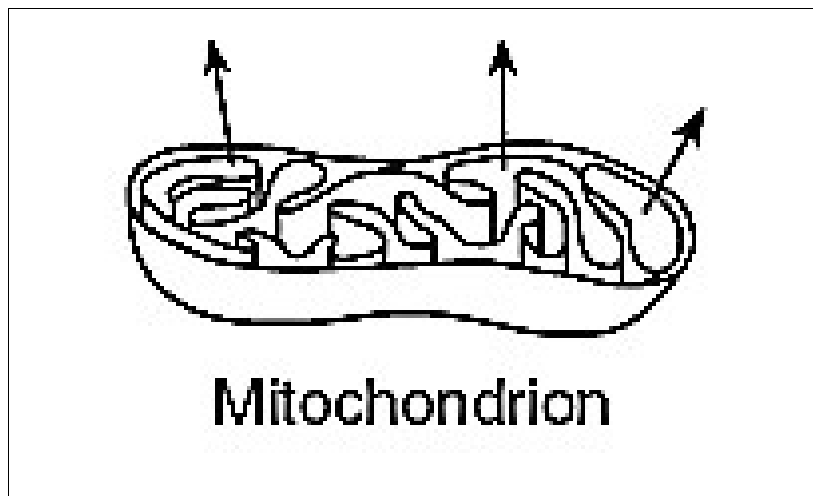
Data Base File Number: 51

Regents Date

Jan2007

20 1/26/2007 S4K5

Answer 3



mitochondria

674. The chart shows some cell organelles. Which organelle is most closely associated with cellular respiration?

- (1) ribosome
- (2) nucleus
- (3) mitochondrion
- (4) cell membrane

Data Base File Number: 769

Regents Date

Aug2003

44 8/13/2003 S4K1

Answer 3

	Set A	Set B
Organelle 1	Ribosome	Mitochondrion
Organelle 2	Nucleus	Cell membrane

mitochondria

675. The diagram shown represents a cell found in some complex organisms. The enlarged section represents an organelle, labeled X, found in this cell. The function of the organelle labeled as X is most closely associated with

- (1) respiration
- (2) storage of fats
- (3) photosynthesis
- (4) water elimination

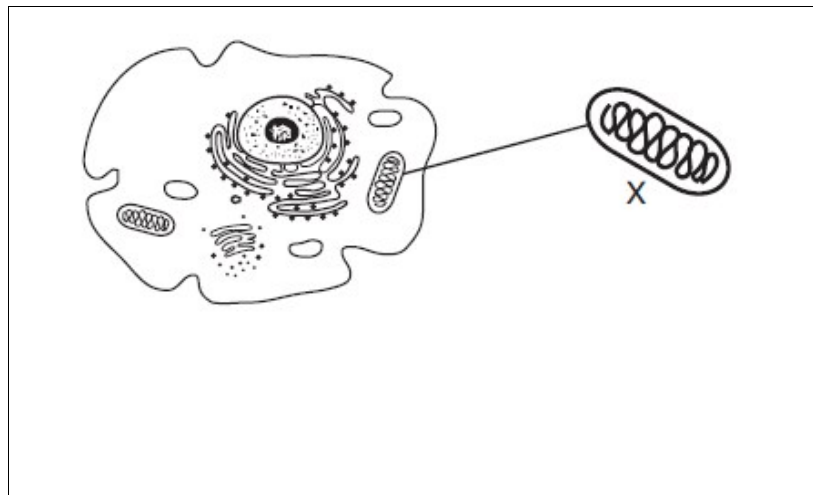
Data Base File Number: 271

Regents Date

June2010

63 6/16/2010 S4K5

Answer 1



mitochondria

676. The diagram shown represents a cell organelle involved in the transfer of energy from organic compounds. The arrows in the diagram could represent the release of
- (1) ATP from a chloroplast carrying out photosynthesis
 - (2) oxygen from a mitochondrion carrying out photosynthesis
 - (3) glucose from a chloroplast carrying out respiration
 - (4) carbon dioxide from a mitochondrion carrying out respiration

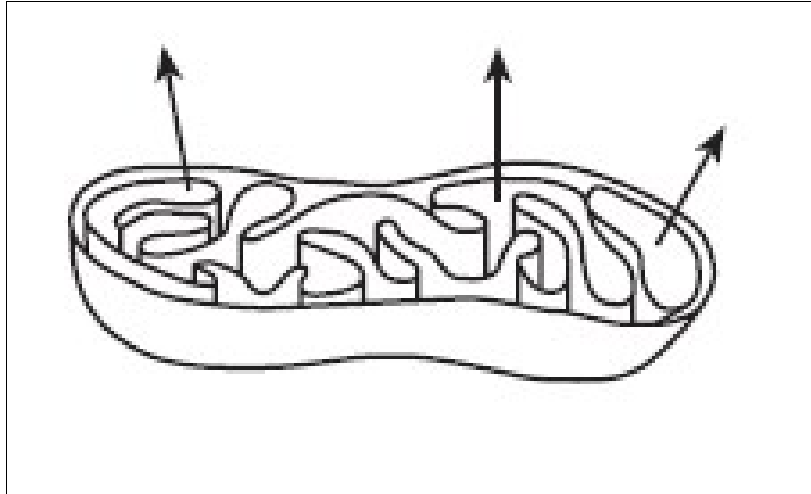
Data Base File Number: 483

Regents Date

June 2006

20 6/21/2006 S4K5

Answer 4



mitosis

677. Which activity most directly involves the process represented in the diagram?
- (1) a gamete reproducing sexually
 - (2) a white blood cell engulfing bacteria
 - (3) a zygote being produced in an ovary
 - (4) an animal repairing damaged tissue

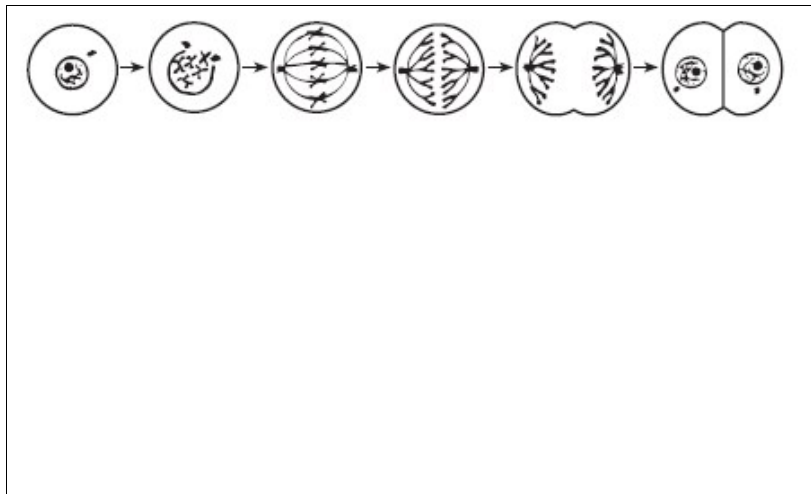
Data Base File Number: 765

Regents Date

Aug 2003

37 8/13/2003 S4K4

Answer 4



mitosis

678. Base your answer to this question on the diagram shown and your knowledge of biology. The diagram represents a single-celled organism, such as an ameba, undergoing the changes shown. Process 1 and process 2 are directly involved in

- (1) meiotic cell division
- (2) mitotic cell division
- (3) fertilization
- (4) recombination

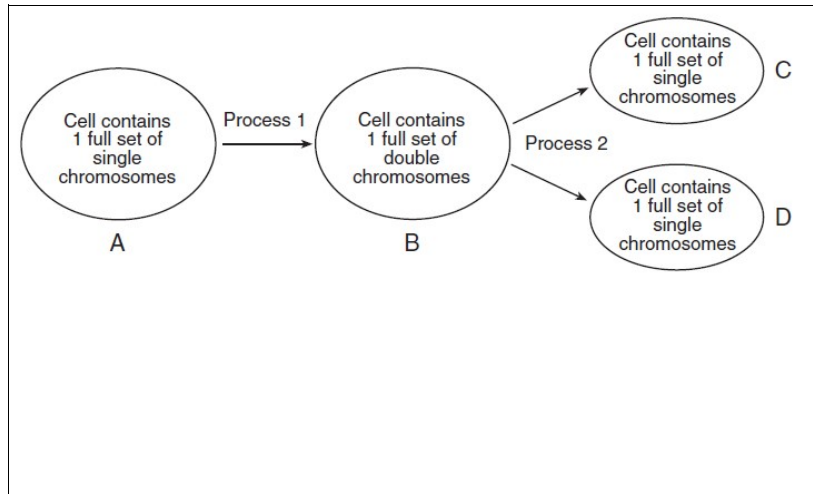
Data Base File Number: 516

Regents Date

Aug2006

33 8/16/2006 S4K2

Answer 2



mitosis

679. The diagram shown represents single-celled organism A dividing by mitosis to form cells B and C. Cells A, B, and C all produced protein X. What can best be inferred from this observation?

- (1) Protein X is found in all organisms.
- (2) The gene for protein X is found in single celled organisms, only.
- (3) Cells A, B, and C ingested food containing the gene to produce protein X.
- (4) The gene to produce protein X was passed from cell A to cells B and C.

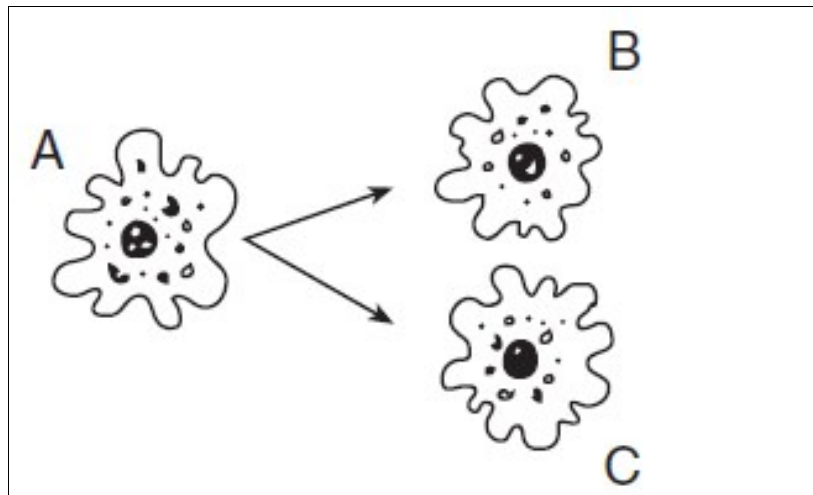
Data Base File Number: 490

Regents Date

June2006

35 6/21/2006 S4K2

Answer 4



mitosis

680. The diagram at the LEFT represents chromosomes in a zygote. Which diagrams at the RIGHT best illustrate the daughter cells that result from normal mitotic cell division of this zygote?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

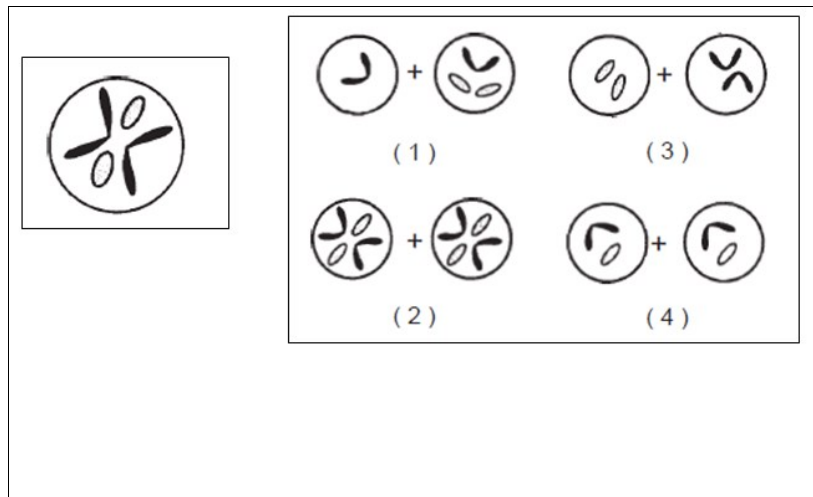
Data Base File Number: 846

Regents Date

June 2001

20 6/15/2001 S4K4

Answer 2



mitosis

681. The chromosome content of a skin cell, shown as diagram "A", is about to form two new skin cells. Which diagram, shown in "B" best represents the chromosomes that would be found in the two new skin cells produced as a result of this process?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

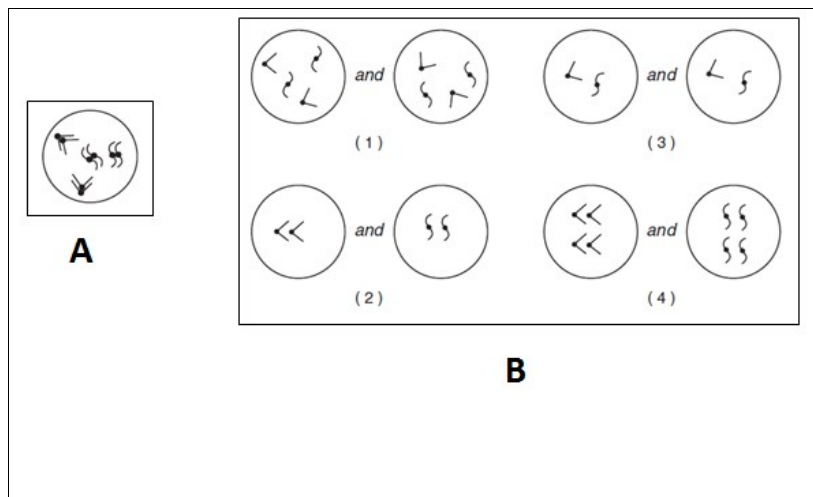
Data Base File Number: 689

Regents Date

Aug 2004

30 8/17/2004 S4K4

Answer 1



mitosis

682. The diagram shown represents reproduction of a single-celled organism A, which has a normal chromosome number of 8. The circles represent offspring 1 and offspring 2. What is the number of chromosomes that offspring 1 and offspring 2 have from the normal asexual reproduction of organism A?

- (1) 2
- (2) 4
- (3) 6
- (4) 8

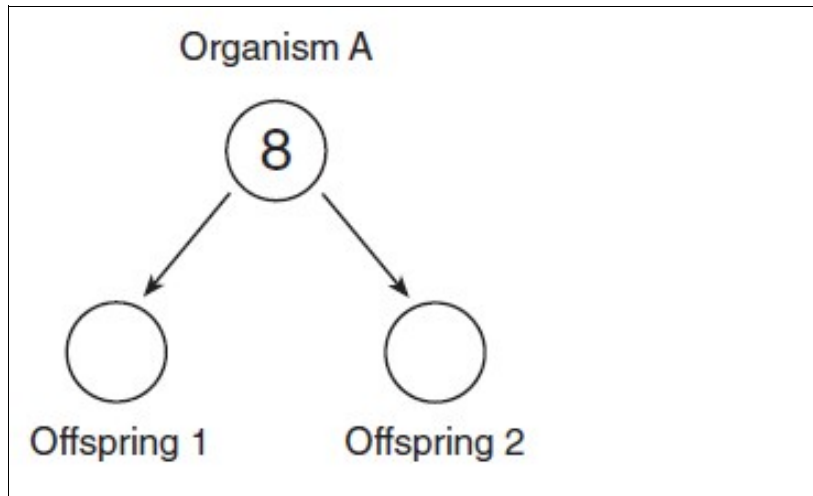
Data Base File Number: 747

Regents Date

June2003

52 6/19/2003 S4K2

Answer 4



mitosis

683. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents the reproductive cycle of a squirrel species with 40 chromosomes in each zygote. A process that could be represented by A is

- (1) fertilization
- (2) meiosis
- (3) mitosis
- (4) mutation

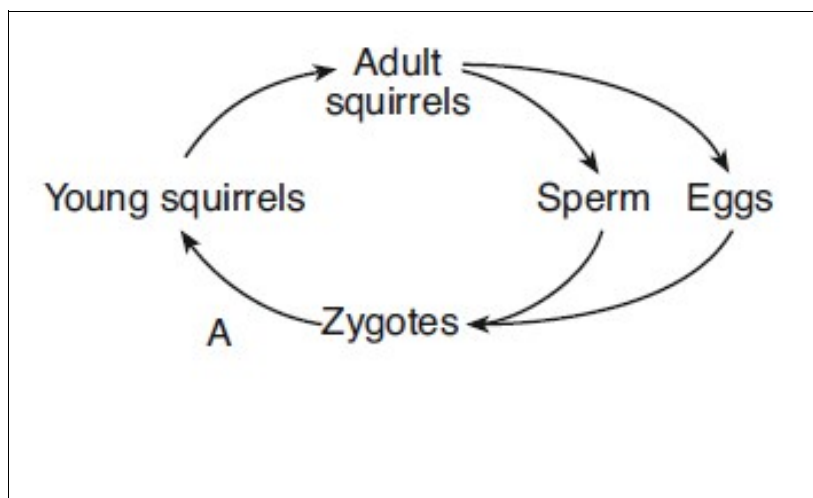
Data Base File Number: 415

Regents Date

June2012

38 6/19/2012 S4K4

Answer 3



mRNA

684. The diagram shows some of the steps in protein synthesis. The section of DNA being used to make the strand of mRNA is known as a

- (1) carbohydrate
- (2) gene
- (3) ribosome
- (4) chromosome

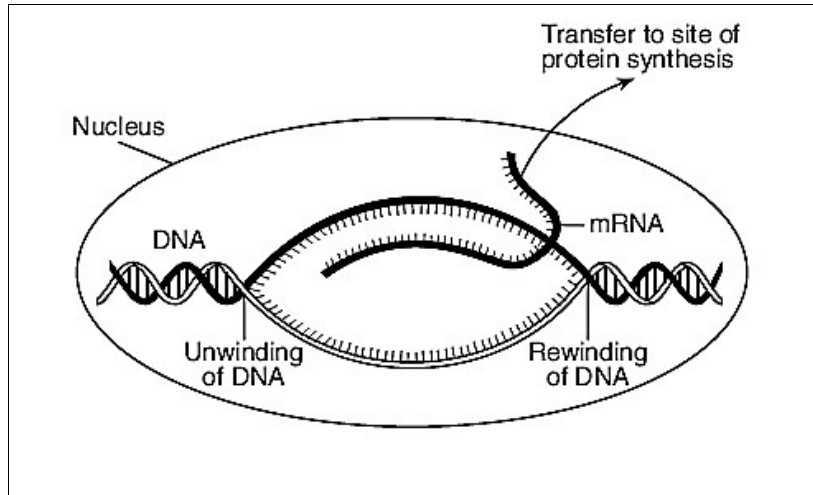
Data Base File Number: 103

Regents Date

June 2008

38 6/24/2008 S4K2

Answer 2



mRNA codon

685. Base your answer to this question on the chart shown, which represents an example of some mRNA codons, and on your knowledge of biology. How many different codons can code for the amino acid threonine (THR)?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 252

Regents Date

Jan 2010

78 1/26/2010 LABS

Answer 4

AUU } AUC } AUA }	ILE	ACU } ACC } ACA } ACG }	THR	AAU } AAC }	ASN	AGU } AGC }	SER
AUG }	MET			AAA } AAG }	LYS	AGA } AGG }	ARG

mRNA Codon

686. Series I represents three mRNA codons. Series II includes a mutation of series I. How would the amino acid sequence produced by the mutant strand (series II) compare to the amino acid sequence produced by series I?

- (1) The amino acid sequence would be shorter.
- (2) One amino acid in the sequence would change.
- (3) The amino acid sequence would remain unchanged.
- (4) More than one amino acid in the sequence would change.

Data Base File Number: 604

Regents Date

Aug2005

73 8/16/2005 LAB1

Answer 2

Series I AGAUCGAGU

Series II ACAUCGAGU

mRNA codon

687. Base your answer to this question on the DNA base sequence shown in the diagram and on your knowledge of biology. What are the mRNA codons that would be produced using the DNA base sequence shown in the diagram?

- (1) UUU CAG TAA UCC ATC
- (2) UUG CGG CAG GCG AUC
- (3) TAA GAA CAA TAG GGC
- (4) AAT UUT AGC CAG GCA

Data Base File Number: 894

Regents Date

June2013

77 6/11/2013 LAB1

Answer 2

AAC-GCC-GTC-CGC-TAG

mutation

688. The diagram shown represents one process that might occur in cells. Which process is represented in the diagram?

- (1) cell reproduction
- (2) meiosis
- (3) mutation
- (4) gene replication

Data Base File Number: 432

Regents Date

Aug2012

8 8/17/2012 S4K2

Answer 3



mutation

689. Some steps involved in DNA replication and protein synthesis are summarized in the table shown. In which step would a mutation lead directly to the formation of an altered gene?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 72

Regents Date

Jan2008

34 1/25/2008 S4K3

Answer 1

Step A	DNA is copied and each new cell gets a full copy.
Step B	Information copied from DNA moves to the cytoplasm.
Step C	Proteins are assembled at the ribosomes.
Step D	Proteins fold and begin functioning.

mutation

690. The diagram shown can be used to illustrate cellular changes. Which row of terms in the chart below best completes the diagram?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 362

Regents Date

Aug2011

9 8/18/2011 S4K5

Answer 2

Cells exposed to
↓
A
Can develop
↓ ↓
B and C

Which row of terms in the chart below best completes the diagram?

Row	A	B	C
(1)	atmospheric oxygen	mutations	increased mitochondria
(2)	radiation	cancer	mutations
(3)	salt water	more cytoplasm	two nuclei
(4)	less sunlight	extra genes	decreased mutations

mutation / deletion

691. An alteration of genetic information is shown in the diagram. This type of alteration of the genetic information is an example of

- (1) deletion
- (2) insertion
- (3) substitution
- (4) recombination

Data Base File Number: 402

Regents Date

June2012

8 6/19/2012 S4K2

Answer 1

A-G-T-A-C-C-G-A-T → A-G-T-G-A-T

natural selection

692. Which concept is best illustrated in the flowchart shown?

- (1) natural selection
- (2) genetic manipulation
- (3) dynamic equilibrium
- (4) natural cycles

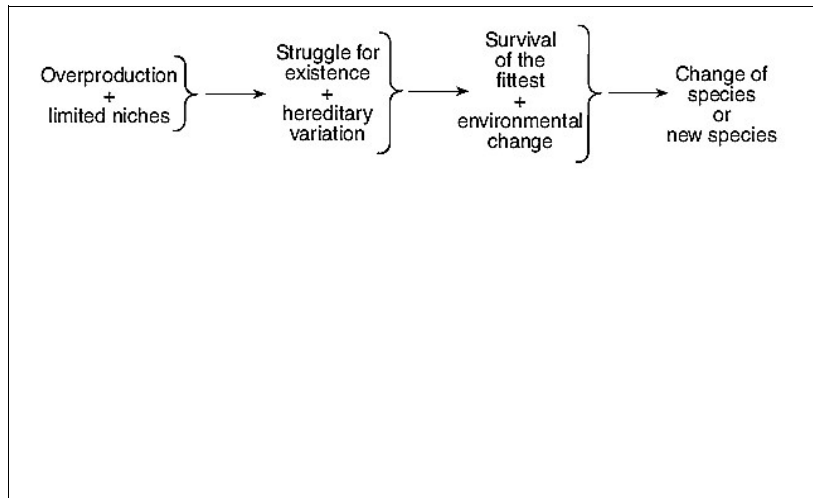
Data Base File Number: 64

Regents Date

Jan2008

10 1/25/2008 S4K3

Answer 1



natural selection

693. The graph shows the changes in the number of individuals in a population who have a specific trait. Which statement concerning this trait is a valid inference?

- (1) As time passed, an increasing number of individuals with this trait survived and reproduced.
- (2) Individuals can acquire new survival characteristics over time and pass them on to their offspring.
- (3) The longer a species is in an environment, the less likely it is that mutations will occur within the species.
- (4) The number of traits a species possesses has a direct relationship to the amount of time the species will

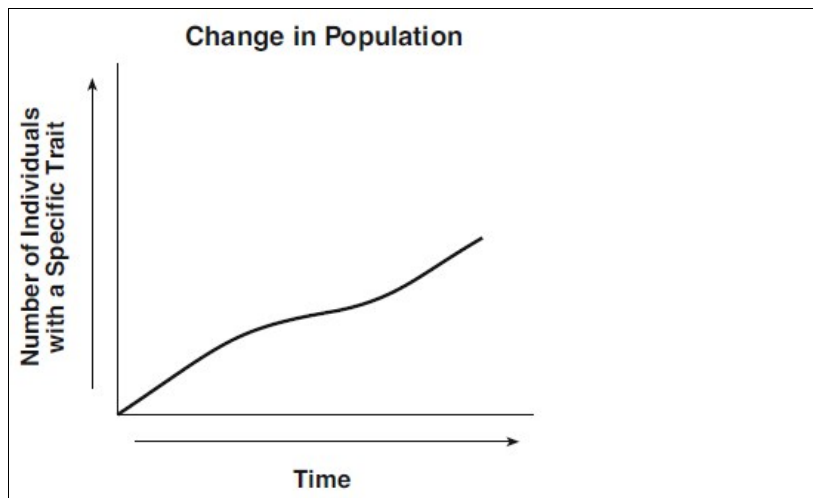
Data Base File Number: 614

Regents Date

Jan2013

34 1/23/2013 S4K3

Answer 1



natural selection

694. The characteristics of four finches that inhabit the same island are represented in the chart shown. Studies of the finches of the Galapagos Islands have shown that

- (1) DNA will change to produce structures needed by birds to survive intense competition
- (2) a bird's beak changes annually in response to the type of food that is most abundant each year
- (3) natural selection occurs when there are scarce resources and intense competition
- (4) the beak of a finch will change if the environment of the bird remains stable





Data Base File Number: 330

Regents Date

Jan2011

74 1/25/2011 LABS

Answer 3

<p>Large Ground Finch</p>  <p>Beak: crushing Food: mainly plant</p>	<p>Warbler Finch</p>  <p>Beak: probing Food: 100% animal</p>
<p>Small Ground Finch</p>  <p>Beak: crushing Food: mainly plant</p>	<p>Large Tree Finch</p>  <p>Beak: grasping Food: mainly animal</p>

natural selection

695. The diagram shown represents a woolly mammoth, a relative of the modern elephant. Woolly mammoths lived during the Ice Age and eventually became extinct. What is a possible reason that this species died out?

- (1) The environment changed and the woolly mammoth could no longer adapt.
- (2) The number of predators of the woolly mammoth increased.
- (3) The woolly mammoth was overhunted.
- (4) Any of these answers could be correct.

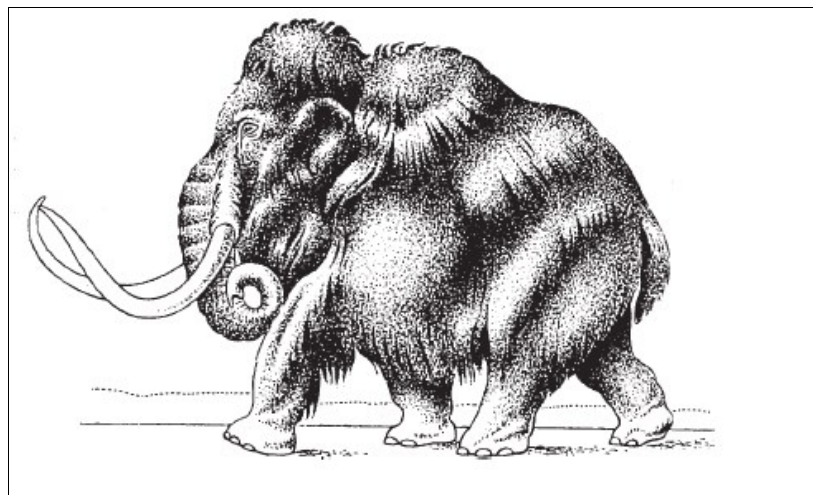
Data Base File Number: 794

Regents Date

Aug2002

60 8/13/2002 S4K3

Answer 4



natural selection

696. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows the heads of four different species of Galapagos Islands finches. The four different types of beaks shown are most likely the result of

- (1) gene manipulation
- (2) natural selection
- (3) unchanging environmental conditions
- (4) patterns of behavior learned from parents

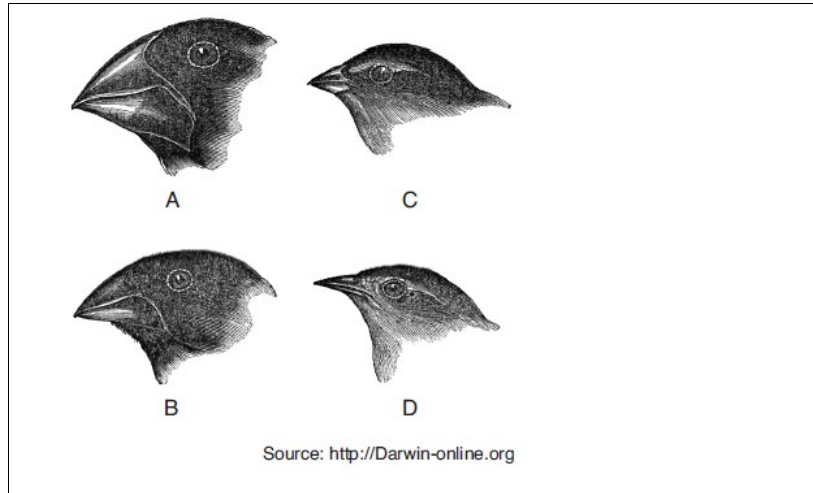
Data Base File Number: 274

Regents Date

June 2010

76 6/16/2010 LABS

Answer 2



natural selection

697. The diagram shown represents the relationship between natural selection and variation. The arrow between them is labeled X. Which phrase best indicates the meaning of the arrow labeled X?

- (1) is dependent on
- (2) increases the rate of
- (3) decreases the rate of
- (4) is independent of

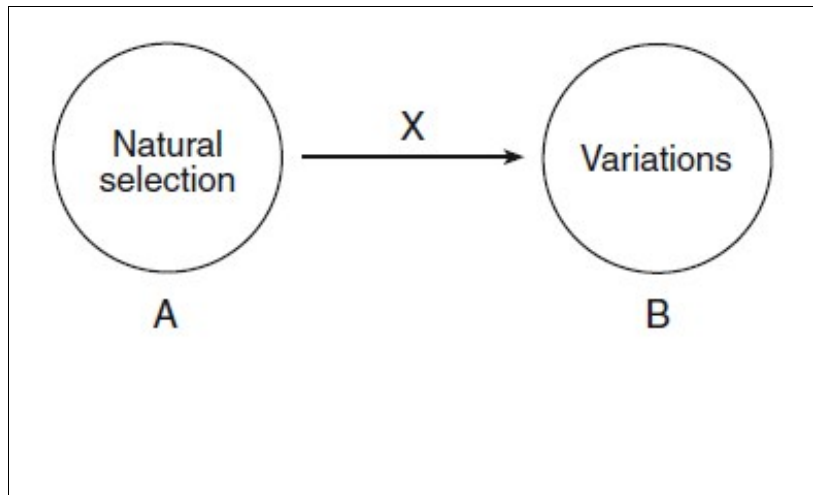
Data Base File Number: 618

Regents Date

Jan 2013

39 1/23/2013 S4K3

Answer 1



natural selection

698. A small village was heavily infested with mosquitoes. The village was sprayed weekly with an insecticide for a period of several months. The results of daily counts of the mosquito population are shown in the graph. Which statement best explains why some mosquitoes survived after the first spraying?

- (1) Some mosquitoes were adapted to the climatic change that occurred over the several-month period of spraying.
- (2) All of the mosquitoes contained DNA unique to the species.
- (3) The spraying of the insecticide represented a change in the environment to which all adult mosquitoes were adapted.
- (4) A natural variation existed within the mosquito population.

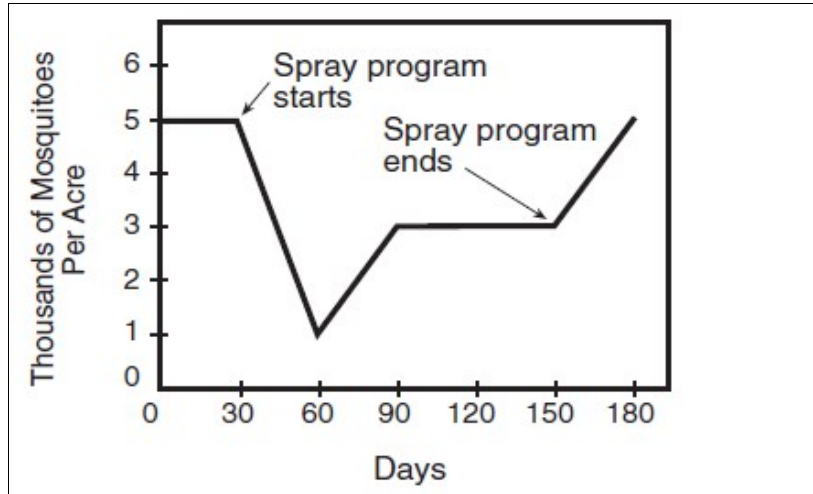
Data Base File Number: 767

Regents Date

Aug2003

40 8/13/2003 S4K3

Answer 4



natural selection

699. The table shows adaptations in two organisms. The presence of these adaptations is most likely the result of

- (1) reproductive technology
- (2) natural selection
- (3) asexual reproduction
- (4) human interference

Data Base File Number: 403

Regents Date

June2012

9 6/19/2012 S4K3

Answer 2

Environmental Adaptations		
Organism	Environment	Adaptation
desert rat	hot and dry	comes out of burrow only at night
Arctic poppy plant	cold and windy	grows low to ground next to rocks

natural selection

700. The diagram shown represents four different species of wild birds. Each species has feet with different structural adaptations. The development of these adaptations can best be explained by the concept of

- (1) inheritance of resistance to diseases that affect all these species
- (2) inheritance of characteristics acquired after the birds hatched from the egg
- (3) natural selection
- (4) selective breeding

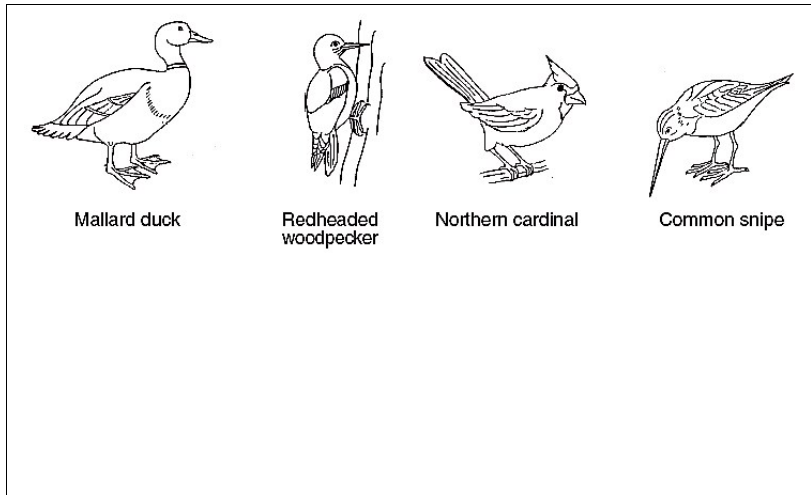
Data Base File Number: 27

Regents Date

June 2007

22 6/20/2007 S4K3

Answer 3



natural selection

701. The diagram shown represents the same field of mice hunted by a hawk over a period of three months. The overall changes in the population of mice can be explained best by

- (1) natural selection
- (2) succession
- (3) reproduction
- (4) mouse extinction

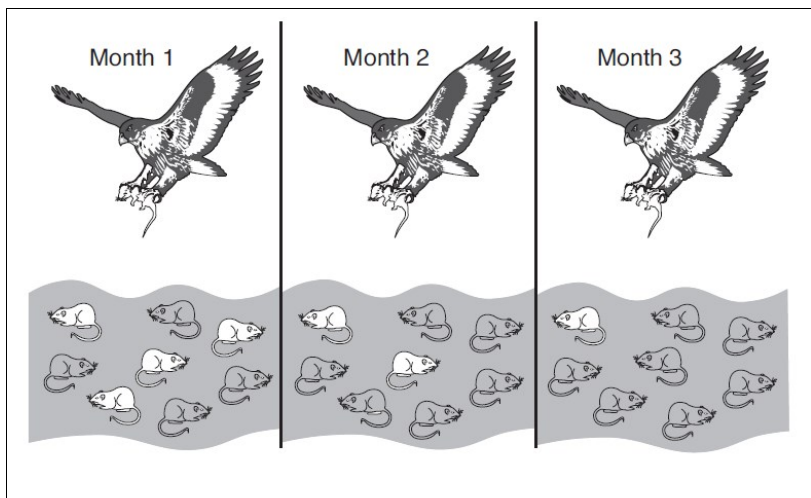
Data Base File Number: 879

Regents Date

June 2013

30 6/11/2013 S4K3

Answer 1



natural selection

702. The diagram shown represents one possible evolutionary change that could have led lobe-finned fish to develop into the first amphibians. Amphibians are animals that live on land some of their life. This change from fins on the lobe-finned fish to legs and feet on the early amphibian is most likely due to

- (1) a sudden mutation that changed the gills of the lobe-finned fish to lungs
- (2) increased competition between animals that had adapted to living on the land
- (3) the need to move to land because of increased competition for food in the ocean
- (4) variations among offspring, followed by natural selection

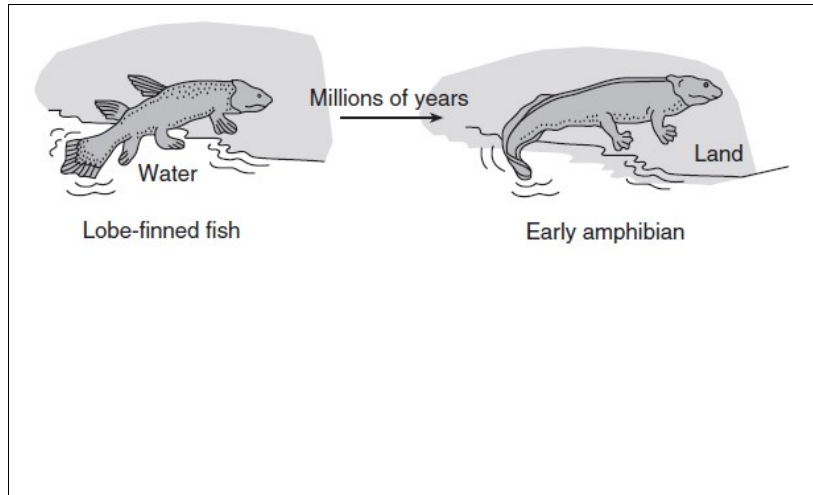
Data Base File Number: 443

Regents Date

Aug2012

41 8/17/2012 S4K3

Answer 4



natural selection

703. Base your answer to this question on the cartoons as shown, which refer to certain concepts of natural selection, and on your knowledge of biology. Which major part of the "Theory of Natural Selection" is illustrated by both cartoons?

- (1) Survival of the fittest.
- (2) Development of new mutations.
- (3) Superiority of predators.
- (4) Genetic engineering.

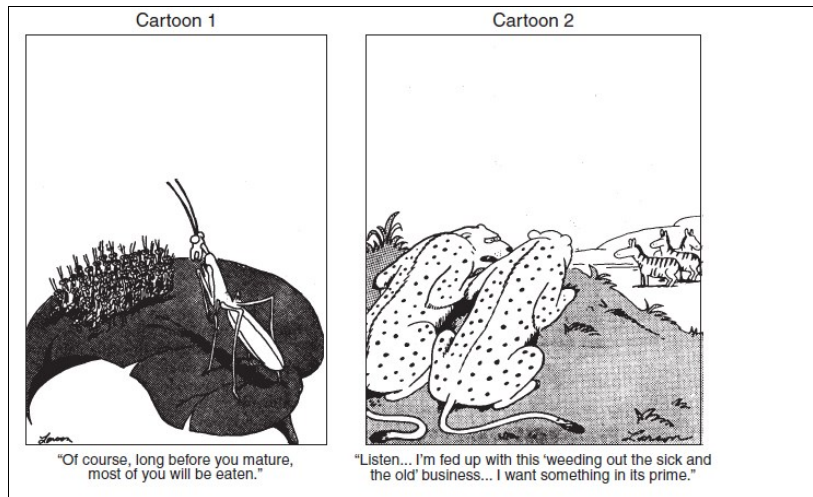
Data Base File Number: 825

Regents Date

June2002

69 6/19/2002 S4K3

Answer 1



natural selection

704. The diversity within the wild bird species in the diagram shown can best be explained by which process?

- (1) natural selection
- (2) asexual reproduction
- (3) ecological succession
- (4) mitotic cell division

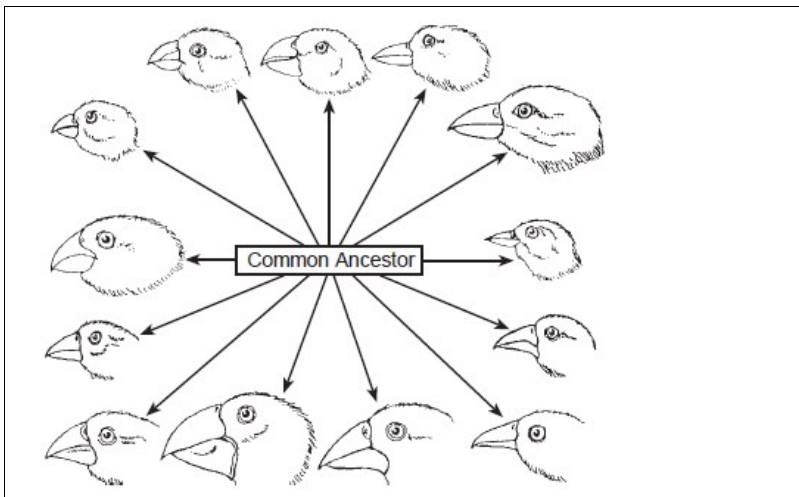
Data Base File Number: 829

Regents Date

Jan2002

11 1/23/2002 **S4K3**

Answer 1



natural selection

705. Base your answer to this question on the information and diagram given and on your knowledge of biology. The circled areas in the diagram represent bird species that are in the same genus, a classification group that includes closely related species. These birds are found on the Hawaiian Islands. Which processes are directly responsible for the presence of the different species of birds shown in the diagram?

- (1) mitosis and differentiation
- (2) gene manipulation and overpopulation
- (3) gene mutations and natural selection
- (4) competition and cloning

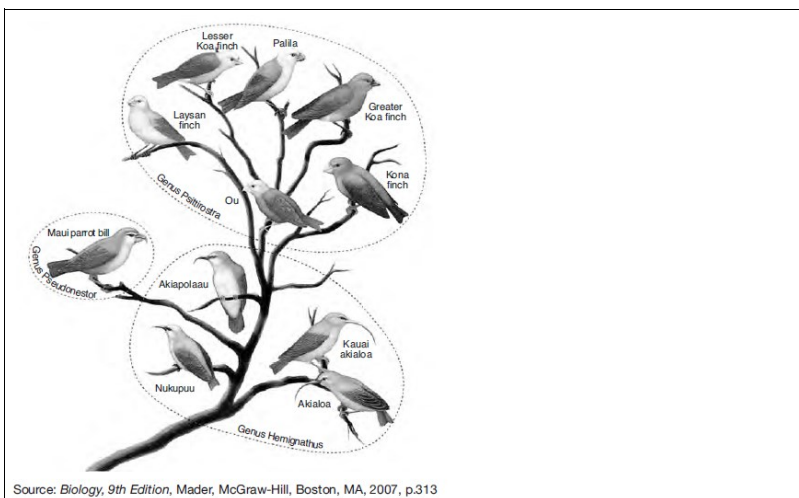
Data Base File Number: 896

Regents Date

June2013

81 6/11/2013 **LAB3**

Answer 3



nerve cells

706. Base your answer to this question on the diagram of the nerve cells shown and on your knowledge of biology. What would happen if a drug molecule shaped like a BOX were introduced into this nerve pathway at AREA I?

- (1) the drug would bind only with NERVE CELL B
- (2) the drug would bind only with NERVE CELL A
- (3) the drug would bind with both NERVE CELL A and NERVE CELL B
- (4) the drug would not bind with either NERVE CELL A or NERVE CELL B

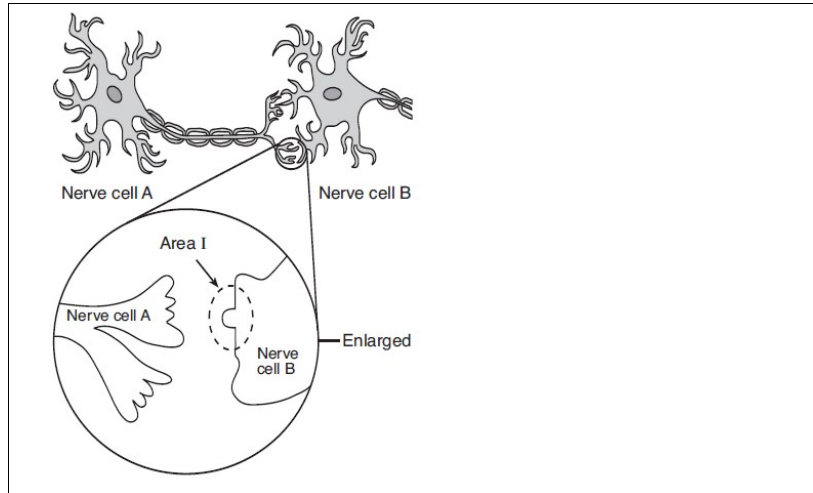
Data Base File Number: 225

Regents Date

Aug2009

51 8/13/2009 **S4K1**

Answer 4



niche

707. A scientist studied iguanas inhabiting a chain of small ocean islands. He discovered two species that live in different habitats and display different behaviors. His observations are listed in the table below. Which statement best describes these two species of iguanas?

