THE SCIENTIFIC METHOD LAB

The scientific method is a way to think about problems and a way to solve problems. Scientists do not always follow the steps of the scientific method in order. However after a problem is solved, a scientist can use the scientific method to explain how the solution was reached. The scientific method can be broken down into the following parts:

1. State the problem.
2. Gather information.
3. Form a hypothesis.
4. Experiment.
5. Record and analyze data.
6. State a conclusion.

INTRODUCTION

In this activity, you will follow the steps of the scientific method to discover how many candies of each color are in a bag of colored candies. It will show you how scientists record data on charts, make graphs, and draw conclusions. Do not eat any of the candies because it will affect your results. Do not open the bag until you are instructed to do so.

OBJECTIVES

1. Name and describe the steps of the scientific method.
2. Follow the steps of the scientific method to solve a problem.
3. Record data in a table or chart.
4. Construct a graph that shows the results of the investigation.

MATERIALS

1 small bag of different-colored candies per group
Colored pencils or crayons to match candy colors

DIRECTIONS

1. **State the problem.** (Hint: What are you trying to find out?)

   _____

   _____

2. **Gather information.** It is unlikely that you will find any information about colored candies in the library. Probably your best sources of information are experts, people with experience with colored candies. Look around and you will find some experts, in fact you may be an expert yourself. What colors of candies are found in these bags?

   _____

   _____

   _____

   Which color is most common? _____

3. **Form a hypothesis.** Write a statement that tells how many candies you think will be in the bag and how many will there will be of each color. Remember, the total number of candies must equal the sum of candies of each color.

____

____

4. **Experiment.** Open the bag of candies. No eating yet! Sort the candies by color.
5. **Record and analyze data.**
   A. Write the colors of the candies in the first column of the table.
   B. Count the number of candies of each color. Record the results in the frequency column of the table.
   C. Add the numbers in the frequency column. Write the total number of candies.
   D. Calculate the percentage of each candy color. Divide the number of each color by the total number of candies.

COLOR	FREQUENCY	PERCENT
	Total:	

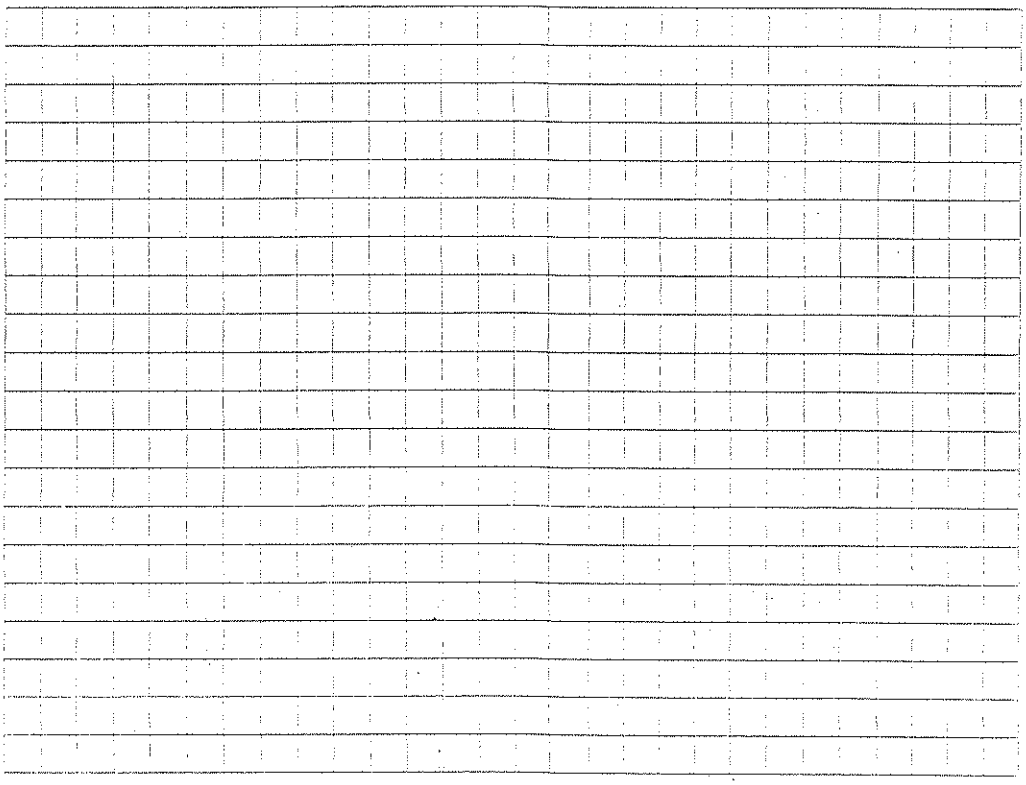
   E. Use the data you entered in the table to make a picture graph below. Use colored pencils that that correspond to the candy color. Color one circle for each candy in your bag.

○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○
○	○	○	○	○	○	○

COLORS OF CANDY

F. Use the data in your table to make a bar graph. Label the horizontal axis with the colors of the candies. Label the vertical axis with the numbers from 1 to 20. Color the bars the same colors as the candies.

TITLE:



LABEL:

LABEL:

6. **Draw a conclusion.** On the lines below, write a paragraph that answers the questions or addresses the problem. It should include the total number of candies in your bag and the frequency of each color. You should mention how your actual results compare with your hypothesis.

Conclusion:

The purpose of the lab was to determine how many candies of each color were in a bag of colored candies. The hypothesis stated that there would be _____ total pieces of candy in the bag; _____red, _____green, _____yellow, _____orange, and _____purple, with _____ being the most common color.

The actual results showed that there were _____candies in the bag; _____red, _____green, _____yellow, _____orange and _____purple. The most common color(s) was/were _____. These results did/did not support the hypothesis.