

The M & M (not the rapper) Lab

Who would have guessed that the idea for M&M'S Plain Chocolate Candies was hatched against the backdrop of the Spanish Civil War? Legend has it that, while on a trip to Spain, Forrest Mars Sr. encountered soldiers who were eating pellets of chocolate encased in a hard sugary coating. This prevented it from melting. Inspired by this idea, Mr. Mars went back to his kitchen and invented the recipe for M&M'S Plain Chocolate Candies.

M&M'S Chocolate Candies were first sold in 1941, and soon became a favorite of the American GIs serving in World War II. Packaged in cardboard tubes, they were sold to the military as a convenient snack that traveled well in any climate. By the late 1940s, they were widely available to the public, who gave them an excellent reception. In 1948, their packaging changed from a tube form to the characteristic brown pouch we know today.



Procedure

1. Obtain a cup filled with M&M'S. **DO NOT EAT OR TOUCH ANY OF THE M&M'S.**
2. In the "Cup of M&M's Data Table (Individual)", please predict the number of each color you think your cup contains and record your answer in the "Predicted number" row.
3. Add up all of the individual color predictions and place that value in the "Total" column.
4. CAREFULLY empty the M&M's onto the sheet of paper on the desk.
5. Sort the M&M's according to color.
6. Count the number of M&M's in each pile and record your information in the "Actual Number" row of the "Cup of M&M's Data Table (Individual)".
7. Transfer your values to the class data table on the board.
8. Create a bar graph showing the actual number of each of the individual colors. Place the colors on the X axis and the Number of M&M's on the Y axis. Be certain to label your axis.
9. Using the formula for percent deviation (a.k.a.: percent error) found under the equation section of your reference tables (ESRT); calculate your percent deviation for each individual color.
10. Transfer data to "Percent (%) Deviation" row on the "Cup of M&M's Data Table (Individual)".
11. Transfer the total from the board onto the "Class Number" row on the "Class Data Table".
12. Calculate the percentage of each individual color is of the total bag. In other words, if we had 10 red M&M's and there were 100 M&M's in the bag, the red M&M's would make up 10 % of the bag since $(10 \text{ reds} / 100 \text{ total}) \times 100\% = 10\%$

$$\frac{\text{Number of color specific M\&M's}}{\text{Total Number in Bag}} \times 100\% = \text{Percentage of that color}$$

13. Transfer the information to the "Calculated Percentage" row on the "Bag of M&M's Data Table (Class)".
14. Using the formula for percent deviation (a.k.a.: percent error) found under the equation section of your reference tables (ESRT); calculate your percent deviation for the percentage of each individual color on the "Class Data Table".
15. Transfer data to "Percent (%) Deviation" row on the "Bag of M&M's Data Table (Class)".
16. Create a pie graph showing the color percentage of the M&M's using data from the "Bag of M&M's Data Table (Class)".
17. Create a pie graph showing the actual color percentage of the M&M' from the "Bag of M&M's Data Table (Class)".

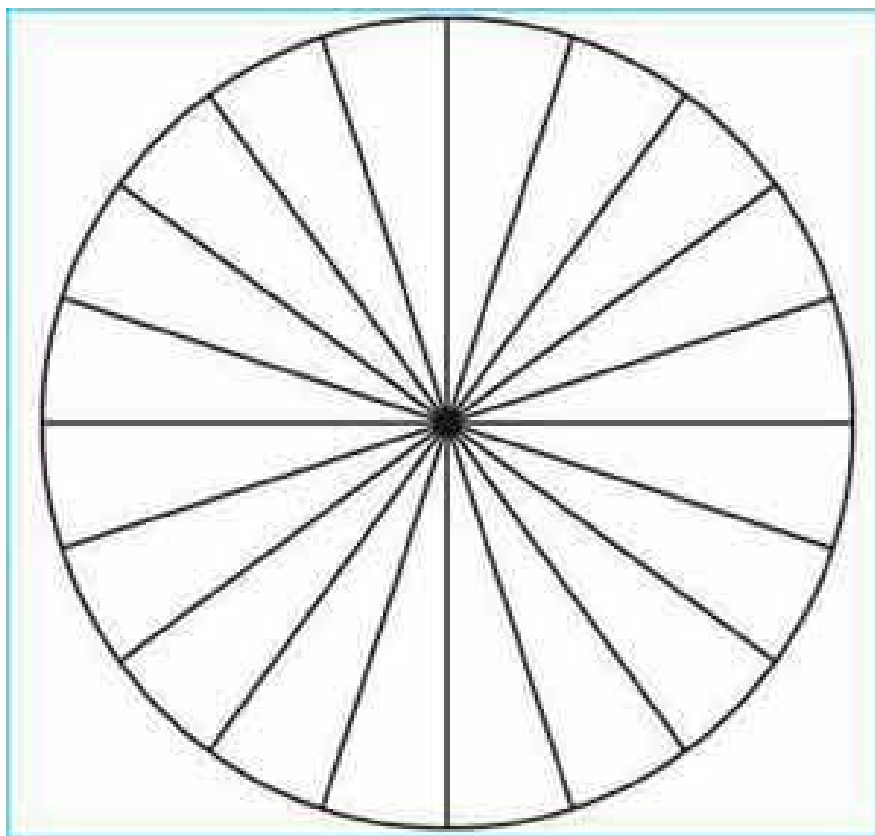
Cup of M&M's Data Table (Individual)