- (1) Both species evolved through the process of ecological succession.
- (2) Each species occupies a different niche.
- (3) The two species can interbreed.
- (4) Species A is a scavenger and species B is a carnivore.

Data Base File Number: 521

Regents Date

Aug2006

38 8/16/2006 **S4K6**

Answer 2

Species A	Species B
spends most of its time in the ocean	spends most of its time on land
is rarely found more than 10 meters from shore	is found many meters inland from shore
eats algae	eats cactus and other land plants

niche

708. The ecological niches of three bird species are shown in the diagram. What is the advantage of each bird species having a different niche?

- (1) As the birds feed higher in the tree, available energy increases.
- (2) More abiotic resources are available for each bird.
- (3) Predators are less likely to feed on birds in a variety of locations.
- (4) There is less competition for food.

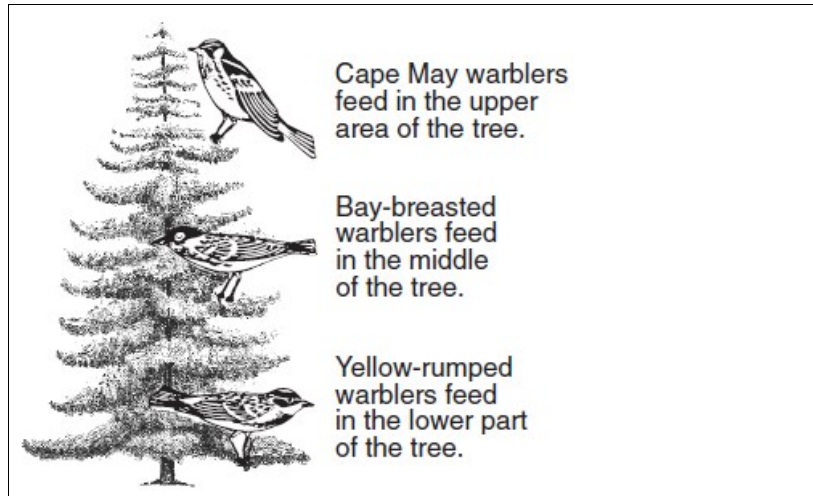
Data Base File Number: 561

Regents Date

June2005

28 6/22/2005 **S4K6**

Answer 4



organ systems

709. The chart shows examples from two groups of organisms, multicellular and one-celled. The tissues and organs in group A perform functions that are

- (1) similar to those performed by the tissues and organs in group B
- (2) similar to those performed by the cell organelles in group B
- (3) different from those performed by the tissues and organs in group B
- (4) identical to those performed by the cell organelles in group B





Data Base File Number: 926

Regents Date

Jan2014

41 1/27/2014 **S4K1**

Answer 2

Group A – Multicellular Organisms		Group B – One-celled Organisms	
 Cow	 Cat	 Paramecium	 Vorticella

organ systems

710. The diagram below represents an incomplete sequence of levels of organization. This sequence can be completed correctly by inserting

- (1) "cells →" between organelles and tissues
- (2) "proteins →" between tissues and organs
- (3) "populations →" between organs and organ systems
- (4) "molecules →" between organ systems and organisms

Data Base File Number: 928

Regents Date

Jan2014

43 1/27/2014 S4K1

Answer 1

organelles → tissues → organs → organ systems → organism

organ systems

711. The skeletal system of an animal is shown in the photograph. Which TWO systems are the MOST important in making the skeleton move when the animal is alive and functioning?

- (1) digestive and circulatory
- (2) nerve and muscle
- (3) excretory and digestive
- (4) circulatory and skin

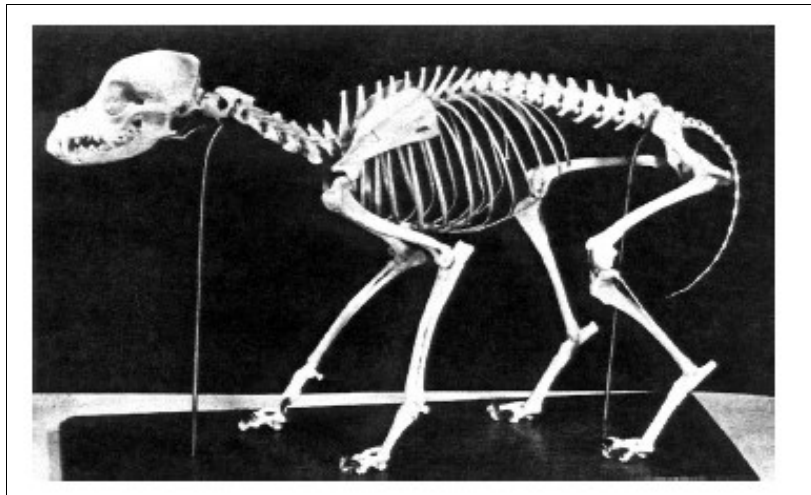
Data Base File Number: 774

Regents Date

Aug2003

67 8/13/2003 S4K1

Answer 2



organelles

712. The diagram shown represents two single-celled organisms. These organisms carry out the activities needed to maintain homeostasis by using specialized internal

- (1) tissues
- (2) organelles
- (3) systems
- (4) organs

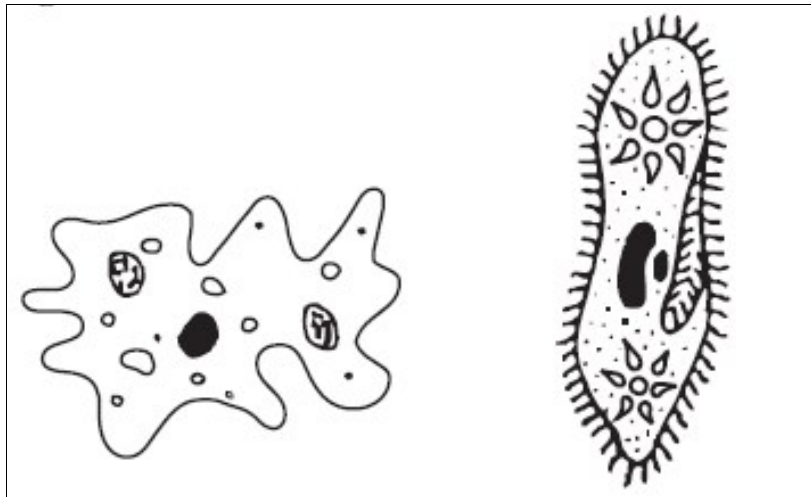
Data Base File Number: 636

Regents Date

Jan2004

6 1/29/2004 S4K1

Answer 2



organelles

713. The table shown provides some information concerning organelles and organs. Based on this information, which statement accurately compares organelles to organs?

- (1) Functions are carried out more efficiently by organs than by organelles.
- (2) Organs maintain homeostasis while organelles do not.
- (3) Organelles carry out functions similar to those of organs.
- (4) Organelles function in multicellular organisms while organs function in single-celled organisms.

Data Base File Number: 62

Regents Date

Jan2008

6 1/25/2008 S4K1

Answer 3

Function	Organelle	Organ
gas exchange	cell membrane	lung
nutrition	food vacuole	stomach

organism competition

714. Two interactions between organisms are shown in the table. X and Y do not represent the same organisms in the two interactions. Which statement best describes the relationship between organism X and organism Y in each interaction?

- (1) Organism X is positively affected by the relationship and organism Y is negatively affected.
- (2) Organism X is negatively affected by the relationship and organism Y is positively affected.
- (3) Both organisms are positively affected by the relationship.
- (4) Both organisms are negatively affected by the relationship.

Data Base File Number: 286

Regents Date

Aug2010

36 8/18/2010 S4K6

Answer 1

	Organism X	Organism Y
Interaction 1	predator	prey
Interaction 2	parasite	host

organization

715. Examine the levels of organization as shown in the diagram. The levels of organization for structure and function in the human body from least complex to most complex would be

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 504

Regents Date

Aug2006

1 8/16/2006 S4K1

Answer 4

(1) systems → organs → tissues → cells
(2) cells → organs → tissues → systems
(3) tissues → systems → cells → organs
(4) cells → tissues → organs → systems

organization

716. The diagram shown represents the organization of genetic information within a cell nucleus. The circle labeled Z most likely represents

- (1) amino acids
- (2) chromosomes
- (3) vacuoles
- (4) molecular bases

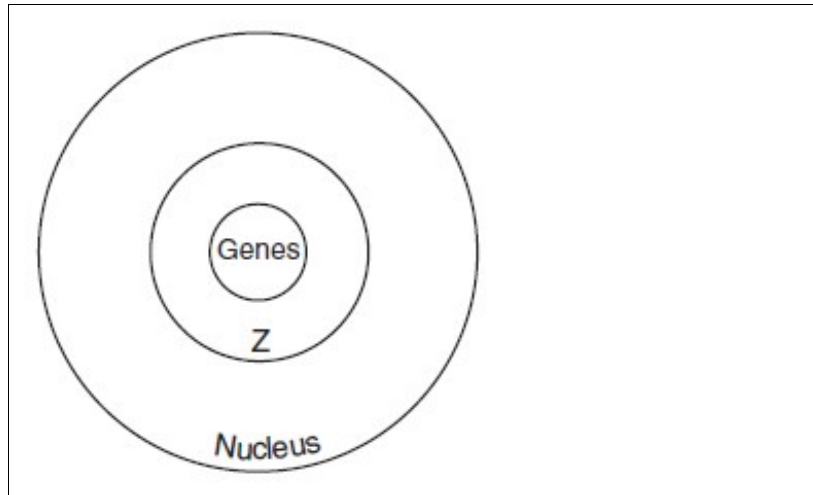
Data Base File Number: 801

Regents Date

June 2002

8 6/19/2002 S4K2

Answer 2



organization

717. A single cell and a multicellular organism are represented as shown. Which structures are correctly paired with their primary function?

- (1) A and G---transmission of nerve impulses
- (2) B and E---photosynthesis
- (3) C and H---digestion of food
- (4) D and F---gas exchange

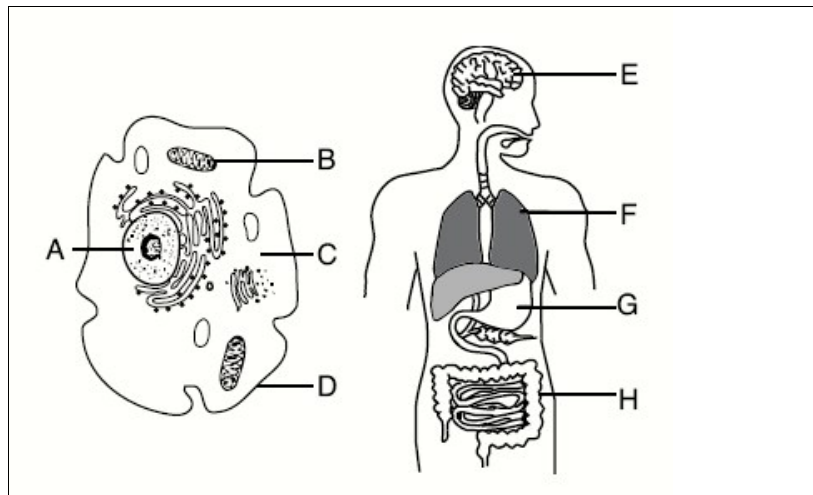
Data Base File Number: 128

Regents Date

Aug 2008

33 8/13/2008 S4K1

Answer 4



organization

718. Some levels of organization in a multicellular organism are shown in the sequence. Which terms represented by letters A and B would complete the sequence?

- (1) A - gametes; B - zygote
- (2) A - zygote; B - gametes
- (3) A - organs; B - organelles
- (4) A - organelles; B - organs

Data Base File Number: 912

Regents Date

Aug2013

49 8/14/2013 S4K1

Answer 4

A → cells → tissues → B → organ systems → organism

organization / cell

719. The diagram shown represents levels of organization within a cell of a multicellular organism. Which statement is correct regarding the structure represented by X?

- (1) Structure X is composed of many different amino acids that determine the type of cell it will become in the organism.
- (2) Structure X has the same base sequence in all the body cells of the organism.
- (3) Structure X is a folded chain arrangement of carbohydrate found in all the body cells of the organism.
- (4) Structure X contains 20 different kinds of subunits that are present in all the cells of the organism

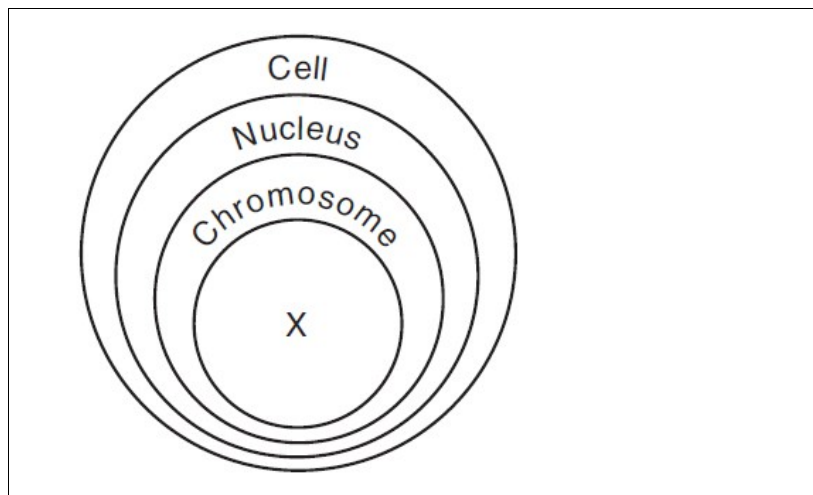
Data Base File Number: 308

Regents Date

Jan2011

20 1/25/2011 S4K1

Answer 2



osmosis

720. A red onion cell has undergone a change, as represented in the diagram shown. This change is most likely due to the cell being placed in

- (1) distilled water
- (2) light
- (3) salt water
- (4) darkness

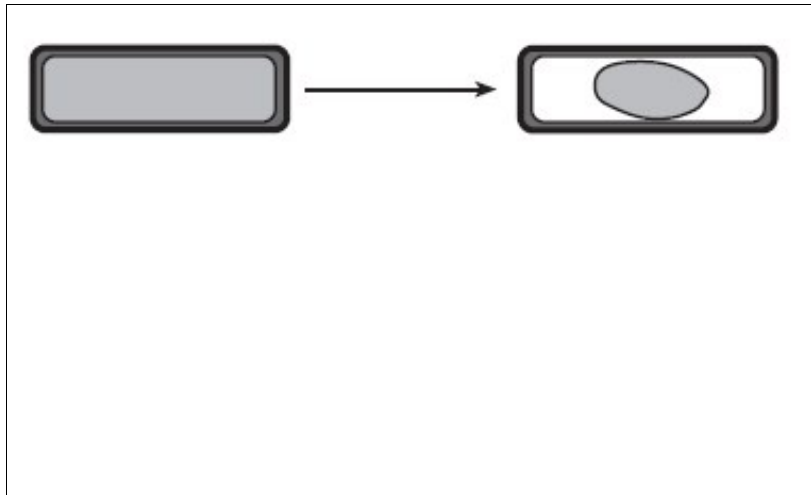
Data Base File Number: 502

Regents Date

June 2006

73 6/21/2006 LAB5

Answer 3



osmosis

721. A laboratory setup of a model cell is shown in the diagram below. Which observation would most likely be made 24 hours later?

- (1) The contents of the model cell have changed color.
- (2) The diameter of the model cell has increased.
- (3) The model cell has become smaller.
- (4) The amount of distilled water in the beaker has increased.

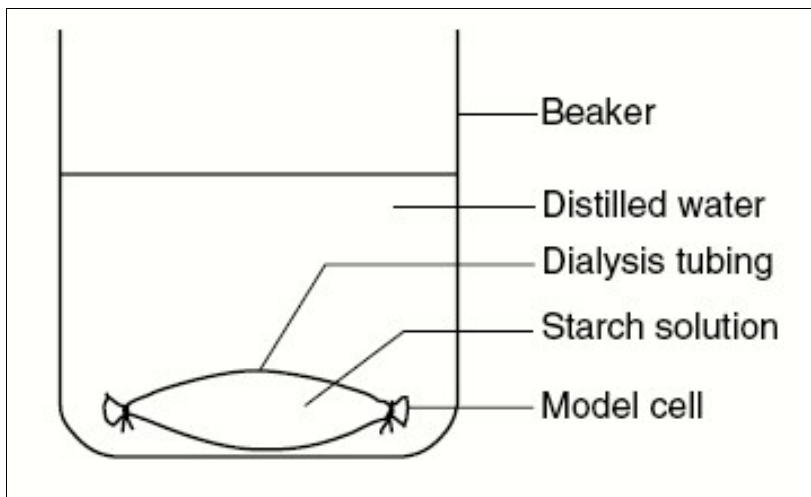
Data Base File Number: 171

Regents Date

Jan 2009

77 1/27/2009 LAB5

Answer 2



ovary

722. A diagram of human female reproductive structures is shown. Which structure is correctly paired with its function?

- (1) A -- releases estrogen and progesterone
- (2) B -- produces and releases the egg
- (3) C -- provides the usual site for fertilization
- (4) D -- nourishes a developing embryo

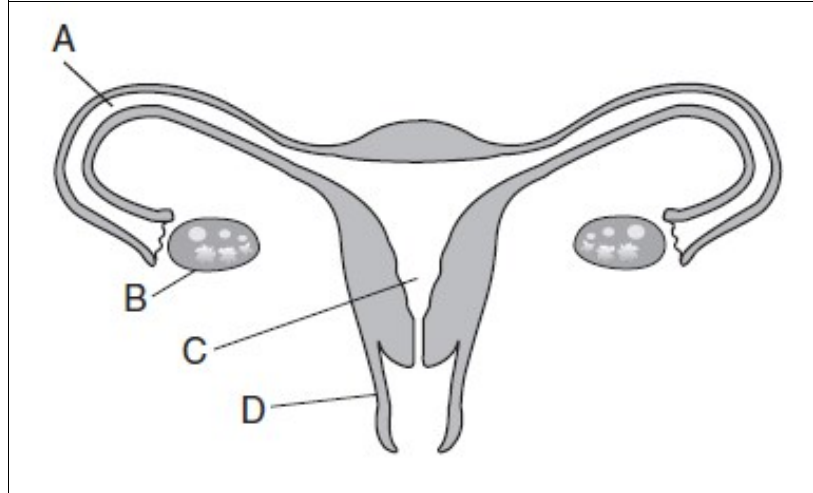
Data Base File Number: 688

Regents Date

Aug2004

16 8/17/2004 S4K4

Answer 2



ovary

723. Base your answer to this question on the diagram shown, which represents the human female reproductive system. New inherited characteristics may appear in offspring as a result of new combinations of existing genes or may result from mutations in genes contained in cells produced by structure

- (1) A
- (2) B
- (3) C
- (4) D

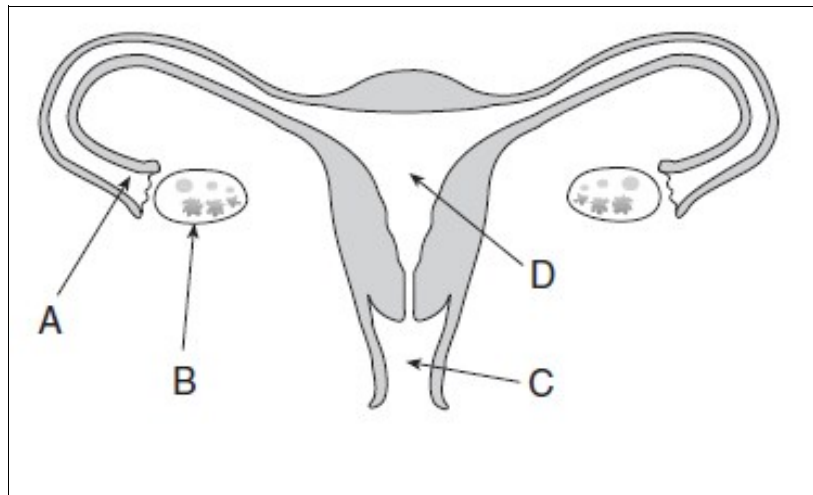
Data Base File Number: 638

Regents Date

Jan2004

15 1/29/2004 S4K3

Answer 2



ovary

724. The diagram shown represents the human female reproductive system. Exposure to radiation or certain chemicals could alter the genetic information in the gametes that form in structure

- (1) A
- (2) B
- (3) C
- (4) D

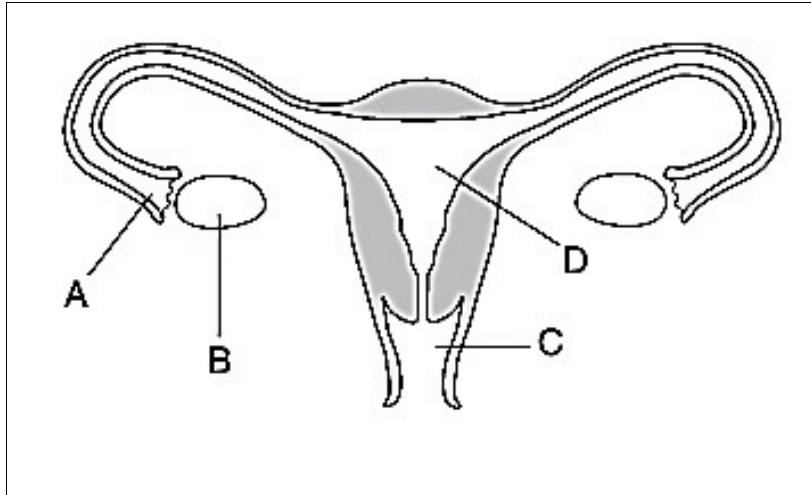
Data Base File Number: 68

Regents Date

Jan2008

20 1/25/2008 S4K4

Answer 2



ovary

725. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents the human female reproductive system. Structure A usually produces

- (1) sperm and eggs
- (2) testosterone and eggs
- (3) estrogen, progesterone, and eggs
- (4) estrogen, progesterone, and testosterone

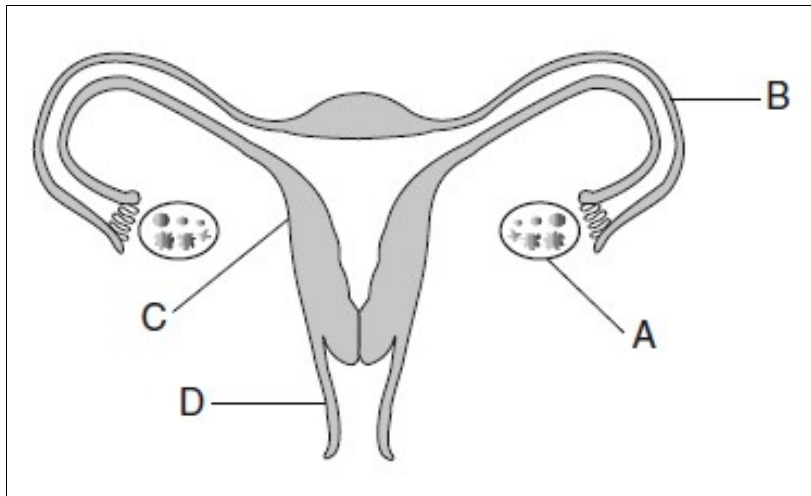
Data Base File Number: 607

Regents Date

Jan2013

10 1/23/2013 S4K4

Answer 3



ovary

726. Structures in a human female are represented in the diagram shown. A heavy dose of radiation would have the greatest impact on genetic information in future offspring if it reached gametes developing within structure

- (1) A
- (2) B
- (3) C
- (4) D

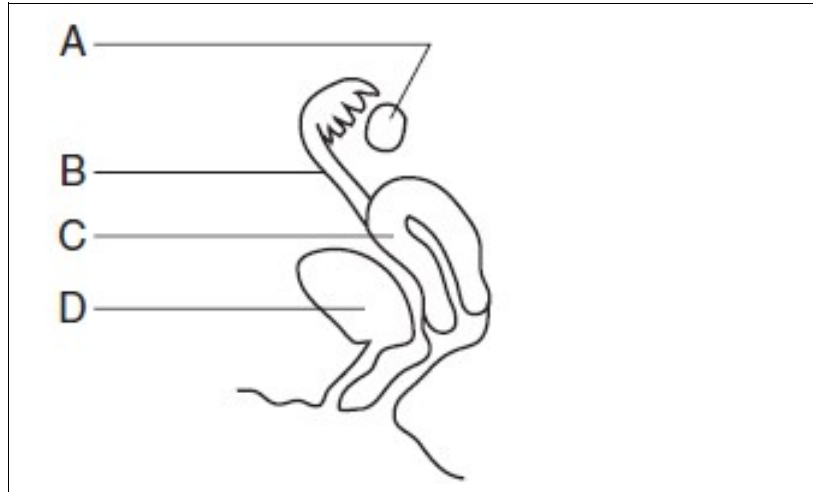
Data Base File Number: 733

Regents Date

June 2003

16 6/19/2003 S4K3

Answer 1



oxygen concentration

727. Recent research findings suggest that algae production in Lake Ontario and several other Great Lakes will be affected as warmer weather leads to warmer lake water. An increase in water temperature reduces the ability of water to hold dissolved oxygen. Examine the graphs shown. Base your answer to this question on the information given and on your knowledge of biology. Which graph best shows the relationship between changes in temperature in the Great Lakes waters and the amount of dissolved oxygen those waters can hold?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

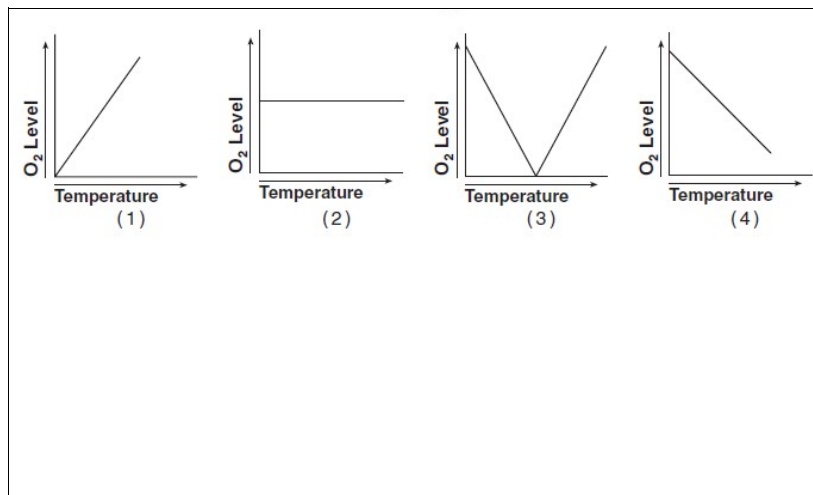
Data Base File Number: 549

Regents Date

Jan 2005

50 1/28/2005 S4K7

Answer 4



oxygen concentration

728. Base your answer to this question on the data table shown and on your knowledge of biology. The data table shows the concentrations of oxygen in parts per million (ppm) present in freshwater and seawater at various temperatures. Predict the oxygen concentration in freshwater at 35 degrees C. in ppm.

- (1) 6 ppm
 (2) 7 ppm
 (3) 8 ppm
 (4) 9 ppm

Data Base File Number: 324

Regents Date

Jan2011

46 1/25/2011 S1K3

Answer 1

Temperature (°C)	Oxygen Concentration in Freshwater (ppm)	Oxygen Concentration in Seawater (ppm)
1	14.0	11.0
10	11.5	9.0
15	10.0	8.0
20	9.0	7.5
25	8.0	7.0
30	7.5	6.0

paper chromatography

729. The diagram shown represents the results of chromatography of leaf pigments from four plant species, A, B, C, and D. Which plant species has pigments most similar to those in A?

- (1) B
 (2) C
 (3) D
 (4) No conclusion can be reached on the basis of the data given.

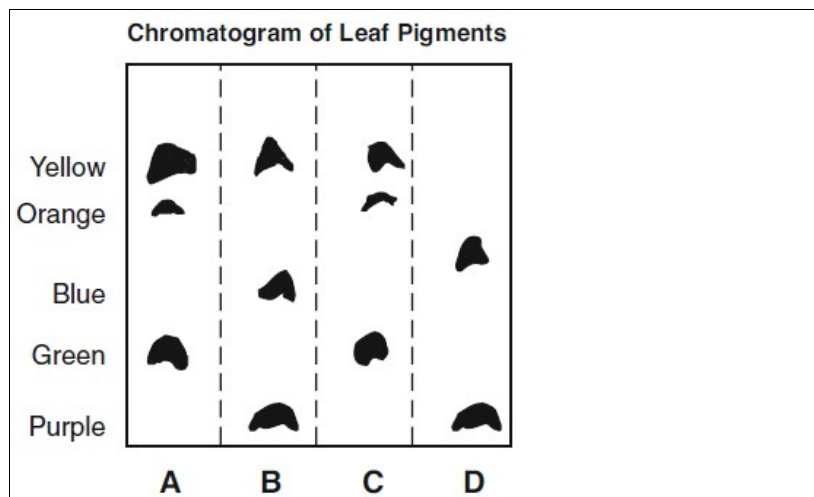
Data Base File Number: 634

Regents Date

Jan2013

80 1/23/2013 LAB1

Answer 2



paper chromatography

730. The materials represented in the diagram shown were used in a laboratory activity. These materials were used to carry out the technique known as

- (1) DNA staining
- (2) genetic engineering
- (3) paper chromatography
- (4) glucose testing

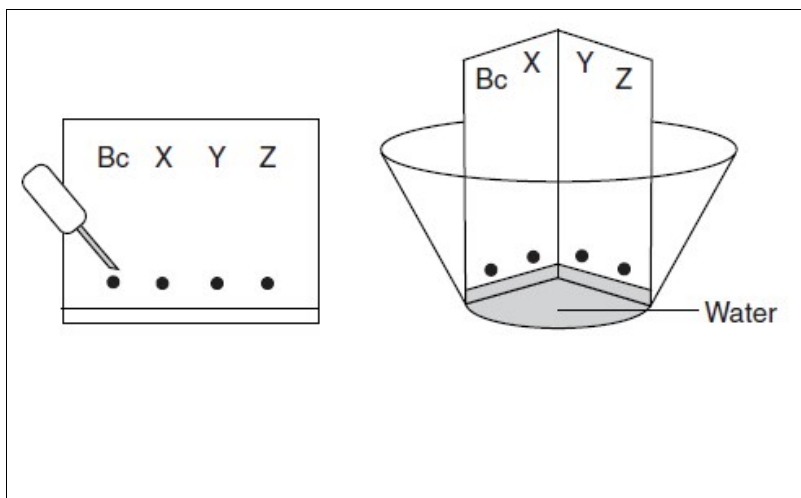
Data Base File Number: 394

Regents Date

Jan2012

73 1/25/2012 LAB1

Answer 3



paper chromatography

731. A laboratory technique is illustrated in the diagram shown. The technique shown in the diagram is used to

- (1) determine volume
- (2) separate molecules in a mixture
- (3) measure length
- (4) analyze data from an experiment

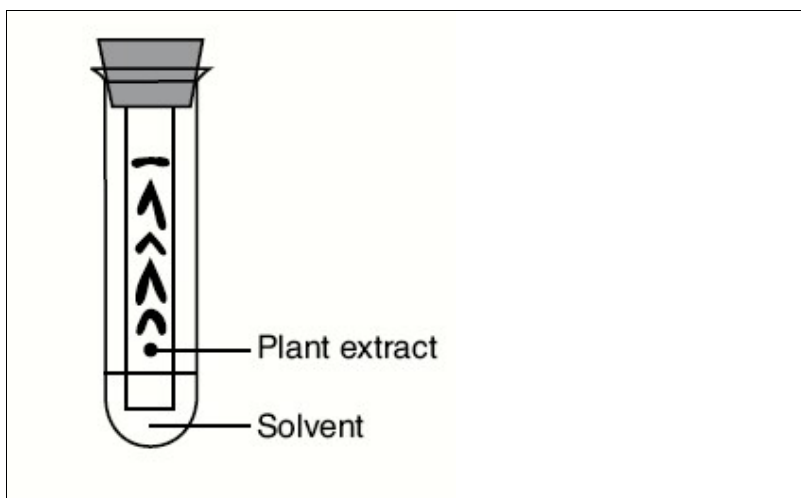
Data Base File Number: 142

Regents Date

Aug2008

72 8/13/2008 LABS

Answer 2



paper chromatography

732. The diagram shown represents a laboratory apparatus. This apparatus is used to

- (1) identify the molecular bases in DNA
- (2) detect chemical toxins in the air
- (3) stain specimens before observing them with a microscope
- (4) separate a mixture of plant pigments

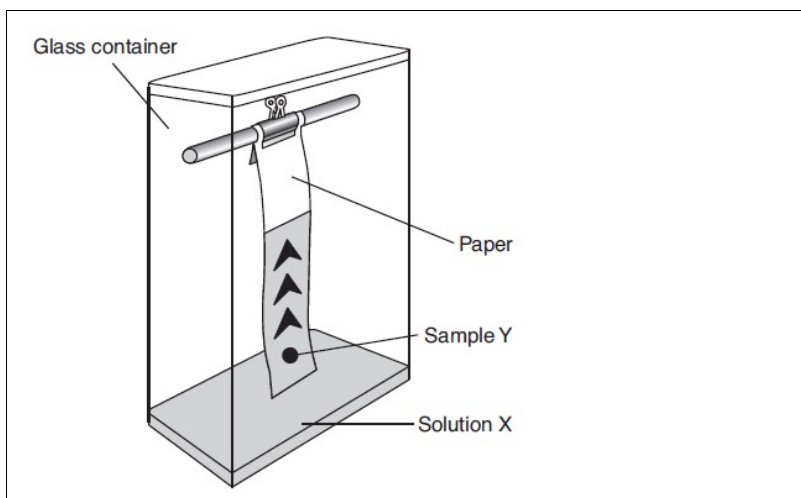
Data Base File Number: 227

Regents Date

Aug2009

66 8/13/2009 LABS

Answer 4



paper chromatography

733. A technique used to analyze pigments in spinach leaves is shown in the diagram. This technique is known as.

- (1) paper chromatography
- (2) gene manipulation
- (3) dissection
- (4) staining

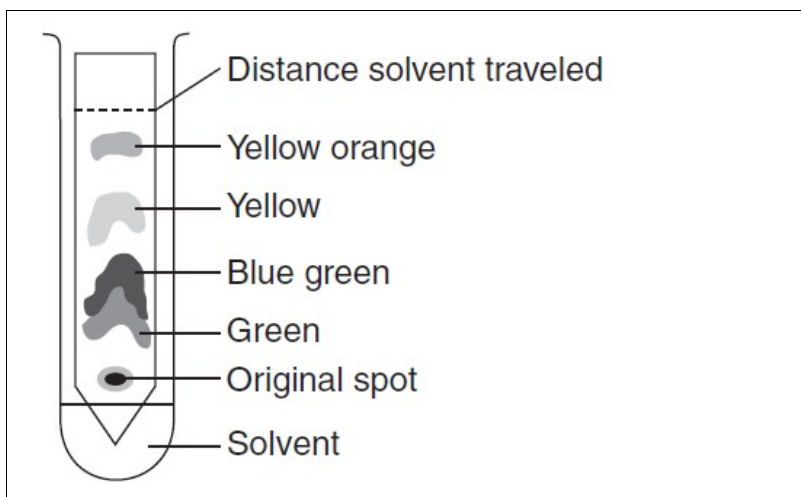
Data Base File Number: 298

Regents Date

Aug2010

67 8/18/2010 LABS

Answer 1



paper chromatography

734. The diagram shown represents the results of a laboratory procedure. This procedure is used to

- (1) separate molecules in a liquid mixture
- (2) determine the rate of photosynthesis in plants
- (3) detect glucose in a solution
- (4) examine the gene sequences of organisms

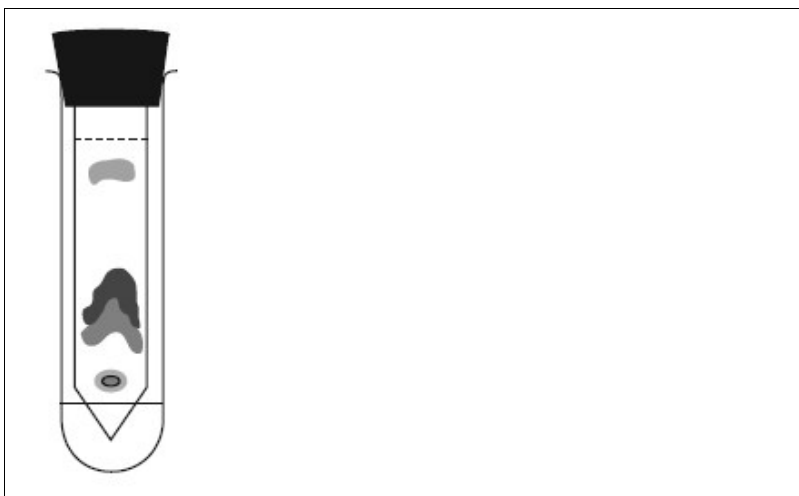
Data Base File Number: 426

Regents Date

June2012

74 6/19/2012 LAB1

Answer 1



paper chromatography

735. Base your answer to this question on the information given and on your knowledge of biology. Paper chromatography can be used to investigate evolutionary relationships. Leaves from a plant were ground and mixed with a solvent. The mixture of ground leaves and solvent was then filtered. Using a toothpick, twenty drops of the filtrate (material that passed through the filter) were placed at one spot on a strip of chromatography paper. This procedure was repeated using leaves from three other species of plants. A separate strip of chromatography paper was prepared for each plant species. Each of the four strips of chromatography paper was placed in a different beaker containing the same solvent for the same amount of time. One of the laboratory setups is shown in the diagram. How could a comparison of these resulting strips indicate evolutionary relationships?

- (1) The strips will not show any similar patterns of color.
- (2) The blue and yellow pigments will separate.
- (3) All four species of green plants will have exact patterns of color, since all the plant pigments are exactly the same.
- (4) The more similar the patterns of colors, the closer the relationships.

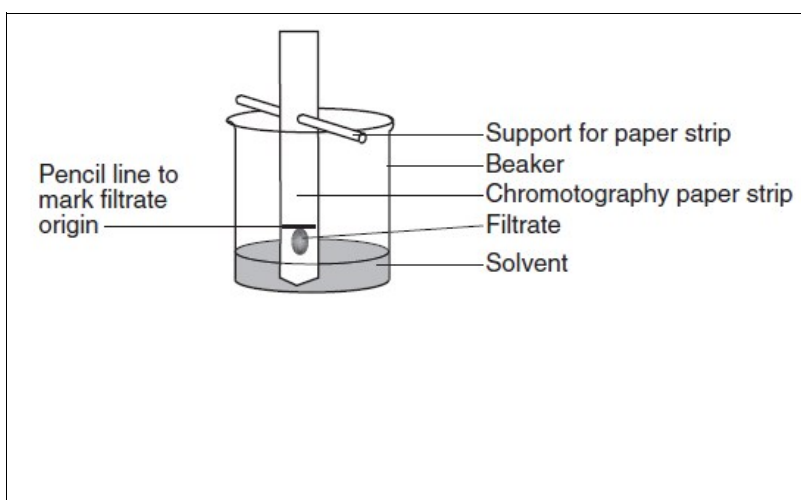
Data Base 601
File Number:

Regents Date

Aug2005

65 8/16/2005 LAB1

Answer 4



passive transport / diffusion

736. A laboratory setup using an artificial cell made from dialysis tubing is shown in the diagram. Which process would most likely be responsible for the movement of glucose from inside the artificial cell to the solution outside of the cell.

- (1) passive transport
- (2) active transport
- (3) cyclosis
- (4) respiration

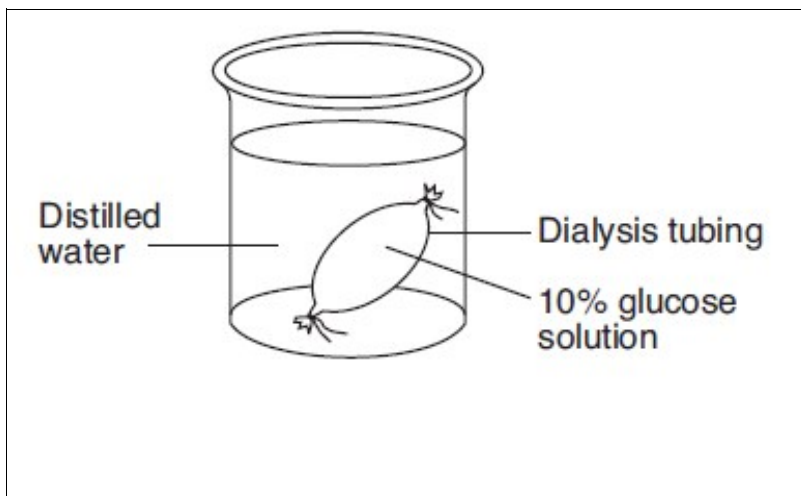
Data Base File Number: 273

Regents Date

June 2010

67 8/16/2010 LABS

Answer 1



pH level

737. Base your answers to this question on the information and data table below and on your knowledge of biology. The table shows data collected on the pH level of an Adirondack lake from 1980 to 1996. What happened to the pH level of the lake from 1980 to 1996?

- (1) The pH level of the lake dropped.
- (2) The pH level of the lake increased.
- (3) The pH level of the lake stayed the same.
- (4) There is insufficient data to support any conclusion.

Data Base File Number: 139

Regents Date

Aug 2008

50 8/13/2008 LABS

Answer 1

Year	pH Level
1980	6.7
1984	6.3
1986	6.4
1988	6.2
1990	5.9
1992	5.6
1994	5.4
1996	5.1

pH level

738. Base your answer to this question on the graph shown and on your knowledge of biology. The graph illustrates a single species of bacteria grown at various pH levels. The most likely reason there are no colonies in cultures of this species at pH 4 and at pH 10 is that

- (1) these bacteria could successfully compete with other species of bacteria at these pH values
- (2) there are more predators feeding on these bacteria at pH 4 and pH 10 than at other pH levels
- (3) at pH 4 and pH 10 the environment is too acidic or too basic for the bacteria to grow
- (4) fertilization cannot occur in these bacteria at pH 4 or pH 10

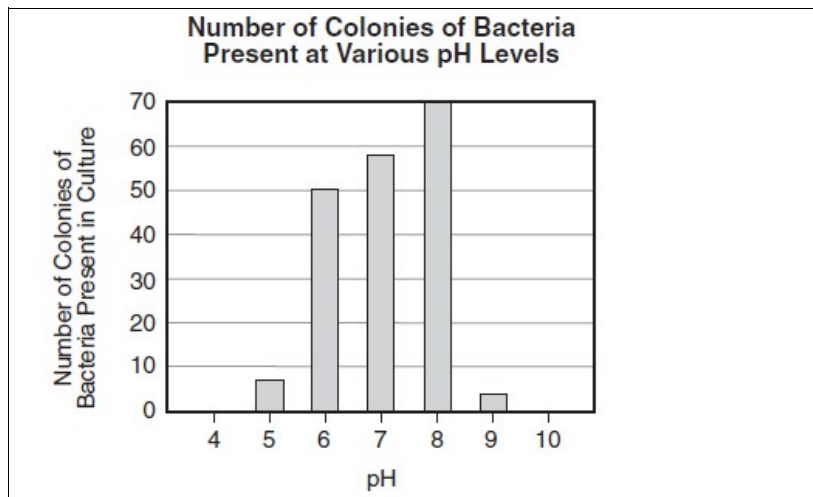
Data Base File Number: 740

Regents Date

June 2003

37 6/19/2003 S4K6

Answer 3



phagocytosis

739. Base your answer to this question on the diagram shown and your knowledge of biology. The diagram represents an ameba, a single-celled organism, carrying out an essential life process. This process represents a step in

- (1) asexual reproduction
- (2) heterotrophic nutrition
- (3) photosynthesis
- (4) diffusion

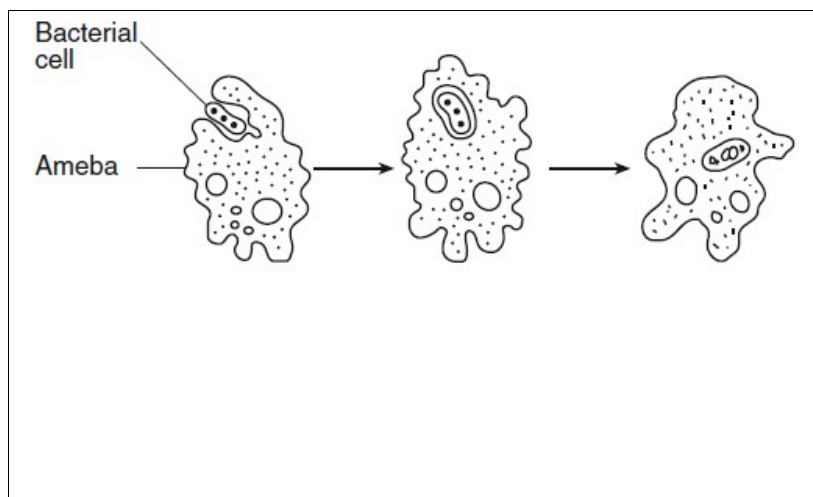
Data Base File Number: 615

Regents Date

Jan 2013

35 1/23/2013 S4K1

Answer 2



phagocytosis

740. The diagram below represents an event that occurs in the blood. Which statement best describes this event?

- (1) Cell A is a white blood cell releasing antigens to destroy bacteria.
- (2) Cell A is a cancer cell produced by the immune system and it is helping to prevent disease.
- (3) Cell A is a white blood cell engulfing disease-causing organisms.
- (4) Cell A is protecting bacteria so they can reproduce without being destroyed by predators.

