

# Activity

## Design Your Own Experiment

# Setting High Standards for Measurement

### Lab Preview

**Directions:** Answer these questions before you begin the Activity.

1. Why should the string be stretched tightly when you measure with it?
- 

2. What is a scale division?
- 

*To develop the International System of Units, people had to agree on set standards and basic definitions of scale. If you had to develop a new measurement system, people would have to agree with your new standards and definitions. In this activity, your team will use string to devise and test its own SI (String International) system for measuring length.*

### Recognize the Problem

What are the requirements for designing a new measurement system using string?

### Form a Hypothesis

Based on your knowledge of measurement standards and systems, state a hypothesis about how exact units help to keep measuring consistent.

### Possible Materials

string	masking tape
scissors	miscellaneous objects
marking pen	for standards

### Safety Precautions

### Goals

- **Design** an experiment that involves devising and testing your own measurement system for length.
- **Measure** various objects with the string measurement system.

### Test Your Hypothesis

#### Plan

1. As a group, agree upon and write out the hypothesis statement.
2. As a group, list the steps that you need to take to test your hypothesis. Be specific, describing exactly what you will do at each step.
3. Make a list of the materials that you will need.
4. **Design** a data table on a separate sheet of paper so it is ready to use as your group collects data.
5. As you read over your plan, be sure you have chosen an object in your classroom to serve as a standard. It should be in the same size range as what you will measure.
6. Consider how you will mark scale divisions on your string. Plan to use different pieces of string to try different-sized scale divisions.
7. What will your new unit of measure be called? Come up with an abbreviation for your unit. Will you name the smaller scale divisions?

## Activity (continued)

8. What objects will you measure with your new unit? Be sure to include objects longer and shorter than your string. Will you measure each object more than once to test consistency? Will you measure the same object as another group and compare your findings?

### Do

1. Make sure your teacher approves your plan before you start.
2. Carry out the experiment as it has been planned.
3. **Record** observations that you make, and complete your data table.

### Analyze Your Data

1. Which of your string scale systems will provide the most accurate measurement of small objects? Explain.

---



---

2. How did you record measurements that were between two whole numbers of your units?

---



---

### Draw Conclusions

1. When sharing your results with other groups, why is it important for them to know what you used as a standard?

---



---

2. **Infer** how it is possible for different numbers to represent the same length of an object.

---



---

### Communicating Your Data

Compare your conclusions with other students' conclusions. **For more help, refer to the Science Skill Handbook.**

---



---



---



---



---



---