100 Ways to Pass the Earth Science Regents with Test Tips

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1 Density of any substance, regardless of size is constant.
2 As pressure increases on a solid or gas, density increases.
3 As temperature of matter increases, its density decreases (in an open system).
4 Water expands when it freezes.
5 Many changes are cyclic (an event which repeats itself)
6 Water is most dense at 4°C, when it is a liquid.
7 The closer the isolines are the steeper the slope or gradient.
8 When calculating percent deviation, the accepted value is the correct answer while the measured value is subject to error.
9 Dynamic equilibrium means balance
10 Earth absorbs short waves (visible light) and radiates long waves (infrared energy).
11 The true shape of the Earth is an Oblate Spheroid, but from space it looks like a sphere or a perfect circle.
12 The best model of the Earth at any reasonable scale is a sphere or a perfect circle.
13 The altitude of Polaris equals your latitude.
14 Latitude lines are drawn east-west and measure angular distance north and south.
15 Longitude lines are drawn north-south, and measure angular distances east and west.
16 Longitude is based on observations of the sun.
17 The earth rotates from west to east (24 hours).
18 The earth revolves counterclockwise (365 1/4 days) when viewed from above the North Pole.
19 The sun appears to rise in the east and set in the west
20 The moon has phases because the angle between the earth and moon changes because the moon revolves around us (remember though that half is always lit).
21 Planets appear to go backwards (retrograde) as the earth passes them in space.
22 **Summer solstice**: June 21st**; Winter solstice**: December 21st**; Equinoxes**: March 21st & September 23rd
23 To an observer in the mid-latitudes of the northern hemisphere facing north, stars appear to make a complete circle around Polaris (North Star).
24 **Blue Shift:** object (e.g.: star) is getting closer to earth. **Red Shift:** object is getting further away (provides evidence universe is still expanding)
25 Equator always has 12 hours of day-light
26 The lower the altitude of the sun, the longer the shadow it casts.
27 The Coriolis Effect results from the earth's rotation. The Foucault Pendulum illustrates the Coriolis Effect, and so 'proves' the earth's rotation
28 Earth is closer to the sun in the winter
29 The closer the planet is to the sun the higher it's velocity and the further the planet is from the sun, the slower its velocity.
30 The sun is one focus on an ellipse. There is nothing at the other foci.

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31 Black objects absorb energy and white objects reflect
32 Apparent diameter of objects (sun, moon) gets larger when the object is closer to Earth
33 Vertical rays (overhead sun) can only occur between 23 1/2 ^{o} N and 23 1/2 ^{o} S

34

DATE (APPROXIMATE)	LATITUDE OF SUN'S DIRECT RAYS	DIRECTION OF SUNRISE AND SUNSET	ALTITUDE OF NOON SUN	LENGTH OF DAYLIGHT
Sept. 23 (Autumnal Equinox)	Equator (0^{o})	Rises due East Sets due West	48^{o}	12 hours
December 21 (Winter Solstice)	Tropic of Capricorn (23.5^{o} S)	Rises in South East Sets in South West	24.5^{o} (lowest)	8 hours (shortest day)
March 21 (Vernal Equinox)	Equator (0^{o})	Rises due East Sets due West	48^{o}	12 hours
June 21 (Summer Solstice)	Tropic of Cancer (23.5^{o} N)	Rises in North East Sets in North West	71.5^{o} (highest)	16 hours (longest day)

35 Winds curve to the right in the northern hemisphere and to the left in the southern hemisphere due to the earth rotation. Called the Coriolis Effect.
36 Energy moves from source to sink: high to low
37 Air moves clockwise and outward around a high
38 Air moves counterclockwise and inward around a low
39 Good absorbers of radiation are good radiators
40 Hottest part of the year is in July in the Northern Hemisphere.
41 Hottest part of the day is after 1:00p.m.
42 As temperature increases, air pressure decreases
43 As atmospheric moisture (humidity) increases, atmospheric pressure decreases
44 Air pressure decreases with altitude
45 Cooler and drier air generally exerts higher pressure. Warm, moist air generally exerts lower pressure.
46 Wind is the result of pressure differences
47 Wind blows from high to low pressure
48 Wind is named for the direction that it is coming from
49 The closer the air temperature is to the dew point the greater the chance for precipitation
50 Weather moves from west to east in the United States