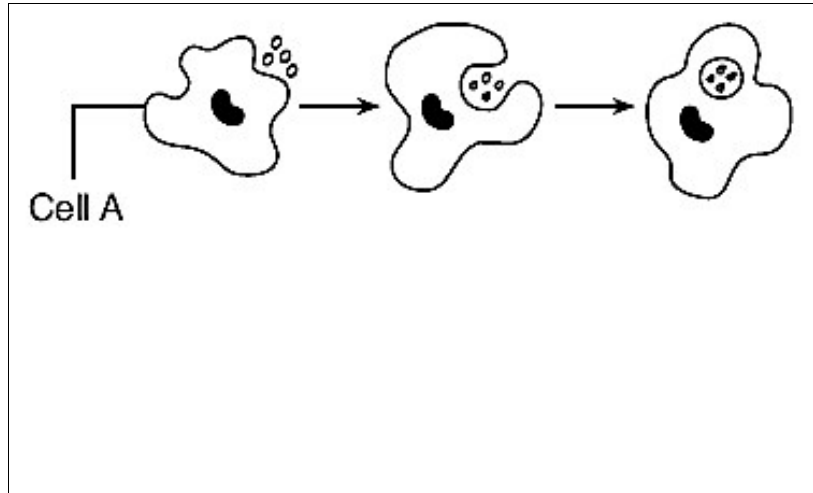
Data Base File Number: 96

Regents Date

June 2008

6/24/2008 S4K5

Answer 3



phagocytosis

741. Base your answer to this question on the diagram shown and your knowledge of biology. The diagram represents an ameba, a single-celled organism, carrying out an essential life process. This process is essential to the survival of the ameba because it

- (1) provides materials used in cellular respiration
- (2) removes pathogens from the environment
- (3) supplies the raw materials for photosynthesis
- (4) protects the organism during development

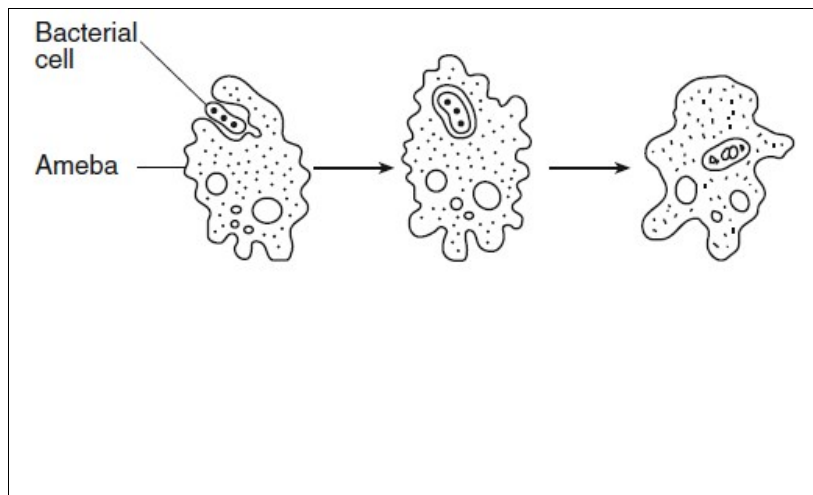
Data Base File Number: 616

Regents Date

Jan 2013

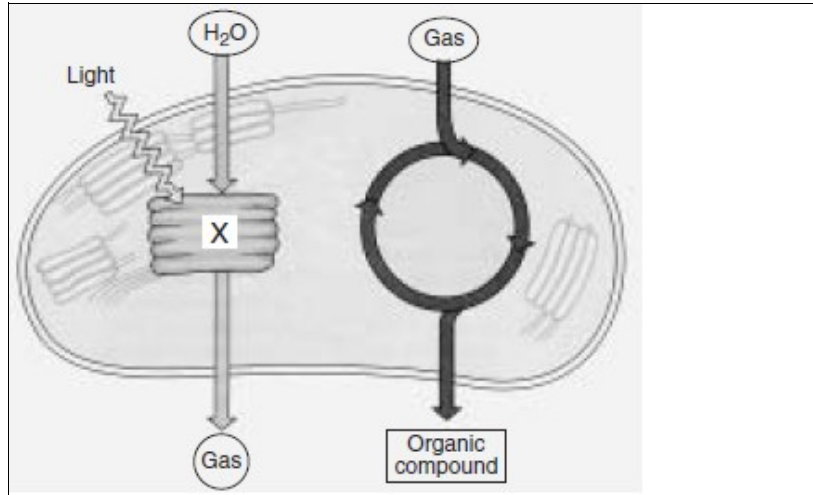
36 1/23/2013 S4K1

Answer 1



photosynthesis

742. The diagram shown represents part of a life process in a leaf chloroplast. If the process illustrated in the diagram is interrupted by a chemical at point X, there would be an immediate effect on the release of
- (1) chlorophyll
 - (2) nitrogen
 - (3) carbon dioxide
 - (4) oxygen



Data Base File Number: 808

Regents Date

June 2002

27 6/19/2002 S4K5

Answer 4

photosynthesis

743. A biological process that occurs in plants is represented in the diagram shown. Which row in the chart identifies the lettered substances in this process?
- (1) 1
 - (2) 2
 - (3) 3
 - (4) 4

$$\text{Water} + \text{A} \xrightarrow{\text{D}} \text{B} + \text{C}$$

Which row in the chart below identifies the lettered substances in this process?

Row	A	B	C	D
(1)	enzymes	oxygen	carbon dioxide	glucose
(2)	carbon dioxide	glucose	oxygen	enzymes
(3)	glucose	enzymes	oxygen	carbon dioxide
(4)	oxygen	glucose	carbon dioxide	enzymes

Data Base File Number: 323

Regents Date

Jan 2011

45 1/25/2011 S4K5

Answer 2

photosynthesis

744. The arrows in the diagram below represent the movement of materials. This movement of materials indicated by the arrows is most directly involved in the processes of

- (1) respiration and replication
- (2) photosynthesis and excretion
- (3) digestion and recycling
- (4) circulation and coordination

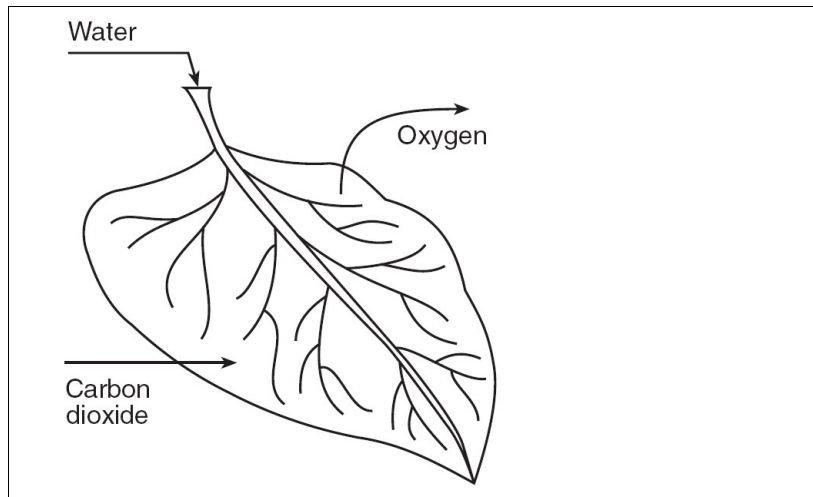
Data Base File Number: 342

Regents Date

June 2011

35 6/21/2011 S4K5

Answer 2



photosynthesis

745. The cell shown in the diagram is a green plant cell which produces oxygen. The biochemical process occurring in this cell that produces oxygen is

- (1) active transport
- (2) digestion
- (3) transpiration
- (4) photosynthesis

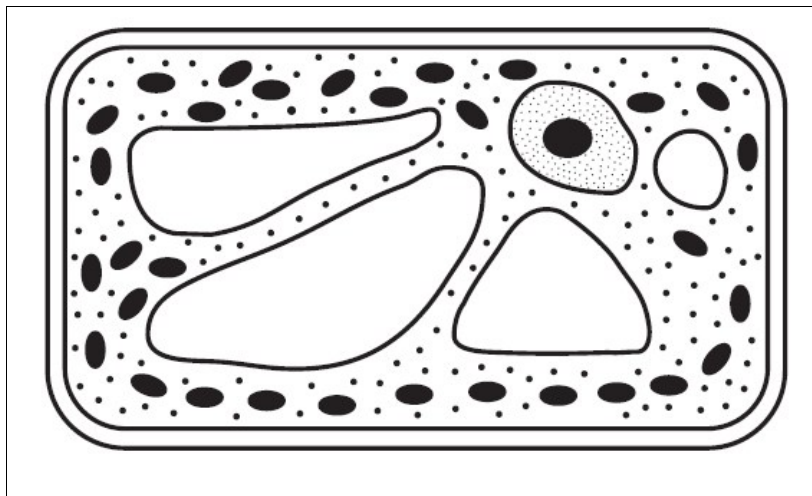
Data Base File Number: 888

Regents Date

June 2013

51 6/11/2013 S4K5

Answer 4



photosynthesis

746. Base your answer to this question on the information and diagram shown. An investigation was carried out using the two setups shown in the diagram. Other than the difference shown in the diagram, all other conditions were identical. State one possible hypothesis that could be tested using these setups.

- (1) The lily grows faster at 15 degrees C. than at 20 degrees C.
- (2) The lily grows faster under blue light.
- (3) The lily grows faster at 20 degrees C. than at 15 degrees C.
- (4) The lily grows faster under green-yellow light.

Data Base File Number: 702

Regents Date

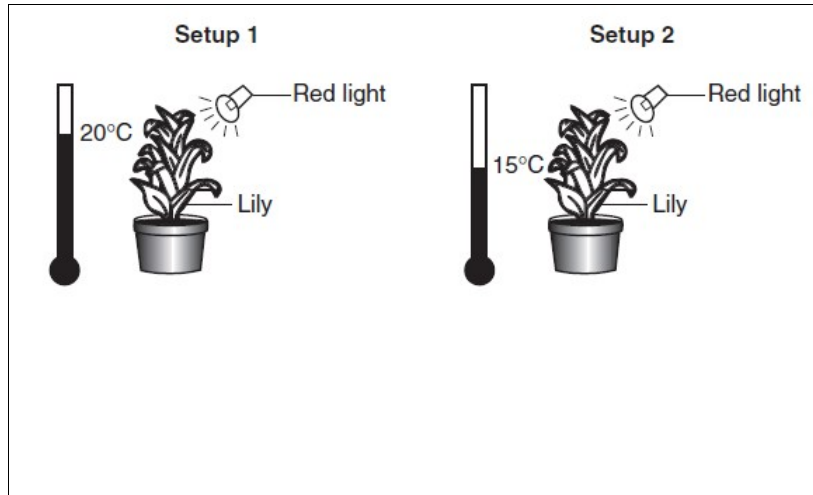
Aug2004

68

8/17/2004

LAB2

Answer 3



photosynthesis

747. The graph shows the results of an experiment in which a container of oxygen-using bacteria and strands of a green alga were exposed to light of different colors. Which statement best explains the results of this experiment?

- (1) The rate of photosynthesis is affected by variations in the light.
- (2) In all environments light is a vital resource.
- (3) The activities of bacteria and algae are not related.
- (4) Uneven numbers and types of species can upset ecosystem stability.

Data Base File Number: 532

Regents Date

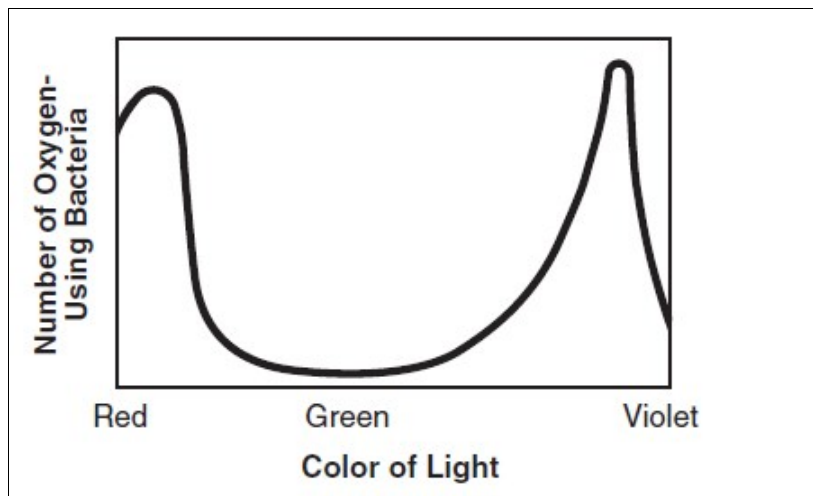
Jan2005

1

1/28/2005

S4K1

Answer 1



photosynthesis

748. The diagram shown represents events associated with a biochemical process that occurs in some organisms. Which statement concerning this process is correct?

- (1) The process represented is respiration and the primary source of energy for the process is the Sun
- (2) The process represented is photosynthesis and the primary source of energy for the process is the Sun.
- (3) This process converts energy in organic compounds into solar energy which is released into the atmosphere.
- (4) This process uses solar energy to convert oxygen into carbon dioxide.

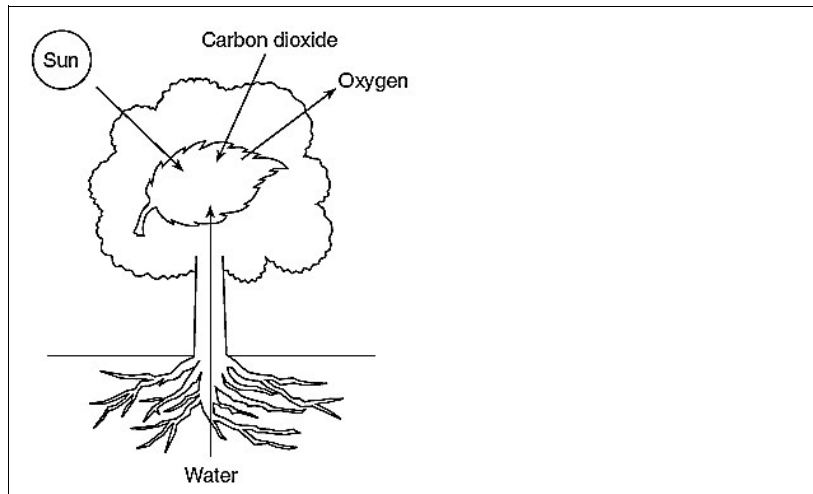
Data Base File Number: 28

Regents Date

June2007

24 6/20/2007 S4K5

Answer 2



photosynthesis

749. An experiment was set up to test the effect of light intensity on the rate of photosynthesis, as shown in the diagram. Data were collected by counting gas bubbles released in a 5-minute period when the light source was placed at various distances from the experimental setup. Which distance, in cm., would most likely produce the most bubbles in a 5-minute period?

- (1) 15
- (2) 23
- (3) 30
- (4) 45

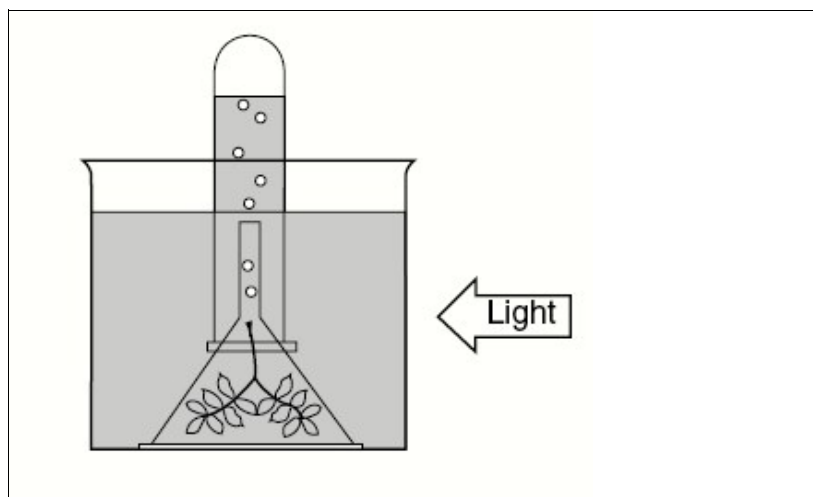
Data Base File Number: 156

Regents Date

Jan2009

31 1/27/2009 S1K3

Answer 1



photosynthesis

750. Base your answer to this question on the two different cells shown in the diagram. Only cell A produces substance X. Both cells A and B use substance X. What is substance X?

- (1) oxygen
- (2) proteins
- (3) fatty acids
- (4) alcohol

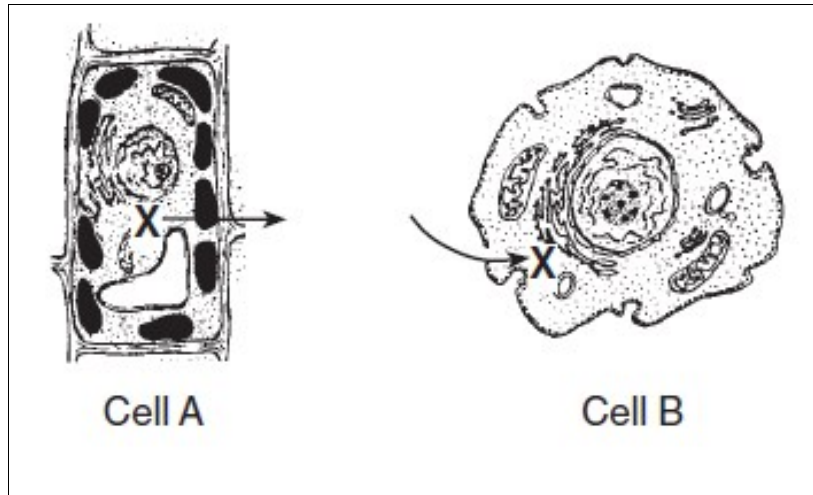
Data Base File Number: 694

Regents Date

Aug2004

37 8/17/2004 S4K1

Answer 1



photosynthesis

751. The diagram shown represents the setup for an experiment. Two black paper discs are opposite each other on both sides of each of two leaves. This experimental setup would most likely be used to show that

- (1) glucose is necessary for photosynthesis
- (2) protein is a product of photosynthesis
- (3) light is necessary for photosynthesis
- (4) carbon dioxide is a product of photosynthesis

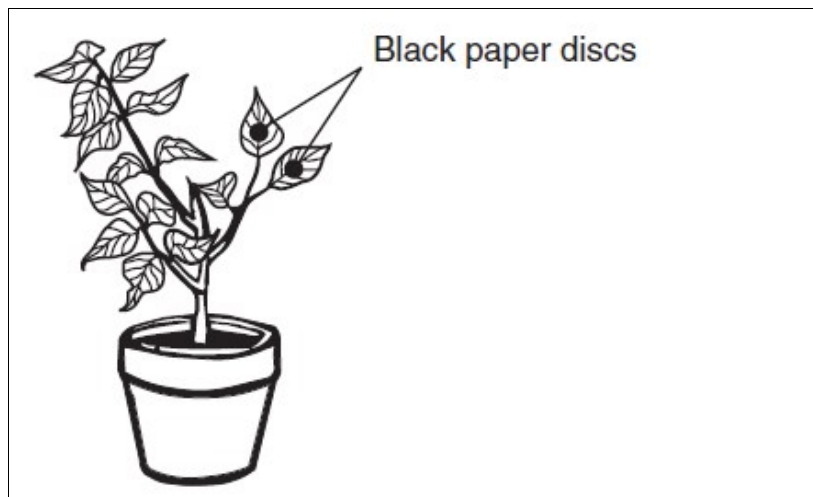
Data Base File Number: 461

Regents Date

Jan2006

32 1/27/2006 S4K5

Answer 3



photosynthesis

752. The diagram shown represents a single-celled organism known as "Euglena". This organism lives in fresh water and chloroplasts are present. Which process can this organism carry out to obtain food?

- (1) ingestion
- (2) digestion
- (3) photosynthesis
- (4) respiration

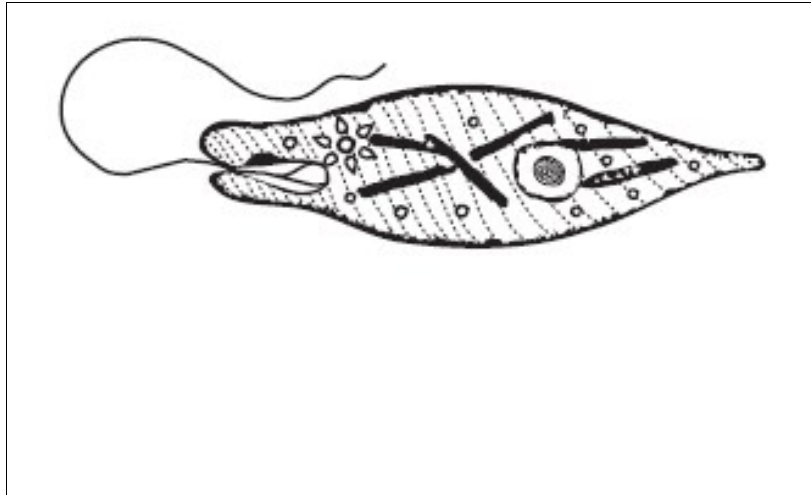
Data Base File Number: 772

Regents Date

Aug2003

53 8/13/2003 S4K1

Answer 3



photosynthesis

753. Which set of terms best identifies the letters in the diagram below?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

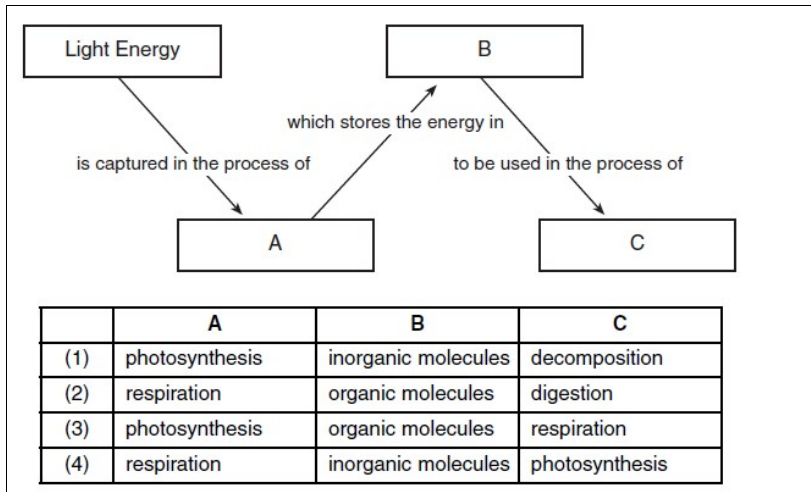
Data Base File Number: 485

Regents Date

June2006

27 6/21/2006 S4K5

Answer 3



photosynthesis

754. The green aquatic plant represented in the diagram shown was exposed to light for several hours. Which gas would most likely be found in the greatest amount in the bubbles?

- (1) oxygen
- (2) nitrogen
- (3) ozone
- (4) carbon dioxide

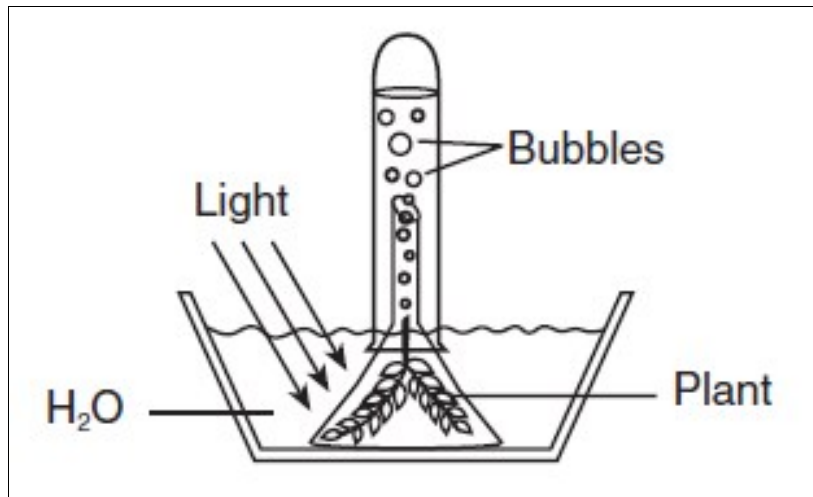
Data Base File Number: 559

Regents Date

June 2005

22 6/22/2005 S4K5

Answer 1



photosynthesis

755. In 1883, Thomas Engelmann, a German botanist, exposed a strand of algae to different wavelengths of light. Engelmann used bacteria that concentrate near an oxygen source to determine which sections of the algae were releasing the most O₂. The results are shown in the graph. Which statement is a valid inference based on this information?

- (1) Oxygen production decreases as the wavelength of light increases from 550 to 650 nm.
- (2) Respiration rate in the bacteria is greatest at 550 nm.
- (3) Photosynthetic rate in the algae is greatest in blue light.
- (4) The algae absorb the greatest amount of oxygen in red light.

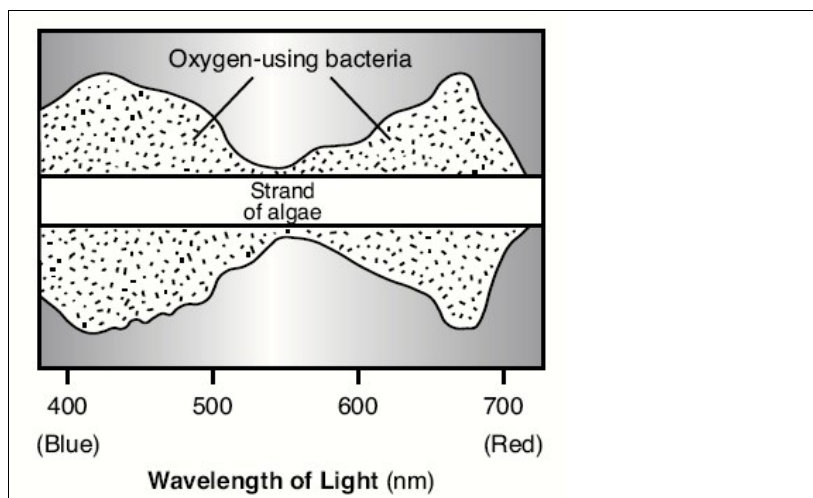
Data Base File Number: 126

Regents Date

Aug 2008

31 8/13/2008 S1K3

Answer 3



photosynthesis

756. Base your answer to this question on the information and graph shown and on your knowledge of biology. A student conducts an experiment to determine how the amount of light affects the rate of oxygen production in a plant. The graph represents the rate of oxygen produced for one trial, X, in the experiment. By the end of the experiment, the plant had not reached maximum oxygen production. If a student supplies more light than was received during trial X, a bar placed on the graph to represent the results would most likely be

- (1) shorter than bar X and placed to the left of bar X
- (2) shorter than bar X and placed to the right of bar X
- (3) taller than bar X and placed to the left of bar X
- (4) taller than bar X and placed to the right of bar X

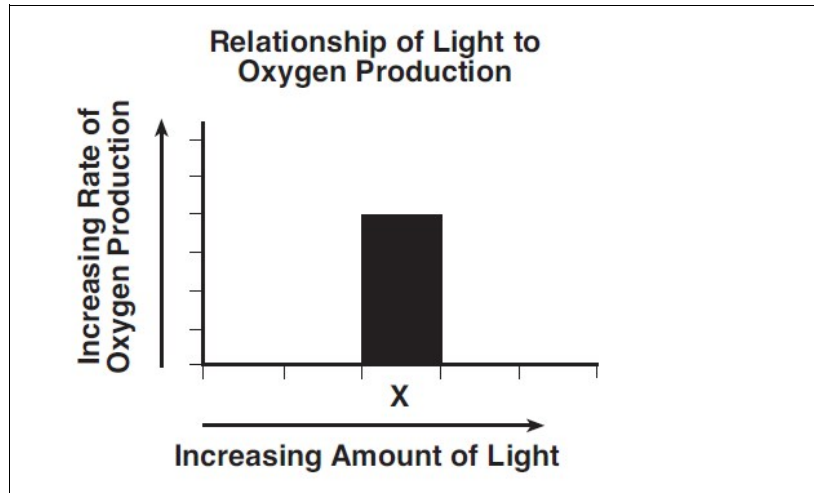
Data Base File Number: 887

Regents Date

June 2013

50 6/11/2013 S1K3

Answer 4



photosynthesis

757. An experimental setup is shown in the diagram. Which hypothesis would most likely be tested using this setup?

- (1) Light is needed for the process of reproduction.
- (2) Glucose is not synthesized by plants in the dark.
- (3) Protein synthesis takes place in leaves.
- (4) Plants need fertilizers for proper growth.

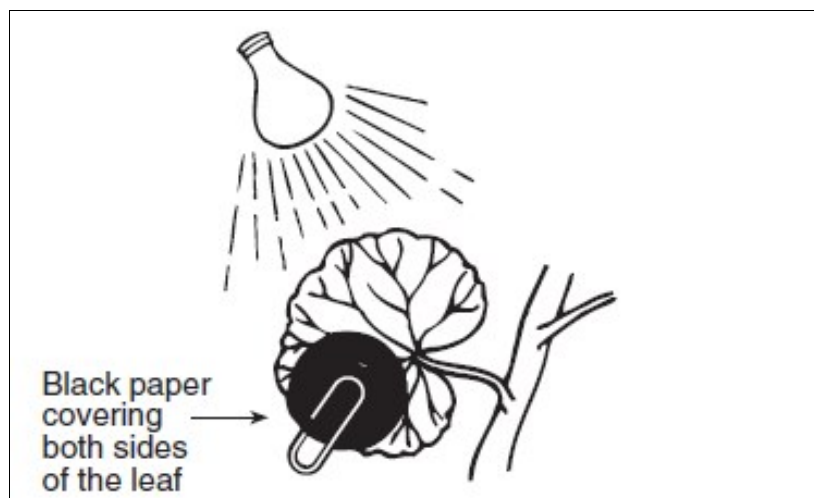
Data Base File Number: 564

Regents Date

June 2005

31 6/22/2005 S1K2

Answer 2



photosynthesis

758. Base your answer to this question on the information given and on your knowledge of biology. A small green plant was placed in a flask as shown AT THE LEFT in the diagram. A sensor that measures the CO₂ content of the air in the flask was inserted, and then the flask was sealed with a rubber stopper. The other end of the sensor was connected to a computer to monitor and record CO₂ levels in the flask over a period of time. For part of the time the flask was placed in bright light and for part of the time it was placed in total darkness. The graph AT THE RIGHT shows data that were recorded by the sensor over a period of time. Which condition most likely produced the effect on CO₂ level over the first 23 minutes?

- (1) The light was on for the entire 23 minutes.
- (2) The light was off for the entire 23 minutes.
- (3) The light was off at the start and turned on after 10 minutes.
- (4) The light could have been either on or off because it would have had no effect on the CO₂ level.

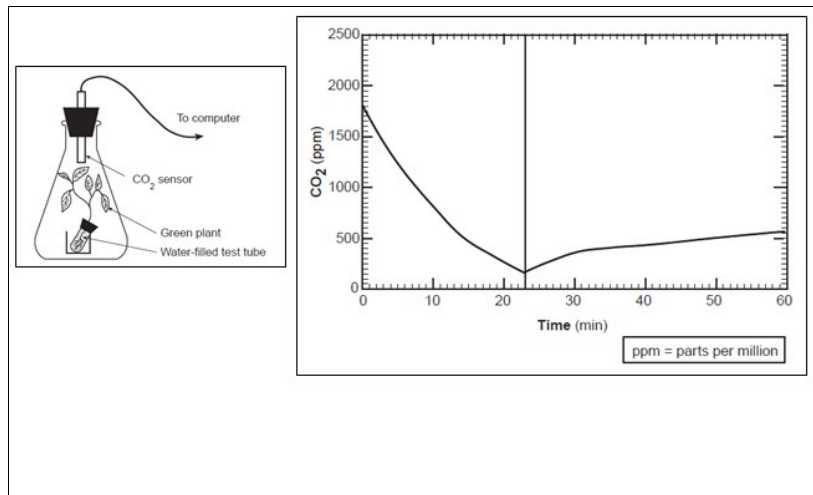
Data Base File Number: 858

Regents Date

June 2001

61 6/15/2001 S1K3

Answer 1



photosynthesis

759. The diagram shown represents a process that occurs in a structure of a specialized cell. Which row in the chart correctly identifies the letters in the diagram?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 243

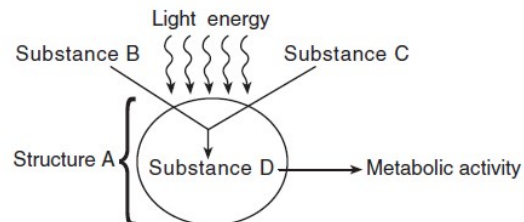
Regents Date

Jan 2010

42 1/26/2010 S4K5

Answer 4

The diagram below represents a process that occurs in a structure of a specialized cell.



Which row in the chart correctly identifies the letters in the diagram?

Row	A	B	C	D
(1)	ribosome	oxygen	carbon dioxide	water
(2)	mitochondrion	water	oxygen	protein
(3)	nucleus	nitrogen	carbon	starch
(4)	chloroplast	carbon dioxide	water	glucose

photosynthesis

760. The equation shown represents a summary of a biological process. This process is completed in

- (1) mitochondria
- (2) ribosomes
- (3) cell membranes
- (4) chloroplasts

Data Base File Number: 712

Regents Date

Jan2003

20 1/30/2003 S4K5

Answer 4

carbon dioxide + water → glucose + water + oxygen

photosynthesis

761. The diagram shown represents a process in certain organisms. Which process is involved?

- (1) respiration
- (2) photosynthesis
- (3) active transport
- (4) excretion

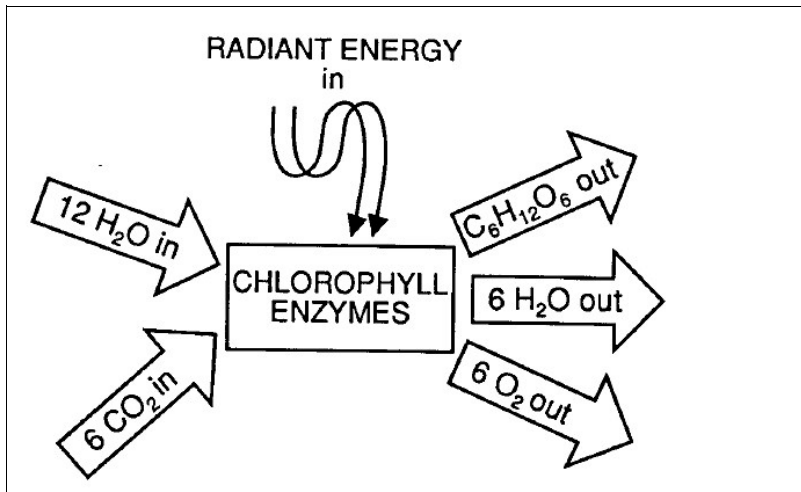
Data Base File Number: 24

Regents Date

UNKNOWN

RBS 9/16/2007 S4K5

Answer 2



photosynthesis

762. The diagram shown represents a biological process. Which set of molecules is best represented by letters A and B?

- (1) A: oxygen and water B: glucose
- (2) A: glucose B: carbon dioxide and water
- (3) A: carbon dioxide and water B: glucose
- (4) A: glucose B: oxygen and water

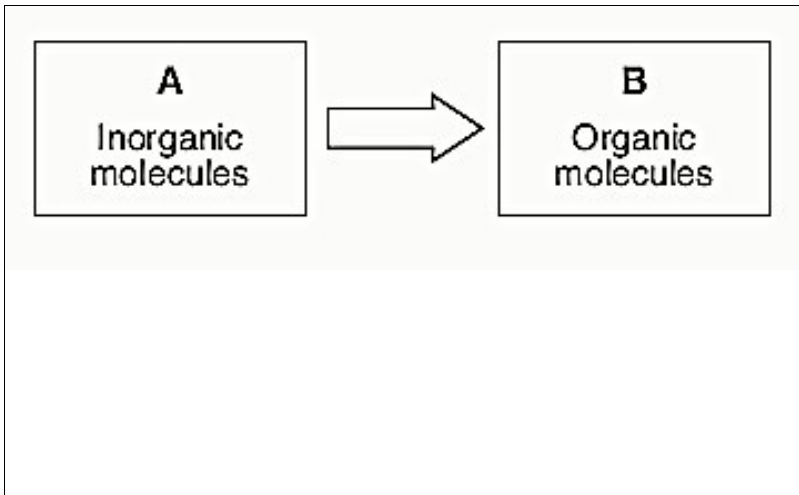
Data Base File Number: 70

Regents Date

Jan2008

30 1/25/2008 S4K5

Answer 3



photosynthesis

763. Base your answer to this question on the information and diagram shown and on your knowledge of biology. The diagram represents a system in a space station that includes a tank containing algae. An astronaut from a spaceship boards the space station. What process is being controlled in the setup shown in the diagram?

- (1) photosynthesis
- (2) digestion
- (3) dehydration synthesis
- (4) phosphorylation

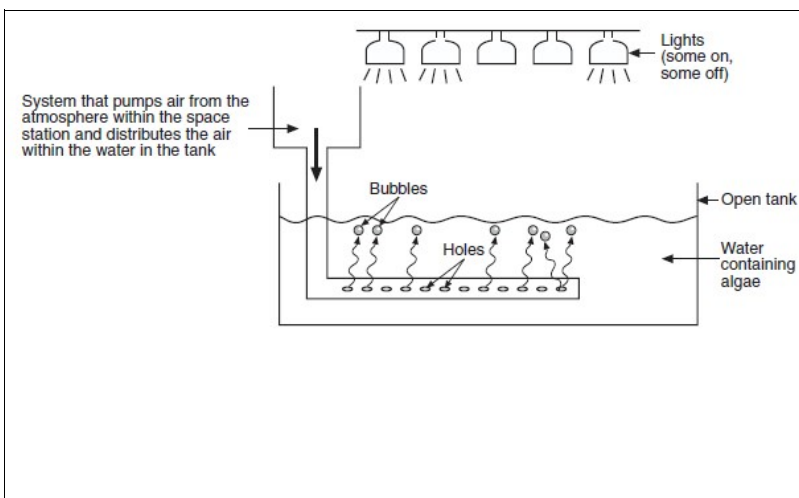
Data Base File Number: 727

Regents Date

Jan2003

71 1/30/2003 S1K2

Answer 1



photosynthesis

764. Base your answers to this question on the information and diagram shown and on your knowledge of biology. A small water plant (elodea) was placed in bright sunlight for five hours as shown in the diagram. Bubbles of oxygen gas were observed being released from the plant. Since oxygen gas is being released, it can be inferred that the plant is

- (1) producing glucose
 (2) making protein
 (3) releasing energy from water
 (4) carrying on active transport

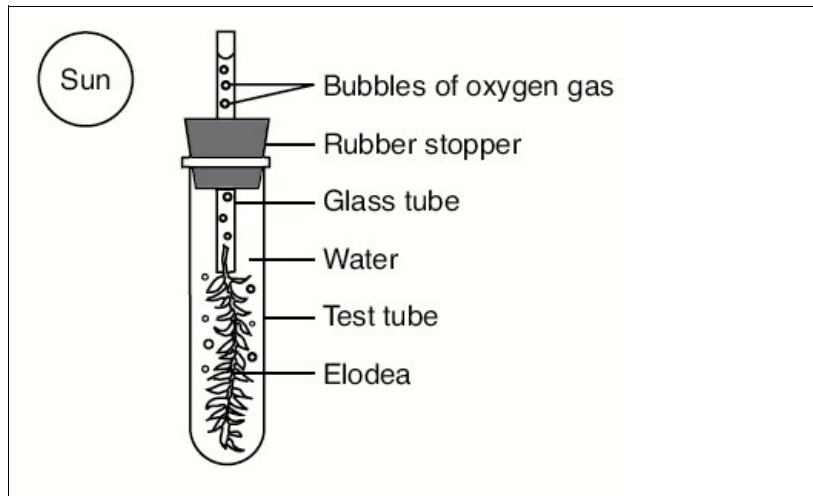
Data Base File Number: 136

Regents Date

Aug2008

41 8/13/2008 S4K5

Answer 1



photosynthesis

765. As the depth of the ocean increases, the amount of light that penetrates to that depth decreases. At about 200 meters, little, if any, light is present. The graph shown illustrates the population size of four different species at different water depths. Which species most likely performs photosynthesis?

- (1) A
 (2) B
 (3) C
 (4) D

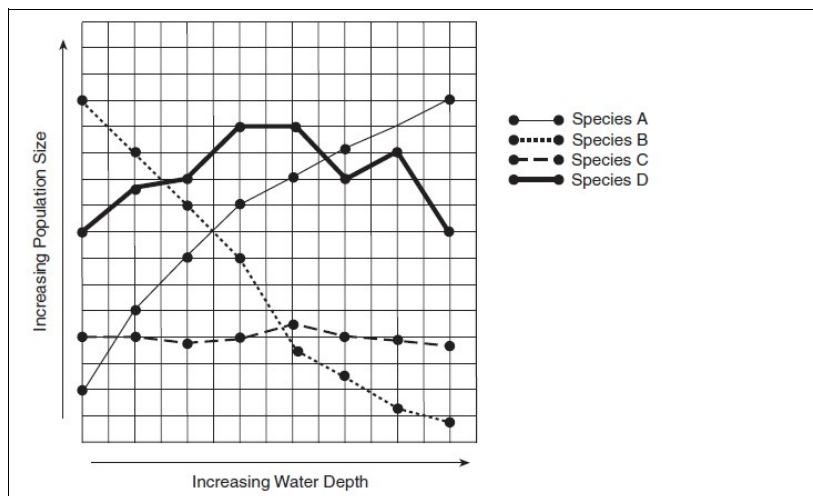
Data Base File Number: 717

Regents Date

Jan2003

36 1/30/2003 S1K3

Answer 2



photosynthesis

766. Base your answers to this question on the information and diagram shown and on your knowledge of biology. A small water plant (elodea) was placed in bright sunlight for five hours as shown in the diagram. Bubbles of oxygen gas were observed being released from the plant. What substance did the plant most likely absorb from the water for the process that produces the oxygen gas?

