Activity 1: Graphing *m&m's*®

PURPOSE Use a variety of graphs to display data and explore relationships among the data.

MATERIALS A one-pound bag of *m&m's* Plain Chocolate Candies*, a one-tablespoon measure, colored pencils, a balance scale and weights, six line plot charts (one for each color of *m&m's*, page A-38), and a calculator

GROUPING Work individually and as a whole class.

GETTING STARTED *m&m's*® Plain Chocolate Candies come in six colors: brown, green, orange, red, blue, and yellow.

Before you take a sample from the bag of *m&m's*, answer the following.

1. a. Which color of *m&m's* do you think will occur most often in the bag? Why?
   b. in your sample? Why?
2. a. Which color of *m&m's* do you think will occur least often in the bag? Why?
   b. in your sample? Why?

REAL GRAPHS

1. Take a sample of *m&m's* by dipping the measuring spoon into the bag of candy and removing a spoonful. *CAUTION: Do not eat any of the m&m's!*

Statistical data are often displayed graphically. Using a graph rather than simply presenting the data as a set of numbers makes it easier to study relationships in the data.

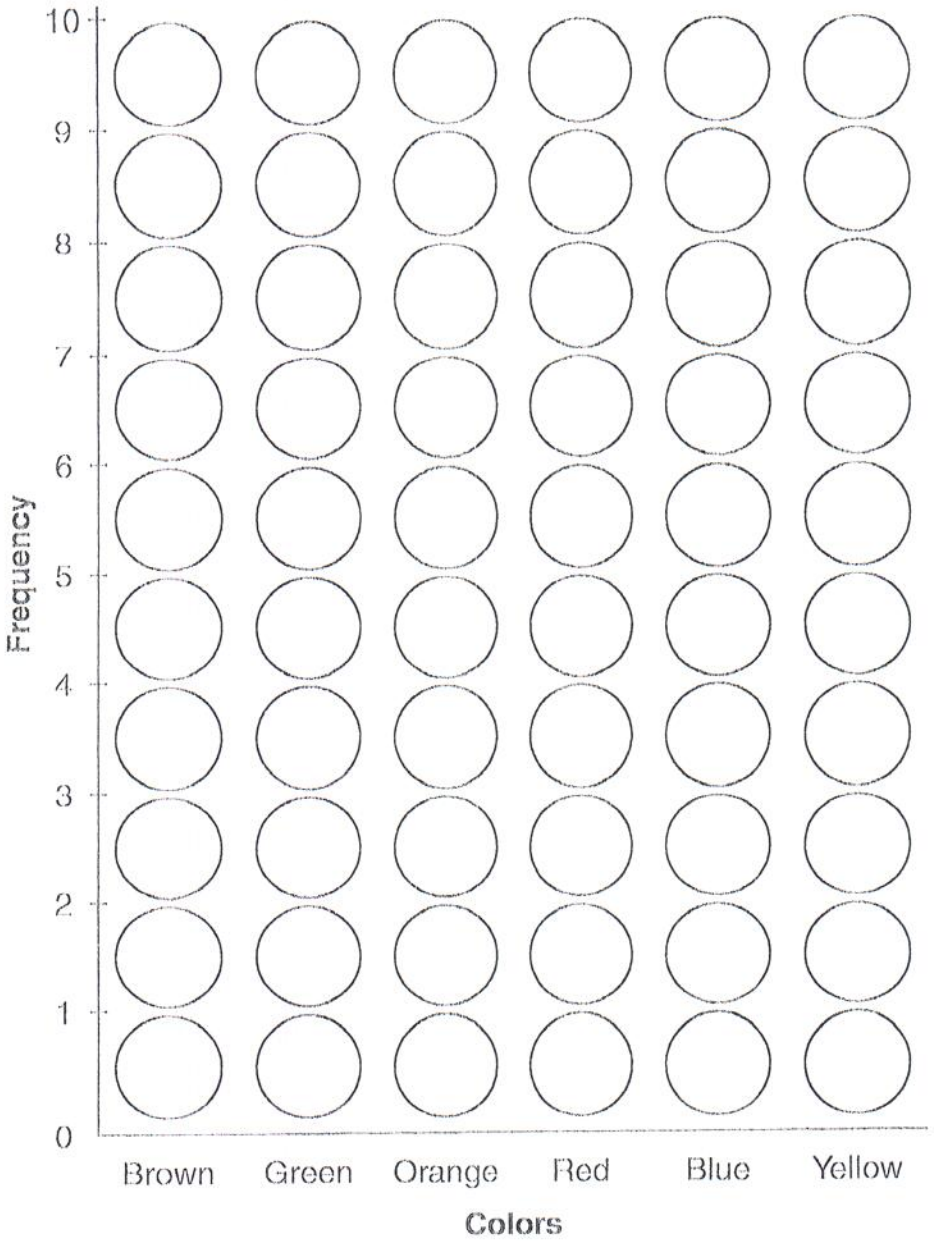
2. Arrange the *m&m's* in your sample on Graph 1 on the next page. This type of graph is often called a *real graph* because the statistical data are displayed using the actual objects whose frequencies are being compared.

