

Ma 6

Name: _____ # _____

M & M Probability Packet

Do you think every bag of M & M's has the same number of candies? Is this fair?

Why or why not?

Do you think everyone in your group has the same chance of drawing their favourite colour of M & M's out of every bag? Why or Why not?

Yesterday we learned.... _____

Today we will learn:

Task: _____

Goal: Today I will focus on _____

Tomorrow we will practice applying what we learn about theoretical and experimental probability.

Prediction: How do you think M & M's can be used to show the difference between experimental and theoretical probability?

Answer the following questions using jot notes. When you are done you will be discussing these ideas with your group members. Be sure to add any new information or ideas your group comes up with.

What is probability?

What is theoretical probability?

What is experimental probability?

What is the difference between theoretical and experimental probability?

How can we discover what theoretical and experimental probability are?

M&M Math Part 1: Tallies and Totals

1. Without opening or touching your bag of candy, estimate how many are inside total and of each colour in the chart below.
2. Open your bag of M&M's and tally how many of each colour, write the number and find the total amount.
3. Put your M&M's in the baggie provided. DO NOT EAT ANY!

Colour	Estimate	Actual Amount	
		Tally (in 5's)	Number
Blue			
Brown			
Green			
Orange			
Red			
Yellow			
Total			

4. Record your totals on the [google form](#).

M&M Math Part 2: Actual Percentages

***If you are having a hard time remembering how to calculate Percentage or write a number as a fraction see the calculations Part 3 Section II*

1. Write the totals in the chart below for the different colours.
2. Find the fraction for each colour and record it on the chart (Number of the colour/total number of M&M's).
3. Find the percentages of each colour and record it on the chart (numerator divided by denominator multiply the answer by 100).
4. Compare your information with the actual data from the company given to you. (You will do this part later.)

Colour	Actual Number	Fraction	Percentage	Data %	Your M&M's
Blue					
Brown					
Green					
Orange					
Red					
Yellow					
Total					

What is your conclusion about this data difference between the actual, class and your M&M's? _____

Fill out the percentage of each colour in [google forms](#)

M&M Math Part 3: Probability

Which M&M color are you most likely to get? What color would you least likely get? Would your results be the same if you opened a bag of Peanut, Almond, Peanut Butter, Crispy, or Mini M&M's? Whenever you start to use the words "most likely" or "least likely", you are talking about probability.

I. Conducting the Experiment

Because we are not able to count all the different colors of M&M's that were created or will be created, we are not able to calculate the theoretical probability. So instead, we will find the experimental probability.

Part A

Using the information that you have already gathered (the numbers of M & M etc).

1. Which colour has the largest quantity? _____
2. Which colour has the least quantity? _____
3. If you were to close your eyes and pick a colour out of the bag, which colour do you think you would pick (explain why).

Part B Trial 1: Keeping out the M&M

1. Close your eyes.
2. Pick an M & M out of your baggie. Place the M & M on your desk (don't put it back in the baggie).
3. Record your colour in the chart below.
4. Repeat steps 1-3, four more times.
5. To complete the probability look below to the calculations section.

	Pick 1	Pick 2	Pick 3	Pick 4	Pick 5
Colour					
Probability Ratio					
Probability Fraction					
Probability Percent					

Part C Trial 2: Replacing the M&M

1. Close your eyes.
2. Pick an M&M out of your baggie. **Put the M&M back in bag.**
3. Record your colour in the chart below.
4. Repeat steps 1-3, four more times.
5. To complete the probability, look to the calculations section.

	Pick 1	Pick 2	Pick 3	Pick 4	Pick 5
Colour					
Probability Ratio					
Probability Fraction					
Probability Percent					

How has the probability changed from trial 1 to trial 2? _____

II. Calculations

1. Calculate the probability of picking a certain color of M&M for each category. The probability is found by creating a ratio. (Do you remember what this is?) The number of M&M's in a color is placed in the numerator, the total number of M&M's is placed in the denominator. (Example: If there are 6 red M&M's and 54 total M&M's, the probability of picking a red M&M is 6/54.)

2. Convert your fractions into decimals and percentages. Add these values to your table.

3. Remember, the more likely something is, the closer to 1 the probability will be. Answer the following questions:

- What color is most likely? _____
- Which one is least likely? _____
- Are there any that are equally likely? (This means the probabilities are the same.) _____

Were the percentages of your M & M package the same as the percentages on the M & M website? How do you think they came up with these numbers? What does this do to the probability of your experiments? Is the probability of your package the same as the probability of your groups package?

Do you think the information from the website is experimental probability or theoretical probability? Why?

M&M Math Part 4: Reflection

What is the most important thing you have learned about theoretical and experimental probability today? _____

Why do you think this is the most important? _____

What is the difference between experimental and theoretical probability? (Which part of the task dealt with theoretical probability? Which part dealt with experimental probability?) _____

How does what you learned today relate to what you already knew about probability? _____

How do you think what you learned about theoretical and experimental probability will relate to what we will learn about probability tomorrow?