- (1) dissolved nitrogen
- (2) carbon dioxide
- (3) an enzyme
- (4) a hormone

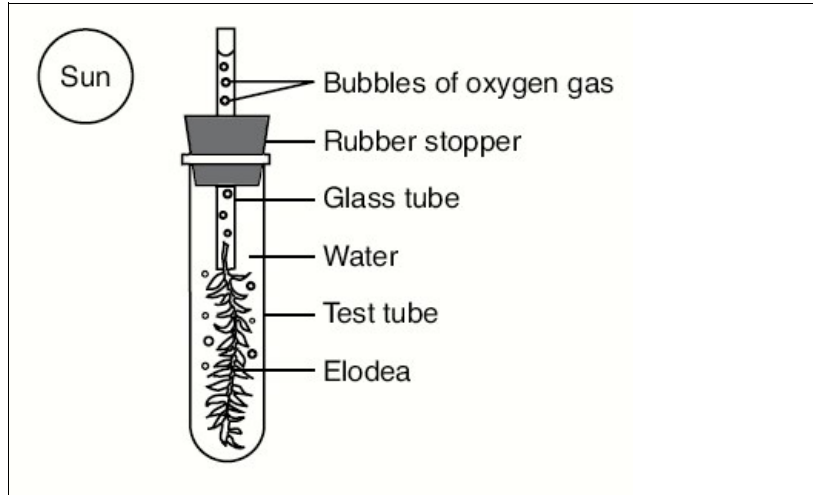
Data Base File Number: 137

Regents Date

Aug2008

42 8/13/2008 S4K5

Answer 2



photosynthesis

767. Which phrase, if placed in box X, would correctly complete the flowchart shown?

- (1) Increased use of starch in root cells
- (2) Increased concentration of glucose in leaf cells
- (3) Decreased ATP in root cells
- (4) Decreased concentration of oxygen in leaf cells

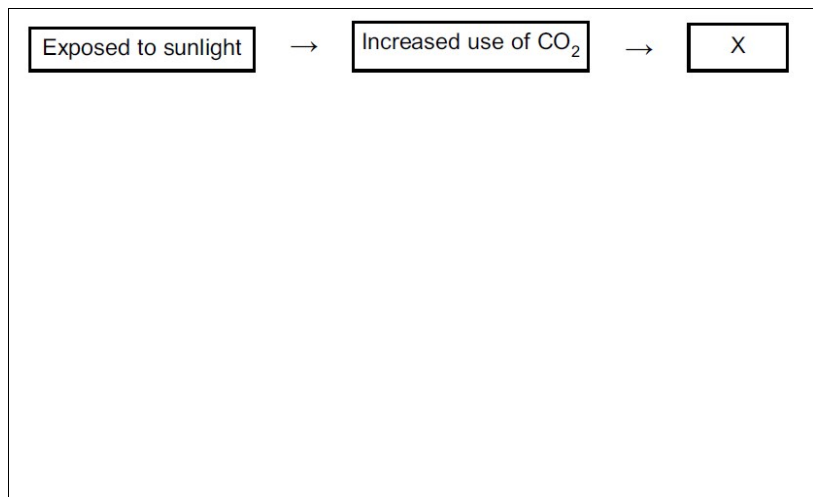
Data Base File Number: 278

Regents Date

Aug2010

11 8/18/2010 S4K5

Answer 2



photosynthetic microbes

768. Base your answer to this question on the information and data in the table and on your knowledge of biology. A student studied the location of single-celled photosynthetic organisms in a lake for a period of several weeks. The depth at which these organisms were found at different times of the day varied greatly. Some of the data collected are shown in the table. A valid inference based on these data is that

- (1) most photosynthetic organisms live below a depth of 150 centimeters
- (2) oxygen production increases as photosynthetic organisms move deeper into the lake.
- (3) photosynthetic organisms respond to changing light levels
- (4) photosynthetic organisms move up and down to increase their rate of carbon dioxide production

Data Base File Number: 15

Regents Date

Aug2007

34 8/16/2007 S4K5

Answer 3

Light Conditions at Different Times of the Day	Average Depth of Photosynthetic Organisms (cm)
full light	150
moderate light	15
no light	10

placenta

769. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents the human female reproductive system. The placenta forms from the combination of fetal tissue and tissue from structure

- (1) A
- (2) B
- (3) C
- (4) D

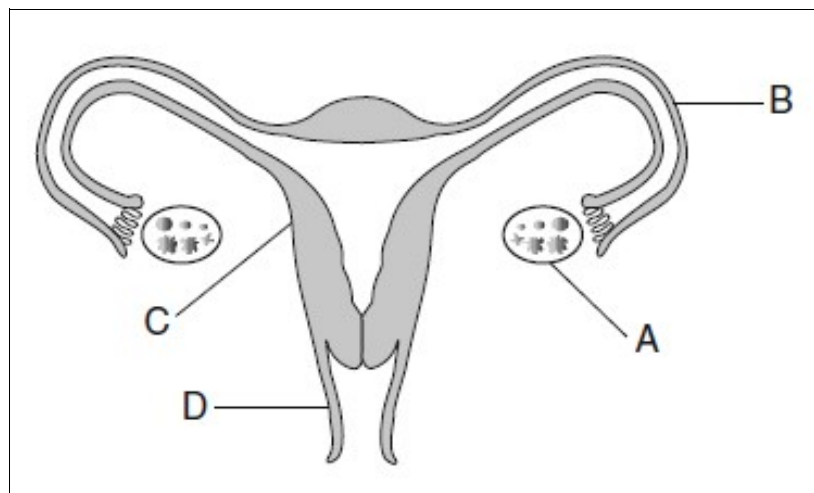
Data Base File Number: 608

Regents Date

Jan2013

11 1/23/2013 S4K4

Answer 3



placenta

770. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram shows part of a human female reproductive system. Identify the structure labeled A.

- (1) oviduct
- (2) placentas
- (3) uterus
- (4) amnion

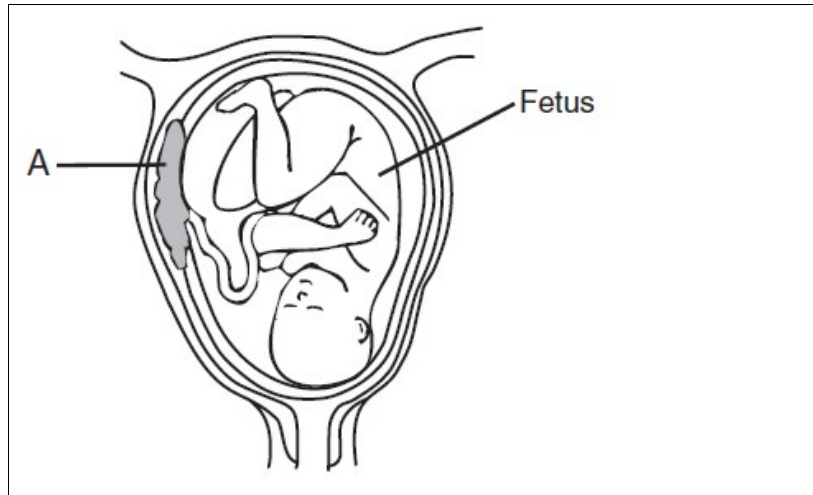
Data Base File Number: 498

Regents Date

June 2006

58 6/21/2006 S4K4

Answer 2



plant cell

771. Which cell is most likely a plant cell?

- (1) cell 1
- (2) cell 2
- (3) cell 1 and cell 2
- (4) No cells are plant cells

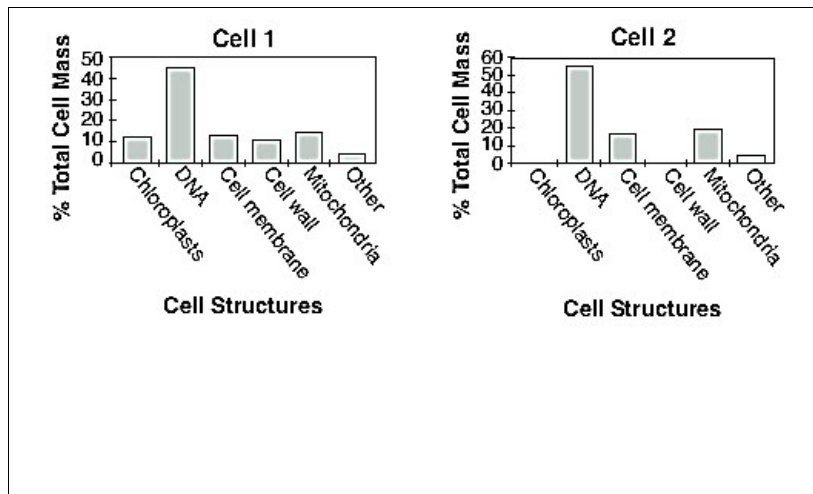
Data Base File Number: 80

Regents Date

Jan 2008

50 1/25/2008 S4K1

Answer 1



plant cell

772. A student examines the diagram of a plant cell as shown. ONE part of the plant cell that would NOT be found in an animal is

- (1) the cell wall
- (2) the central vacuole
- (3) the chloroplasts
- (4) all of the above choices are correct

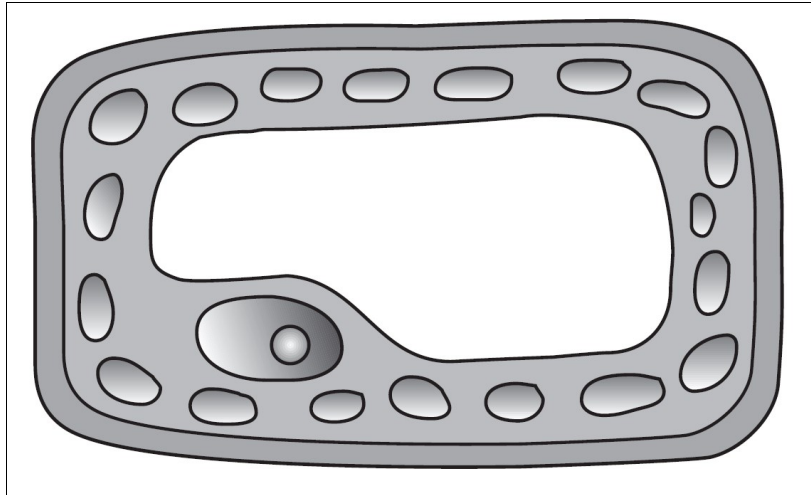
Data Base File Number: 346

Regents Date

June 2011

46 6/21/2011 S4K1

Answer 4



plasmolysis

773. A student prepared a wet-mount slide of some red onion cells and then added some salt water to the slide. The student observed the slide using a compound light microscope. Diagram A is typical of what the student observed after adding salt water. What would be the appearance of the cell in diagram B if the cell were then rinsed with distilled water for several minutes?

- (1) The shaded area in B would be the same size as the shaded area in A.
- (2) The shaded area in B would be larger than the shaded area in A.
- (3) There would be no shaded area in B.
- (4) Cell B would die.

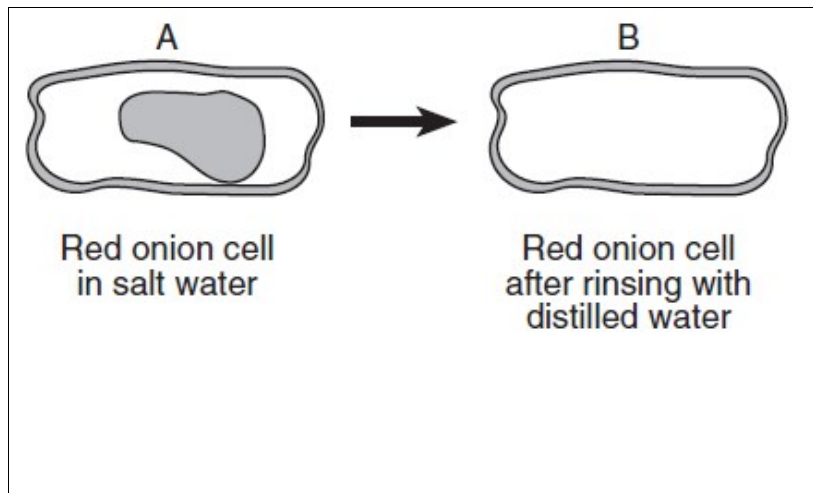
Data Base File Number: 579

Regents Date

June 2005

73 6/22/2005 LAB5

Answer 2



plasmolysis

774. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents a cell and its changes as a result of two laboratory procedures, A and B. In procedure A, a 2% salt solution is added to the cell. In procedure "B", distilled water is added to the cell. What is the name of process A?

- (1) plasmolysis
- (2) plasmoptysis
- (3) electrophoresis
- (4) chromatography

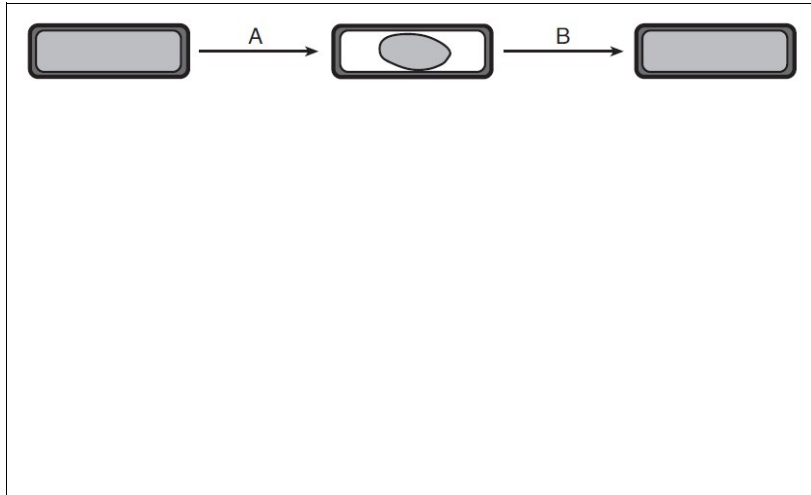
Data Base File Number: 895

Regents Date

June2013

79 6/11/2013 LAB5

Answer 1



plasmolysis

775. Cell (1) in the diagram shown represents a plant cell in tap water as seen with a compound light microscope. Which diagram best represents the appearance of the cell after it has been placed in a 15% salt solution for two minutes?

- (1) (1)
- (2) (2)
- (3) (3)
- (4) (4)

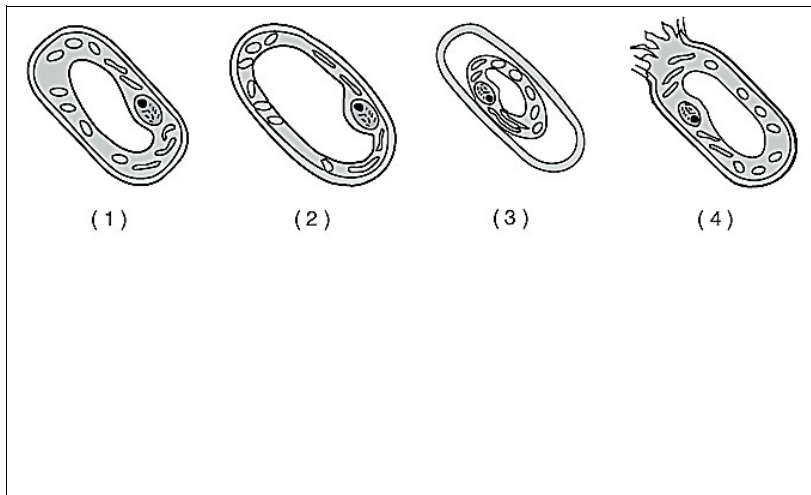
Data Base File Number: 116

Regents Date

June2008

80 6/24/2008 LABS

Answer 3



pollination / insect

776. The diagram below represents a species of bee that helps one type of orchid plant reproduce by carrying pollen on structure X from one orchid flower to another. Pollination by this species of bee is the only way the orchid can reproduce. If this bee species dies out, this orchid species would most likely

- (1) cease to exist
- (2) find another animal to carry the pollen
- (3) find another animal to carry the pollen
- (4) develop another way to reproduce

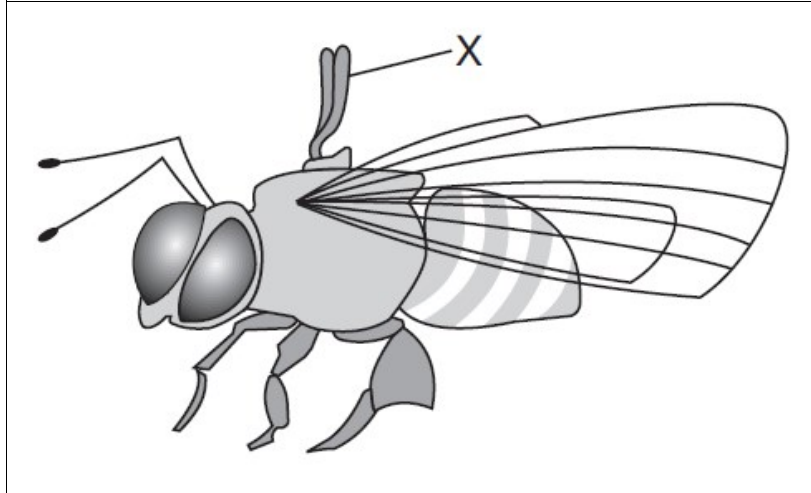
Data Base File Number: 215

Regents Date

Aug2009

33 8/13/2009 S4K6

Answer 1



pollution / air

777. NOTE: ROTATE your paper to the LEFT to view the MAP. The map shows the movement of some air pollution across part of the United States. Which statement is a correct inference that can be drawn from this information?

- (1) Illinois produces more air pollution than the other states shown.
- (2) The air pollution problem in Baltimore is increased by the addition of pollution from other areas.
- (3) There are no air pollution problems in southern states.
- (4) The air pollution problems in Virginia clear up quickly as the air moves toward the sea.

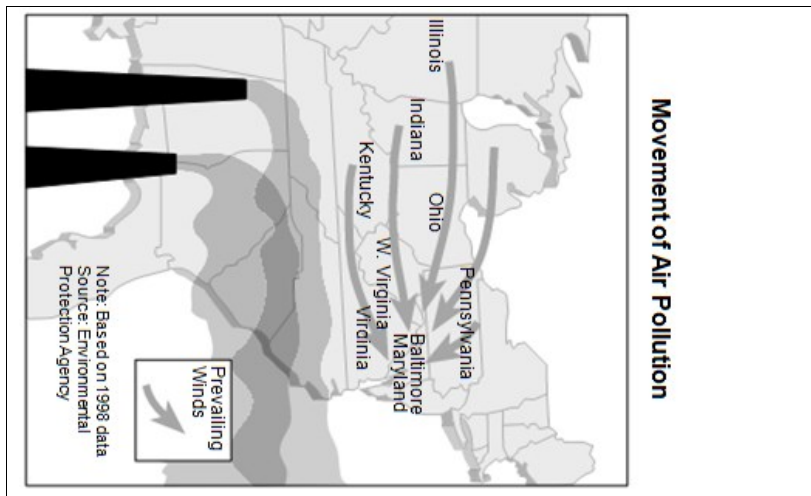
Data Base File Number: 739

Regents Date

June2003

36 6/19/2003 S1K3

Answer 2



population

778. Base your answer to question 36 on the information given in the question and on your knowledge of biology. The information came from; Source: "USA Today, 12/28/05 ." " Alaska: Anchorage -- Birders noted a sharp increase in European starlings in the 2005 Anchorage Christmas Bird Count. The sometimes aggressive species is relatively new to Alaska. Only three starlings were spotted during the 1995 Christmas bird count. In 2004, there were 35 birds. In the year 2005, birders counted 156." Which graph best represents the change in the number of starlings seen in the Anchorage area?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

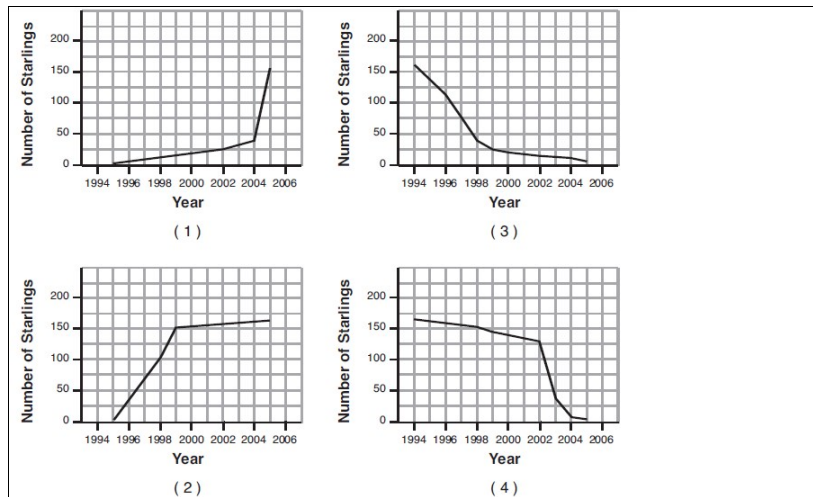
Data Base File Number: 218

Regents Date

Aug2009

36 8/13/2009 S1K3

Answer 1



population

779. The graph shows the growth of a population of coyotes in a wilderness area. A possible cause for the population decrease at X is

- (1) disease
- (2) harsh winter
- (3) food supply decreased
- (4) any of the above could be a possible cause for the coyote population to decrease

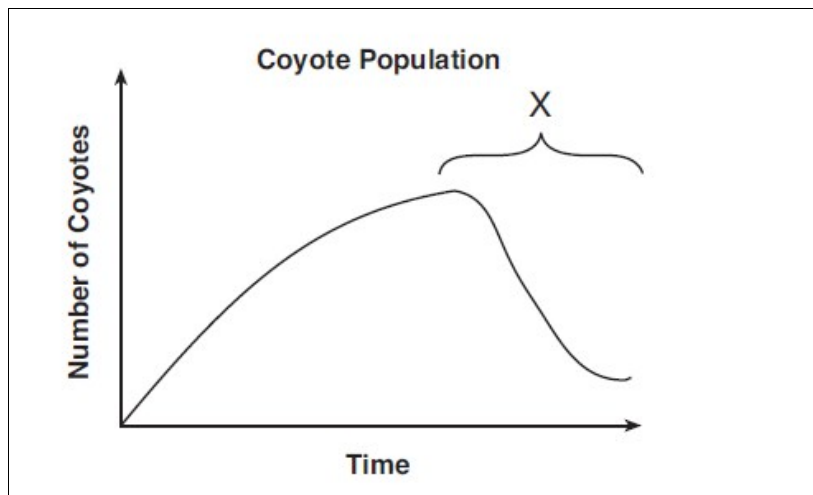
Data Base File Number: 270

Regents Date

June2010

54 6/16/2010 S4K1

Answer 4



population / carrying capacity

780. Changes in a deer population are shown in the graph. Which statement best explains section X?

- (1) The population has reached the carrying capacity of its environment
- (2) Energy is used for interbreeding between members of different species.
- (3) A predator recycles the remains of dead organisms.
- (4) Competition does not occur between members of different species in the same habitat.

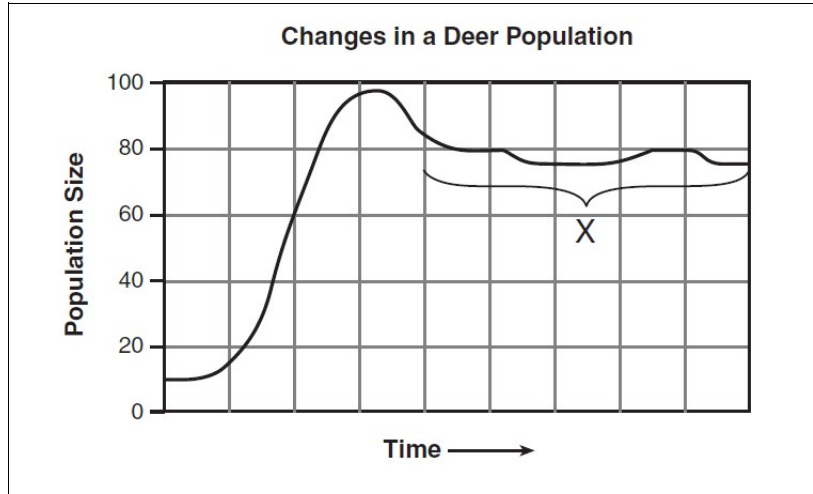
Data Base File Number: 319

Regents Date

Jan2011

40 1/25/2011 S4K6

Answer 1



population / environment

781. The graph below shows the changes in the size of a fish population over a period of time. The dashed line on the graph represents the

- (1) carrying capacity of the environment
- (2) life span of the species
- (3) level at which extinction is reached
- (4) level of maximum biodiversity of the species

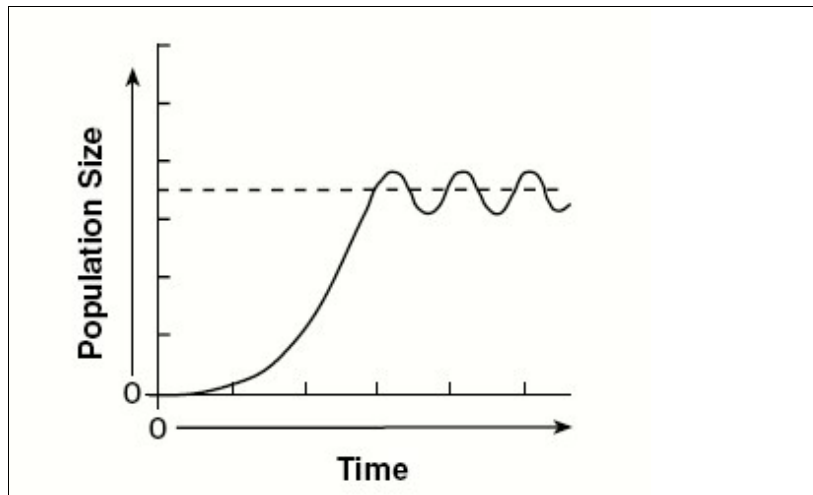
Data Base File Number: 162

Regents Date

Jan2009

42 1/27/2009 S4K6

Answer 1



population equilibrium

782. The graph shown indicates the size of a fish population over a period of time. The section of the graph labeled A represents

- (1) biodiversity within the species
- (2) nutritional relationships of the species
- (3) a population becoming extinct
- (4) a population at equilibrium

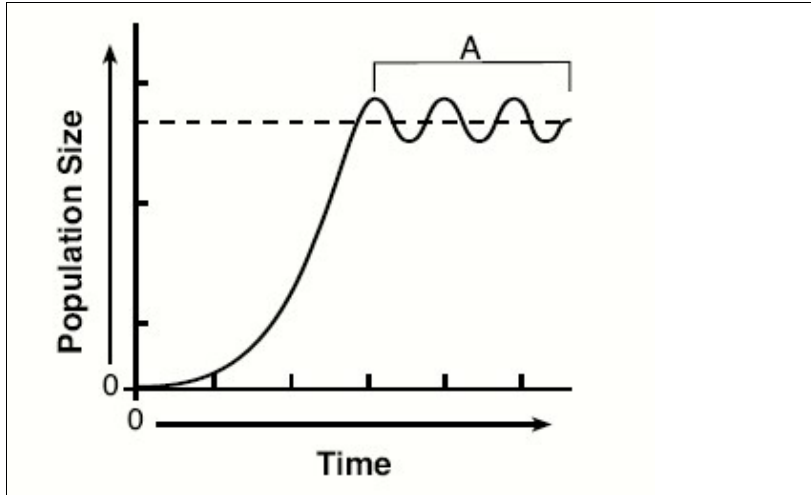
Data Base File Number: 129

Regents Date

Aug2008

34 8/13/2008 S4K1

Answer 4



population growth

783. Which graph correctly represents the pattern of human population growth over the past 5000 years?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

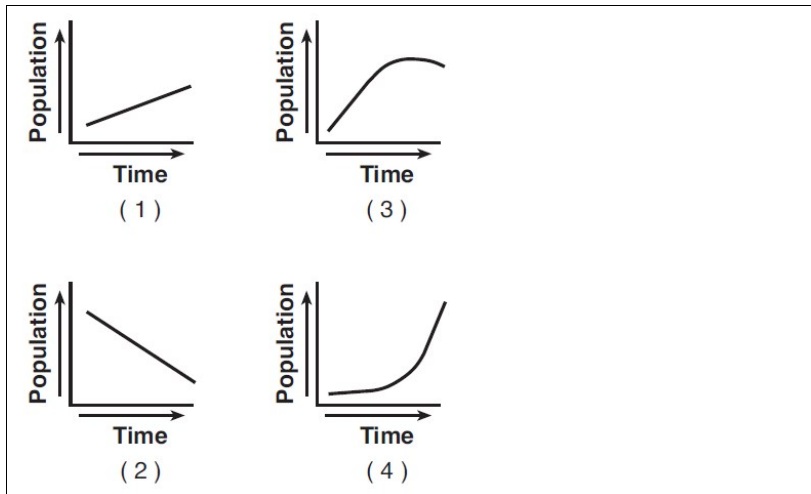
Data Base File Number: 874

Regents Date

June2013

5 6/11/2013 S4K7

Answer 4



population growth

784. Students conducting a study on an insect population placed 25 insects of the same size in a box. The amount of food, water, and shelter available to the insects was kept constant. Each month, students removed and counted the number of insects present, recorded the total, and returned the insects to the box. The graph shows the number of insects in the box over a 12 month period. What inference can be made regarding this insect population?

- (1) All the insects in the box are the same age.
- (2) The insects hibernated from January to April.
- (3) The population has carnivorous members.
- (4) The population reached carrying capacity by January.

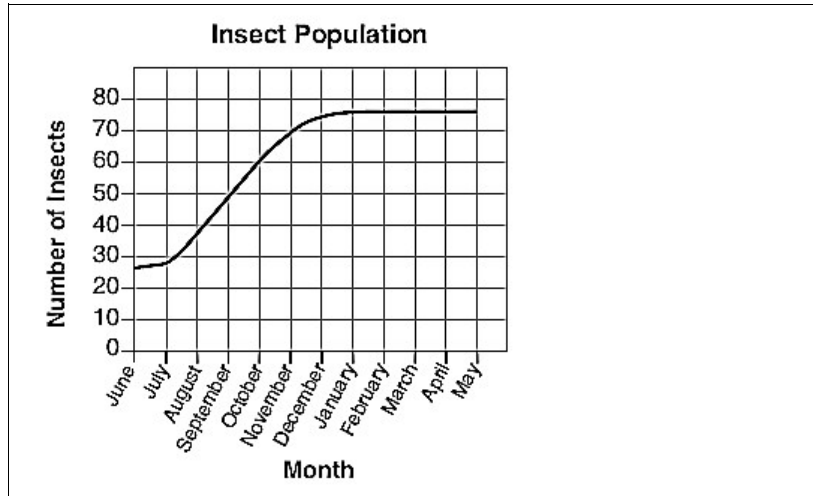
Data Base File Number: 74

Regents Date

Jan2008

36 1/25/2008 S4K6

Answer 4



population growth

785. The graph shown represents the growth of a population of flies in a jar. Which letter indicates the part of the graph that represents the carrying capacity of the environment in the jar?

- (1) A
- (2) B
- (3) C
- (4) D

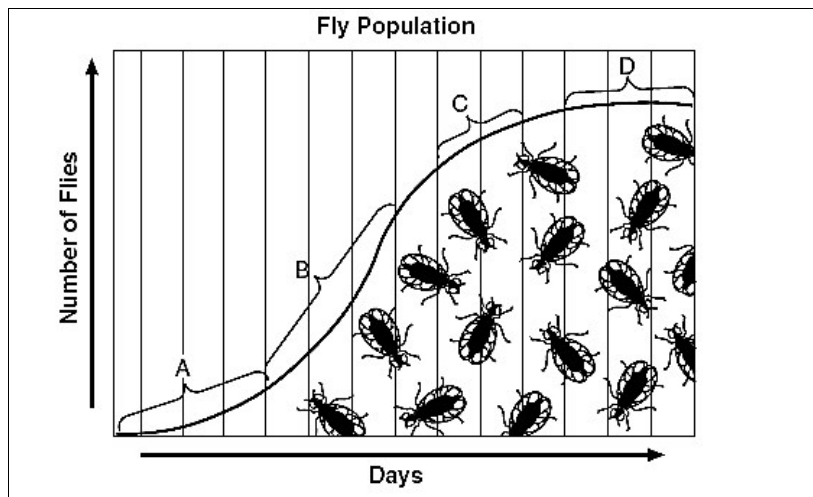
Data Base File Number: 11

Regents Date

Aug2007

28 8/16/2007 S4K6

Answer 4



population growth

786. The graph shows data on human population growth. The trend shown on the graph would most likely result in

- (1) a decreased demand for deforestation
- (2) an increase in available freshwater
- (3) a decrease in air pollution
- (4) an increased demand for land use

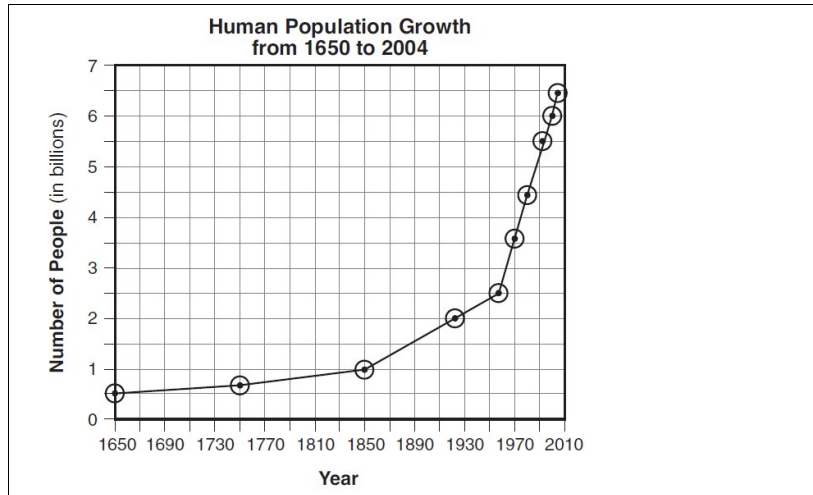
Data Base File Number: 291

Regents Date

Aug2010

42 8/18/2010 S4K7

Answer 4



population growth

787. Base your answer to this question on the information and graph given and on your knowledge of biology. A population of paramecia (single-celled aquatic organisms) was grown in a 200-mL beaker of water containing some smaller single-celled organisms. Population growth of the organisms for 28 hours is shown in the graph. Which factor most likely accounts for the change in the paramecium population from 8 to 20 hours?

- (1) an increase in the nitrogen content of water
- (2) an increase in wastes produced
- (3) an increase in available food
- (4) an increase in water pH

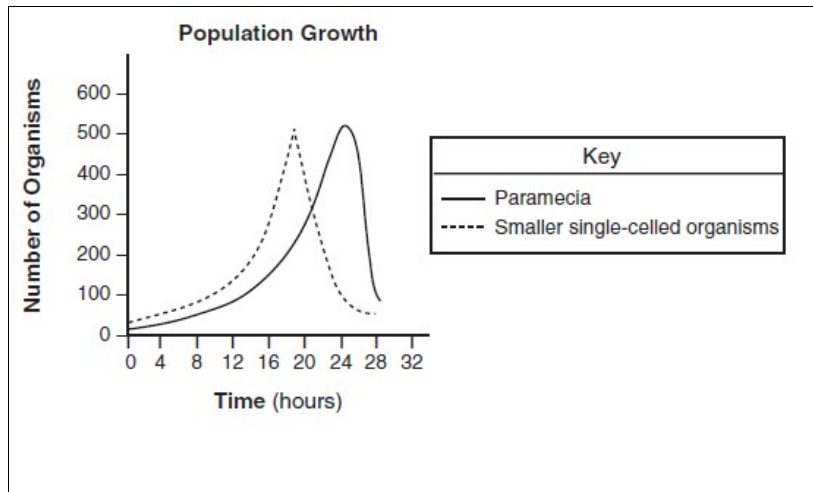
Data Base File Number: 522

Regents Date

Aug2006

39 8/16/2006 S1K3

Answer 3



population growth

788. Base your answer to this question on the information and graph below and on your knowledge of biology. A population of paramecia (single-celled aquatic organisms) was grown in a 200-mL beaker of water containing some smaller single-celled organisms. Population growth of the organisms for 28 hours is shown in the graph. One likely explanation for the change in the paramecium population from 26 hours to 28 hours is that the

- (1) carrying capacity of the beaker was exceeded
- (2) rate of reproduction increased
- (3) time allowed for growth was not sufficient
- (4) oxygen level was too high

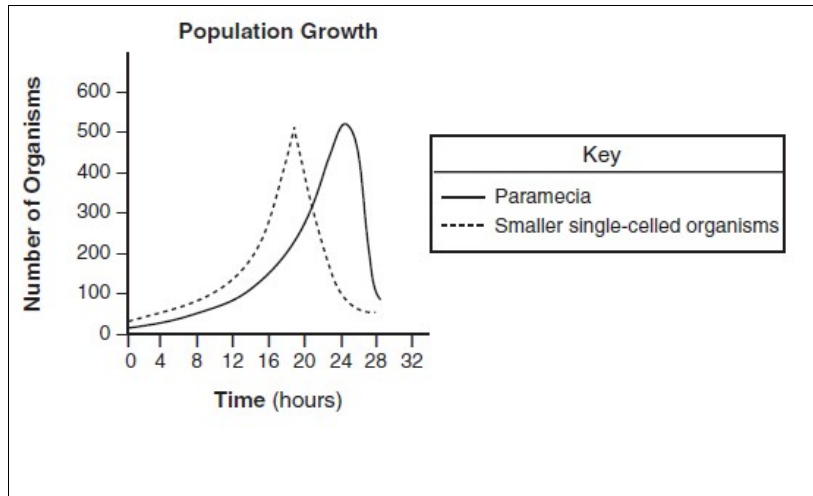
Data Base File Number: 523

Regents Date

Aug2006

40 8/16/2006 S4K6

Answer 1



population growth

789. The graph shows how the human population has grown over the last several thousand years. Which statement is a valid inference that can be made if the human population continues to grow at a rate similar to the rate shown between 1000 A.D. and 2000 A.D.?

- (1) Future ecosystems will be stressed and many animal habitats may be destroyed
- (2) Global warming will decrease as a result of a lower demand for fossil fuels.
- (3) One hundred years after all resources are used up, the human population will level off.
- (4) All environmental problems can be solved without a reduction in the growth rate of the human population.

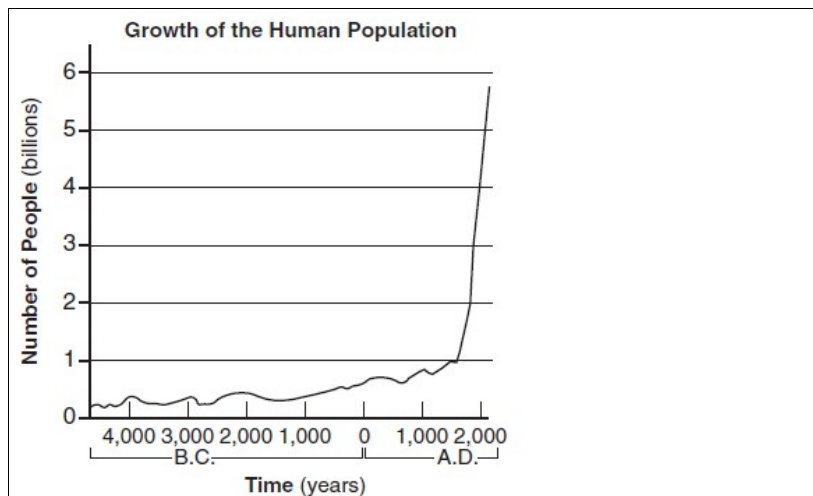
Data Base File Number: 488

Regents Date

June2006

33 6/21/2006 S4K7

Answer 1



population size

790. In a particular ecosystem, squirrels make up a large portion of the diet of coyotes. A fatal disease in the squirrel population begins to reduce their population over a period of months. Which graph best represents the expected changes in population size of the coyotes and the squirrels?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

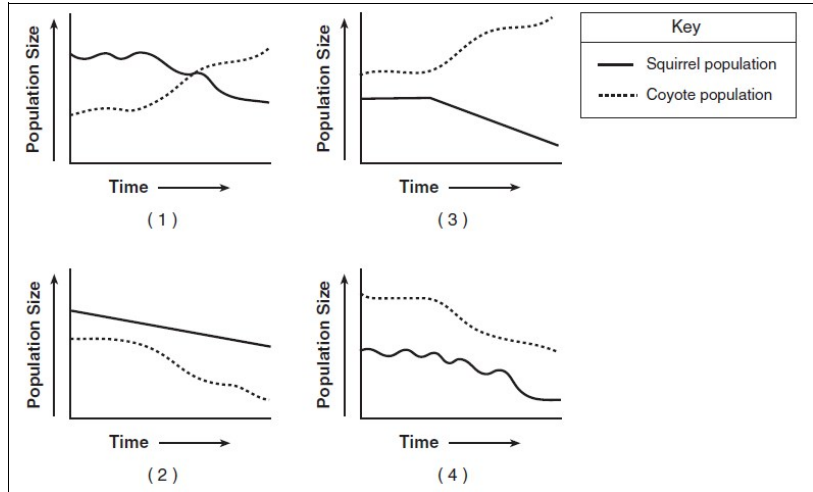
Data Base File Number: 313

Regents Date

Jan2011

33 1/25/2011 S4K1

Answer 2



populations

791. The graph shows changes in the populations of two species that interact only with each other over a period of time. Which statement best describes these two species?

- (1) Species A is a producer and species B is its consumer
- (2) Species A is a host and species B is its parasite.
- (3) Species A is a predator and species B is its prey
- (4) Species A is a scavenger and species B is its decomposer.

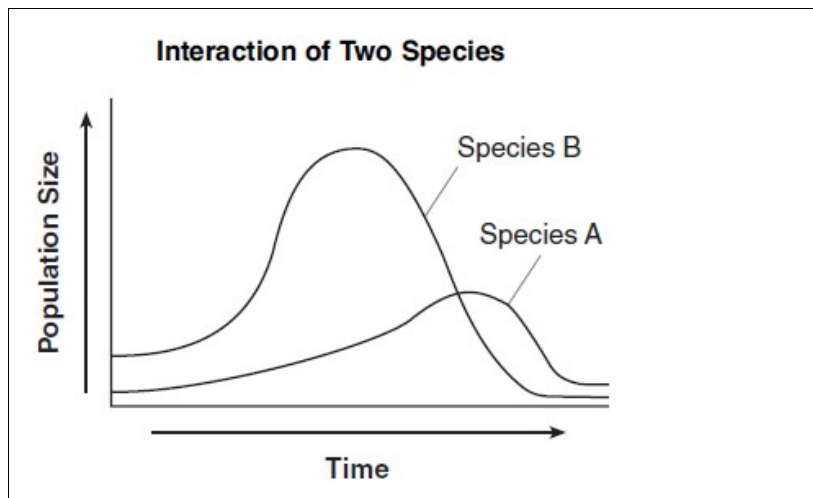
Data Base File Number: 241

Regents Date

Jan2010

40 1/26/2010 S4K6

Answer 3



populations

792. A biologist collected the data shown in the table. Which statement is supported by the data in the table?

- (1) Populations do not vary from month to month.
- (2) The populations are highest in September.
- (3) The grasshoppers increased in length in July.
- (4) Seasonal variations may affect populations.

Data Base File Number: 76

Regents Date

Jan2008

38 1/25/2008 S4K1

Answer 4

Type of Organism	Number of Organisms in a Field		
	May	July	September
grasshoppers	100	500	150
birds	25	100	10
spiders	75	200	50

predator / prey

793. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram is from Wikipedia(tm). Didinium and Paramecium are single-celled fresh water protozoa. The diagram at the LEFT is the Didinium. The diagram at the RIGHT is the Didinium eating a Paramecium. What is the relationship between Didinium and Paramecium?