3. Record the number of *m&m's* of each color and the total number in your sample.

   Brown: ____ Orange: ____ Blue: ____ Green: ____ Red: ____ Yellow: ____ Total: ____

4. What color occurred most often and what color occurred least often in your sample? How do these colors compare with your predictions?

Graph 1: Frequencies of *m&m's*



PICTOGRAPHS

1. As you remove each candy from the graph, color its circle the appropriate color. This type of graph is called a *pictograph* because the data are displayed using parallel columns (or rows) of pictures in which each picture represents one or more of the objects being compared.

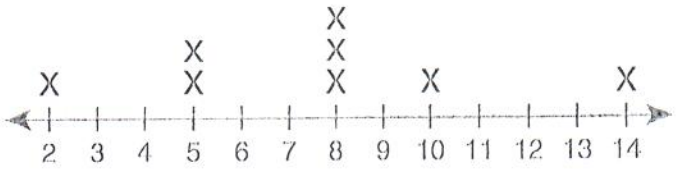
Now you may eat the m&m's in your sample!

2. Compare your pictograph with your classmates' pictographs. Describe any similarities and differences and explain why these may have occurred.

LINE PLOTS

1. Complete the following to collect the class data for the yellow *m&m's*.
   a. What is the maximum number of yellow *m&m's* in anyone's sample?
   b. What is the minimum number of yellow *m&m's* in anyone's sample?
   c. Title one of the line-plot charts "Yellow" and use the maximum and minimum values from Parts (a) and (b) to label the scale on the number line.
   d. Each time a person reports the number of yellow *m&m's* in his or her sample, record an X above that number on the number line.

Example: **Yellow *m&m's***



Minimum = 2 *Maximum = 14*

This type of graph is called a *line plot*. Line plots provide a quick, simple way to organize numerical data. They work best when there are fewer than 25 data points.

2. Repeat Exercise 1 for each color of *m&m's*.
3. Use the line plots to describe the data for each color. Rather than just looking at individual numbers, describe the shape of the data—any patterns or special features such as clusters or gaps in the data and isolated data points—that tell how the data are distributed.
4. Use the line plots to find the total number of each color of *m&m's* in the samples.

