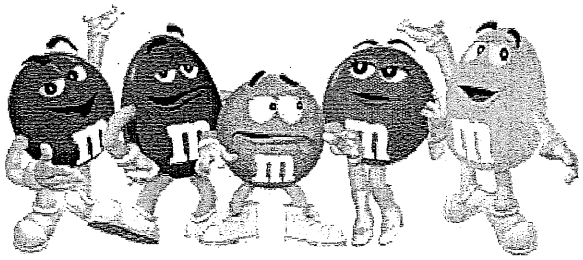
Name: Key Date: _____ Period: _____

Activity: M&M's Candy Probabilities

The Great M&M Experiment



If you pick a candy out of a bag of plain M&M's, what color would you most likely get? What color would you least likely get? Whenever you use words like ***most likely*** or ***least likely*** you are referring to probability. **Probability** is a number from 0 to 1 indicating the likelihood of an event. There are two kinds of probability: experimental and theoretical. **Theoretical probability** can be found by dividing the number of outcomes of an event by the total number of all possible outcomes. This is only possible when all equally likely outcomes are known. But, we can't know the total number of M&M's that have been made. So, we perform an experiment to find the **experimental probability.**

Directions:

- Get a cup of M&M's candies and count how many candies it holds. _____
- Separate the M&M's candies into each color. List the colors in the first row of the table below.
- Count how many are in each pile and record these values in the second row.
    - Which color has the largest quantity in your cup? _____
    - Which color has the smallest quantity in your cup? _____
    - Is this what you expected to find? Why or why not?

- Calculate the *experimental* probability of picking a certain color of M&M's candy for each color provided. (Hint: The probability is found by creating a ratio with the number of M&M's candies in a color is recorded in the numerator and the total number of M&M's candies is recorded in the denominator.) Probabilities can also be displayed as decimals and percents. Record the 3 forms of each *experimental* probability in the indicated rows of the table.

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Table of M&M's candies Experimental Probabilities of Color:

Total: 45

Colors:	Blue	Red	Green	Brown	Yellow	Orange
Outcomes:	12	8	7	5	9	4
Probability: (Fraction)	12/45					
Probability: (Decimal)	0.27					
Probability: (Percent)	27%					

1. Which color M&M's candy from your cup has the highest probability?

2. What would it mean for a color to have a probability of 1?

3. What is the probability of picking a red M&M's from your cup?

4. What is the probability of picking a black M&M's from your cup?

5. What is the probability of picking either a brown or orange M&M's candy from your cup?

6. What is the probability of NOT picking a green M&M's candy from your cup?

For #7 & 8, suppose your sample of M&M's candies is an accurate representation of the whole M&M's candy population.

7. How many blue M&M's candies would be likely to be found in a bag of 250 candies?

8. How many yellow M&M's candies would be likely to be found in a bag of 500 candies?