- (1) prey - predator
- (2) parasite - host
- (3) predator - prey
- (4) host - parasite

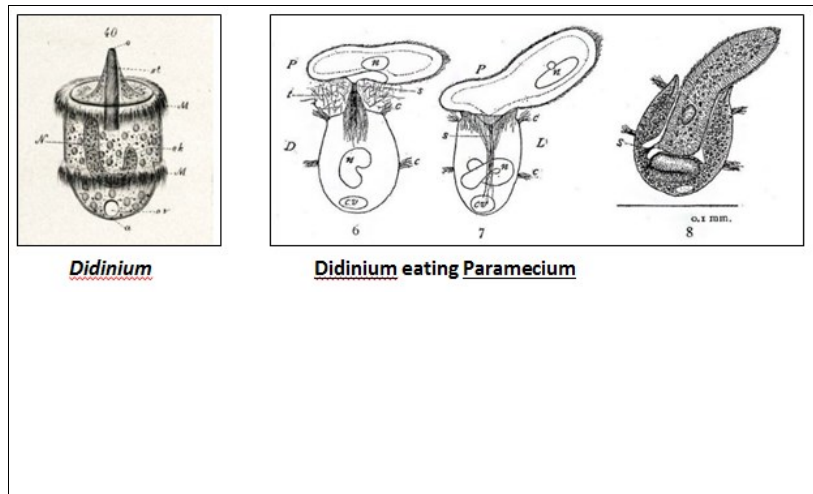
Data Base File Number: 703

Regents Date

Aug2004

RBS 8/17/2004 RBS

Answer 3



predator / prey

794. The graph shown represents a predator-prey relationship. What is the most probable reason for the increasing predator population from day 5 to day 7?
- (1) an increasing food supply from day 5 to day 6
 - (2) a predator population equal in size to the prey population from day 5 to day 6
 - (3) the decreasing prey population from day 1 to day 2
 - (4) the extinction of the yeast on day 3

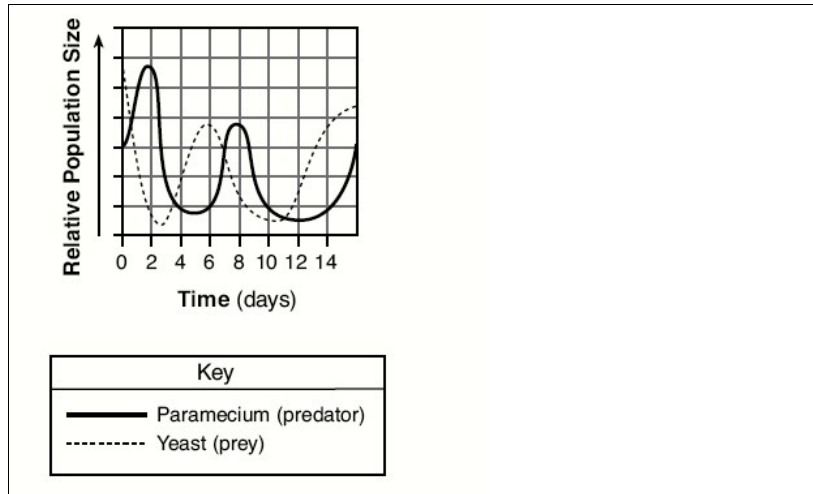
Data Base File Number: 127

Regents Date

Aug2008

32 8/13/2008 S4K6

Answer 1



predator / prey

795. Base your answer to this question on the graph shown and on your knowledge of biology. The graph shows interactions of moose and wolf populations on Isle Royale. What is the relationship between a wolf and a moose?
- (1) wolf-prey; moose-predator
 - (2) wolf-parasite; moose-host
 - (3) wolf-predator; moose-decomposer
 - (4) wolf-predator; moose-prey

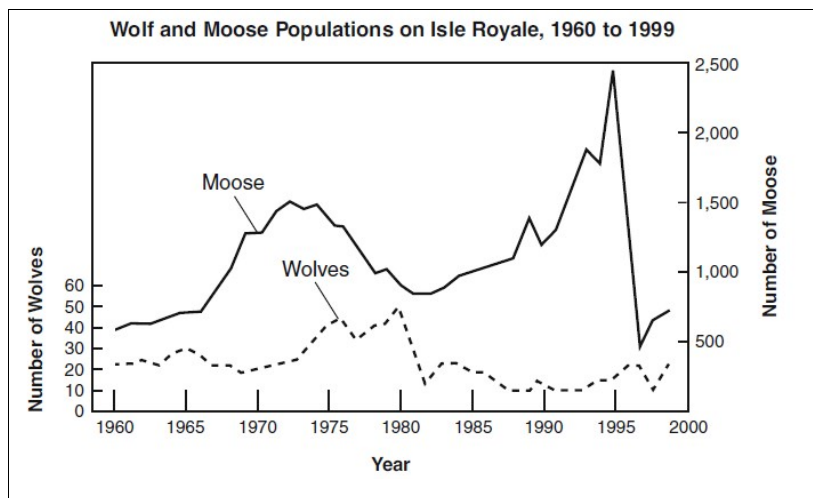
Data Base File Number: 625

Regents Date

Jan2013

50 1/23/2013 S4K6

Answer 4



predators

796. Base your answer to this question on the information and data table given and on your knowledge of biology. A student added two species of single-celled organisms, "Paramecium caudatum" and "Didinium nasutum", to the same culture medium. Each day, the number of individuals of each species was determined and recorded. The results are shown in the data table given. Which protozoan was most likely the PREDATOR?

- (1) "Paramecium"
- (2) "Didinium"
- (3) "Ameba"
- (4) "Euglena"

Data Base File Number: 695

Regents Date

Aug2004

40 8/17/2004 S1K3

Answer 2

Day	Number of Paramecium	Number of Didinium
0	25	2
1	60	5
2	150	10
3	50	30
4	25	20
5	0	2
6	0	0

predators

797. Base your answer to this question on the information given and on your knowledge of biology. The chart describes the beaks of various types of birds that live in a small island ecosystem containing flowering land plants, aquatic plants, many small mammals, amphibians, and several species of trees. Which beak type would be characteristic of predators of small mammals?

- (1) cracker
- (2) shredder
- (3) chisel
- (4) probe






Data Base File Number: 633

Regents Date

Jan2013

77 1/23/2013 LAB3

Answer 2

Beak Shape	Beak Type	Adaptation and Use
	Cracker	Seed eaters like sparrows and cardinals have short, thick beaks for cracking seeds.
	Shredder	Birds of prey like hawks and owls have sharp, curved beaks for tearing meat.
	Chisel	Woodpeckers have beaks that are long and chisel-like for boring into wood to eat insects.
	Probe	Hummingbirds have beaks that are long and thin for probing flowers for nectar.
	Strainer	Some ducks have long, flat beaks that strain small plants and animals from the water.

producer

798. Mice live in an ecosystem which also includes wheat plants. Which row in the chart shown best identifies the relationship between the mice and the wheat?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 881

Regents Date

June2013
34 6/11/2013 S4K1

Answer 4

Row	Role of Mice	Role of Wheat
(1)	producer	consumer
(2)	predator	host
(3)	host	predator
(4)	consumer	producer

producer

799. Base your answer to this question on the diagram shown and on your knowledge of biology. The arrows in the diagram represent biological processes. Which type of organism carries out process 1?

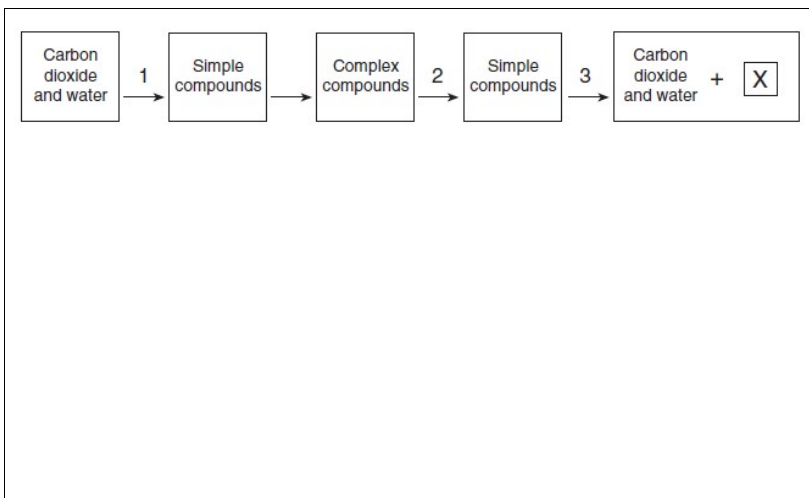
- (1) predator
- (2) carnivore
- (3) producer
- (4) parasite

Data Base File Number: 497

Regents Date

June2006
52 6/21/2006 S4K1

Answer 3



protein

800. Base your answer to this question on the diagram of the cell shown and your knowledge of biology. Which two structures interact in the process of protein synthesis?

- (1) 1 and 2
- (2) 2 and 3
- (3) 3 and 4
- (4) 4 and 1

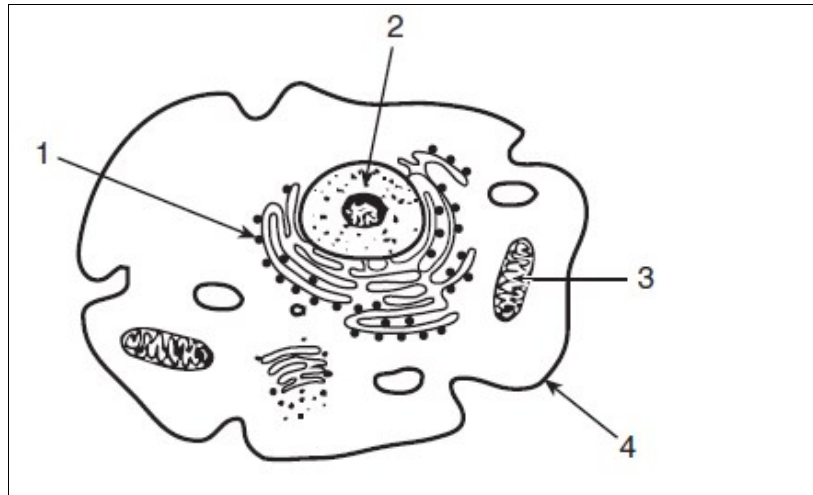
Data Base File Number: 651

Regents Date

Jan2004

56 1/29/2004 S4K2

Answer 1



protein function

801. The diagram shows two different structures, 1 and 2, that are present in many singlecelled organisms. Structure 1 contains protein A, but not protein B, and structure 2 contains protein B, but not protein A. Which statement is correct concerning protein A and protein B?

- (1) Proteins A and B have different functions and different amino acid chains.
- (2) Proteins A and B have different functions but the same amino acid chains.
- (3) Proteins A and B have the same function but a different sequence of bases (A, C, T, and G).
- (4) Proteins A and B have the same function and the same sequence of bases (A, C, T, and G).

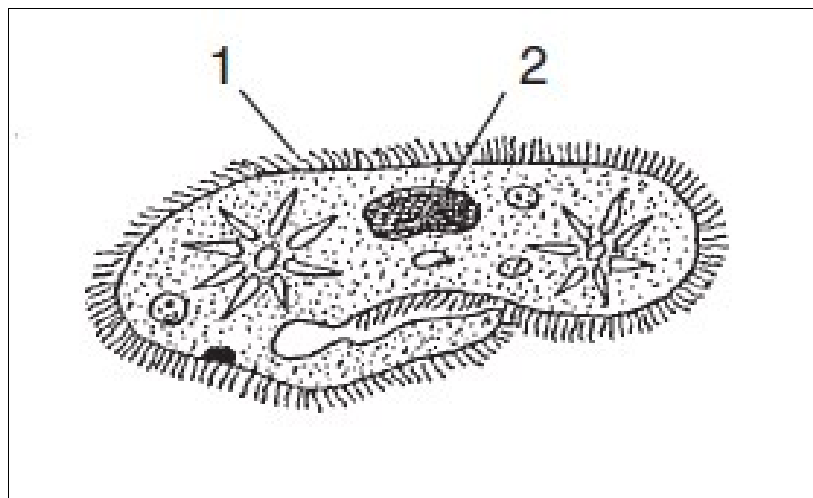
Data Base File Number: 804

Regents Date

June2002

12 6/19/2002 S4K2

Answer 1



pulse rate

802. During a laboratory activity, a group of students obtained the data shown in the table. The group average for the resting pulse rate is

- (1) 107 (3) 73
(2) 78 (4) 63

Data Base File Number: 207

Regents Date

June 2009

65 6/18/2009 LABS

Answer 3

Student Tested	Pulse Rate at Rest (beats/min)	Pulse Rate After Exercise (beats/min)
A	70	97
B	74	106
C	83	120
D	60	91
E	78	122
Group Average		107

reaction time

803. The data in the table shown were collected during a reaction-time experiment conducted in five biology classes. Average reaction times for each class were determined first at room temperature and then after cooling each student's hand in cold water for two minutes. Which statement is best supported by the data?

- (1) Cooling the hand increases the reaction time. (3) Cooling the hand affects only some subjects.
(2) Cooling the hand does not affect the reaction time. (4) Two minutes of cooling is not enough to affect reaction time.

Data Base File Number: 21

Regents Date

Aug 2007

63 8/16/2007 LABS

Answer 1

Class	At Room Temperature (seconds)	After Cooling (seconds)
1	.42	.48
2	.36	.41
3	.35	.47
4	.43	.58
5	.44	.47
Averages	.40	.48

receptor / hormone

804. The diagram shown represents two molecules that can interact with each other to cause a biochemical process to occur in a cell. Molecules A and B most likely represent

- (1) a protein and a chromosome
- (2) a receptor and a hormone
- (3) a carbohydrate and an amino acid
- (4) an antibody and a hormone

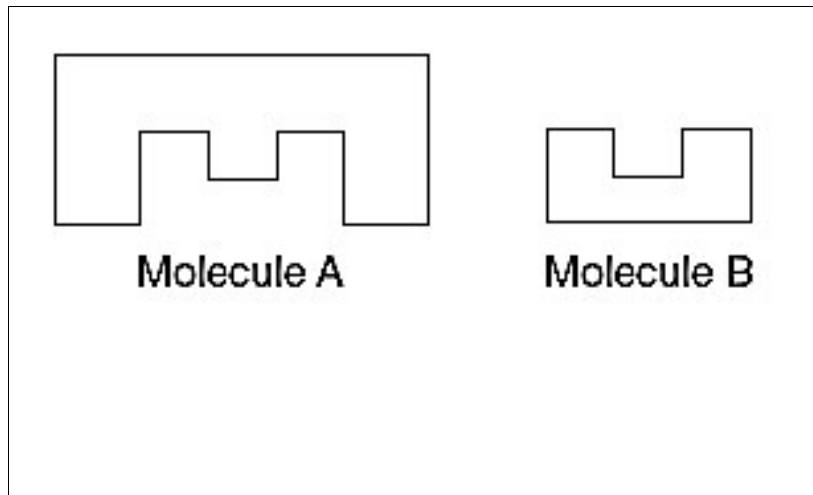
Data Base File Number: 29

Regents Date

June2007

26 6/20/2007 S4K5

Answer 2



receptor / hormone

805. The diagram shows a biological process. Why do the hormones attach to the target cell and NOT to other cells in the diagram?

- (1) Target cells carry on natural selection.
- (2) Hormones act as enzymes to target cells.
- (3) Target cells have receptors that are specific for a hormone and non-target cells lack receptors for the hormone.
- (4) Endocrine cells are specific for target and non-target cells.

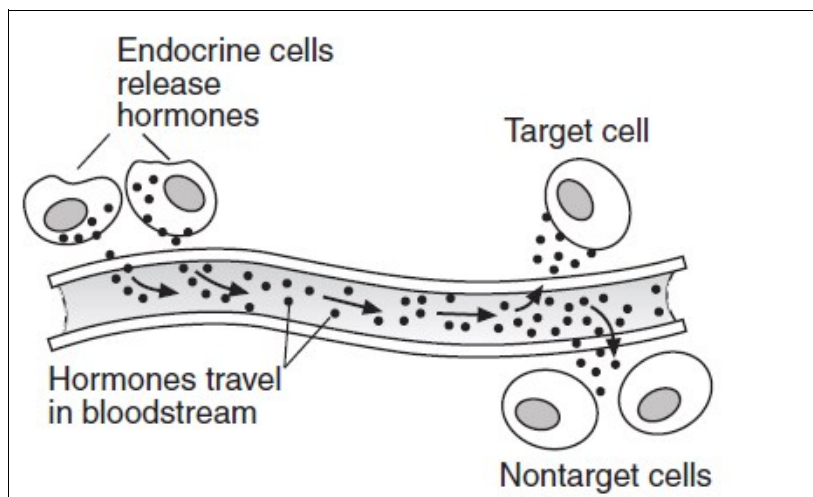
Data Base File Number: 792

Regents Date

Aug2002

54 8/13/2002 S4K1

Answer 3



receptor molecules

806. A process that occurs in the human body is represented in the diagram shown. Which statement is most closely associated with the diagram?

- (1) Small molecules are obtained from large molecules during digestion.
- (2) Certain molecules are replicated by means of a template.
- (3) Receptor molecules play an important role in communication between cells.
- (4) Energy from nutrients is utilized for waste disposal.

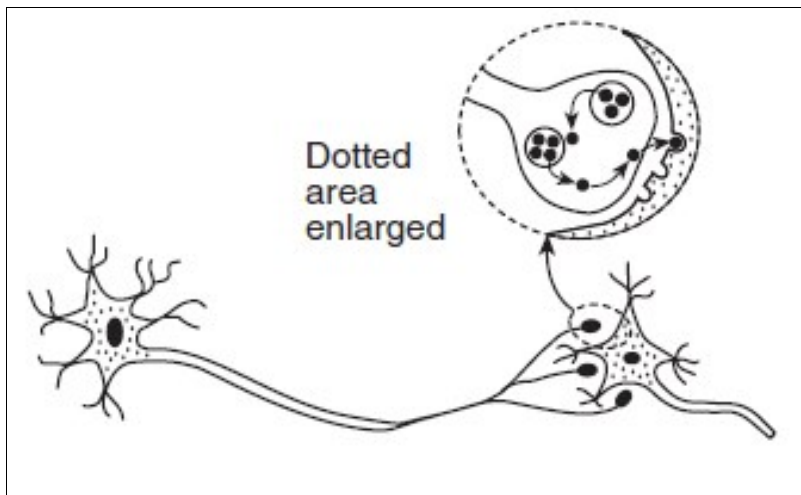
Data Base File Number: 566

Regents Date

June2005

33 6/22/2005 S4K1

Answer 3



receptor molecules

807. Base your answer to this question on the diagram shown and on your knowledge of biology. Which statement best describes the diagram?

- (1) Nerve cell X is releasing receptor molecules.
- (2) Nerve cell Y is signaling nerve cell X.
- (3) Nerve cell X is attaching to nerve cell Y.
- (4) Nerve cell Y contains receptor molecules for substance A.

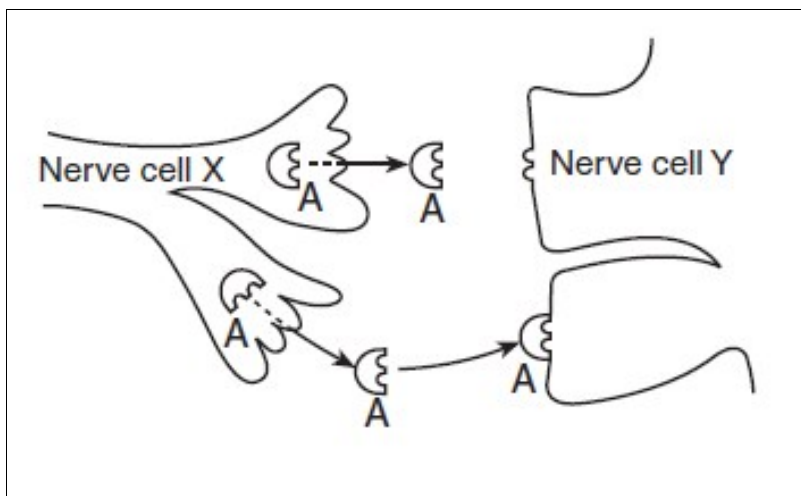
Data Base File Number: 670

Regents Date

June2004

36 6/18/2004 S4K1

Answer 4



receptor molecules

808. The diagram shown represents the region between two nerve cells. Cell A releases a chemical that travels to and binds with structure X on cell B. Structure X most likely represents

- (1) a receptor molecule
- (2) an inorganic substance
- (3) a ribosome
- (4) an antibody

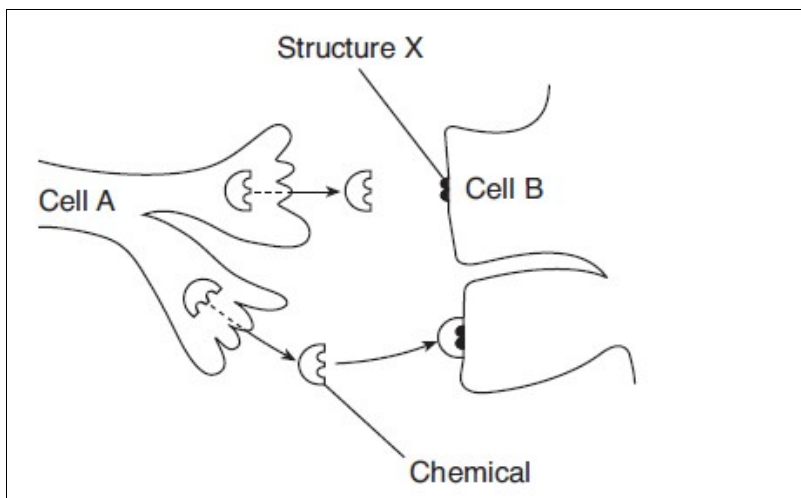
Data Base File Number: 899

Regents Date

Aug2013

5 8/14/2013 S4K1

Answer 1



receptor molecules

809. Base your answer to this question on the diagram shown which illustrates a role of hormones. Letter B indicates

- (1) ribosomes
- (2) receptor molecules
- (3) tissues
- (4) inorganic substances

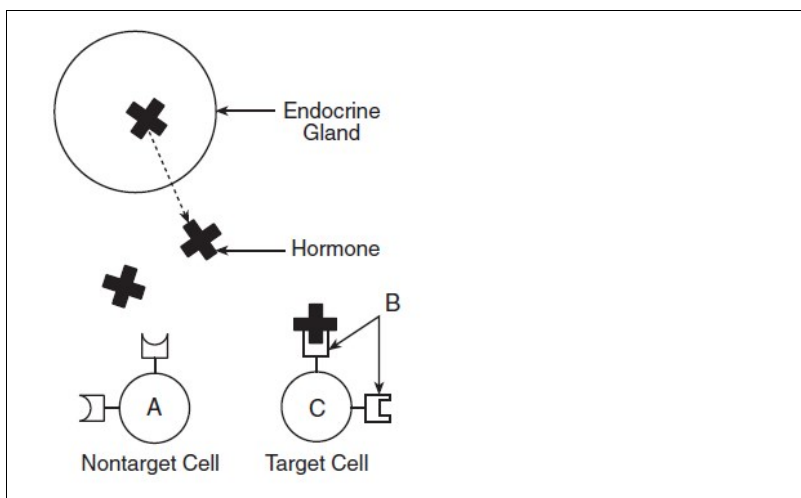
Data Base File Number: 652

Regents Date

Jan2004

58 1/29/2004 S4K1

Answer 2



receptor sites

810. Base your answer to this question on the diagram shown and on your knowledge of biology. A drug is developed that, due to its molecular shape, blocks the action of substance A, in DIAGRAM A . Which shape in DIAGRAM B would the drug molecule most likely resemble?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

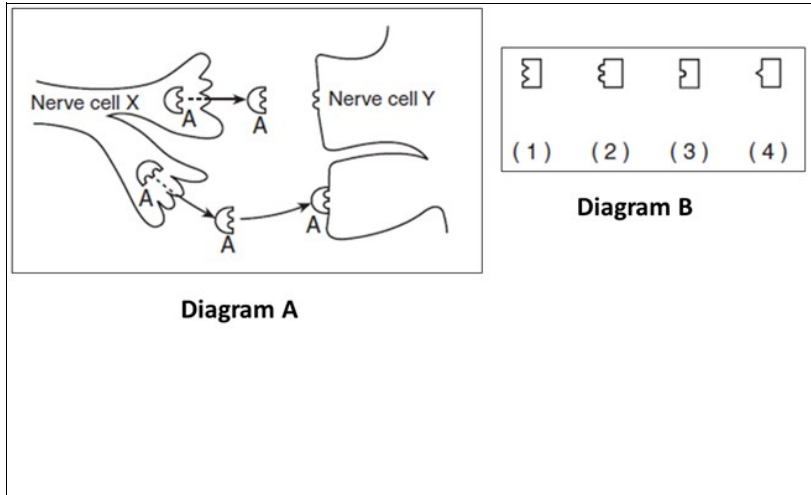
Data Base File Number: 671

Regents Date

June 2004

37 6/18/2004 S4K1

Answer 2



receptor sites

811. Base your answer to this question on the information given and on your knowledge of biology. Botulinum toxin is a protein produced by the bacterium "Clostridium botulinum". It causes a serious form of food poisoning in humans. In a very dilute form, it is also commonly used to eliminate some signs of aging, such as wrinkles. It does this by preventing nerves from releasing a chemical messenger called acetylcholine into the synapse (space between a nerve cell and a muscle cell). The toxin affects the process that causes the muscle cell to contract and form wrinkles. The diagram shown represents a process that is involved in the formation of wrinkles. Which structure is MISSING on the muscle cell membrane in the diagram that would allow the nerve cell to communicate with the muscle cell?

- (1) reseptor sites
- (2) mitochondria
- (3) toxic sites
- (4) ATP producing sites

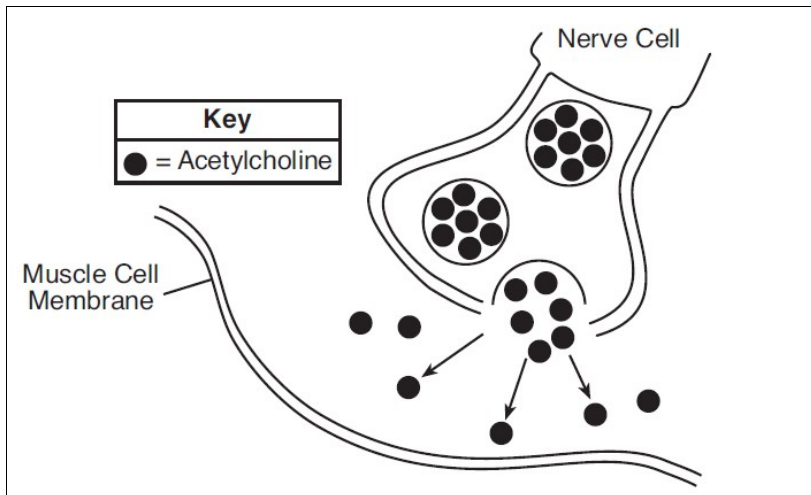
Data Base File Number: 889

Regents Date

June 2013

53 6/11/2013 S4K1

Answer 1



receptors

812. Base your answers to this question on the diagram shown and on your knowledge of biology. Each arrow in the diagram represents a different hormone released by the pituitary gland that stimulates the gland indicated in the diagram. All structures are present in the same organism. Why does hormone 1 influence the action of gland A but not gland B or C?

- (1) Every activity in gland A is different from the activities in glands B and C.
- (2) cells of glands B and C contain different receptors than the cells of gland A.
- (3) Each gland contains cells that have different base sequences in their DNA.
- (4) The distance a chemical can travel is influenced by both pH and temperature

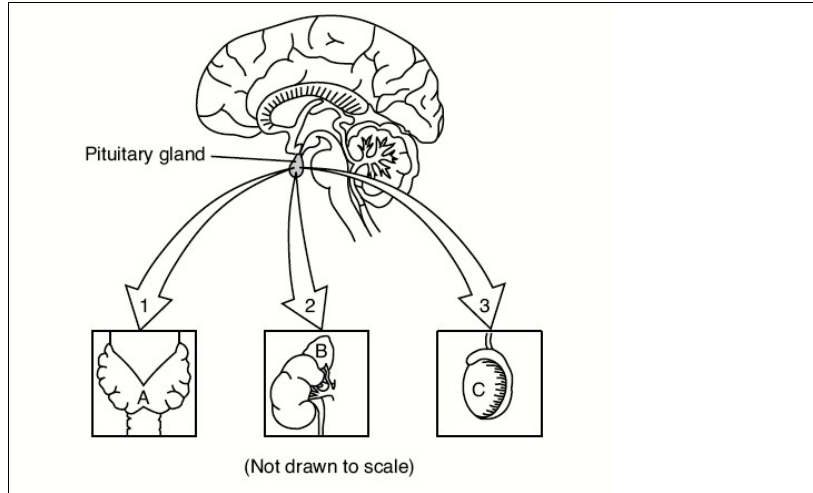
Data Base File Number: 135

Regents Date

Aug2008

40 8/13/2008 S4K1

Answer 2



recombination

813. The puppies shown in the photograph below are all from the same litter. The differences seen within this group of puppies are most likely due to

- (1) overproduction and selective breeding
- (2) mutations and elimination of genes
- (3) evolution and asexual reproduction
- (4) sorting and recombination of genes

Data Base File Number: 181

Regents Date

June2009

12 6/18/2009 S4K3

Answer 4



recycling

814. Which statement most accurately predicts what would happen in the aquarium shown if it were tightly covered and maintained in natural light for one month?
- (1) The water temperature would rapidly decrease.
 - (2) The process of respiration in the snail would decrease
 - (3) The rate of reproduction of the fish would be affected.
 - (4) The organisms would probably survive because materials would cycle.

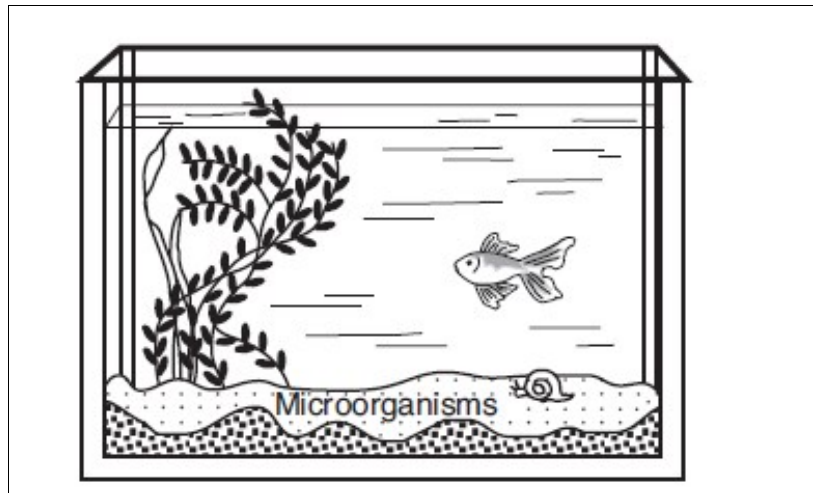
Data Base 266
File Number:

Regents Date

June 2010

39 6/16/2010 S4K6

Answer 4



recycling

815. The graph shows the percentage of solid wastes recycled in New York State between 1987 and 1997. What is one specific positive effect recycling has on the environment?
- (1) The increased percent of recycling involves the use of materials such as glass, plastic, and aluminum cans to produce other products.
 - (2) Recycling did not increase effectively over the ten year period.
 - (3) Recycling increased the costs to the consumer.
 - (4) Dumps and landfills went out of business.

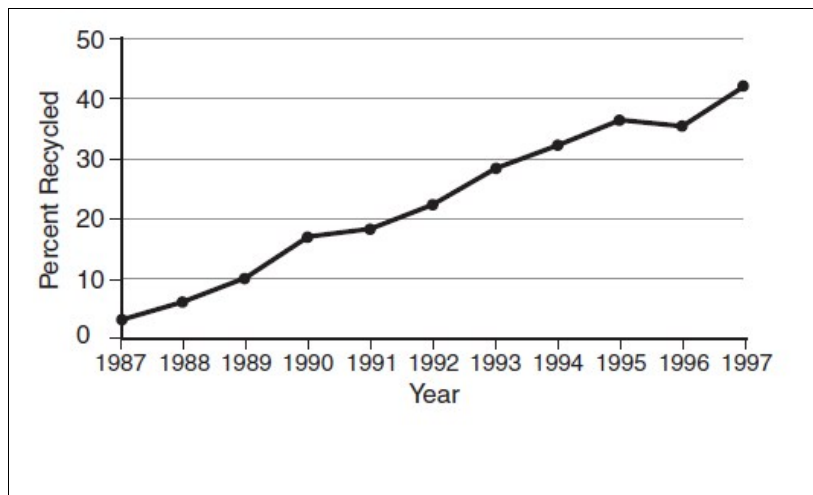
Data Base 699
File Number:

Regents Date

Aug 2004

56 8/17/2004 S4K7

Answer 1



red cells / crenated

816. Base your answer to this questions on the information given and on your knowledge of biology. A student prepared four different red blood cell suspensions, as shown in the chart. Which suspension would contain red blood cells that would appear wrinkled and reduced in volume?

- (1) A
- (2) B
- (3) C
- (4) D

Data Base File Number: 331

Regents Date

Jan2011

76 1/25/2011 LABS

Answer 2

Suspension	Contents
A	red blood cells in normal blood serum (0.7% salt solution)
B	red blood cells in 10% salt solution
C	red blood cells in distilled water
D	red blood cells in tap water

renewable resource

817. A ski resort installed a wind turbine similar to those represented in the diagram to supply some of its energy needs. This turbine was most likely installed because wind power is

- (1) renewable and does substantial damage to the atmosphere
- (2) renewable and does minimal damage to the atmosphere
- (3) nonrenewable and does substantial damage to the atmosphere
- (4) nonrenewable and does minimal damage to the atmosphere

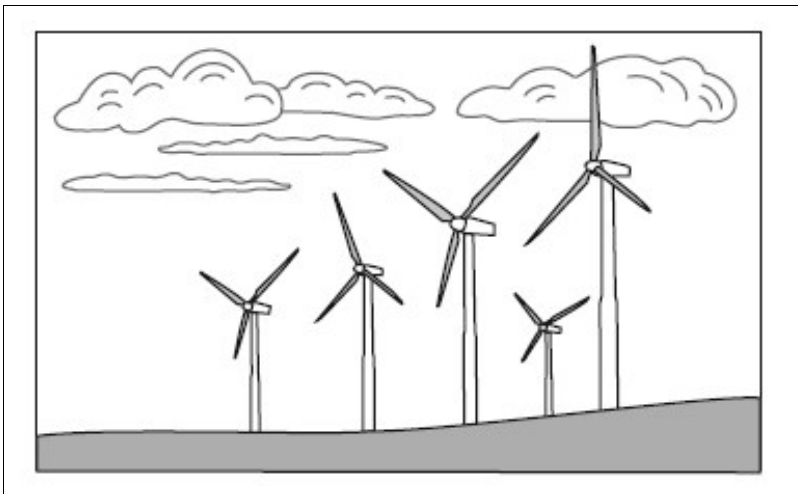
Data Base File Number: 410

Regents Date

June2012

27 6/19/2012 S4K7

Answer 2



replication

818. Which nuclear process is represented in the diagram shown?

- (1) recombination
- (2) fertilization
- (3) replication
- (4) mutation

Data Base File Number: 92

Regents Date

June 2008

11 6/24/2008 S4K2

Answer 3

A DNA molecule → The two strands of → Molecular bases → Two identical DNA
untwists. DNA separate. pair up. molecules are produced.

replication

819. Base your answer to this question on the diagram shown and your knowledge of biology. The diagram represents a single-celled organism, such as an ameba, undergoing the changes shown. Process 1 is known as

- (1) replication
- (2) meiosis
- (3) differentiation
- (4) digestion

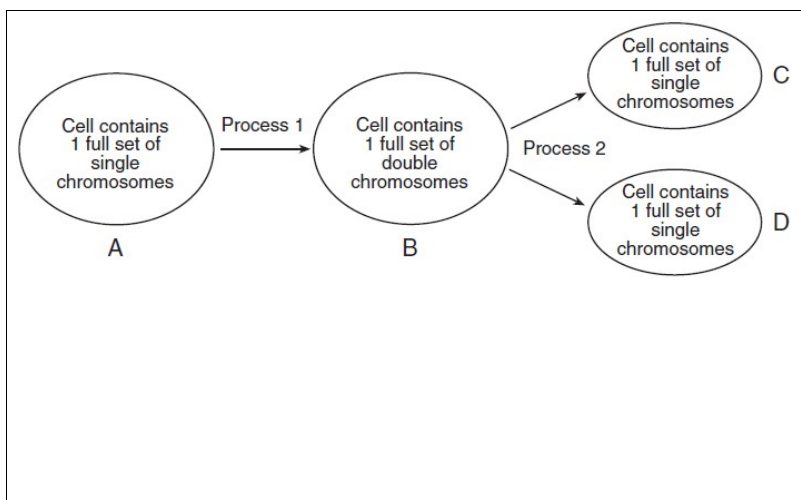
Data Base File Number: 515

Regents Date

Aug 2006

32 8/16/2006 S4K4

Answer 1



reproduction

820. The diagrams shown represent organs of two individuals. Which individual contains organs that produce gametes?

- (1) Both A and B.
- (2) A, only
- (3) B, only
- (4) neither A nor B

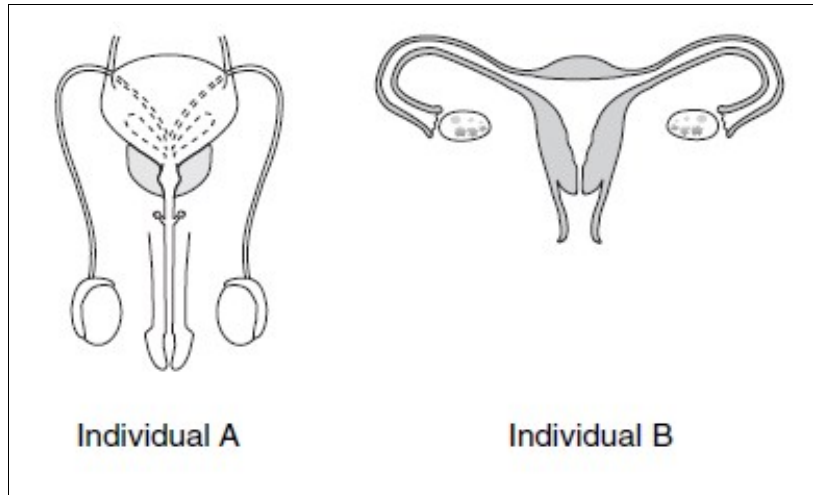
Data Base File Number: 746

Regents Date

June2003

47 6/19/2003 S4K4

Answer 1



reproduction

821. Some chemical interactions in a human are shown in the graph. This graph represents hormones and events in the

- (1) process of fetal growth and development
- (2) process of meiotic cell division during sperm development
- (3) reproductive cycle of males
- (4) reproductive cycle of females

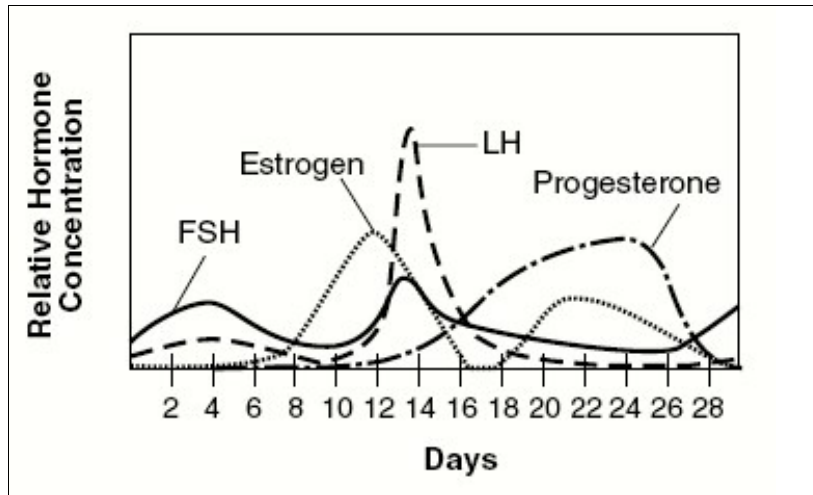
Data Base File Number: 151

Regents Date

Jan2009

16 1/27/2009 S4K4

Answer 4



reproduction

822. How does the type of reproduction shown in method A in the diagram differ from the type of reproduction shown in method B?

- (1) Method A illustrates sexual reproduction, and method B illustrates asexual reproduction.
- (2) Offspring produced by method B will be genetically alike, but offspring produced by method A will be genetically different.
- (3) The two cells shown in the last step of method A are genetically alike, but the two cells shown in the last step of method B are genetically different.
- (4) Offspring produced by method A will be genetically like the parent, but offspring produced by method B will be genetically different from the parents.

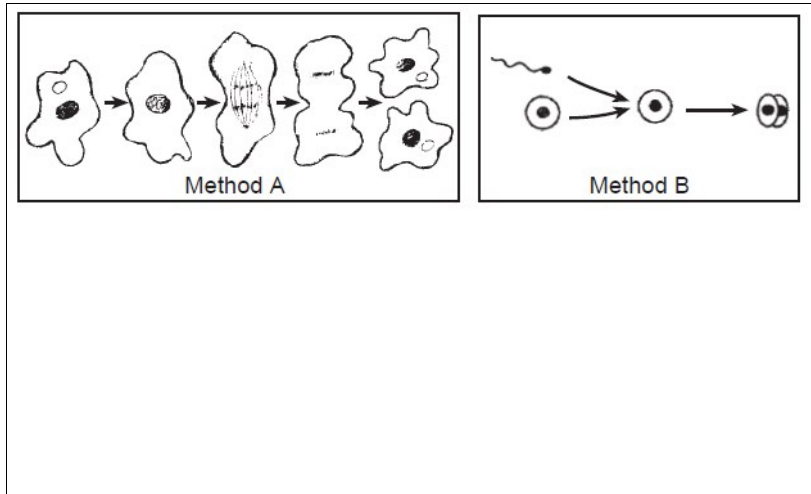
Data Base File Number: 828

Regents Date

Jan2002

8 1/23/2002 S4K2

Answer 4



reproduction

823. The diagram shown represents a developing bird egg. What is the primary function of this egg?

- (1) food supply for predators to preserve predator populations
- (2) adaptation to allow maximum freedom for parent birds
- (3) continuation of the species through reproduction
- (4) preservation of the exact genetic code of the parent birds

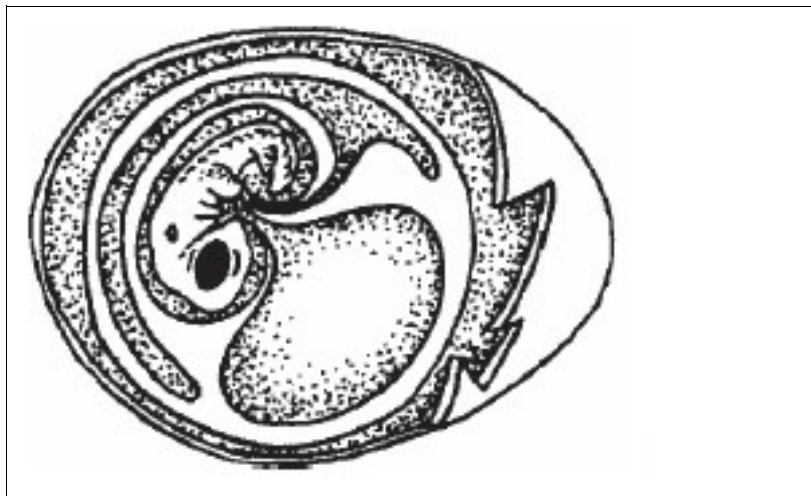
Data Base File Number: 713

Regents Date

Jan2003

22 1/30/2003 S4K4

Answer 3



reproduction

824. Base your answer to this question on the diagram shown and on your knowledge of biology. The diagram represents the reproductive systems of the human female and male. In which structure would both mitosis and differentiation of an embryo occur?

- (1) G (3) E
 (2) B (4) D

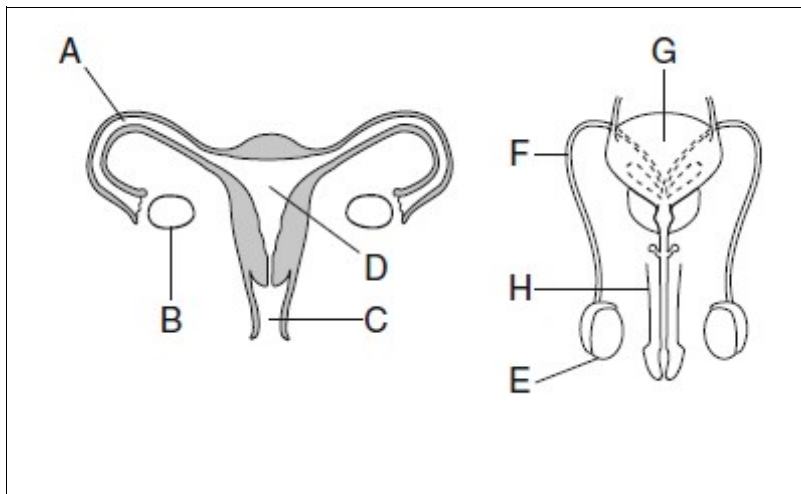
Data Base File Number: 440

Regents Date

Aug2012

38 8/17/2012 S4K4

Answer 4



reproduction

825. Base your to this question on the diagram shown and on your knowledge of biology. The diagram represents the reproductive systems of the human female and male. In which structure do gametes usually unite to produce a zygote?

