Creating Graphs

**Summary**- Students will be able to identify graphs, components of graphs, interpret graphs, and construct various types of graphs.

**Key Words**- Pictograph  
Bar Graph  
Circle Graph

**Background Knowledge**- Students should be able to read a variety of graphs and be able to identify the various components to a graph. Students should also be able to read a pictograph, a bar graph, and a circle graph.

**NCTM Standards**- 1. Problem Solving-Application  
2. Communication-Oral and Written  
3. Reasoning  
4. Number and Number Relations  
5. Computation and Estimation  
6. Statistics

**Learning Objective**- To create graphs that show data.

**Materials**- Worksheets  
Pencils  
Crayons  
M&M’s

**Suggested Procedures**- As a warm up activity; students will work together to create a graph of birthdays represented by the students. Students will act as the markers for creating this graph. The teacher will make signs for each month of the year and students will stand in the correct line. The teacher will present questions to the students about the graph that they created. For the M&M graphing activity, students will work in groups of two.
Assignment: Students will create a pictograph, a line graph and a circle graph with the data they collected from a small bag of M&Ms.
**Read and Create Graphs**

**Activity-** M&M Graph Activity

**Goals-** In this lesson, students will use M&Ms to compile data. Using this compiled data, students will create a circle graph, a bar graph, and a pictograph.

**Materials-**
- 1 package of M&Ms
- Worksheets
- Crayons
- Pencils

**Investigations-** (Do these before you open your M&Ms.)
1. How many M&Ms do you think your bag contains? _______

2. How do you think the company that makes M&Ms decides how many M&Ms belong in a pack?
   
   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________

3. Do you think each bag will contain the same number of M&Ms?? ________________________________

4. Why do you feel this way?
   
   __________________________________________________
   __________________________________________________
   __________________________________________________
   __________________________________________________

5. What colors do you think you will find in your bag?
   
   __________________________________________________
   __________________________________________________
   __________________________________________________
6. Why do you think these colors are inside?
________________________________________________
________________________________________________
________________________________________________
________________________________________________

7. Do you think that every student have the same number of each color in their bag as you have in your bag?
________________________________________________

8. Why or why not?
________________________________________________
________________________________________________
________________________________________________
________________________________________________

Solution: 1. Pour out your M&Ms. Sort them by color. Name the colors you have in your bag from the greatest to the least.
   1. __________________________
   2. __________________________
   3. __________________________
   4. __________________________
   5. __________________________
   6. __________________________

2. Fill in the chart below.

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<th>Color</th>
<th>Number</th>
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3. Now add the number of each color together. How many M&Ms were in you bag all together? __________
4. What is the difference between your estimated amount and the actual number of M&Ms in the bag?

__________________________

Activities- 1. Create a bar graph. Using the template below, create a bar graph by labeling the vertical axis with numbers and the horizontal axis with colors. Make sure you color your bar graph and give it a title.
2. Circle Graph- All the data that you collected can also be represented with a circle graph (also called a pie graph). Use the template below to represent the information you collected in a circle graph. Label. (Hint: Change your answer into fractions by putting the number of a color over the total number of M&Ms. Make sure you use this information to consider how big each piece of your circle graph will be.)

3. Pictograph-Another way to represent your data is by creating a pictograph. A pictograph uses pictures to represent numbers in this type of graph. Use the template below to create a pictograph to explain the data you collected. Make sure you label all necessary information. Make a key to help read the graph.
Extensions:

1. Find the fraction, decimal, and percentage of each color in your bag. Fill in the chart below. Use your calculator to check over your work.

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<tr>
<th>Color</th>
<th>Fraction</th>
<th>Decimal</th>
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Teacher Solution

Unfortunately, because all the bags of M&Ms will be different, all the answers will vary depending upon each situation. However, we did create a rubric to help you grade the graphs.

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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tr>
<td>This score is representative of a student not even attempting to do this activity.</td>
<td>The student attempted the activity. However, they failed to demonstrate an understanding of it.</td>
<td>The student has included any 2 of the 5 components needed to score a score of 4.</td>
<td>The student has included at least 3 of the five requirements for a score of 4.</td>
<td>To receive a score of 4 the student must have placed a title on the graph, labeled all parts, all areas must be to scale, the graph must be neat and colored, and a key must be present.</td>
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