

V. STANDARDS: The Need for Comparison (Day 5)

A. INTRODUCTION:

1. Measuring is comparing.
2. Distance is measured by comparing the unknown distance with a length.
 - a. These lengths do not change.
 - b. In the English (American) system, the inches, feet, and yards on tape measures and rulers are set by comparison with a standard yard.
 - c. In the metric system, lengths are compared with a standard meter.
3. A standard is a value that is accepted by a large number of people.

B. STANDARDS ARE UNIVERSAL

1. People have used standards for many centuries.
2. A standard is a particular value that is accepted as the official value.
3. A standard must always stay the same.
 - a. Standard meter bars are kept by the National Bureau of Standards.
 - b. Meter bars expand and contract with temperature. The lengths marked on them are accurate only when the bars are at the temperature of melting ice.
4. Standards apply to more than lengths and weights.
 - a. Electricity and Traffic Signals are universal throughout the world.
 - b. Automobile parts
 - c. Camera films

C. STANDARDS ARE MAINTAINED

1. Standards are important enough to be controlled by law.
2. Congress set up the National Bureau of Standards to maintain the standards for the United States.

a. The Bureau compares such things as the measuring equipment use in factories with the standards for the whole country. Everyone in this country can speak of measurements in the same terms.

b. Most state and county governments have departments of weights and measures.

D. QUESTIONS:

1. When you measure with a ruler or tape measure, what are you really doing?
2. What is a standard?
3. What would happen to a business that bought lengths of cloth with a short tape and sold them with a long tape?
4. How long have standards been used?
5. Why should standards be the same all over the world?
6. Name some standards other than mass, length, and volume.
7. Why does industry need standards?
8. Why should market scales be checked by a department of weights and measures?
9. Why are standards so important?

E. ACTIVITY: Making a Standard Ruler (Materials: Stick, masking tape)

1. Put a strip of masking tape on the piece of wood that you have been given.
2. Use the materials to create your own ruler. You may use your finger, a dime, a paper clip, or anything you wish to mark off the spaces. Just be sure to use the same object for the entire ruler. What units did you use?
3. Measure the width of your desk as so many marked spaces and units. Width=_____
4. Write the value you found for width on the white board. Include the unit used.
5. From the white board, make a list of the values your classmates found with unit. Do the data you collected show all the desks have the same width?
6. Do the desks all look to be the same size?
7. What is necessary for the answers to questions #5 and #6 to agree?