- (1) A (3) C
 (2) G (4) F

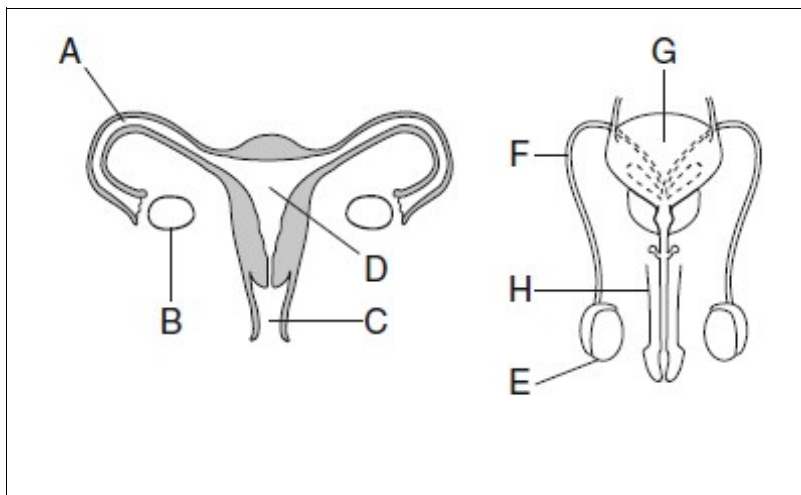
Data Base File Number: 441

Regents Date

Aug2012

39 8/17/2012 S4K4

Answer 1



reproduction

826. Base your answers to this question on the diagram shown and on your knowledge of biology. Each arrow in the diagram represents a different hormone released by the pituitary gland that stimulates the gland indicated in the diagram. All structures are present in the same organism. What would most likely occur if the interaction is blocked between the pituitary and gland C, the site of meiosis in males

- (1) The level of progesterone would start to increase.
- (2) The pituitary would produce another hormone to replace hormone 3.
- (3) Gland A would begin to interact with hormone 3 to maintain homeostasis
- (4) The level of testosterone may start to decrease

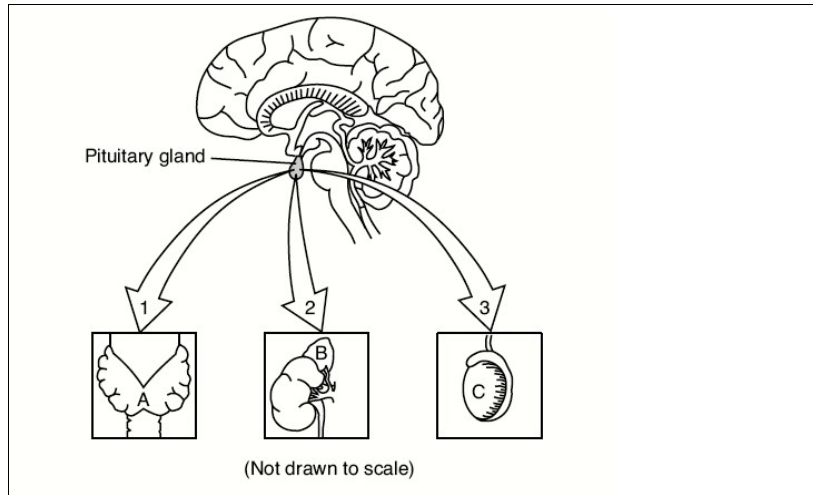
Data Base File Number: 134

Regents Date

Aug2008

38 8/13/2008 S4K4

Answer 4



reproduction

827. Base your answer to this question on the graph shown and on your knowledge of biology. The graph represents changes in the mass of a fetus from week 8 to its birth at week 43. During which five-week period did the fetal mass increase at the greatest rate?

- (1) weeks 10-15
- (2) weeks 15-20
- (3) weeks 25-30
- (4) weeks 30-35

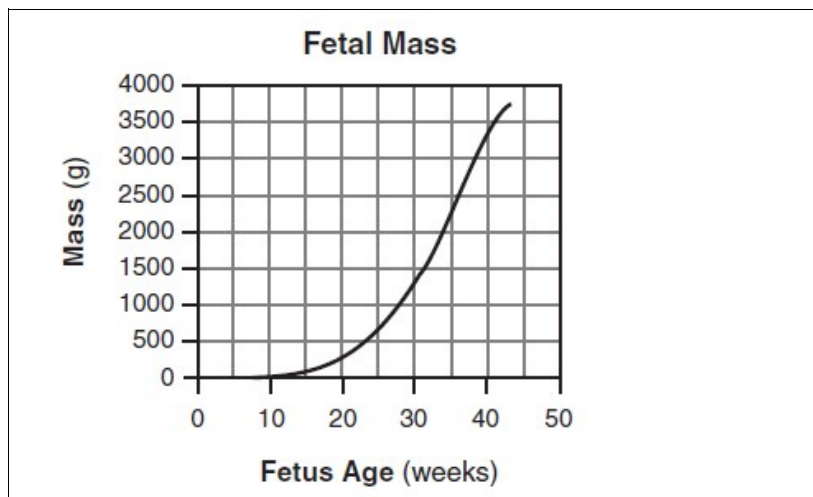
Data Base File Number: 245

Regents Date

Jan2010

50 1/26/2010 S4K4

Answer 4



reproduction / female

828. Base your answer to this question on the information and diagram shown and on your knowledge of biology. Endometriosis is a condition that occurs in some women, causing multiple cells or layers of cells to grow outside of the uterus. In some cases, these growths can actually cover the entire ovary or cause the tube leading from the ovary to the uterus to be blocked. The diagram shown represents the female reproductive system. Two structures, A and B, are labeled. Structures A and B are the

- (1) ovary and oviduct (3) uterus and oviduct
(2) uterus and cervix (4) oviduct and uterus

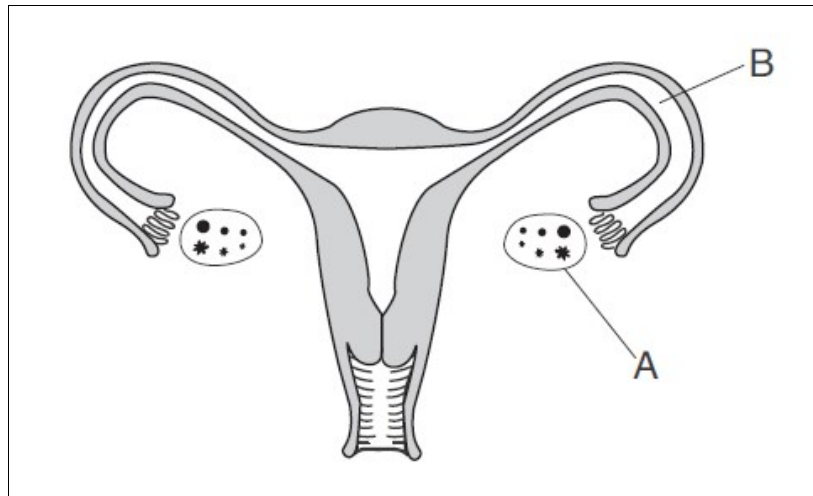
Data Base File Number: 892

Regents Date

June 2013

71 6/11/2013 S4K4

Answer 1



reproduction / female

829. The diagram shown represents part of the human female reproductive system. Fertilization and development normally occur in structures

- (1) 1 and 5 (3) 3 and 1
(2) 2 and 5 (4) 4 and 5

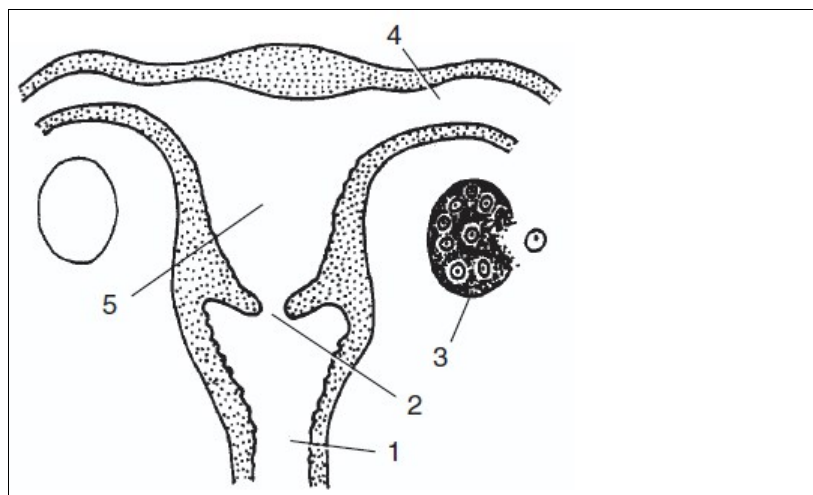
Data Base File Number: 714

Regents Date

Jan 2003

23 1/30/2003 S4K4

Answer 4



reproduction / female

830. The diagram shown represents human reproductive systems. Which statement best describes part of the human reproductive process?

- (1) Testosterone produced in A is transferred to D, where it influences embryonic development.
- (2) Testosterone produced in D influences formation of sperm within B.
- (3) Estrogen and progesterone influence the activity of C.
- (4) Progesterone stimulates the division of the egg within C.

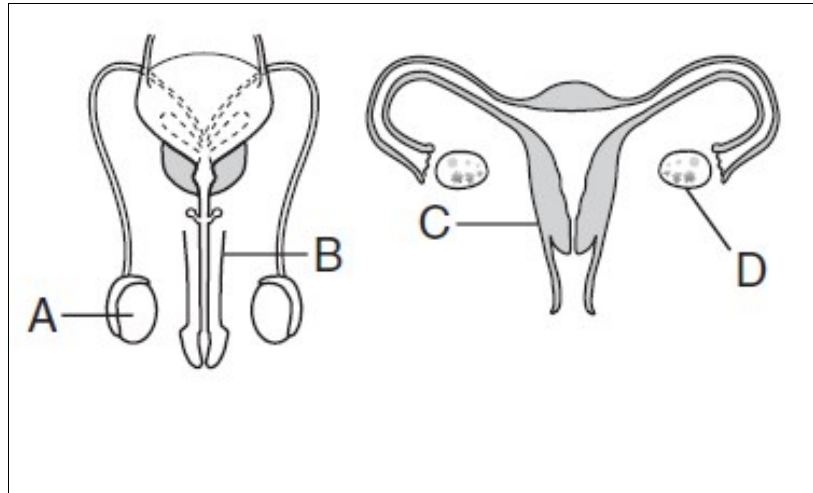
Data Base File Number: 481

Regents Date

June 2006

18 6/21/2006 S4K4

Answer 3



reproduction / male

831. The diagram below represents the human male reproductive system. Which activity would be prevented by blockages at X and Y?

- (1) transport of urine out of the body
- (2) passage of testosterone to the female to stimulate egg production
- (3) movement of sperm out of the body
- (4) movement of testosterone to the testes to stimulate sperm production

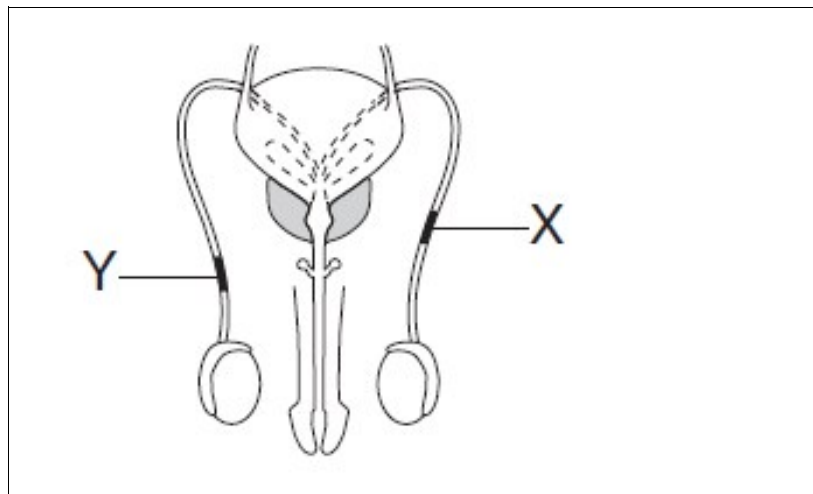
Data Base File Number: 309

Regents Date

Jan 2011

22 1/25/2011 S4K4

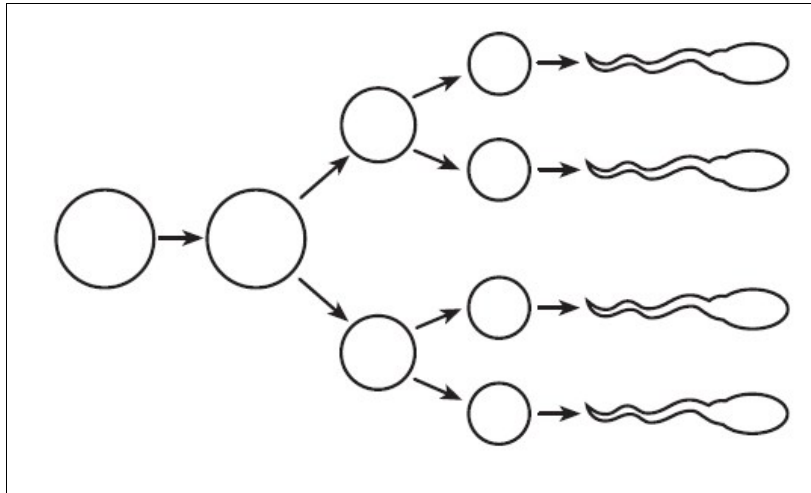
Answer 3



reproductive cells

832. Which statement concerning the reproductive cells in the diagram shown is correct?

- (1) The cells are produced by mitosis and contain all the genetic information of the father.
- (2) If one of these cells fertilizes an egg, the offspring will be identical to the father.
- (3) Each of these cells contains only half the genetic information necessary for the formation of an offspring.
- (4) An egg fertilized by one of these cells will develop into a female with the same characteristics as the mother.



Data Base File Number: 275

Regents Date

Aug2010

3 8/18/2010 S4K2

Answer 3

respiration

833. Yeast cells carry out the process of cellular respiration as shown in this equation. $\text{GLUCOSE} + \text{YEAST} \rightarrow \text{ETHYL ALCOHOL} + \text{CARBON DIOXIDE}$. An investigation was carried out to determine the effect of temperature on the rate of cellular respiration in yeast. Five identical experiments were set up as shown on the LEFT side of the diagram. The only variation was the incubating temperature of the water bath which varied from 5-80 degrees C as shown in the data table. Gas was collected (D) after thirty minutes of incubation at each temperature, The maximum rate of cellular respiration in yeast occurred at which temperature?

- (1) 5 degrees C
- (2) 20 degrees C
- (3) 40 degrees C
- (4) 60 degrees C

Group	Temperature (°C)	D (mL)
1	5	0
2	20	5
3	40	12
4	60	6
5	80	3

Data Base File Number: 198

Regents Date

June2009

45 6/18/2009 S1K3

Answer 3

respiration

834. Base your answer to this question on the word equation shown and on your knowledge of biology. What process represented by the equation?

- (1) photosynthesis
(2) respiration
(3) digestion
(4) homeostasis

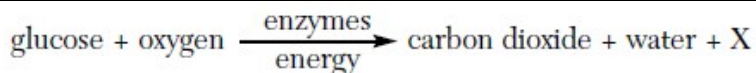
Data Base File Number: 839

Regents Date

Jan2002

53 1/23/2002 S4K5

Answer 2



respiration

835. Base your answer to this question on the information and diagram below and on your knowledge of biology. Two test tubes, A and B, were set up as shown in the diagram. Bromthymol blue, which turns from blue to yellow in the presence of carbon dioxide, was added to the water at the bottom of each tube before the tubes were sealed. The tubes were maintained at the temperatures shown for six days. (Average room temperature is 20°C.) Which life process is responsible for the change in tube A?

- (1) photosynthesis
(2) respiration
(3) homeostasis
(4) active transport

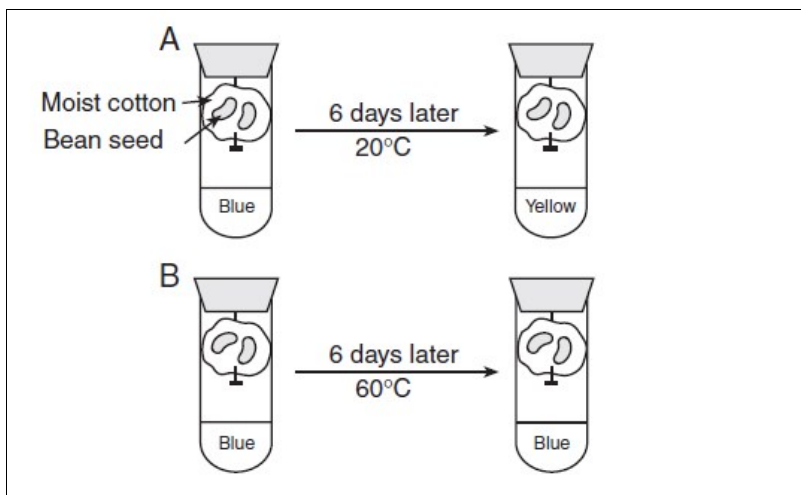
Data Base File Number: 548

Regents Date

Jan2005

46 1/28/2005 S4K5

Answer 2



respiration

836. A biological process that occurs in both plants and animals is shown in the UPPER part of the diagram shown. Which row in the chart shown identifies the lettered substances in this process?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 290

Regents Date

Aug2010

41 8/18/2010 **S4K5**

Answer 2

A + B \xrightarrow{C} ATP + D + H₂O

Which row in the chart below identifies the lettered substances in this process?

Row	A	B	C	D
(1)	O ₂	CO ₂	glucose	enzymes
(2)	glucose	O ₂	enzymes	CO ₂
(3)	enzymes	O ₂	CO ₂	glucose
(4)	glucose	CO ₂	enzymes	O ₂

respiration

837. Base your answer to this question on the diagram shown, which illustrates a transport pathway of CO₂ in the human body, and on your knowledge of biology. Which cellular process most likely produced the carbon dioxide in the body cell?

- (1) cellular respiration
- (2) fermentation
- (3) diffusion
- (4) osmosis

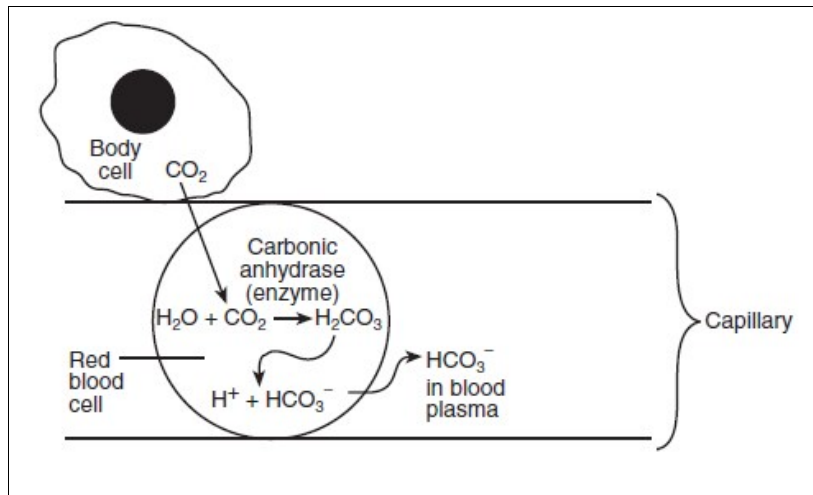
Data Base File Number: 468

Regents Date

Jan2006

52 1/27/2006 **S4K5**

Answer 1



respiration

838. The graphs show the changes in the relative concentrations of two gases in the air surrounding a group of mice. Which process in the mice most likely accounts for the changes shown?

- (1) active transport
- (2) evaporation
- (3) respiration
- (4) photosynthesis

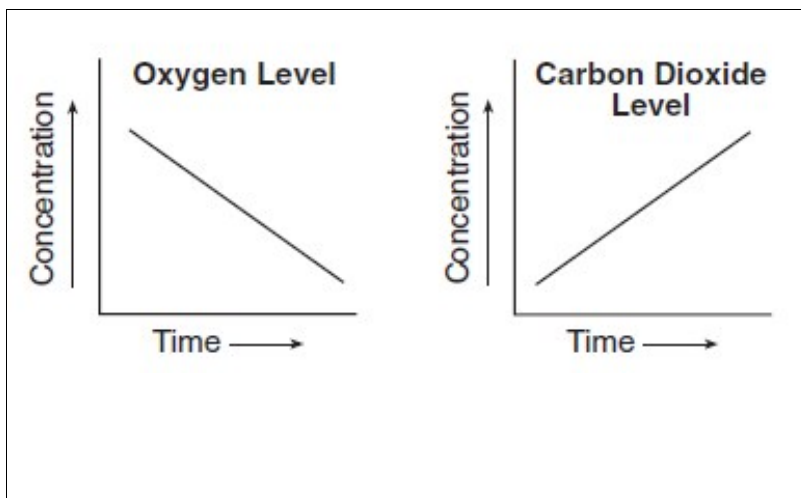
Data Base File Number: 535

Regents Date

Jan2005

17 1/28/2005 S4K5

Answer 3



ribosome

839. Base your answer to this question on the diagram below, which represents a sequence of events in a biological process that occurs within human cells and on your knowledge of biology. Molecule A contains the

- (1) starch necessary for ribosome synthesis in the cytoplasm
- (2) organic substance that is broken down into molecules B, C, and D
- (3) proteins that form the ribosome in the cytoplasm
- (4) directions for the synthesis of molecules B, C, and D

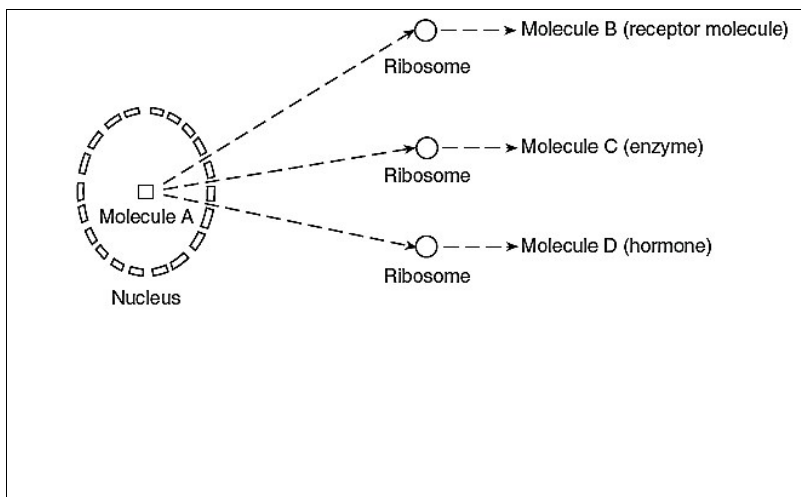
Data Base File Number: 16

Regents Date

Aug2007

37 8/16/2007 S4K2

Answer 4



ruler measurement

840. A clear plastic ruler is placed across the middle of the field of view of a compound light microscope. A row of cells can be seen under low-power magnification (100×). What is the average length of a single cell in micrometers (μm)?

- (1) 10um
- (2) 100um
- (3) 200um
- (4) 2000um

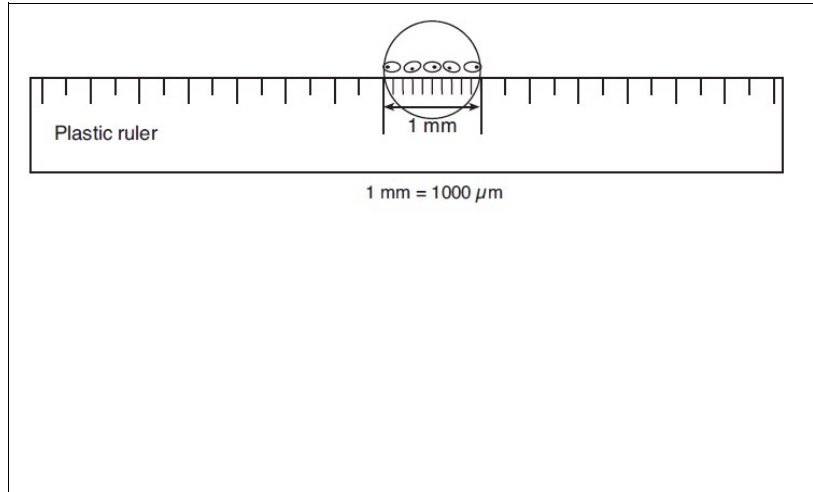
Data Base File Number: 260

Regents Date

June2010

31 6/16/2010 S4K1

Answer 3



scientific method

841. The diagram shows two setups that were used to study bacterial growth. Each setup initially contained an equal number of the bacterium "E. coli" in different carbohydrate solutions. After one hour, a 1-milliliter sample was drawn from each tube and analyzed. The number of bacteria found in the sample from test tube 1 was higher than the number in test tube 2. Which conclusion regarding this investigation is NOT valid?

- (1) All bacteria grow best in a solution of glucose.
- (2) "E. coli" grows better in a 10% solution of glucose than in a 10% solution of sucrose.
- (3) The type of sugar solution will make a difference in the rate of growth of "E. coli".
- (4) The rate of growth of "E. coli" depends on the type of carbohydrate present.

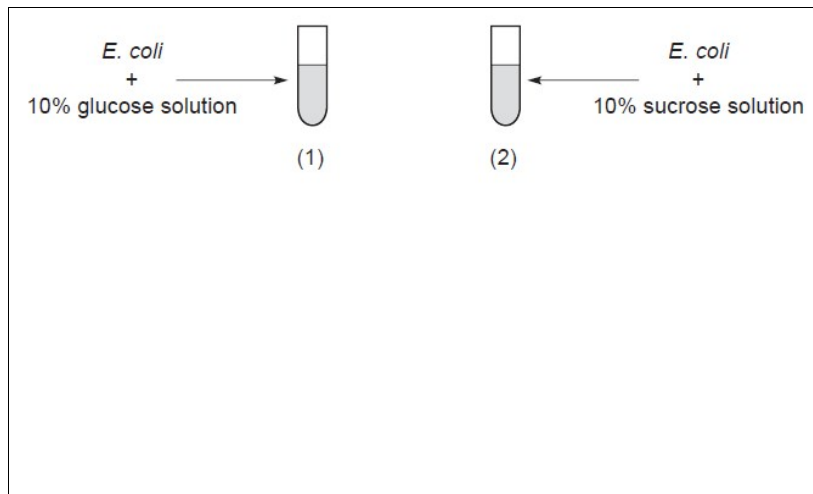
Data Base File Number: 857

Regents Date

June2001

60 6/15/2001 S1K3

Answer 1



scientific method

842. Base your answer to this question on the information given, the data table shown and on your knowledge of biology. Five students design an experiment to answer the question: "How is heart rate affected by running?" Two chairs were set up at different ends of a large room. The pulse rate of each student was taken at rest just before running. Each of the five students ran between the chairs a different number of times. Their pulse rates were taken after running and the results are shown in the table. If a control group is NOT included in an experiment, it would be difficult to

- (1) formulate a hypothesis for the experiment
- (2) make observations about the experimental group
- (3) record data in a data table
- (4) draw a valid conclusion

Data Base File Number: 395

Regents Date

Jan2012

76 1/25/2012 LAB2

Answer 4

Student	Number of Times the Student Ran Between the Chairs	Pulse Rate After Running (beats/min)
A	2	88
B	4	96
C	6	104
D	8	112
E	10	120

scientific method

843. Base your answer to this question on the data table shown and on your knowledge of biology. The table contains information about glucose production in a species of plant that lives in the water of a salt marsh. Which terms describe temperature in this investigation?

- (1) abiotic factor and independent variable
- (2) abiotic factor and dependent variable
- (3) biotic factor and independent variable
- (4) biotic factor and dependent variable

Data Base File Number: 525

Regents Date

Aug2006

50 8/16/2006 S4K1

Answer 1

Temperature (°C)	Glucose Production (mg/hr)
10	5
20	10
30	15
40	5

scientific method

844. A student performed an experiment to determine if treating 500 tomato plants with an auxin (a plant growth hormone) will make them grow faster. The results are shown in the table. The student can NOT draw a valid conclusion from these results because

- (1) there is no hypothesis
- (2) there is no theory
- (3) there is no control
- (4) there is insufficient data

Data Base File Number: 543

Regents Date

Jan2005

36 1/28/2005 S1K3

Answer 3

Days	Average Stem Height (cm)
1	10
5	13
10	19
15	26
20	32
25	40

scientific study

845. A mineral supplement designed to prevent the flu was given to two groups of people during a scientific study. Dosages of the supplement were measured in milligrams per day, as shown in the table. After 10 weeks, neither group reported a case of the flu. Which procedure would have made the outcome of this study more valid?

- (1) test only one group with 200 mg of the supplement
- (2) test the supplement on both groups for 5 weeks instead of 10 weeks
- (3) test a third group that receives 150 mg of the supplement
- (4) test a third group that does not receive the supplement

Data Base File Number: 262

Regents Date

June2010

33 6/16/2010 S1K3

Answer 4

Supplement Dosages

Group	Dosage (mg/day)
A	100
B	200

secondhand smoke

846. The data table shows an effect of secondhand smoke on the birth weight of babies born to husbands and wives living together during pregnancy. Based on these data, a reasonable conclusion that can be drawn about secondhand smoke during pregnancy is that secondhand smoke

- (1) is unable to pass from the mother to the fetus
- (2) slows the growth of the fetus
- (3) causes mutations in cells of the ovaries
- (4) blocks the receptors on antibody cells

Data Base File Number: 267

Regents Date

June 2010

40 6/16/2010 S4K4

Answer 2

	Wife: Nonsmoker Husband: Nonsmoker	Wife: Nonsmoker Husband: Smoker
Number of Couples	837	529
Average Weight of Baby at Birth	3.2 kg	2.9 kg

selective breeding

847. The arrows in the diagram indicate the development of four different varieties of vegetable plants from wild mustard. Each of these varieties was most likely produced as a result of

- (1) asexual reproduction in the wild for many years
- (2) changes in light availability
- (3) competition between plants
- (4) selective breeding over many generations

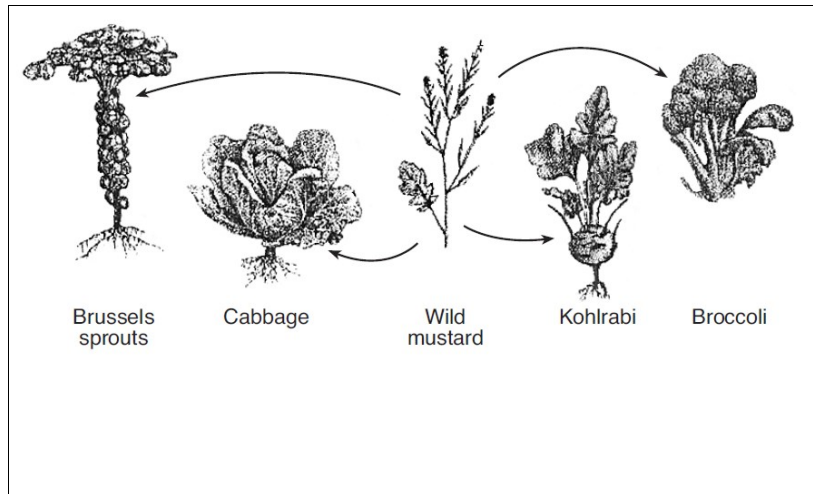
Data Base File Number: 306

Regents Date

Jan 2011

14 1/25/2011 S4K2

Answer 4



selective breeding

848. Which statement provides accurate information about the technique illustrated in the diagram shown?

- (1) This technique results in offspring that are genetically identical to the parents.
- (2) New varieties of organisms can be developed by this technique known as selective breeding.
- (3) This technique is used by farmers to eliminate mutations in future members of the species.
- (4) Since the development of cloning, this technique is no longer used in agriculture.

Data Base File Number: 456

Regents Date

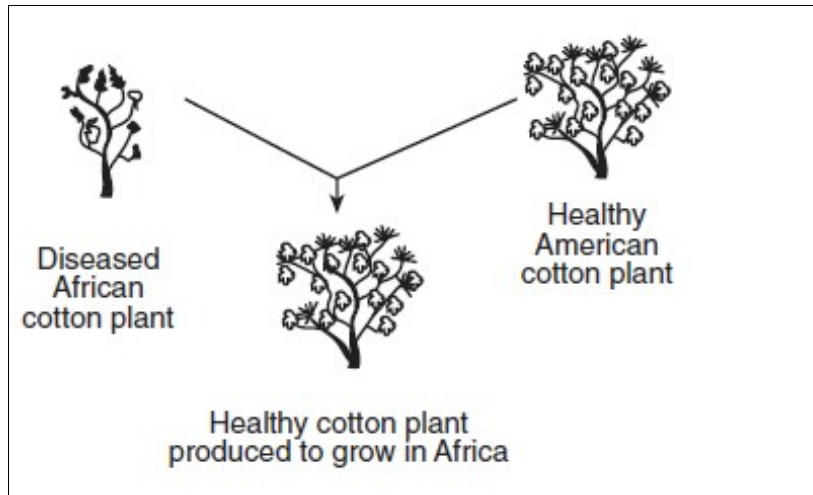
Jan2006

9

1/27/2006

S4K2

Answer 2



sequencing

849. Part of a molecule found in cells is represented in the diagram shown. Which process is most directly affected by the arrangement of components 1 through 4?

- (1) diffusion through cell membranes
- (2) fertilization of a sex cell
- (3) sequencing of amino acids in cells
- (4) increasing the number of cells in an organism

Data Base File Number: 315

Regents Date

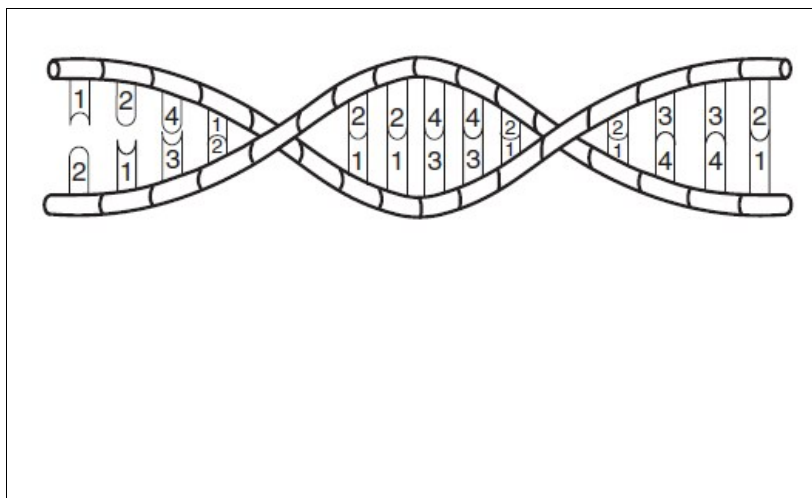
Jan2011

35

1/25/2011

S4K5

Answer 3



sex organs

850. Some human body structures are represented in the diagrams shown. In which structures would the occurrence of mutations have the greatest effect on human evolution?

(1) 1 and 3

(3) 3 and 6

(2) 2 and 5

(4) 4 and 6

Data Base File Number: 23

Regents Date

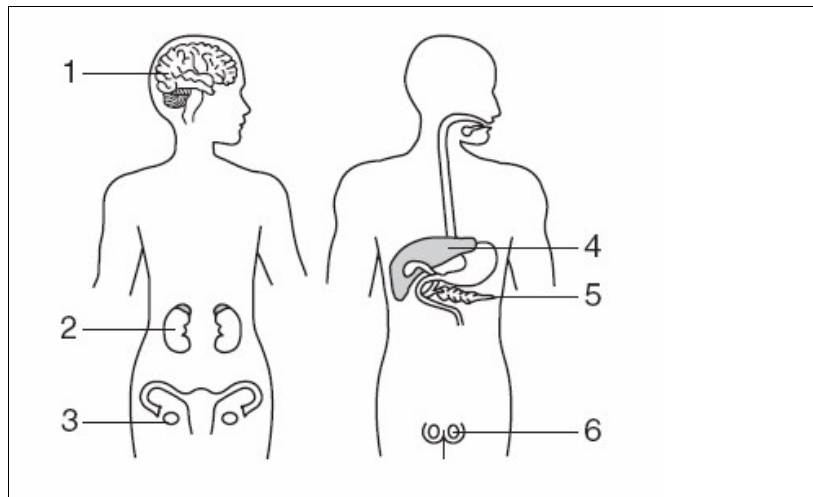
June 2007

12

6/20/2007

S4K3

Answer 3



sexual reproduction

851. Sexual reproduction involves the processes as shown. Which sequence represents the order in which these processes occur?

(1) A -> B -> C -> D

(3) C -> B -> D -> A

(2) B -> A -> C -> D

(4) D -> B -> C -> A

Data Base File Number: 233

Regents Date

Jan 2010

18

1/26/2010

S4K4

Answer 3



sexual reproduction

852. The diagram shown represents cells that transport chromosomes. These cells are specialized for
- (1) oxygen transport
 - (2) transmitting chemical signals over long distances
 - (3) sexual reproduction
 - (4) injecting antibodies into harmful bacteria

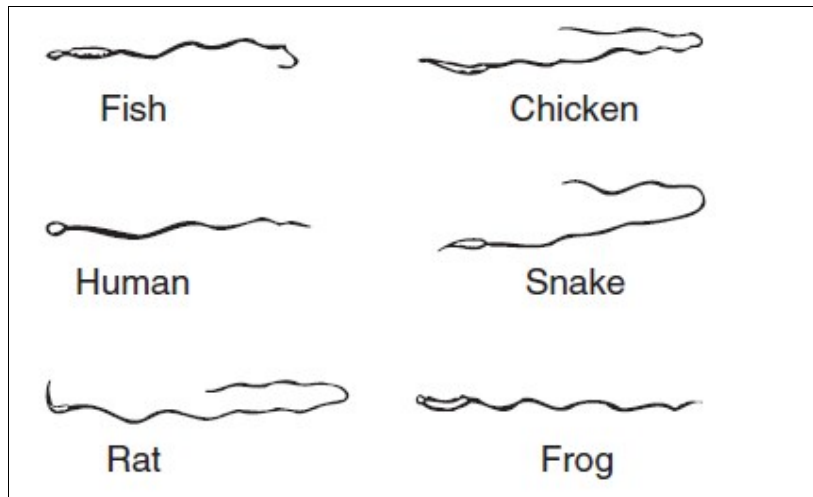
Data Base File Number: 760

Regents Date

Aug2003

23 8/13/2003 S4K4

Answer 3



species relationships

853. Base your answer to this question on the information given and on your knowledge of biology. A valuable medicine is obtained from a certain rare species of plant. Scientists are anxious to find another more abundant species of plant that is closely related to the rare one, and also produces the medicine. Two newly discovered plant species, A and B, were studied and compared to the rare one. The results of the study are shown in the table. Which newly discovered species is more closely related to the rare species?

- (1) Species A
- (2) Species B
- (3) Species A and B
- (4) There is NO relationship between the RARE SPECIES and Species A or Species B.

Data Base File Number: 329

Regents Date

Jan2011

72 1/25/2011 LABS

Answer 2

Species of Plant	Characteristics of Flowers	Shape of Leaves	Species Number of Chromosomes	Enzyme A Present	Enzyme B Present	Enzyme C Present
rare species	pink 5 petals	round	36	yes	yes	yes
species A	pink 5 petals	oval	34	no	no	yes
species B	white 5 petals	round	36	yes	yes	yes

sperm

854. Which statement about the gametes represented in the diagram below is correct?

- (1) They are produced by females.
- (2) They are fertilized in an ovary.
- (3) They transport genetic material.
- (4) They are produced by mitosis

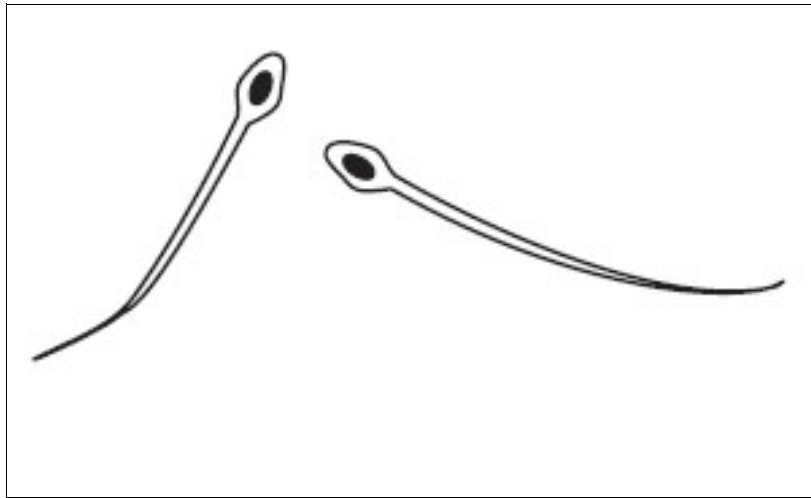
Data Base File Number: 458

Regents Date

Jan2006

19 1/27/2006 S4K2

Answer 3



sperm

855. A sperm cell from an organism is represented in the diagram as shown. Which statement regarding this sperm cell is NOT correct?

- (1) The acrosome contains half the normal number of chromosomes.
- (2) Energy to move the flagellum originates in the middle piece.
- (3) The head may contain a mutation.
- (4) This cell can unite with another cell resulting in the production of a new organism.

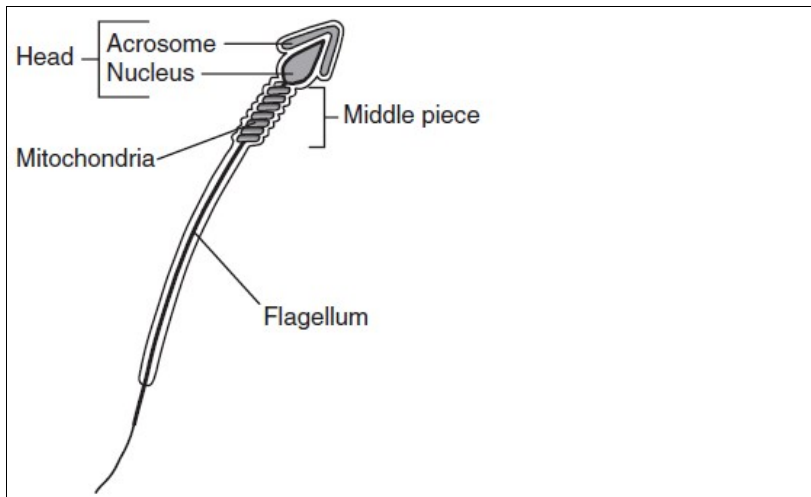
Data Base File Number: 567

Regents Date

June2005

35 6/22/2005 S1K1

Answer 1



sperm

856. A reproductive system is represented in the diagram below. If an injury occurred to the structure labeled A, the most likely result would be a problem with

- (1) delivery of sperm
- (2) production of gametes
- (3) production of hormones
- (4) excretion of urine

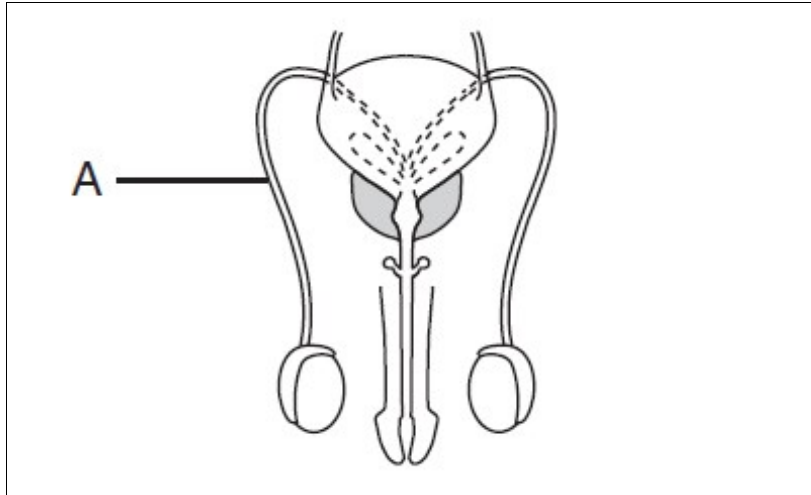
Data Base File Number: 280

Regents Date

Aug2010

20 8/18/2010 S4K4

Answer 1



sperm duct

857. The letters in the diagram indicate structures present in a human male. What change would occur immediately if both structures labeled B were damaged or blocked?

- (1) Structure A would decrease in size.
- (2) The blood supply to structure E would decrease.
- (3) Gametes would no longer be transported to structure C.
- (4) Structure D would be able to deliver more gametes.

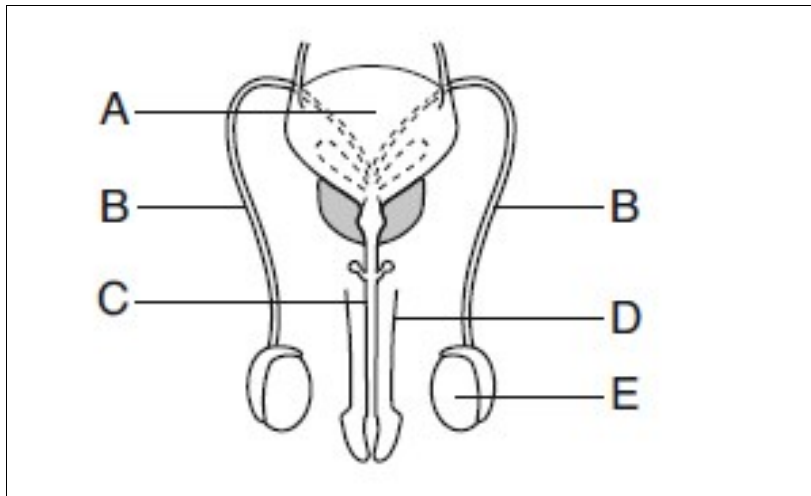
Data Base File Number: 413

Regents Date

June2012

35 6/19/2012 S4K4

Answer 3



stain

858. A student observes some cells with a compound light microscope as shown in view A. What did the student most likely do to obtain view B?

