

# **“How Much?” Contest – Measurement**

## **4<sup>th</sup>, 5<sup>th</sup>, or 6<sup>th</sup> Grade**

Jennifer Leandres

### **Benchmark:**

SLC 17: Measures length in customary and metric units to solve application problems.

SLC 18: Students use a variety of tools and techniques to measure, and use the results in problem-solving situations. Students select a unit, compare, convert, and apply the concepts of distance, weight, time, capacity, temperature, angles, perimeter, area, and volume in metric or customary units.

### **Objective:**

Students will learn how to visualize English/ Metric measurements in two and three dimensions.

### **Materials:**

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Object used for measuring length (piece of string, dowel rod, extension cord etc. )</li><li>• Object used for measuring area (book face, postcard, floppy disk etc.)</li><li>• Object used for measuring volume capacity of a liquid</li></ul> | <p>(Tupperware container, a cut -off milk jug, small fish tank etc.)</p> <ul style="list-style-type: none"><li>• Ruler</li><li>• Meter stick / yard stick</li><li>• Measuring cup</li><li>• Milk jug (to measure gallons)</li><li>• Pencil</li><li>• Paper</li></ul> |
|--|--|

### **Set Up:**

Before sharing this activity with the class, measure the length of your first object in English units (and metric). Repeat this action for the area of your second object, and the volume of your third object. These six measurements should be used to score your “contestants’ ” estimations and measurements of each object.

### **Procedure:**

Start the activity by reviewing metric and English conversions with the class. A good way to get the students thinking about length, area and volume of real objects may be to show them a few items they can easily identify the dimensions of, such as a meter stick or ruler, a centimeter square, a two- liter etc. Ask them questions like

“If I wanted to estimate how long the chalkboard is, about how many meter sticks would I have to use?”

“Why would it/ wouldn’t it be a good idea to use centimeter squares to measure the length of the chalkboard?”

“What other units could I use to measure the length of the chalkboard? What units would not be a good idea to use?”

Also, remind them that *a measurement serves no purpose without a unit label*. Give them an example where, without the label, the measurement would be useless. A good example:

“If you wanted to buy carpet for your room and the sales clerk told you that it costs \$2.00 for every 5, it would be hard for you to know how much carpet you need, AND how much it will cost for you to carpet your room.”

**Target Observations:**

- It would not be a good idea to use centimeter squares for the chalkboard, because it would take a long time and you would need a lot of squares
- It would not be a good idea to use miles to measure the length of the chalkboard because a mile is very long
- You wouldn't know how much carpet to buy if you didn't know the units to buy it in

**Target Model:**

*-Some units are better to measure in than others.*

*-It is important to have the correct units for a measurement.*

**Procedure:**

Set up three stations that students will come to individually. At the first station, have the object you chose for length clearly visible, and have student estimate how long the object is in English units. They may pick up the object, but they may NOT use a ruler to judge how long the object is. Have them record their value PLUS their label on the corresponding space of their worksheets. After everyone has estimated the length of the object, have the students measure the length with a ruler/ yardstick. (You may want to review the proper way to use a ruler here.) Have them write their estimates in one column and their measurements in a second column on a chalkboard or posterboard to see how everyone did.

[From this point, you can have them repeat the above sequence in metric units. You might want to show the relationship between metric and English, assuming that it will not confuse your students.]

Have them move on to the second station and visualize what they think the area of the second object is using English units. They may use the length of their fingernails or feet, for instance, to measure the dimensions, but they may NOT use a ruler or meterstick. Have them write their response on the corresponding space of their worksheets.

- Remember that their units must be squared. You can preface this information for them, or you can see if they remember!

On to the third station... this time they will estimate the volume of a container in English units. Have them record their guesses, and finally their measurements on their worksheets. Upon measuring the volume of the container, they will need the measuring

cup and water. Remind them that they need to be eye-level to the level of the water in the measuring cup.

You may wish to hand out prizes to the student(s) with the closest estimations!

**Target Observations:**

- It is hard to guess the length, area, and volume of objects

Name \_\_\_\_\_

### Contest Record Sheet

Record your measurements and their units in the corresponding spaces.

#### Station 1: Length

Estimated Length \_\_\_\_\_

How did you estimate the length of  
this object?

Measured Length \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

#### Station 2: Area

Estimated length \_\_\_\_\_ X Estimated width \_\_\_\_\_ =

Estimated Area \_\_\_\_\_

How did you estimate the area of this object? \_\_\_\_\_

\_\_\_\_\_

Measured length \_\_\_\_\_ X Measured width \_\_\_\_\_ =

Measured Area \_\_\_\_\_

#### Station 3: Volume

Estimated Volume \_\_\_\_\_ Measured Volume \_\_\_\_\_

How did you estimate the volume of this object? \_\_\_\_\_

\_\_\_\_\_