

ACTIVITY 1-2: SWEET OBSERVATIONS

SCIENCE PROCESSES: Observe, Use Numbers, Classify, Hypothesize, Design Experiments, Interpret Data, Predict, Communicate

SKILLS: Counting, Graphing, Averaging

OBJECTIVE(s): After completing the activity, students will be able to:

- ◆ understand the basic steps of the Scientific Method.
- ◆ observe, predict and record data.
- ◆ define hypothesis.

MATERIALS:

40 individual bags of Skittles candy	40 boxes of crayons
40 student workbooks	

BACKGROUND INFORMATION:

Scientific Method

The Italian physicist Galileo Galilei (1564 -1642) and the English Francis Bacon (1561 - 1626) are usually credited as being the principal founders of the **Scientific Method**. The Scientific Method is the systematic collection and classification of data, and usually, the formulation and testing of hypotheses based on the data.

The parts of the Scientific Method are:

1. Statement of **Problem**
2. Make an **Hypothesis**
3. Design **Experiment**
4. Collect **Data**
5. Form a **Conclusion**

The scientific method is extremely effective in gaining, organizing, and applying new knowledge.

Observations/Inferences

An **observation** is information that is gained by using your senses. An **inference** is deriving a conclusion from past experiences and/or knowledge. Good observations lead to good inferences. For example, students may be quick to conclude that a clear liquid in a beaker is water because the most common clear liquid that they are familiar with is water. However, after closer observations, the students may note a distinctive odor of the clear liquid and form another hypothesis.

GLOSSARY OF TERMS All underlined terms found in the BACKGROUND INFORMATION sections can be found in the glossary.

PROCEDURE:

1. In this activity, students will apply the Scientific Method to find out the amount of Skittles® candy in an individual bag of candy.
2. Students should complete parts 1 through 3 of the Student Activity Sheet 1-2 individually. They may work with a partner for the rest of the activity.
3. To start off, the instructor should hold up 2 bags of Skittles® candy.
4. State the **Problem**: Are the contents in all bags of Skittles® candy the same?
5. Students should **Predict/Hypothesize** how many Skittles® are in each bag.
6. Students should record their individual hypothesis on Student Activity Sheet 1-2. Instructors should assist the class in coming up with a class hypothesis.
7. After the class hypothesis is complete, students should set up an **Experiment** to see if each bag is exactly the same.
8. In groups of 2, students should discuss how to set up their experiments. **Skittles® bags should remain closed until questions 1-3 on the Student Activity Sheet 1-2 have been completed.**
9. Students need to carry out their experiment and record their **Data**, then use centimeter graph paper to create a bar graph (amount-versus-color) of their results. (Graph paper provided in student workbook.)
10. Instructors should allow time for students to present data and discuss class **Conclusions**.

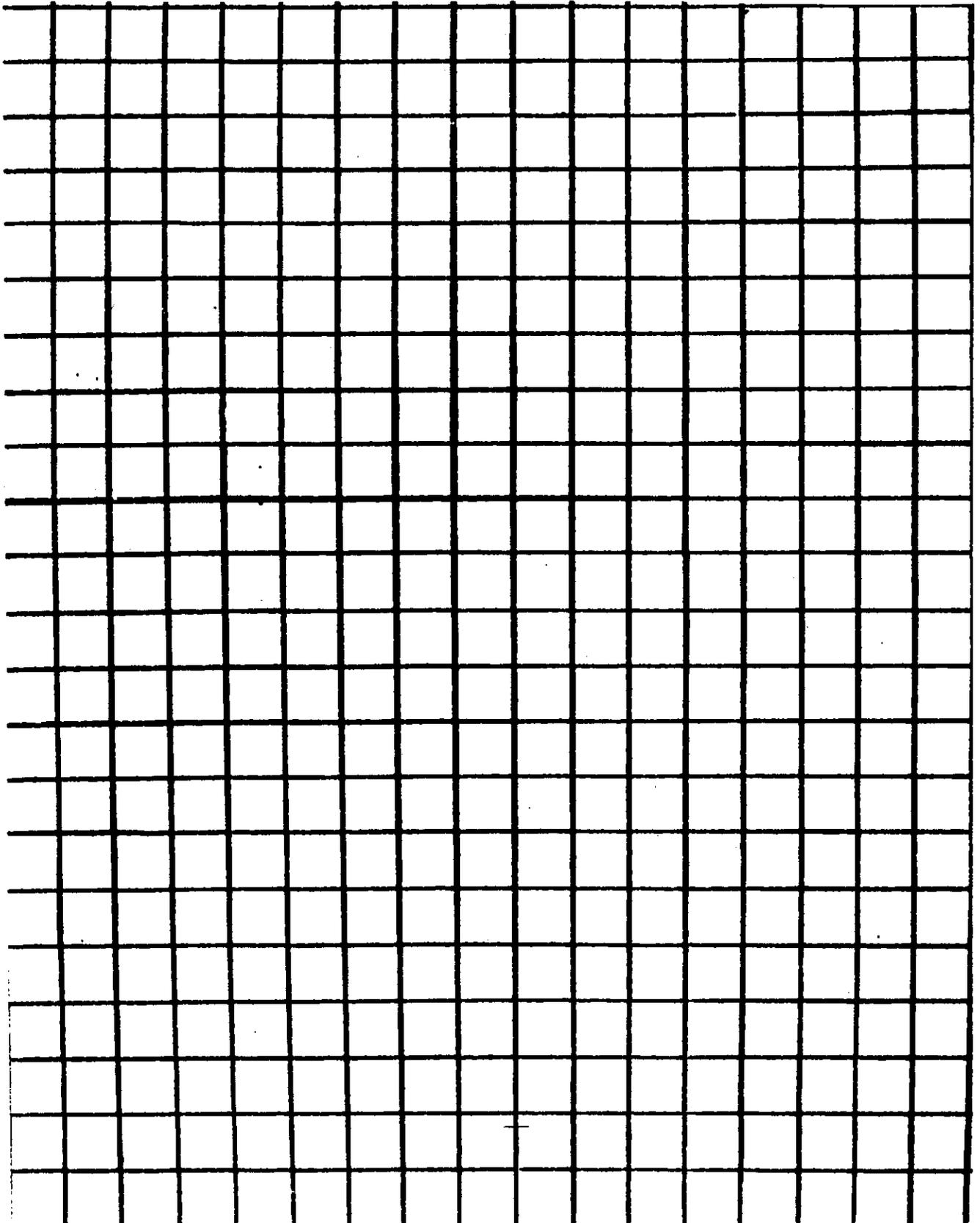
CONCLUSION:

Instructors should use the following questions to bring closure to this activity:

1. Define the steps of the Scientific Method.
2. Explain the difference between an observation and an inference.
3. How do you make good observations? Inferences?
4. Were your Skittles® hypotheses accurate?
5. Discuss how students designed their experiments.

SWEET OBSERVATIONS

(Amount versus Color)



(Open Skittles® here)

4. **Collect Data:** Information gathered through observations.

a. Fill in the table below.

Color	Amount

b. Make a bar graph of your results using centimeter graph paper and crayons.

c. Other observations: (shape, cracked, smooth, inside color, etc.)

d. Class data:

1. Average total _____

2.

Color	Amount

5. **Form a Conclusion:** Summary of your results.

a. Use your data to make a statement that summarizes your experimental results.

b. How did your predictions add up?