- (1) applied a biological stain to the slide
- (2) applied distilled water to the slide
- (3) used electrophoresis
- (4) used a higher magnification

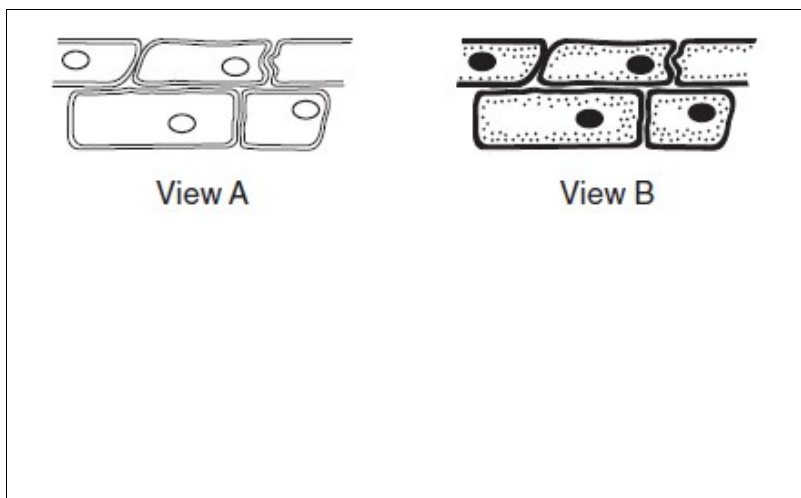
Data Base File Number: 248

Regents Date

Jan2010

71 1/26/2010 LABS

Answer 1



starch test / lab

859. A laboratory setup for a demonstration is represented in the diagram shown. What indicator could be used in the beaker of water to indicate if starch moves through the membrane, from the test tube, into the beaker of water?

- (1) Brom Thymol blue solution
- (2) Benedict's solution
- (3) iodine solution
- (4) Fehling's solution

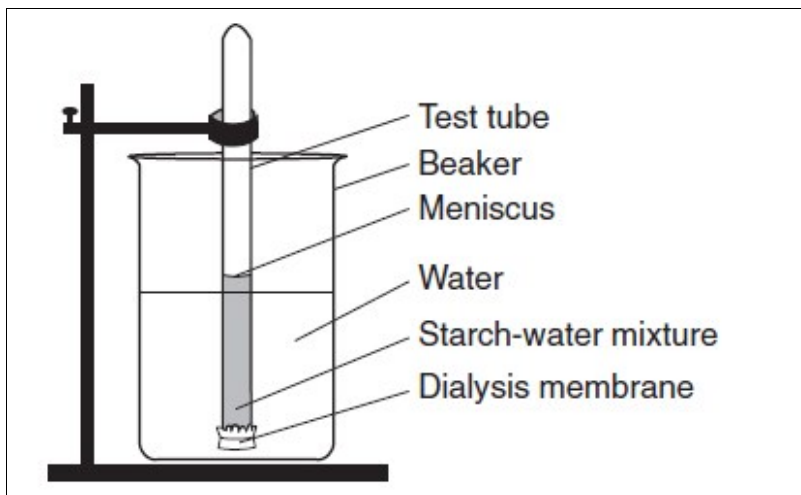
Data Base File Number: 503

Regents Date

June2006

74 6/21/2006 LAB5

Answer 3



starch test / lab

860. Glucose indicator was added to a beaker of an unknown liquid. Starch indicator was added to a different beaker containing the same unknown liquid. The color of the indicator solutions before they were added to the beakers and the color of the contents of the beakers after adding the indicator solution are recorded in the chart shown. Which carbohydrate is present in the unknown liquid?

(1) cellulose

(3) sucrose

(2) starch

(4) glucose

**Data Base
File Number:** 170

Regents Date

Jan2009

76

1/27/2009

LABS

Answer 2

Beaker	Solution	Color of Indicator Solution Before Adding to Beaker	Color of Contents of Beaker After Adding Indicator Solution
1	unknown liquid + glucose indicator	blue	blue (after heating)
2	unknown liquid + starch indicator	amber	blue black

statistical analysis

861. Honeybees have a very cooperative way of living. Scout bees find food, return to the hive, and do the "waggle dance" to communicate the location of the food source to other bees in the hive. The waggle, represented by the wavy line in the diagram below, indicates the direction of the food source, while the speed of the dance indicates the distance to the food. Different species of honeybees use the same basic dance pattern in slightly different ways as shown in the table. What is the relationship between the distance to the food source and the number of waggle runs in 15 seconds?

- (1) Fewer waggles means that the food source is farther away.
- (2) Fewer waggles means that the food source is closer.
- (3) More waggles means that the food source is farther away.
- (4) More waggles means that the food source is closer.

Data Base File Number: 138

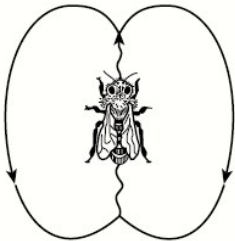
Regents Date

Aug2008

47 8/13/2008 S1K3

Answer 1

Number of Waggle Runs in 15 Seconds		Distance to Food (feet)
Giant Honeybee	Indian Honeybee	
10.6	10.5	50
9.6	8.3	200
6.7	4.4	1000
4.8	2.8	2000



stomate

862. The diagram shown represents specialized cells in the surface of the leaf of a green plant. The main function of these cells is to

- (1) change the size of the stomate to regulate water loss
- (2) close the stomate to keep dust and dirt out of the leaf
- (3) directly provide leaf cells with the water involved in photosynthesis
- (4) allow newly formed glucose to be released from the leaf

Data Base File Number:

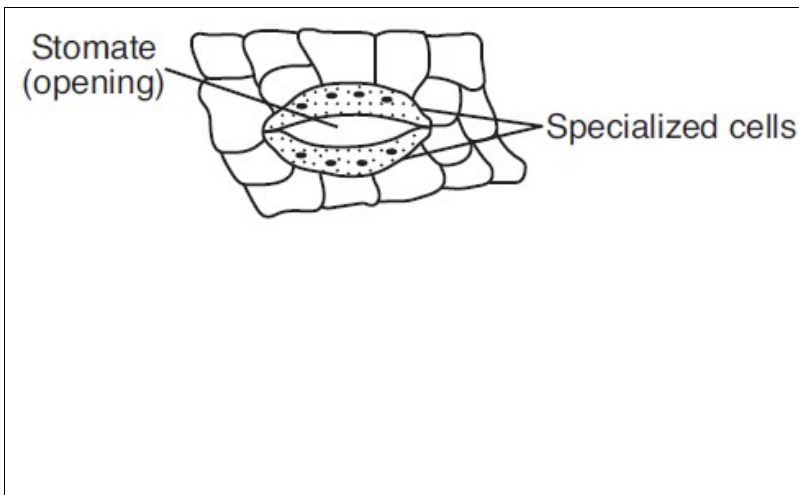
883

Regents Date

June 2013

42 6/11/2013 S4K5

Answer 1



stomate

863. The diagram shown represents changes in the sizes of openings present in leaves as a result of the actions of cells X and Y. The actions of cells X and Y help the plant to

- (1) maintain homeostasis by controlling water loss
- (2) store excess heat during the day and remove the heat at night
- (3) absorb light energy necessary for cellular respiration
- (4) detect changes in the biotic factors present in the environment

Data Base File Number:

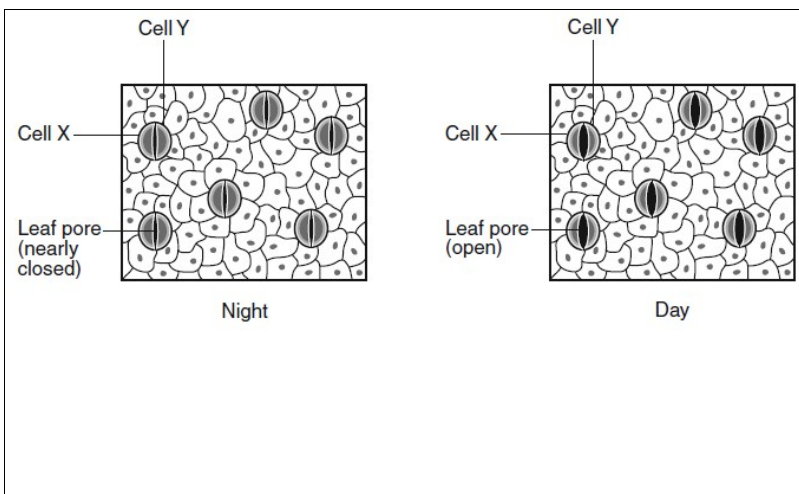
611

Regents Date

Jan 2013

29 1/23/2013 S4K5

Answer 1



stomate

864. The diagram shown represents a change in guard cells that open and close pores in a plant. This change directly helps to

- (1) increase heterotrophic nutrition
- (2) absorb minerals
- (3) regulate water loss
- (4) reduce seed production

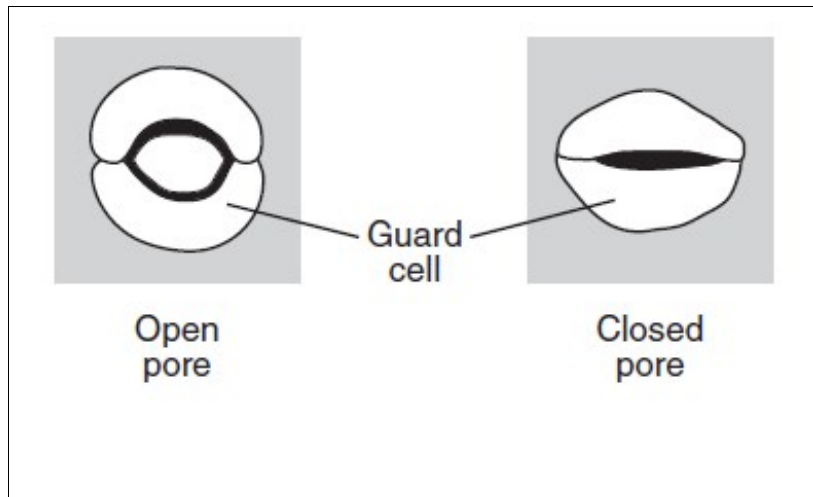
Data Base File Number: 382

Regents Date

Jan2012

22 1/25/2012 S4K5

Answer 3



stomate

865. The diagram shown represents a cross section of a leaf of a green plant, showing an opening (stomate) in the lower surface. A stomate in the lower surface of the leaf has a function most similar to the function of which cell structure?

- (1) cell membrane
- (2) vacuole
- (3) ribosome
- (4) nucleus

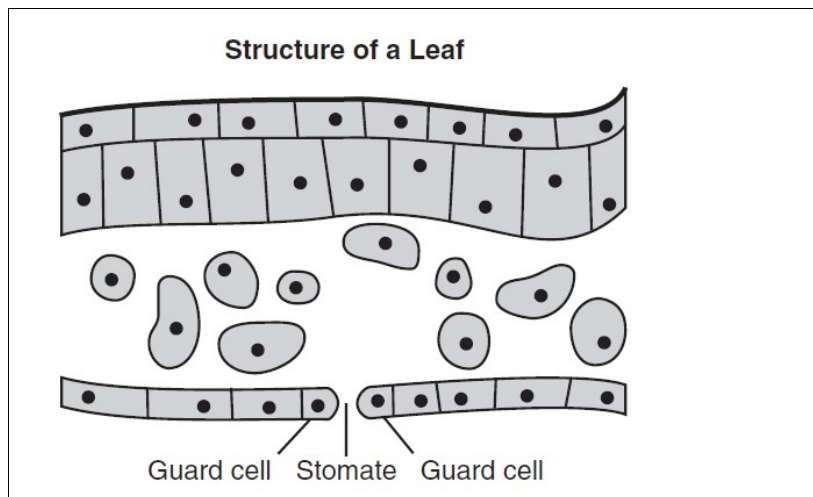
Data Base File Number: 303

Regents Date

Jan2011

6 1/25/2011 S4K2

Answer 1



stomate

866. The diagram shown represents a cross section of a leaf. how does the structure labeled X primarily function to maintain homeostasis in a plant?

- (1) it controls nitrogen loss
- (2) it controls respiration
- (3) it controls water loss
- (4) it controls starch digestion

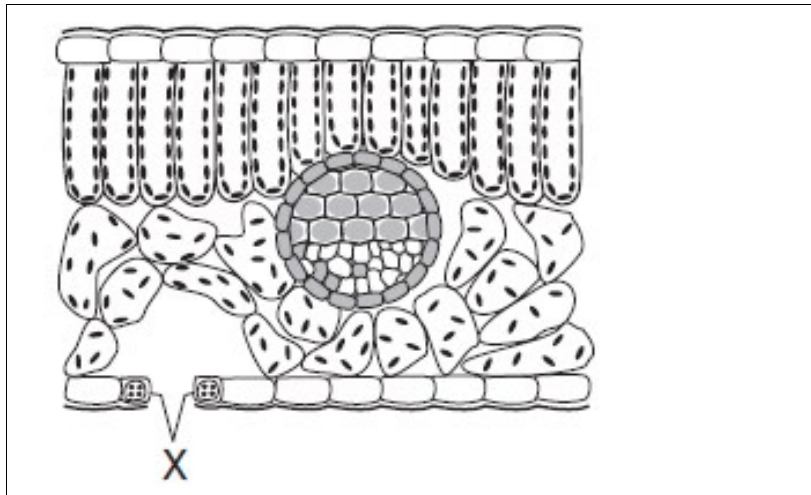
Data Base File Number: 770

Regents Date

Aug2003

46 8/13/2003 S4K5

Answer 3



stomate

867. The diagram shown represents a cross section of part of a leaf. Which life functions are directly regulated through feedback mechanisms associated with the actions of the structures labeled X?

- (1) excretion and immunity
- (2) digestion and coordination
- (3) circulation and reproduction
- (4) respiration and photosynthesis

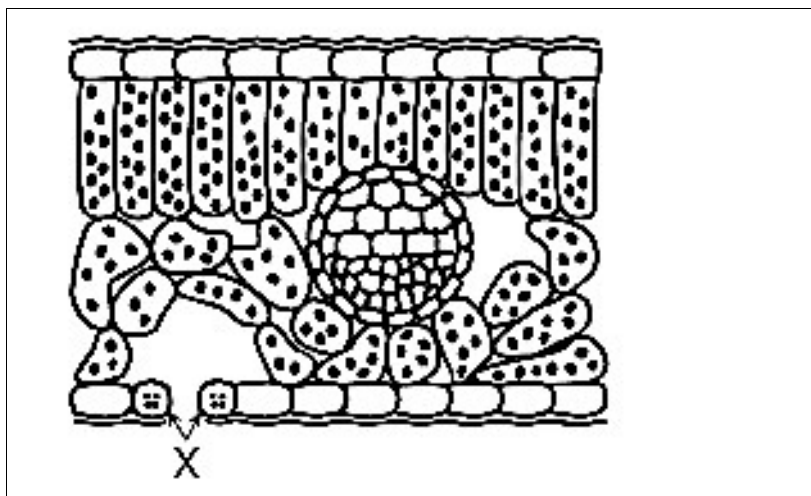
Data Base File Number: 9

Regents Date

Aug2007

22 8/16/2007 S4K5

Answer 4



stomate

868. The photograph below shows a microscopic view of the lower surface of a leaf. What is the main function of the cells indicated by the black pointer?

- (1) regulate the rate of gas exchange
- (2) store food for winter dormancy
- (3) undergo mitotic cell division
- (4) give support to the veins in the leaf

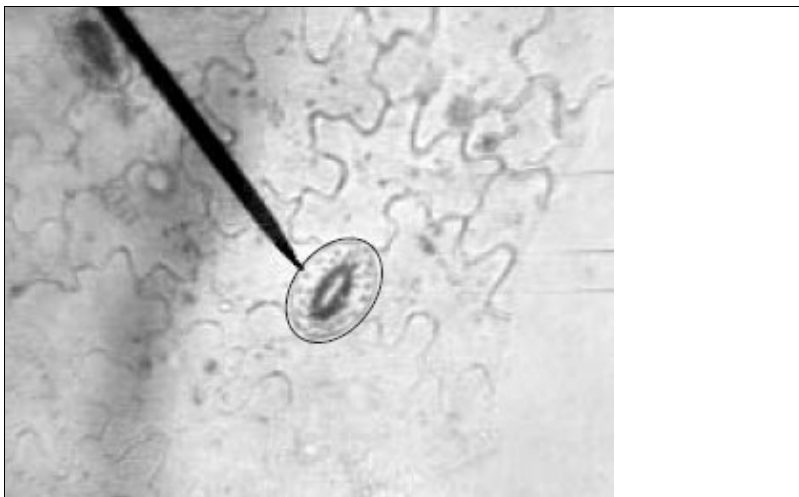
Data Base File Number: 786

Regents Date

Aug2002

39 8/13/2002 S4K5

Answer 1



structural similarities

869. The information in the diagram was printed on a calendar of important events in the field of biology. This information is most closely associated with

- (1) an explanation for the change in types of minerals in an area through ecological succession
- (2) the reasons for the loss of biodiversity in all habitats on Earth
- (3) an attempt to explain the structural similarities observed among diverse living organisms
- (4) the effect of carrying capacity on the size of populations

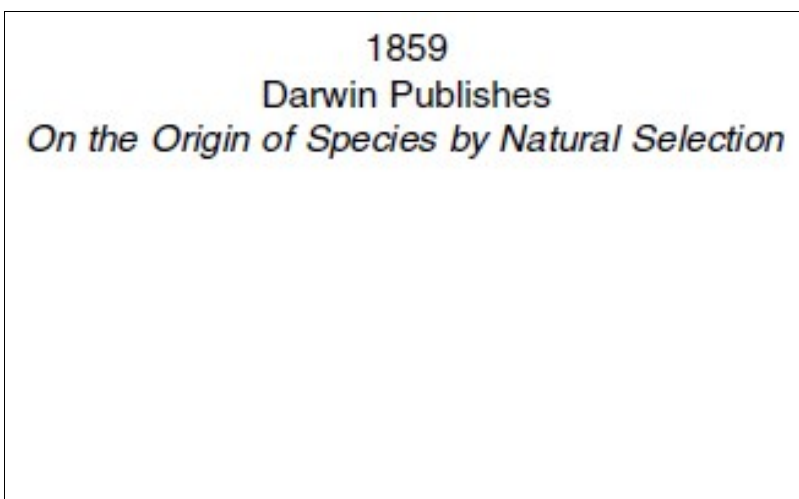
Data Base File Number: 759

Regents Date

Aug2003

18 8/13/2003 S4K3

Answer 3



structural similarities

870. The remains of three organisms are shown in the diagram. A study of these remains would indicate that these organisms have

- (1) identical food preferences
- (2) identical body sizes
- (3) structural similarities
- (4) habitat similarities

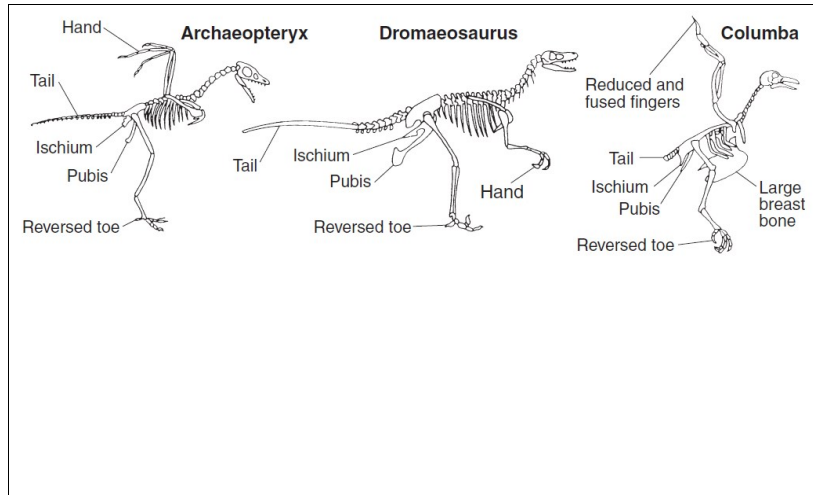
Data Base File Number: 238

Regents Date

Jan2010

35 1/26/2010 S4K3

Answer 3



succession

871. Base your answer to this question on the diagrams of the stages of succession as shown and on your knowledge of biology. What is the correct sequence of these stages?

- (1) B → A → D → C
- (2) A → D → C → B
- (3) C → B → A → D
- (4) D → A → C → B

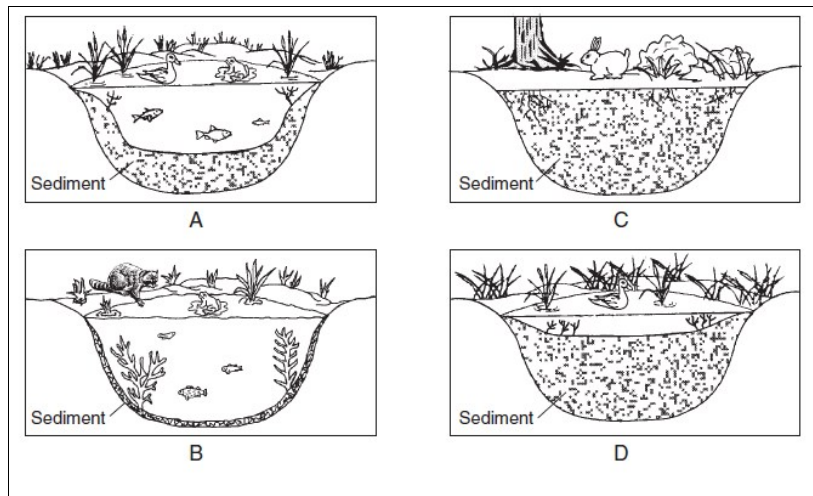
Data Base File Number: 823

Regents Date

June2002

59 6/19/2002 S4K6

Answer 1



succession

872. Stage D in the diagram shown is located on land that was once a bare field. The sequence of stages leading from bare field to stage D best illustrates the process known as

- (1) replication
- (2) recycling
- (3) feedback
- (4) succession

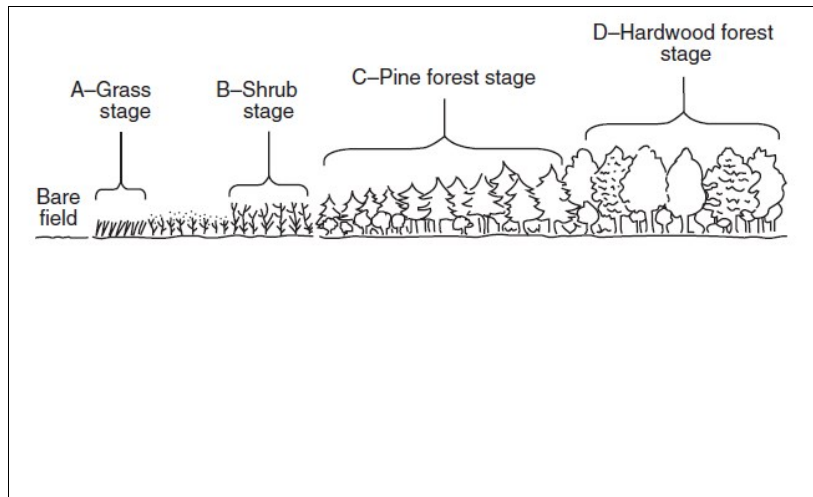
Data Base File Number: 668

Regents Date

June 2004

30 6/18/2004 S4K6

Answer 4



succession

873. The diagrams show some changes in an environment over time. Which phrase best describes this sequence of diagrams?

- (1) the path of energy through a food web in a natural community
- (2) the altering of an ecosystem by a natural disaster
- (3) natural communities replacing each other in an orderly sequence
- (4) similarities between an aquatic ecosystem and a terrestrial ecosystem

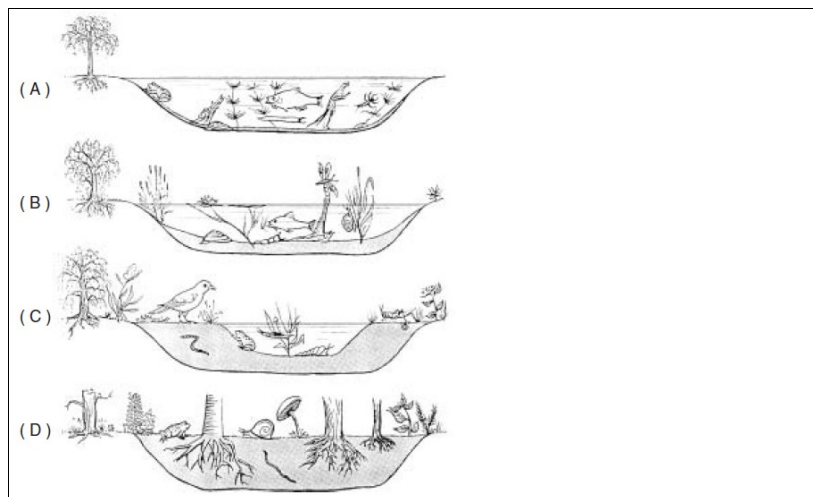
Data Base File Number: 783

Regents Date

Aug 2002

30 8/13/2002 S4K6

Answer 3



succession

874. Which concept is represented by the graph shown?

- (1) ecological succession in a community
- (2) cycling of carbon and nitrogen in a forest
- (3) energy flow in a food chain over time
- (4) negative human impact on the environment

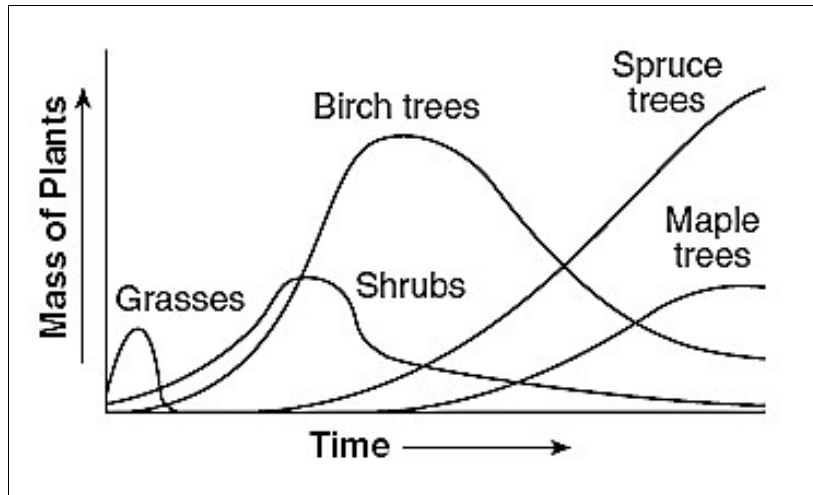
Data Base File Number: 13

Regents Date

Aug2007

32 8/16/2007 S4K6

Answer 1



succession

875. Over a long period of time, the stages represented in the diagram shown were each present in a particular ecosystem. After a forest fire, what is the most likely order in which these stages appeared?

- (1) D -> C -> A -> B
- (2) B -> D -> C -> A
- (3) A -> B -> C -> D
- (4) B -> C -> D -> A

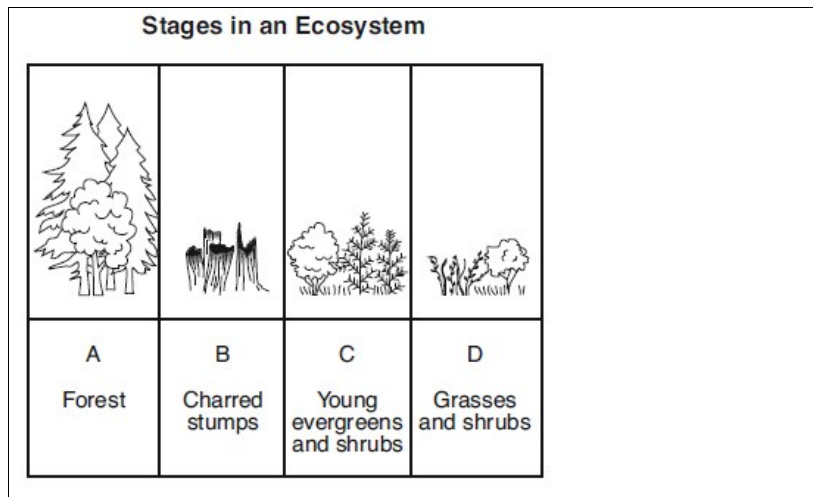
Data Base File Number: 409

Regents Date

June2012

26 6/19/2012 S4K6

Answer 2



succession

876. The diagram shown represents a biological process taking place in an area of New York State unaffected by natural disasters, Which statement correctly describes a stage in this process?

- (1) The grass stage is the most stable stage and exists for thousands of years.
- (2) The shrub stage modifies the ecosystem, making it more suitable for the pine forest
- (3) The pine forest stage has no biodiversity and the least competition.
- (4) The hardwood forest stage will be replaced by a pine forest

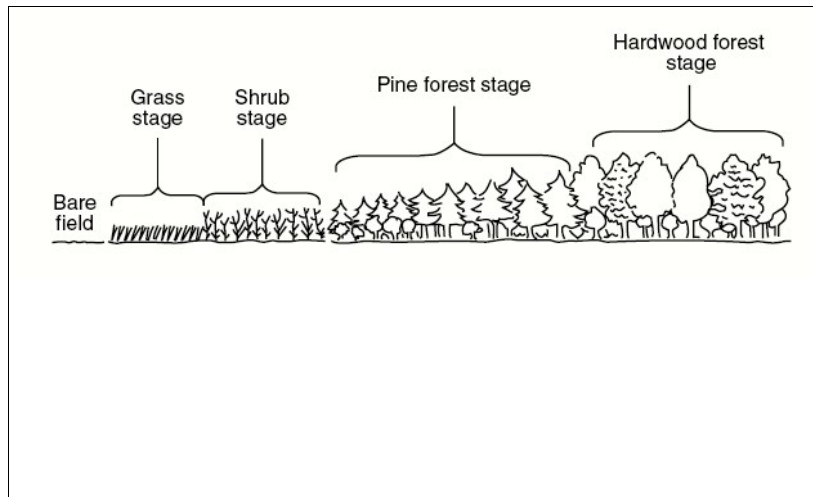
Data Base File Number: 154

Regents Date

Jan2009

26 1/27/2009 S4K6

Answer 2



succession

877. Which statement best describes one of the stages represented in the diagram shown?

- (1) The mature forest will most likely be stable over a long period of time.
- (2) If all the weeds and grasses are destroyed, the number of carnivores will increase.
- (3) As the population of the shrubs increases, it will be held in check by the mature forest community.
- (4) The young forest community will invade and take over the mature forest community.

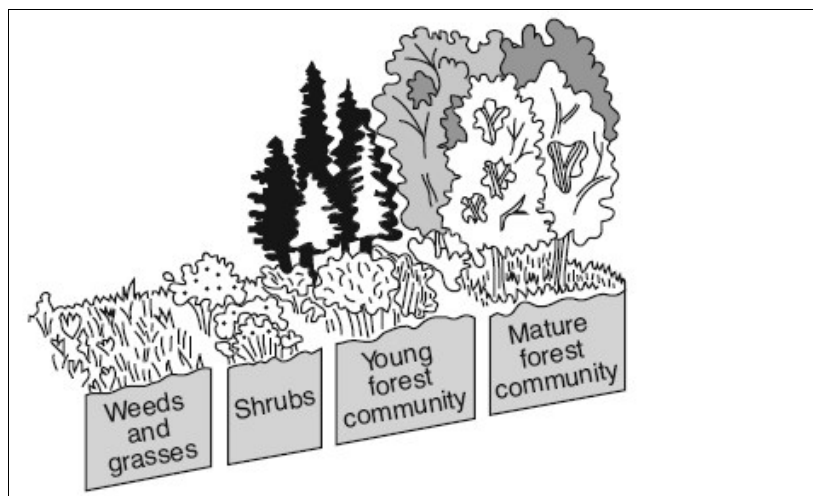
Data Base File Number: 177

Regents Date

June2009

1 6/18/2009 S4K1

Answer 1



succession

878. Which statement best explains why different plant species are found at different water depths as represented in the diagram shown?

- (1) Energy flows through ecosystems in one direction, typically beginning with photosynthetic organisms.
- (2) In any particular environment, the growth and survival of organisms is affected by physical conditions.
- (3) Plants on land are higher up the food chain than plants under water.
- (4) Plant cells and some one-celled organisms contain chloroplasts.

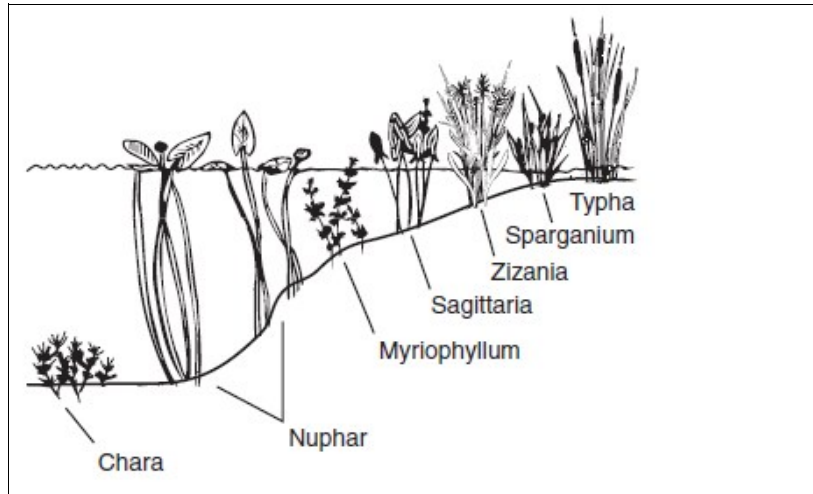
Data Base File Number: 383

Regents Date

Jan2012

24 1/25/2012 S4K6

Answer 2



succession

879. Which of the stages in the diagram shown consists of plant species that modify the environment, eventually making it more suitable for another community?

- (1) grass stage, only
- (2) grass, shrub, and pine forest stages
- (3) shrub, pine forest, and hardwood forest stages
- (4) hardwood forest stage, only

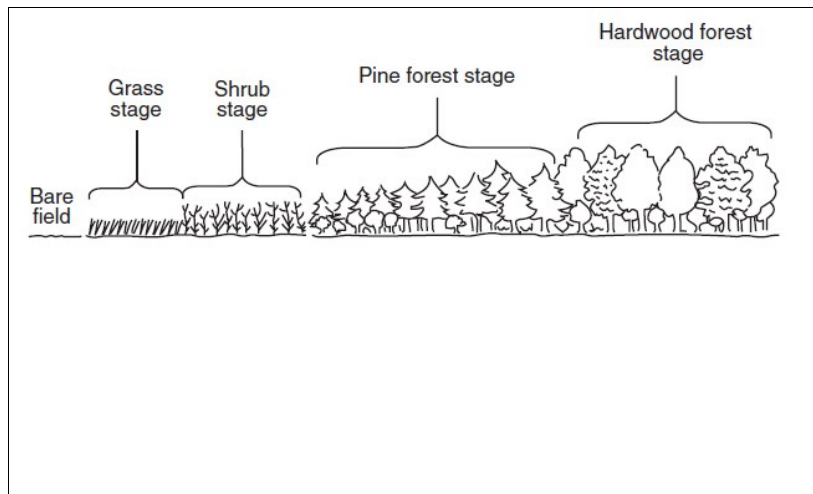
Data Base File Number: 540

Regents Date

Jan2005

28 1/28/2005 S4K6

Answer 2



succession

880. The diagram shown represents a process that occurs in nature. This diagram can be used to illustrate the
- (1) effects of reduced competition between different types of plant life
 - (2) effect of human intervention on a stable ecosystem
 - (3) ecological succession from bare rock to stable ecosystem
 - (4) evolution of mosses to trees over 200 years

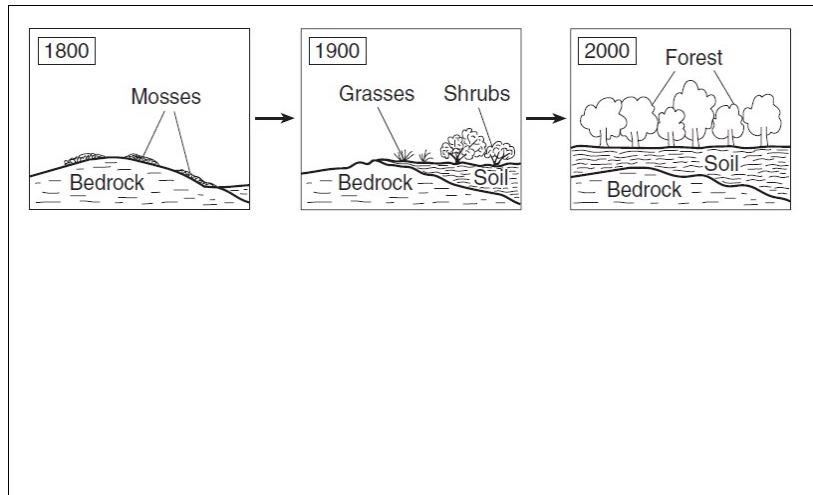
Data Base File Number: 234

Regents Date

Jan2010

26 1/26/2010 S4K6

Answer 3



succession / secondary

881. The diagram shows changes that might occur over time after a fire in a forest area. Which statement is most closely related to the events shown in the diagram?
- (1) The lack of animals in an altered ecosystem speeds natural succession.
 - (2) Abrupt changes in an ecosystem only result from human activities.
 - (3) Stable ecosystems never become established after a natural disaster.
 - (4) An abrupt environmental change can cause a long-term gradual change in an ecosystem.

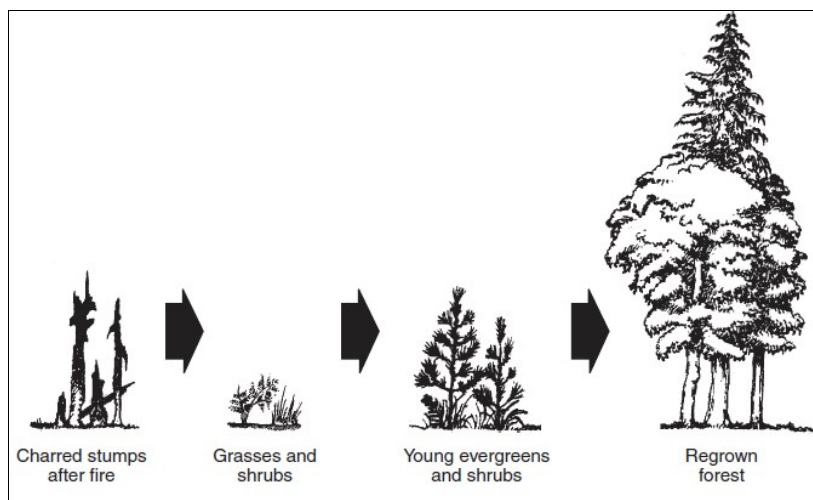
Data Base File Number: 725

Regents Date

Jan2003

64 1/30/2003 S4K6

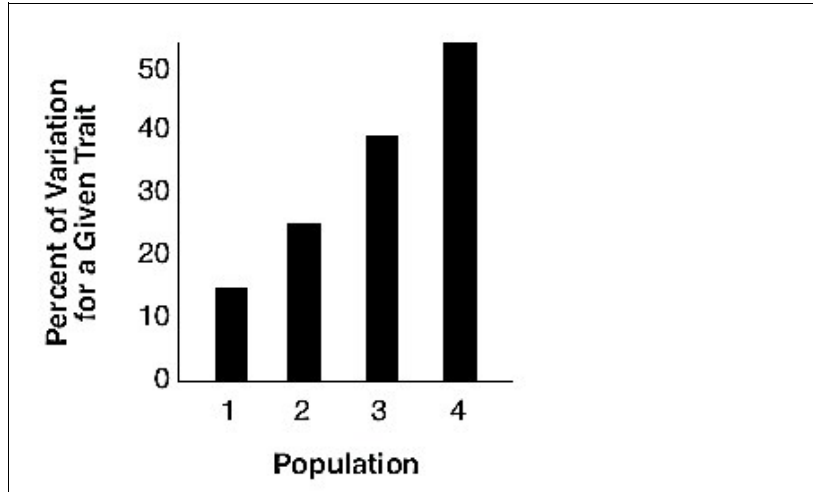
Answer 4



survival

882. The graph shows the percent of variation for a given trait in four different populations of the same species. The populations inhabit similar environments. In which population will the greatest number of individuals most likely survive if a significant environmental change related to this trait occurs?

- (1) 1
- (2) 2
- (3) 3
- (4) 4



Data Base File Number: 65

Regents Date

Jan2008

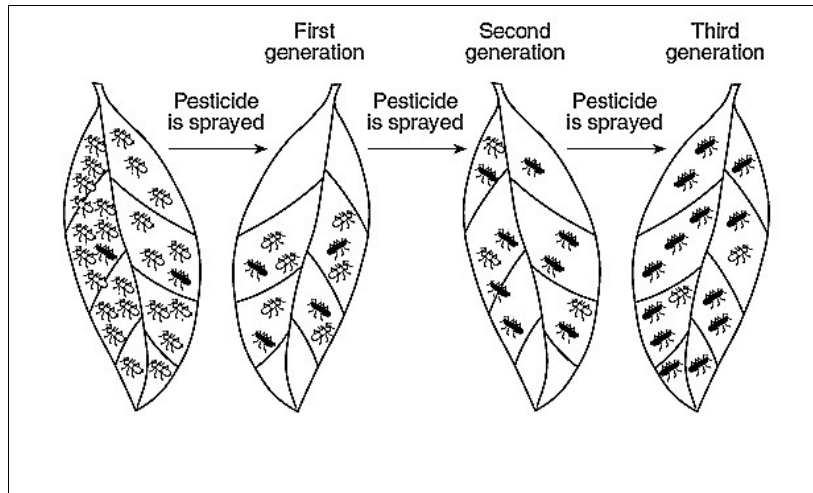
15 1/25/2008 S4K3

Answer 4

survival of the fittest

883. The diagram shows the effect of spraying a pesticide on a population of insects over three generations. Which concept is represented in the diagram?

- (1) survival of the fittest
- (2) dynamic equilibrium
- (3) succession
- (4) extinction



Data Base File Number: 40

Regents Date

June2007

37 6/20/2007 S4K3

Answer 1

synthesis

884. What substance could be represented by the letter X in the diagram shown?

- (1) carbohydrates
- (2) ozone
- (3) carbon dioxide
- (4) water

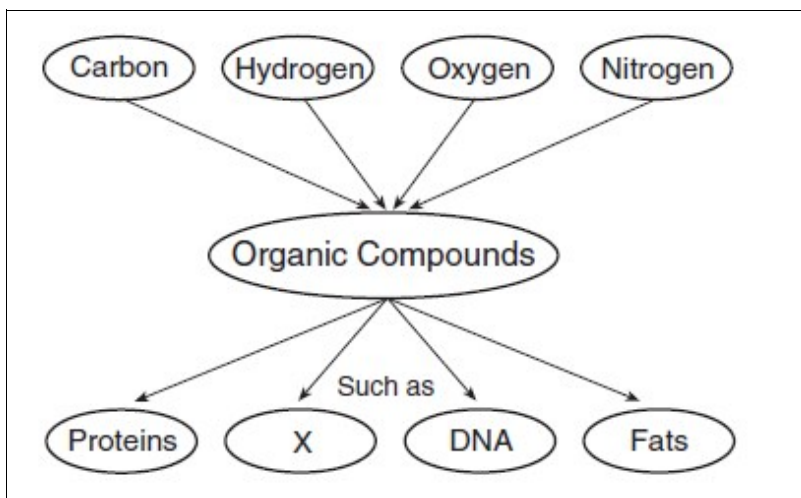
Data Base File Number: 643

Regents Date

Jan2004

26 1/29/2004 **S4K5**

Answer 1



synthesis

885. Which row in the chart shown contains correct information concerning synthesis?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 505

Regents Date

Aug2006

4 8/16/2006 **S4K1**

Answer 3

Row	Building Blocks	Substance Synthesized Using the Building Blocks
(1)	glucose molecules	DNA
(2)	simple sugars	protein
(3)	amino acids	enzyme
(4)	molecular bases	starch

synthesis

886. The diagram shown represents a process that occurs within a cell in the human pancreas. This process is known as

- (1) digestion by enzymes
- (2) protein synthesis
- (3) energy production
- (4) replication of DNA

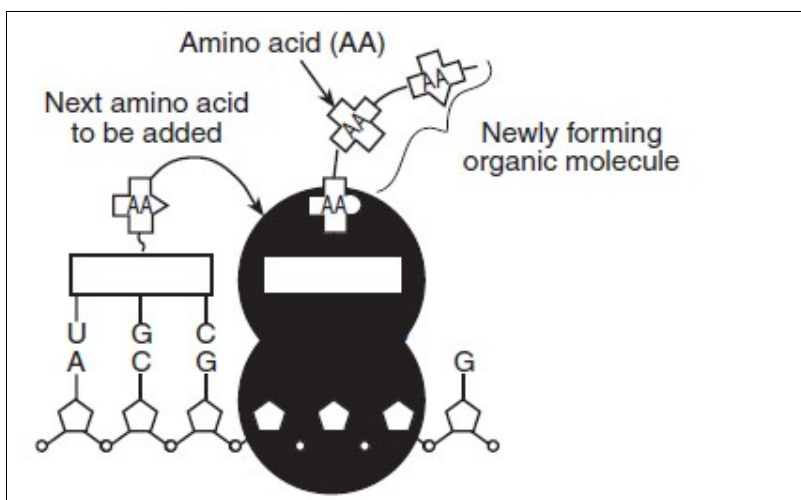
Data Base File Number: 860

Regents Date

Aug2001

6 8/16/2001 S4K1

Answer 2



synthesis

887. The diagram shown represents a series of reactions that can occur in an organism. This diagram best illustrates the relationship between

- (1) enzymes and synthesis
- (2) amino acids and glucose
- (3) antigens and immunity
- (4) ribosomes and sugars

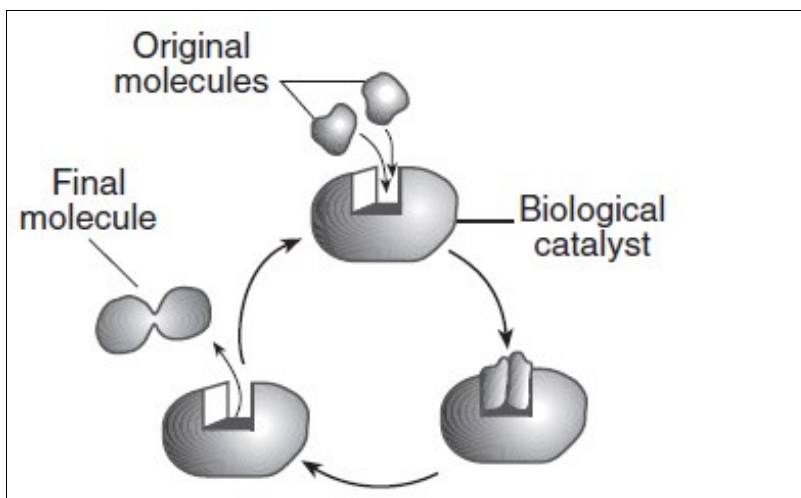
Data Base File Number: 558

Regents Date

June2005

20 6/22/2005 S4K5

Answer 1



synthesis

888. The diagram shown represents the synthesis of a portion of a complex molecule in an organism. Which of the following could be used to identify the building blocks and product?

