

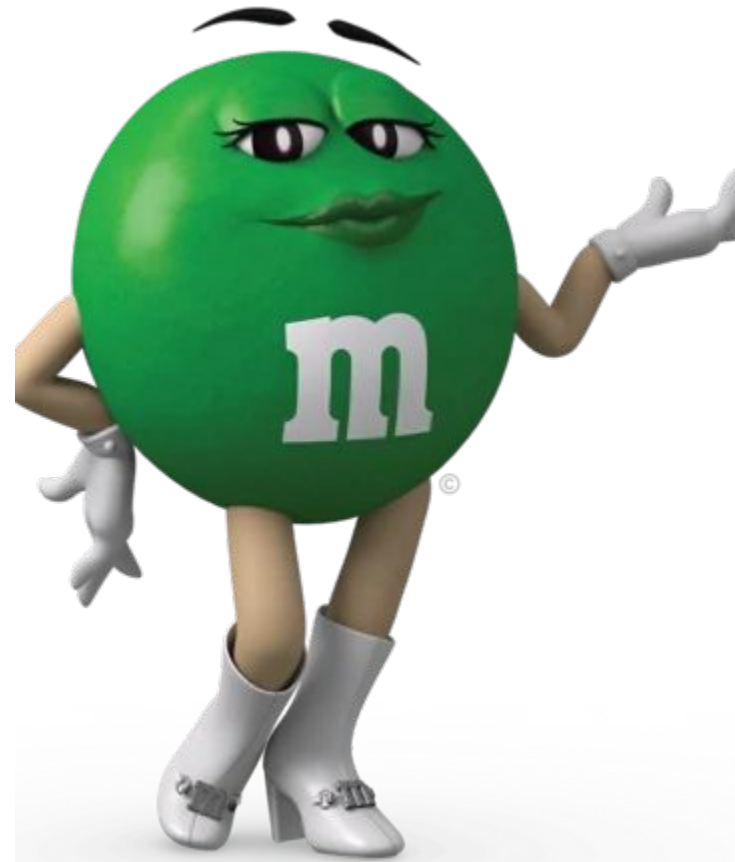


M&M's Activity

Goals & Objectives

Goal: Students will use their knowledge of statistics to compute mean, median, mode, and standard deviation using the colors of M&M's in 10 bags.

Objectives: Given 10 bags of M&M's, students will count the colors in each bag and compute the mean, median, mode, and standard deviation.




Standards


CCSS.MATH.CONTENT.6.SP.B.5- Summarize numerical data sets in relation to their context, such as by:

CCSS.MATH.CONTENT.6.SP.B.5.A- Reporting the number of observations.


CCSS.MATH.CONTENT.6.SP.B.5.C- Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.

Materials

 Calculator

 10 bags of M&M's!

 Worksheet

 iPad/Computer/Laptop to access Google
Slides

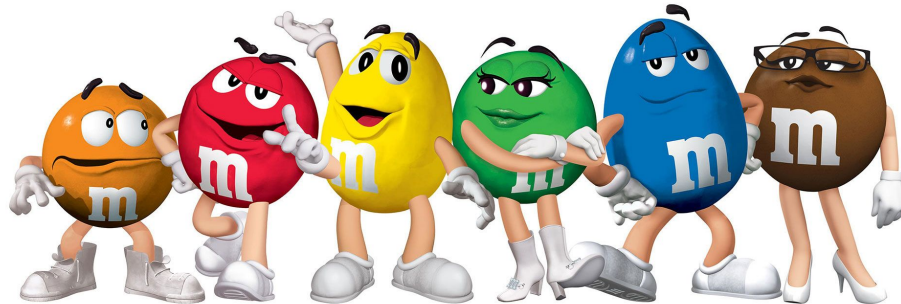


M&M's!

According to Mars Chocolate North America, their color blends were selected by conducting consumer preference tests, which indicate the assortment of colors that pleased the greatest number of people and created the most attractive overall effect.

On average, the mix of colors for M&M'S milk chocolate is: 24% blue, 20% orange, 16% green, 14% yellow, 13% red, and 13% brown.

Let's calculate the frequencies of each color, the mean, median, and mode, and the standard deviation of 10 bags of M&M's.



Make a prediction...

What do you think the outcome will be?

Will our bags of M&M's be close to the average mix of colors?

Write your predictions down on your handout!

Find a partner!

We will be working in groups of two and each group will get one bag of M&M's.

The first thing we are going to do is count all of our M&M's. We will write our total number in the "Total" box in Table 1 on your worksheet. Next, we are going to count each individual color and find the percentage of each color. Fill the table in accordingly. Table 1 is for your group's data only!





Table 1 - Your Group's Data!

	Red	Blue	Green	Brown	Orange	Yellow	Total
# of each color	10	11	9	11	11	5	57
Percentage of each color	18%	19%	16%	19%	19%	9%	100%

Table 2

For table 2, we are going to put all of our data together. Once everybody's data is in, you and your partner will calculate the mean, median, and mode for the entire class's data.

We will compare our answers once everyone is done!

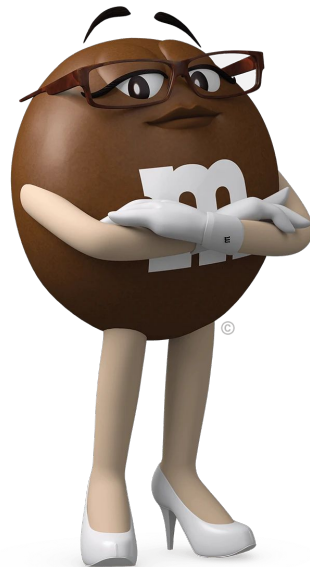


Table 2 - Class Data

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9	Group 10	Total	Mean	Median	Mode
Blue	11	11	14	9	11	9	10	12	13	11	111	11.1	11	11
Brown	11	6	7	11	4	12	14	4	7	7	83	8.3	7	7
Green	9	7	8	13	14	11	5	10	13	6	96	9.6	9	13
Orange	11	10	7	6	11	5	8	10	6	7	81	8.1	7	N/A
Red	10	13	11	10	8	9	10	6	9	16	102	10.2	10	10
Yellow	5	9	11	8	9	8	7	13	8	8	86	8.6	8	8
Totals	57	56	58	57	57	54	54	55	56	55	559	55.9	56	57

Calculating Class Data Percentages

of each color/total number of M&M's (559)

Blue: 20%

Brown: 15%

Green: 17%

Orange: 14%

Red: 18%

Yellow: 15%

Table 3 - Calculating Standard Deviation

Complete the following table using your data and the class data. x_i represents your data while \bar{x} is from the class average. Keep in mind, all of this data is based on the sample of all possible M&Ms. You must show your work for standard deviation on your worksheet.

Standard Deviation s=
$$\sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$



Table 3 - Calculating Standard Deviation

Color	x_i (Your group's data!)	\bar{x} (Class mean Table 2)	$x_i - \bar{x}$	$(x_i - \bar{x})^2$	$s = \sqrt{\frac{\sum(x - \bar{x})^2}{n - 1}}$
Blue n=111		11.1			
Brown n=83		8.3			
Green n=96		9.6			
Orange n=81		8.1			
Red n=102		10.2			
Yellow n=86		8.6			

Questions

Does your bag of M&M's fit the standard that Mars Inc. has set for the distribution of M&M colors?

Does the class data of M&M's fit the standard that Mars Inc. has set for the distribution of M&M colors?

In this case, what does the standard deviation tell us with respect to why your individual colors are different?

Credit

https://mrryman.weebly.com/uploads/3/0/5/6/30561563/lab_5_-_m_ms.pdf