Name: _____ Date: _____

M&M's Standard Deviation Activity

Goal: Students will use their knowledge of statistics to compute mean, median, mode, and standard deviations 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.

Materials: Calculator, bag of M&M's, iPad/Computer/Laptop to access Google Sheets

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.

My group's prediction:

_____
_____
_____.

Open your bag of M&M's. Count the number of each color and fill in the table below. Then, calculate the percentage of each color.

Table 1:

	Red	Blue	Green	Brown	Orange	Yellow	Total
# of each color							
Percentage of each color							100%

Use this link to access the presentation. Go to table 2 and fill in your groups data under your group number. Once all the data is in, you will calculate the mean, median, and mode for each color and fill it into the presentation! Use the space below to show your work for your calculations!

Next, using the class data that everyone just entered, you are going to calculate the percentages of each color from the total amount of M&M's (We had 559 total!)

Blue:

Brown:

Green:

Orange:

Red:

Yellow:

For table 3, you will fill in the following table using your data and the class data. x_i represents your data while $\bar{x}$ is 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 the standard deviation below. Remember, a high standard deviation means that values are generally far from the mean, while a low standard deviation indicates that values are clustered close to the mean.

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

Table 3

Color	x_i (Your group's data from table 1!)	$\bar{x}$ (Class mean Table 2!)	$x_i - \bar{x}$	$\left(x_i - \bar{x} \right)^2$	Standard Deviation
Blue n=111					
Brown n=83					
Green n=96					
Orange n=81					
Red n=102					
Yellow n=86					

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?