	Brown	Yellow	Red	Blue	Orange	Green	Total
Predicted Number							
Actual Number							
Percent (%) Deviation							

Bag of M&M's Data Table (Class)

	Brown	Yellow	Red	Blue	Orange	Green	Total
Class Number							
Calculated Percentage							100%
Actual Percentage	13	14	13	24	20	16	100
Percent (%) Deviation							

Color Percentage using "Cup of M&M's" Data

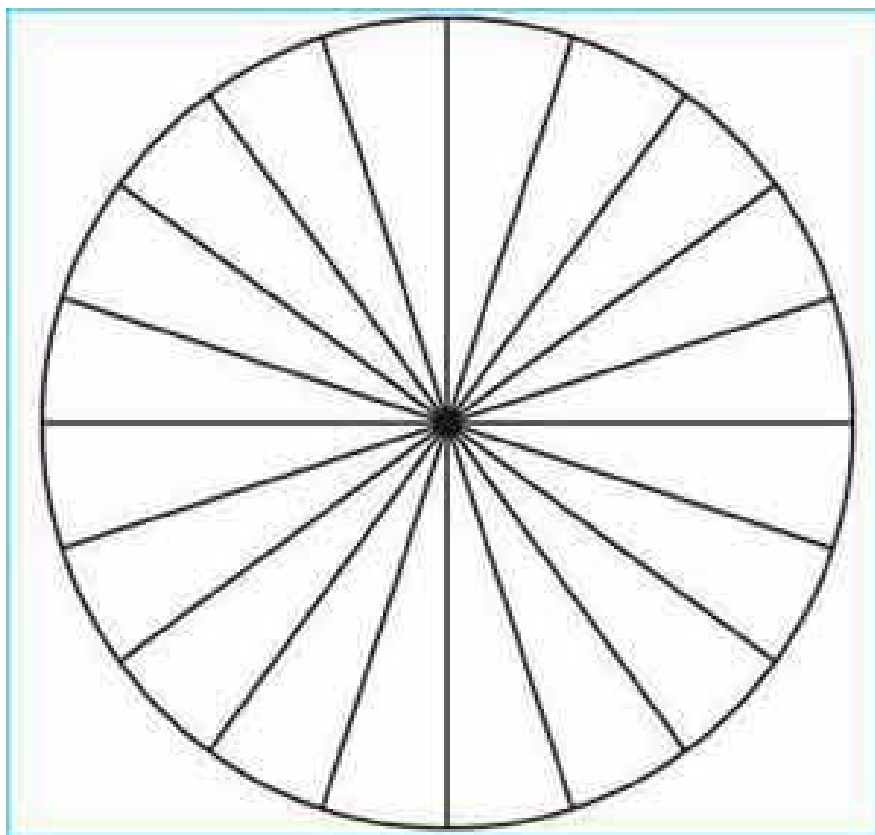


NOTE: Each full slice of the pie is equal to 5% or $1/20^{\text{th}}$. Half of a slice equals 2.5% or $1/40^{\text{th}}$. Be careful when coloring these in. Use color pencil, crayons or markers!

KEY

- = Brown
- = Yellow
- = Red
- = Blue
- = Orange
- = Green

Color Percentage using "Bag of M&M's" Data



NOTE: Each full slice of the pie is equal to 5% or $1/20^{\text{th}}$. Half of a slice equals 2.5% or $1/40^{\text{th}}$. Be careful when coloring these in. Use color pencil, crayons or markers!

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Insert graph paper with X and Y axis's marked

Questions (Answer in full and complete sentences. One word answers will be marked wrong!)

1. How close were your initial predictions to what you actually had in your cup?
2. Which color did you have the most of in your cup?
3. Was this true for the rest of the class? Hint: Look at the data from the class results.
4. Which color did you have the least of in your cup?
5. Was this true for the rest of the class? Hint: Look at the data from the class results.
6. Was the ratio of colors in your cup identical to what others had?
7. Why do you suppose it was or wasn't?
8. Why is the concept of percent deviation important in an activity like this?
9. Why is it important to keep data organized in tables?
10. Explain the difference between a bar graph and a pie graph? What are their strengths and weaknesses?