Brown: _____ Orange: _____ Blue: _____ Green: _____ Red: _____ Yellow: _____

PREDICTIONS

1. Use the class data to predict the number of each color of *m&m's* that you would expect to find in a one-pound bag.

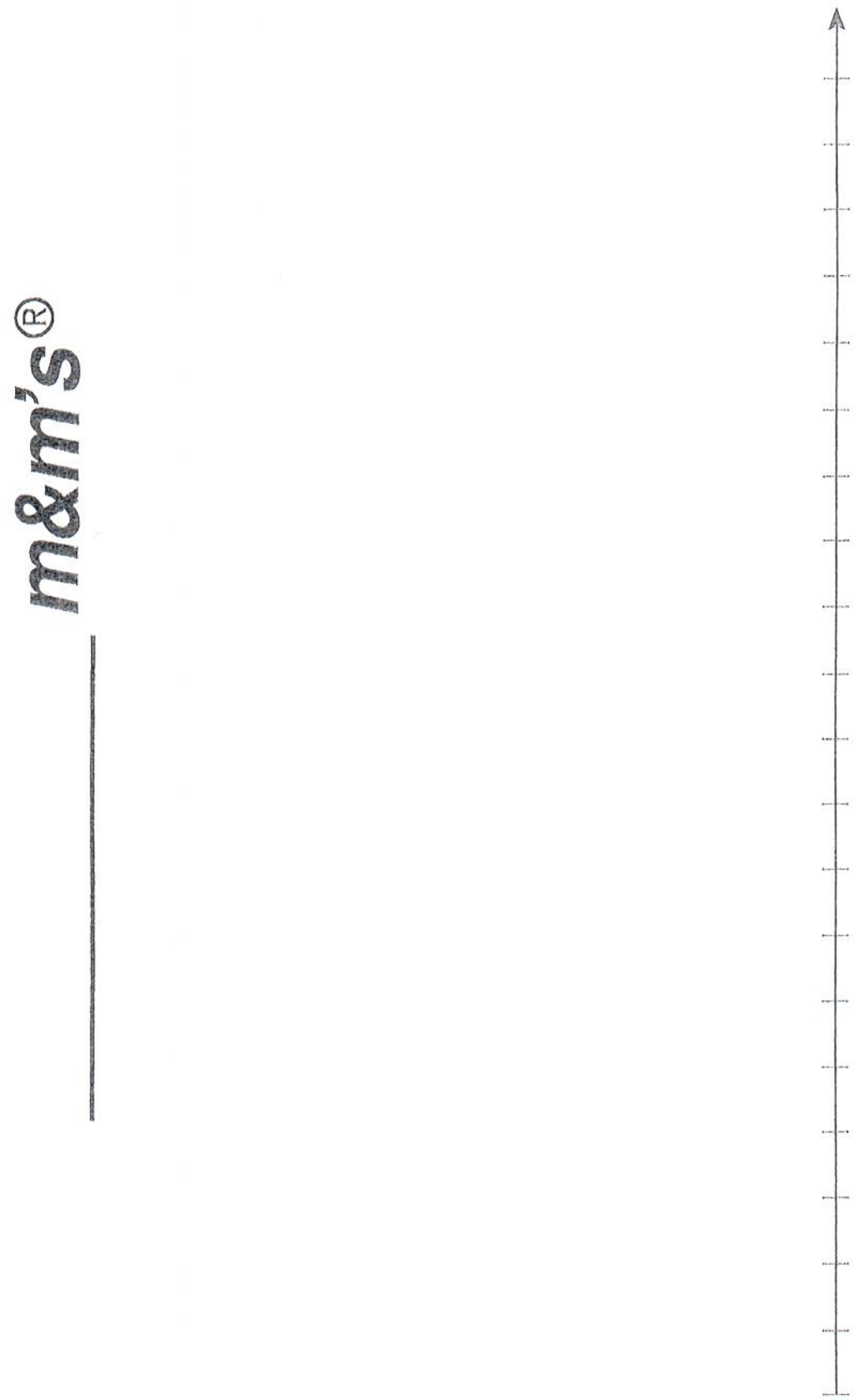
Brown: _____ Orange: _____ Blue: _____ Green: _____ Red: _____ Yellow: _____

2. Describe the procedure you used to make your predictions.
3. Help your classmates count the *m&m's* remaining in the bag. Add these counts to the numbers you already have. What was the total number of each color of *m&m's* in the bag?