51 Generally, with the passage of a cold front, the temperature and humidity decrease, the pressure rises
52 Generally, with the passage of a warm front, the temperature and humidity increase, the pressure decreases
53 Occluded front is formed when a cold front overtakes a warm front.
54 Cold fronts move the fastest
55 As air rises, it expands and cools
56 Porosity does not depend on particle size
57 As particle size increases, permeability increases
58 Capillarity increases when particle size decreases
59 Ep (potential evapotranspiration) depends on temperature
60 Water bodies moderate temperature
61 Adiabatic cooling occurs as rising air expands. The air expands because the pressure on it is decreasing.
62 Most surface water runoff occurs if the soil is bare, precipitation rate exceeds permeability rate, soil is saturated and slope of land is too great.
63 Chemical weathering dominates in warm, humid climates.
64 Physical Weathering dominates in cold, humid climates (good for frost wedging)
65 Gravity is the force that drives erosion
66 Streams are currently the number one agent of erosion in New York State
67 Stream velocity depends on slope (gradient) and discharge
68 Velocity is greatest on the out side of meander bend
69 Heavy, round and dense particle settle out first
70 Water sorts sediments by size vertically, with the biggest sentiments on the bottom only when sediments settle in still water.
71 Isostasy: earth's crust in equilibrium
72 Unconformity is a buried erosion surface that represents a gap in the rock record
73 The four principal types of drainage pattern are related to the underlying regional geology. They are: Dendritic (random), Rectangular, Radial and Trellis (block)
74 When a rock is broken into smaller pieces, surface area increases and weathering rate increases
75 Mineral properties depend on internal atomic arrangement
76 Ocean crust is thin and made of basalt
77 Continental crust is thick and made of granite
78 Sedimentary rocks commonly layered and almost all fossils form in sedimentary environments
79 Igneous rock: cools fast: small crystals; cools slow: large crystals
80 Metamorphic- banded-distorted structure
81 The silicon (Si) oxygen (O) tetrahedron is the building block of silicate minerals, the most abundant in earth's crust
82 Arid landscape: steep slopes with sharp angles
83 Humid landscape: smooth with rounded slopes
84 Mid-ocean ridge - new earth being created-sea floor spreading
85 Trenches - earth being destroyed - subduction zone

86 P waves are faster than S waves
87 P-waves pass through liquids and solids, S-waves through solids only.
88 You need 3 seismometer stations to triangulate the epicenter of an earthquake
89 Convection currents in the mantle move plates
90 The orientation of the Earth's magnetic field has reversed with time.
91 Continental Drift states that continents not only float on top of deeper layers, but are able to slowly move ("drift") the way ice-flows do in the arctic ocean.
92 There are three main types of faults: convergent, divergent and transform
93 Mountains form by uplift
94 The half-life of a radioactive element can't be changed
95 Index fossils are good time markers (widely spread, lived a short time)
96 Undisturbed strata - bottom layer is oldest
97 Intrusion and faults are younger than the rock they are in
98 Uranium 238 (U^{238}) dates old rocks
99 Carbon 14 dates recent living objects
100 Use your Earth Science Reference Tables! This is one of the most important tools in your test taking arsenal

A Use the reference tables! Ask yourself: Is it in the reference tables, or can the reference tables help me?
B Look up formulas, even if you think you know them. Substitute information from the question into the formula. Many of them are on the reference tables.
C Draw diagrams to help you visualize the questions asked - where possible
D Read introductory paragraphs and study diagrams before looking at questions. Underline key words. Read all choices before deciding on an answer, sometimes a question has a good and a better answer. Always choose the best answer.
E If you are not sure of an answer, try to eliminate choices that you think are clearly wrong and narrow down your choices. Then make your most careful guess.
F Skip over hard questions that are stumping you. Go back to them later. Something else in the test may give you a clue to the harder problems.
G Don't leave any questions blank. Check your test a second time, but only change an answer if you find an obvious mistake. Your first choice is usually correct.
H Take your time. You have three hours to do the exam
I Relax-you've seen all this stuff before and you've already completed 1/4 of the exam.
J Have a healthy meal for dinner the night before and a good night sleep is as important as the above items.

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