- (1) starch molecules producing glucose
- (2) amino acid molecules producing part of a protein
- (3) sugar molecules producing ATP
- (4) DNA molecules producing part of starch

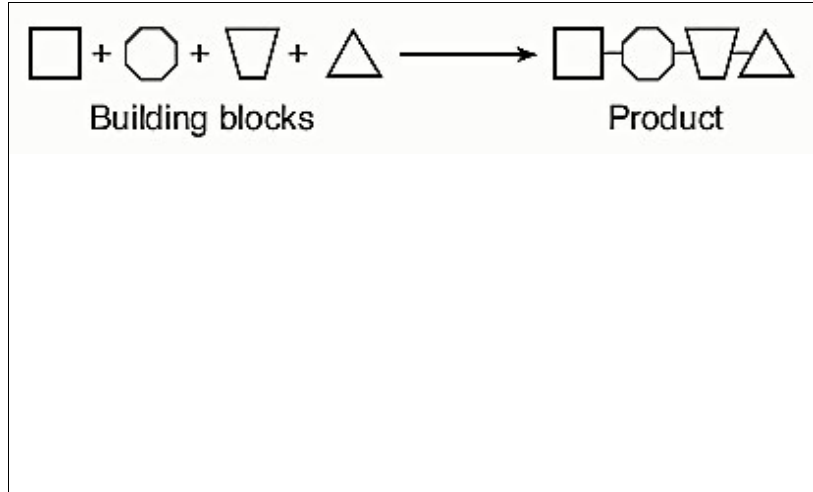
Data Base File Number: 90

Regents Date

June2008

9 6/24/2008 S4K1

Answer 2



synthesis

889. The diagram shown represents a sequence of events that occurs in living things. Letter X represents

- (1) inorganic molecules
- (2) organic molecules
- (3) biological catalysts
- (4) simple sugars

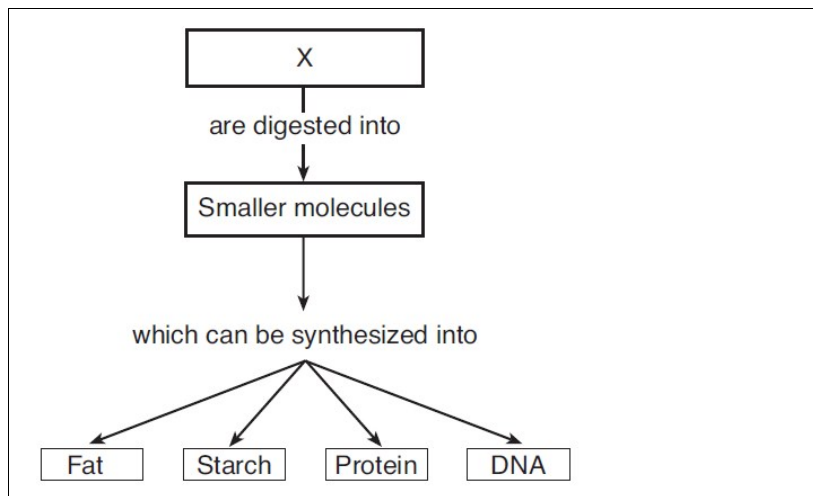
Data Base File Number: 882

Regents Date

June2013

35 6/11/2013 S4K5

Answer 2



synthesis

890. Which order of metabolic processes, shown in the diagram, converts nutrients consumed by an organism into cell parts?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

Data Base File Number: 482

Regents Date

June2006

19 6/21/2006 S4K5

Answer 1

- (1) digestion → absorption → circulation → diffusion → synthesis
- (2) absorption → circulation → digestion → diffusion → synthesis
- (3) digestion → synthesis → diffusion → circulation → absorption
- (4) synthesis → absorption → digestion → diffusion → circulation

testes

891. Base your answer to this question on the diagram shown and on your knowledge of biology. The letters in the diagram indicate structures present in a human male. Which structure produces the male hormone responsible for characteristics such as muscle development, deep voice, and gamete production?

- (1) A
- (2) B
- (3) E
- (4) D

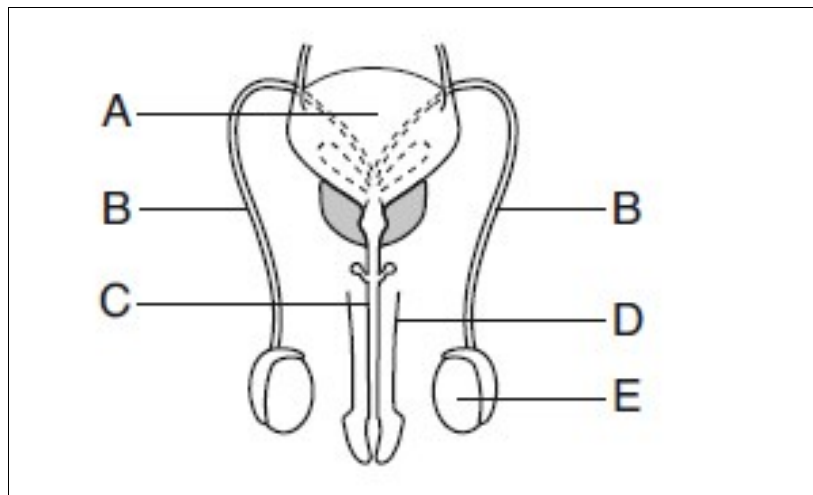
Data Base File Number: 412

Regents Date

June2012

34 6/19/2012 S4K4

Answer 3



testes

892. The diagram shown represents the reproductive system of a mammal. The hormone produced in structure A most directly brings about a change in

- (1) blood sugar concentration
- (2) physical characteristics
- (3) the rate of digestion
- (4) the ability to carry out respiration

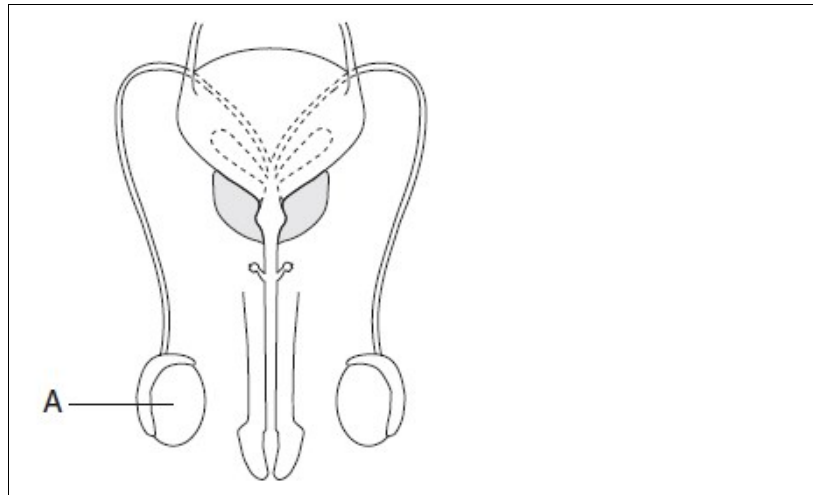
Data Base File Number: 641

Regents Date

Jan2004

23 1/29/2004 S4K4

Answer 2



tissue

893. Some human body cells are shown in the diagram. These groups of cells represent different

- (1) tissues in which similar cells function together
- (2) organs that help to carry out a specific life activity
- (3) systems that are responsible for a specific life activity
- (4) organelles that carry out different functions

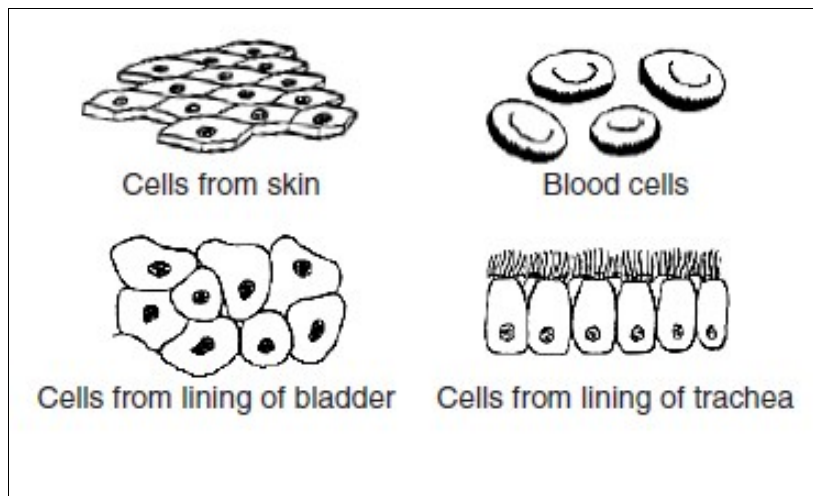
Data Base File Number: 534

Regents Date

Jan2005

7 1/28/2005 S4K1

Answer 1



tissue

894. The diagram shown represents levels of organization in living things. Which term would best represent X?

- (1) human
- (2) tissue
- (3) stomach
- (4) organelle

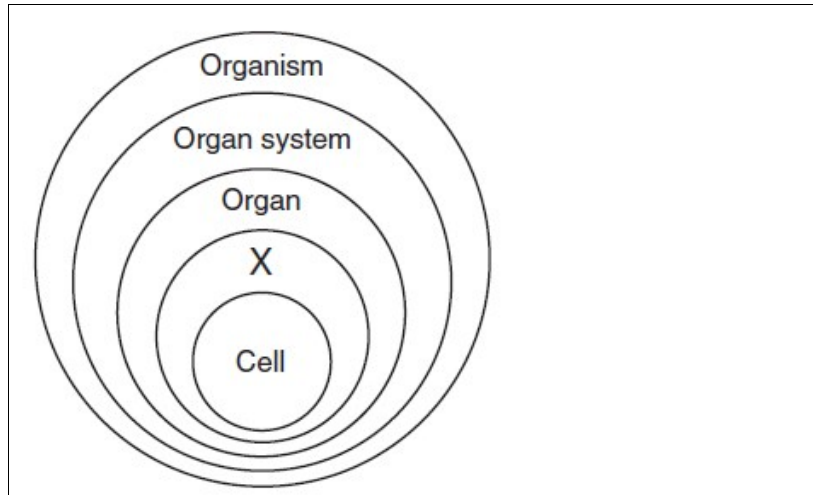
Data Base File Number: 473

Regents Date

June2006

1 6/21/2006 S4K1

Answer 2



transport

895. Which statement is a valid inference concerning structure X represented in the diagram below?

- (1) Structure X contains guard cells that regulate glucose intake.
- (2) Structure X carries out heterotrophic nutrition.
- (3) Structure X produces gametes for asexual reproduction.
- (4) Structure X transports materials for metabolic activities.

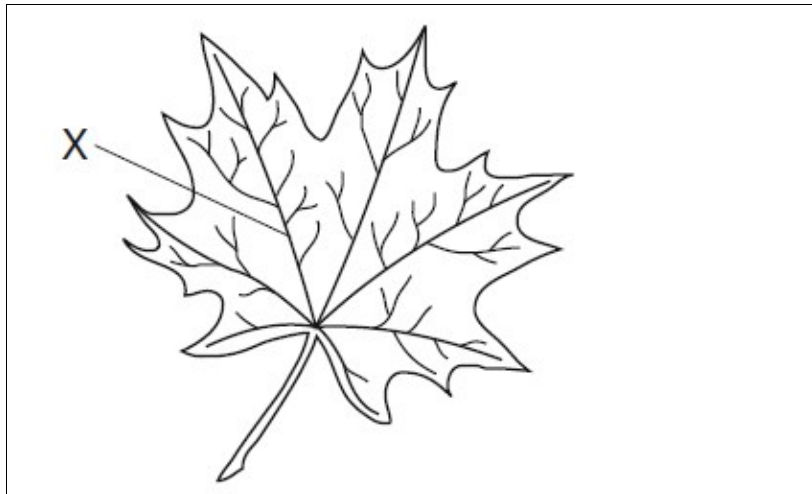
Data Base File Number: 435

Regents Date

Aug2012

33 8/17/2012 S1K3

Answer 4



uterus

896. The diagram shows the human female reproductive system. The fetus normally develops within structure

- (1) A
- (2) B
- (3) C
- (4) D

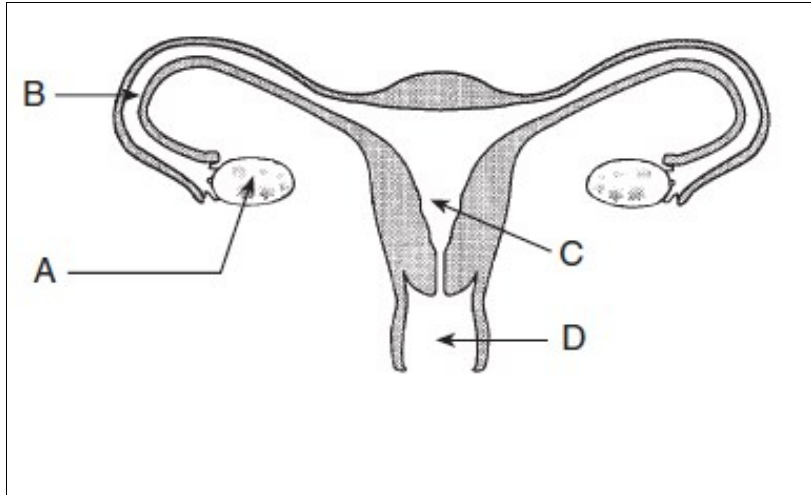
Data Base File Number: 863

Regents Date

Aug2001

17 8/16/2001 S4K4

Answer 3



uterus

897. Base your answer to this question on the diagram shown, which represents the human female reproductive system. In which part of this system does a fetus usually develop?

- (1) A
- (2) B
- (3) C
- (4) D

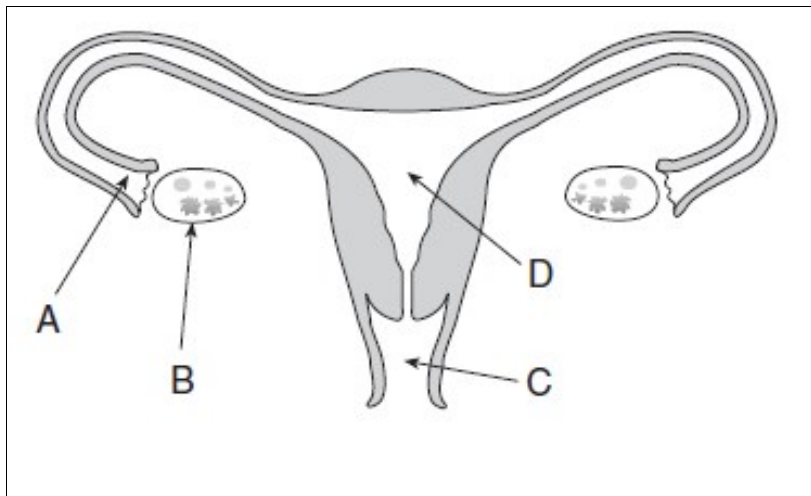
Data Base File Number: 639

Regents Date

Jan2004

16 1/29/2004 S4K4

Answer 4



uterus

898. The letters in the diagram shown represent structures in a human female. Estrogen and progesterone increase the chance for successful fetal development by regulating activities within structure

- (1) A
- (2) B
- (3) C
- (4) D

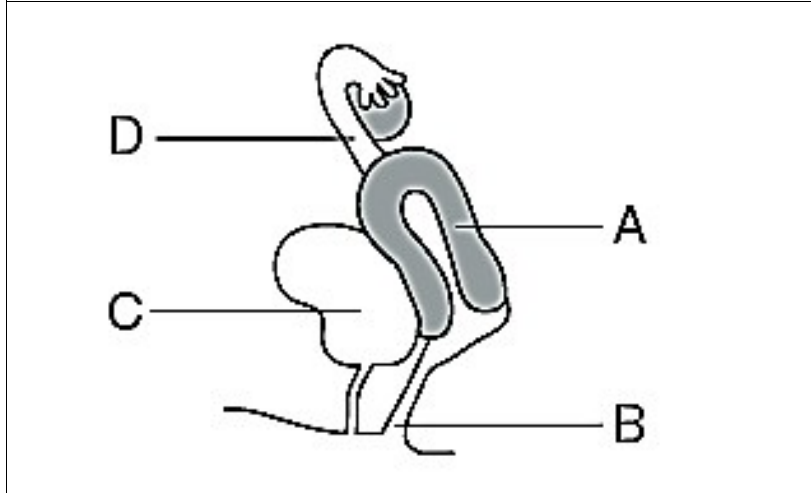
Data Base File Number: 26

Regents Date

June 2007

18 6/20/2007 S4K4

Answer 1



uterus

899. A diagram of the human female reproductive system is shown. Identify the structure labeled X.

- (1) ovary
- (2) oviduct
- (3) cervix
- (4) uterus

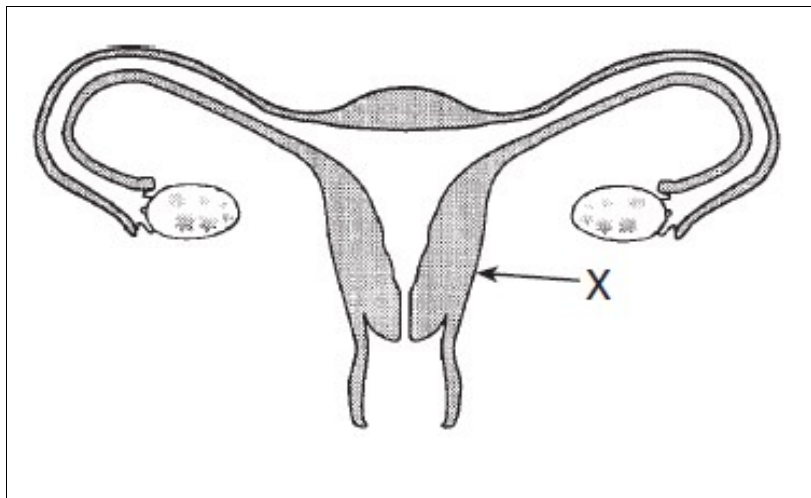
Data Base File Number: 797

Regents Date

Aug 2002

69 8/13/2002 S4K4

Answer 4



vaccination

900. Base your answer to this question on the table shown and on your knowledge of biology. None of these volunteers ever had chicken pox. After the injection, there would most likely be antibodies to chicken pox in the bloodstream of volunteers

- (1) A and D, only
- (2) A, B, and D
- (3) C
- (4) D, only

Data Base File Number: 785

Regents Date

Aug2002

37 8/13/2002 S4K5

Answer 1

Volunteer	Injected with Dead Chicken Pox Virus	Injected with Dead Mumps Virus	Injected with Distilled Water
A	X		
B		X	
C			X
D	X	X	

vaccination

901. Base your answer to this question on the graph shown and on your knowledge of biology. Which statement best explains a change in the incidence of disease in 1970?

- (1) Children were vaccinated against measles.
- (2) New drugs cured diabetes.
- (3) The bacteria that cause pneumonia developed a resistance to drugs.
- (4) New technology helped to reduce the incidence of all three diseases.

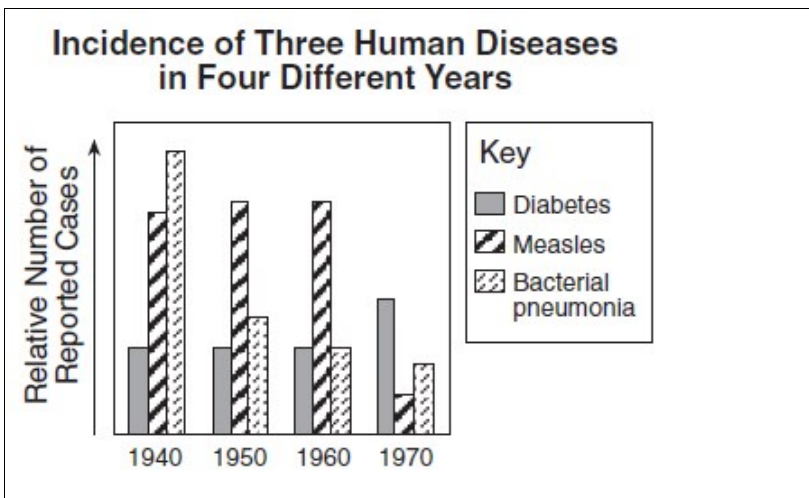
Data Base File Number: 591

Regents Date

Aug2005

36 8/16/2005 S4K5

Answer 1



variation

904. Base your answer to this questions on the information and graph shown and on your knowledge of biology. A small community that is heavily infested with mosquitoes was sprayed weekly with an insecticide for several months. Daily counts providing information on mosquito population size are represented in the graph as shown. Which statement best explains why some mosquitoes survived the first spraying?

- (1) The weather in early summer was probably cool.
- (2) Most of the mosquitoes were of reproductive age.
- (3) Environmental factors varied slightly as the summer progressed.
- (4) Natural variation existed within the population.

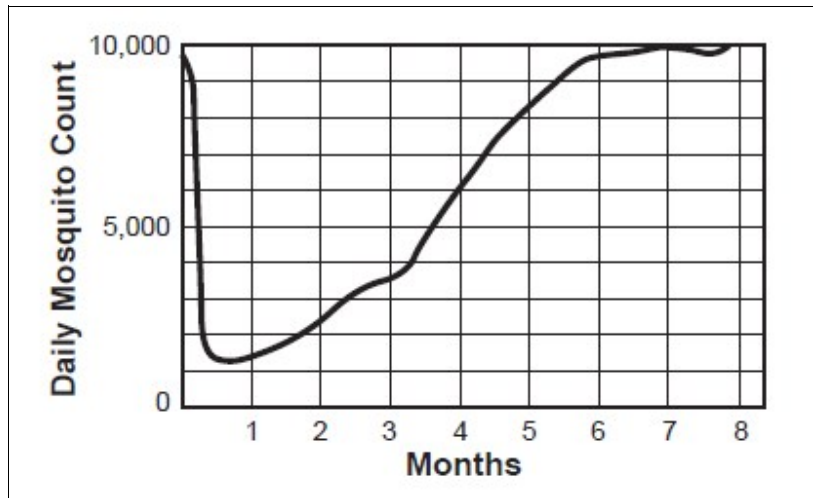
Data Base File Number: 855

Regents Date

June2001

57 6/15/2001 S4K3

Answer 4



vegetative propagation

905. Spider plants can reproduce both sexually and asexually. The diagram shown represents a spider plant reproducing asexually by a method known as vegetative propagation. Which statement best describes the relationship between the parent plant and the offspring in the diagram?

- (1) The cells of the offspring contain half the amount of DNA as the cells of the parent plant.
- (2) The parent plant provides genetic material to the offspring through its gametes.
- (3) The cells of the offspring have the same genetic content as the cells of the parent plant.
- (4) The cells of the parent plant have more genetic diversity, compared to the cells of the offspring.

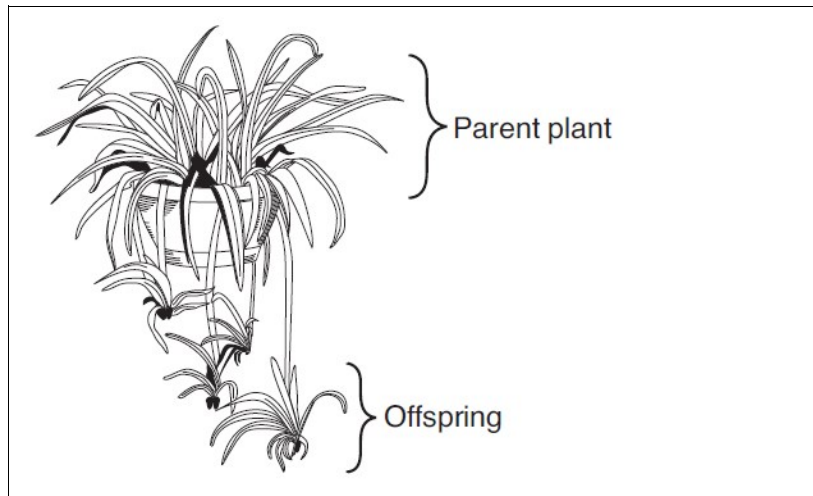
Data Base 875
File Number:

Regents Date

June 2013

7 6/11/2013 S4K4

Answer 3



virus structure

906. Proteins on the surface of a human cell and on a bird influenza virus are represented in the diagram shown. What change in the bird influenza virus would allow it to infect this human cell?

- (1) The bird influenza virus would have to have some surface proteins that would be similar to this shape ----->
- (2) The bird influenza virus would have to have some surface proteins that would be similar to this shape -----<
- (3) The bird influenza virus would have to have some surface proteins that would be similar to this shape -----O
- (4) The bird influenza virus would not have to have any changes in its surface proteins.

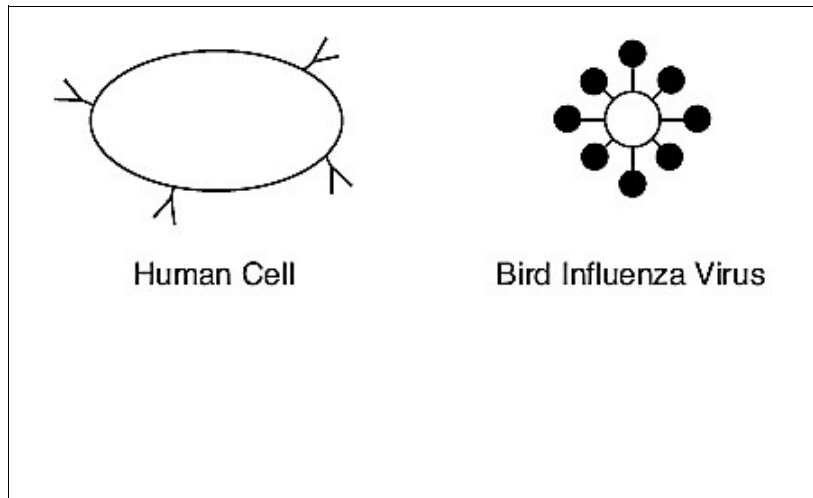
Data Base File Number: 110

Regents Date

June2008

53 6/24/2008 S4K1

Answer 1



waste removal

907. Some organs of the human body are represented in the diagram shown. Which statement best describes the functions of these organs?

- (1) B pumps blood to A for gas exchange.
- (2) A and B both produce carbon dioxide, which provides nutrients for other body parts.
- (3) A releases antibodies in response to an infection in B.
- (4) The removal of wastes from both A and B involves the use of energy from ATP.

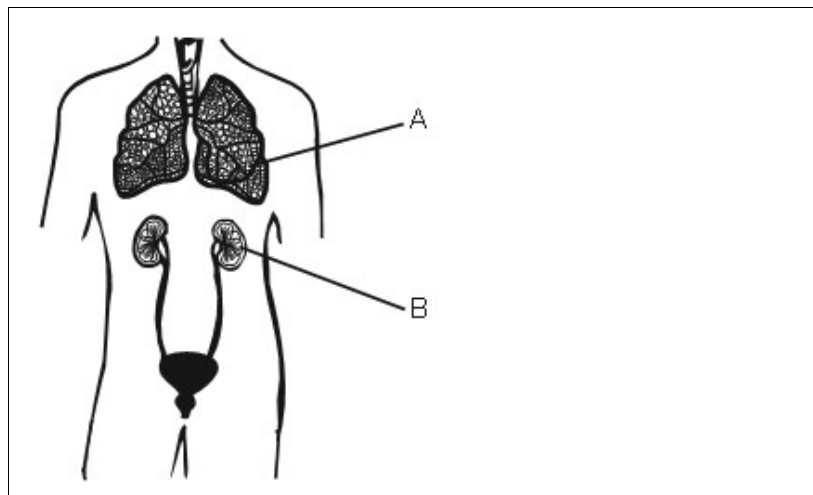
Data Base File Number: 183

Regents Date

June2009

18 6/18/2009 S4K5

Answer 4



waste removal

908. Which structures in diagram I and diagram II carry out a similar life function?

- (1) 1 and C
 (2) 2 and D
 (3) 3 and A
 (4) 4 and B

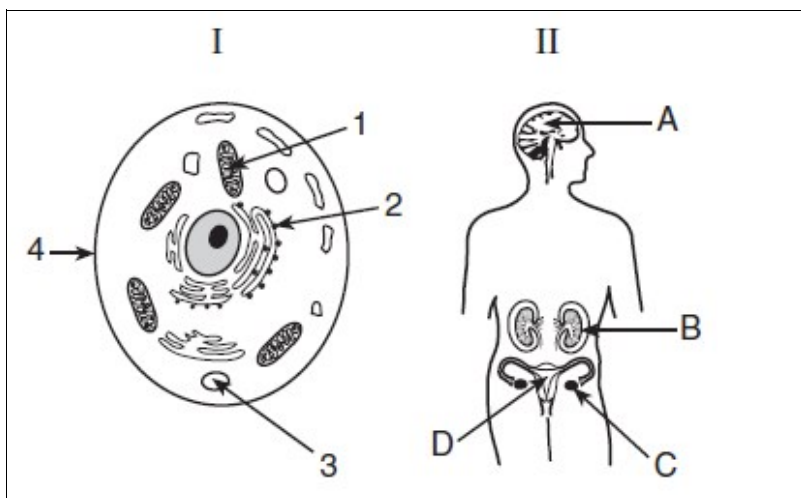
Data Base File Number: 555

Regents Date

June 2005

3 6/22/2005 S4K1

Answer 4



wet mount

909. The diagram shows how a coverslip should be lowered onto some single-celled organisms during the preparation of a wet mount. Why is this a preferred procedure?

- (1) The coverslip will prevent the slide from breaking.
 (2) The organisms will be more evenly distributed.
 (3) The possibility of breaking the coverslip is reduced.
 (4) The possibility of trapping air bubbles is reduced.

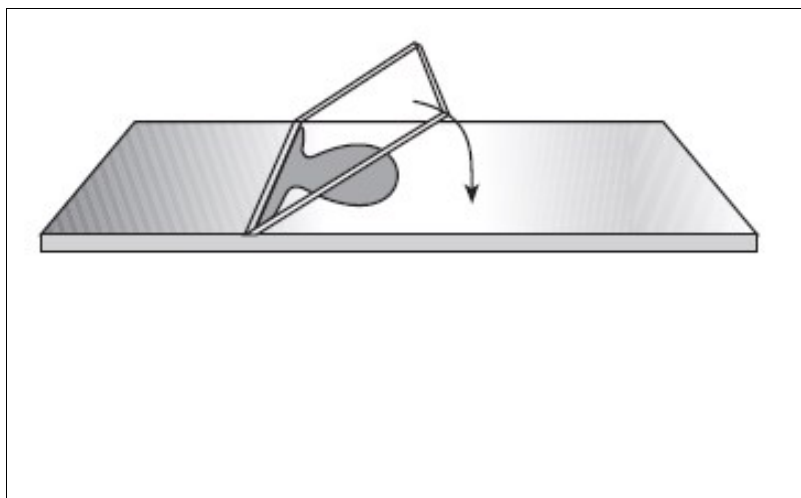
Data Base File Number: 460

Regents Date

Jan 2006

31 1/27/2006 LABA

Answer 4



wet mount

910. A student makes a wet mount of some onion cells to be viewed using a light compound microscope. Which diagram best illustrates the technique that would most likely be used to add salt to these cells?

- (1) 1
- (2) 2
- (3) 3
- (4) 4

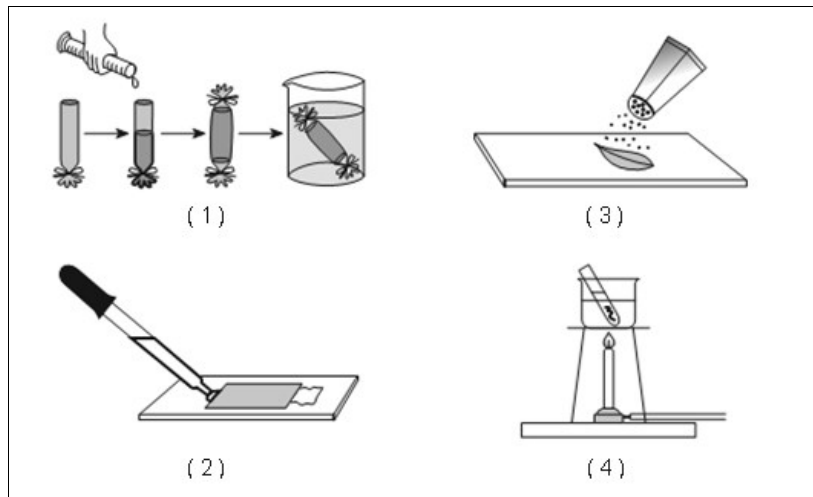
Data Base File Number: 208

Regents Date

June 2009

67 6/18/2009 LABS

Answer 2



white blood cell

911. Base your answer to this question on the structures in the diagram of human blood that help to maintain homeostasis in humans. What is one way a cell such as cell X helps to maintain homeostasis?

- (1) destroys antigens
- (2) transports oxygen
- (3) controls blood clotting
- (4) transports carbon dioxide

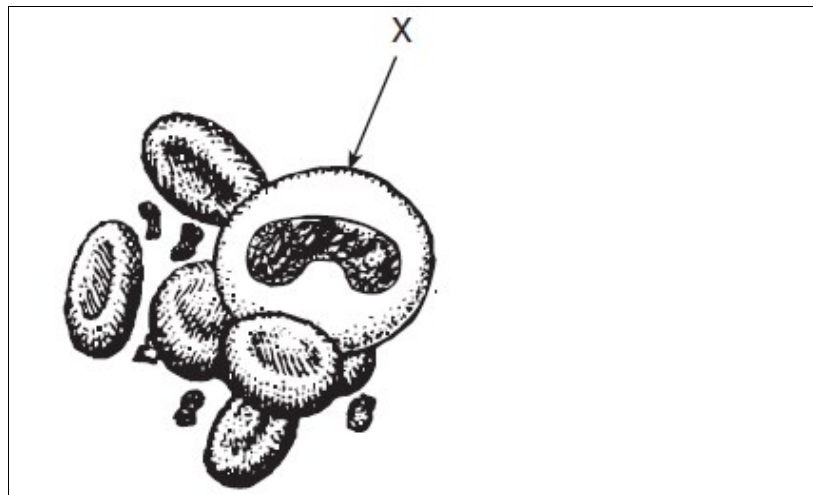
Data Base File Number: 748

Regents Date

June 2003

54 6/19/2003 S4K5

Answer 1



white blood cell

912. Base your answer to this question on the diagram shown of a slide of normal human blood and on your knowledge of biology. An increase in the production of the cells labeled A is a response to an internal environmental change. What change is most likely to cause this response?

- (1) A case of iron deficiency anemia.
- (2) An invasion of the body by microbes causing sickness.
- (3) A disease of the bone.
- (4) A cancerous tumor of the brain.

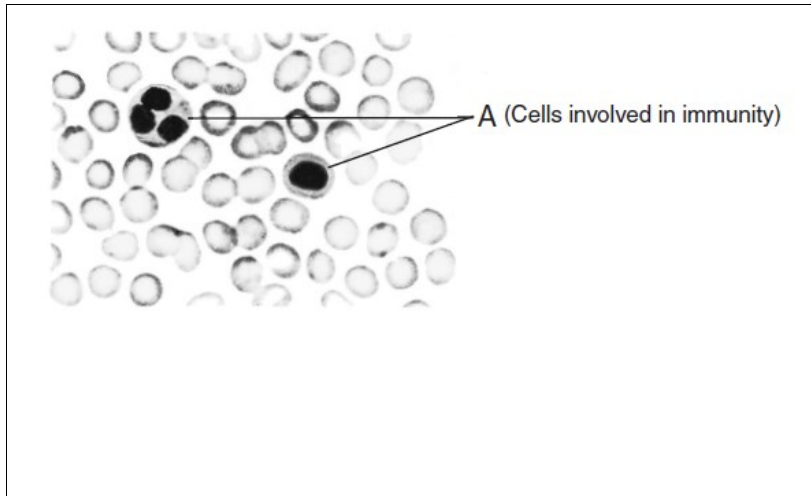
Data Base File Number: 720

Regents Date

Jan2003

48 1/30/2003 S4K5

Answer 2



white blood cell

913. The diagram shown represents a microscopic view of blood. Cell A protects the body by producing specific chemicals in response to pathogens. Cell A is

- (1) a red blood cell
- (2) a bacteria cell
- (3) an insulin-producing cell
- (4) a white blood cell

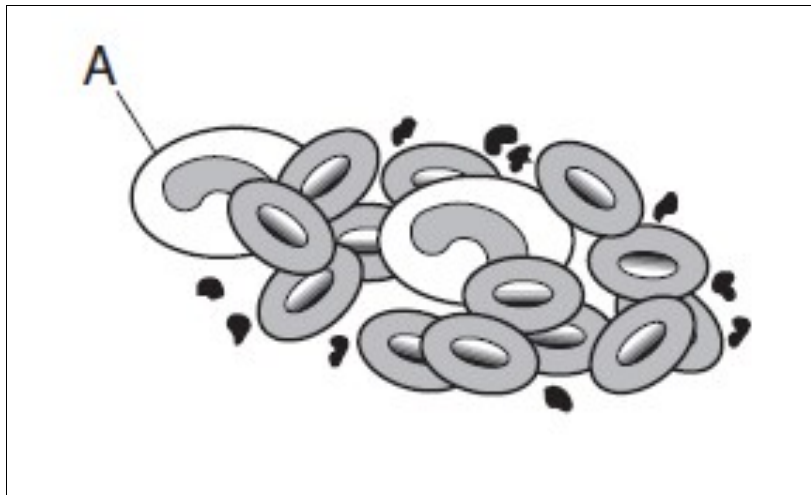
Data Base File Number: 381

Regents Date

Jan2012

20 1/25/2012 S4K5

Answer 4



white blood cell

914. The diagram shown represents one type of white blood cell. This type of white blood cell ingests microbes. A function of another type of white blood cell is to

- (1) prevent the loss of blood from a wound
- (2) produce specialized molecules that mark invaders
- (3) increase the number of red blood cells in the blood
- (4) cause gene mutations that will increase immune responses

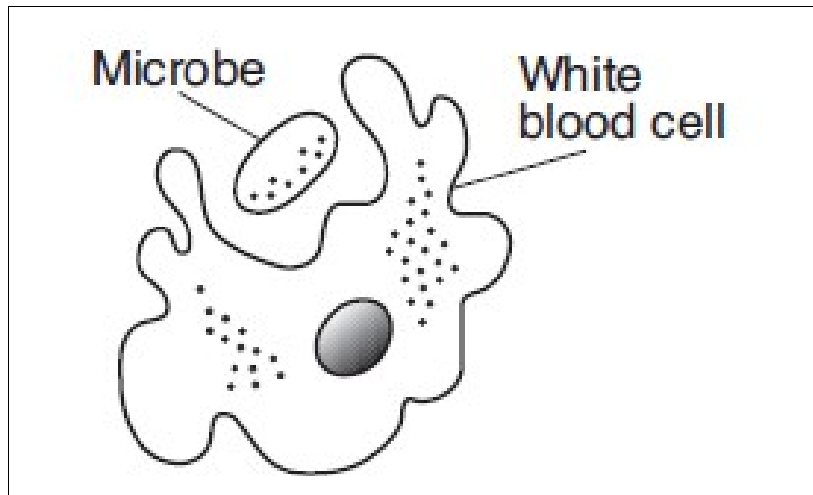
Data Base File Number: 906

Regents Date

Aug2013

34 8/14/2013 S4K5

Answer 2



zygote

915. The diagram shown represents some stages that occur in the formation of an embryo. Which statement best describes stage X?

- (1) Stage X is a zygote and contains half the number of chromosomes as the body cells of the parents.
- (2) Stage X is formed by the process of meiosis and is known as a gamete.
- (3) Stage X is a zygote and is formed as a result of the process of fertilization.
- (4) Stage X is formed by mitosis and is known as an egg cell.

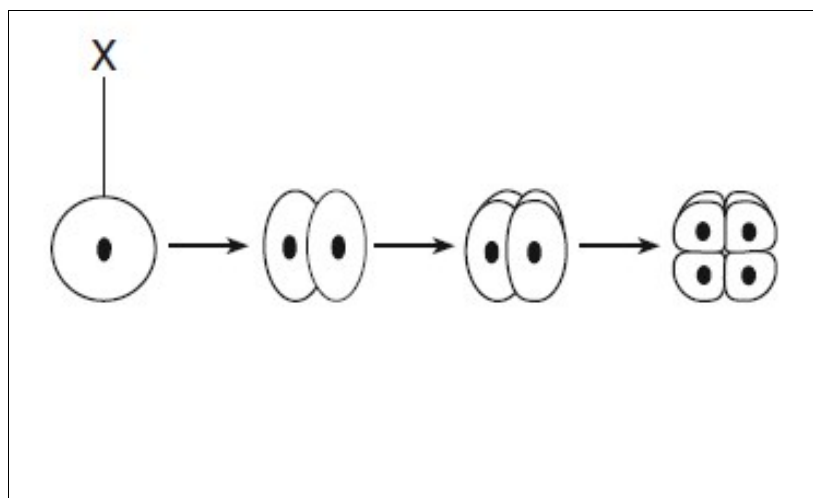
Data Base File Number: 620

Regents Date

Jan2013

41 1/23/2013 S4K4

Answer 3



zygote

916. Which phrase best describes a process represented in the diagram below?

- (1) a zygote dividing by mitosis
- (2) a zygote dividing by meiosis
- (3) a gamete dividing by mitosis
- (4) a gamete dividing by meiosis

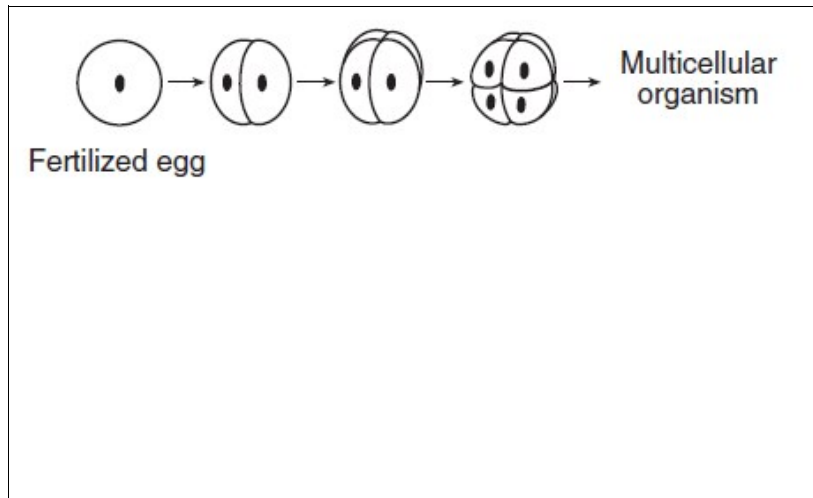
Data Base File Number: 640

Regents Date

Jan2004

17 1/29/2004 S4K4

Answer 1



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