Brown: _____ Orange: _____ Blue: _____ Green: _____ Red: _____ Yellow: _____

4. How do these totals compare with the predictions you made in Exercise 1?

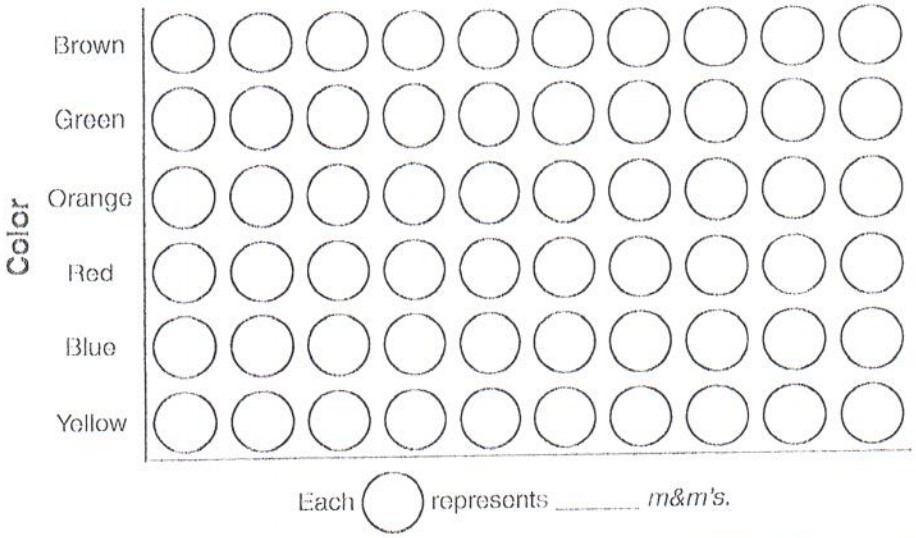
m&m's® LINE PLOT



PICTOGRAPHS REVISITED

Construct a pictograph for the number of each color of *m&m's* in the bag on Graph 2 below.
HINT: Let each circle represent more than one *m&m*.

Graph 2: Frequencies of *m&m's*

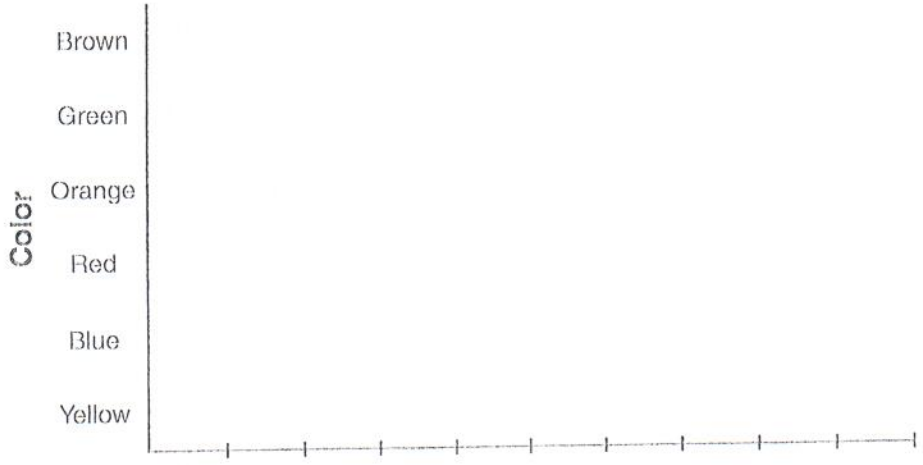


Each ◯ represents _____ *m&m's*.

BAR GRAPHS

1. Use Graph 3 below to construct a horizontal bar graph for the number of each color of *m&m's* in the bag. Label the scale on the horizontal axis.

Graph 3: Frequencies of *m&m's*



2. a. Which graph, the pictograph or the bar graph, was easier to construct? Why?

   b. Which graph is easier to read? Why?