

## Instructional Procedures

### Investigating Metrics

Introduce the Essential Question, *How can the metric system help me understand my world?* Log results on chart paper and hang it on a wall for students to add to throughout the rest of the unit.

Tell students they are going to begin a unit about metrics. Poll the students to see which metric measurements are familiar to them. Ask them the Unit Questions, *Why might you need to know the metric system?* and *What difference does it make if you use inches or centimeters?*

Have students write down their answers to the questions in a journal or notebook. Tell them they will be adding to their knowledge of these as they progress throughout the unit and that they will need to refer to their answers to complete some of the upcoming activities.

Keep the following important points in mind when teaching metrics:

- Teach metrics by itself. Make no English-unit comparison. Teach no conversion factors. Teach how to coexist and cope with standard units and metric units rather than teaching conversions from one system to the other.
- Stress the relationships between the monetary system (a decimal system) and metric system.
- Stress the relationship between the meter, liter, and gram.

The following is a minimal structure for teaching metrics lessons over a 2-week period. After each activity, have students, in pairs, reflect on the three questions asked at the beginning of the unit and add to their notes:

- Introduce the straw as units. Measure desks with straws (have different lengths of straws for different student groups). Point out discrepant events. Introduce standard units. Talk about why we should use metrics. Become familiar with metric vocabulary and the metric ruler.
- Introduce the millimeter and the centimeter. Review estimating. Estimate several objects and then measure them. Have students estimate then measure different parts of their body, such as, fingers, shoulder to elbow, elbow to wrist, toes, and so forth. Measure height and arm span. Compare the measurements, and discuss the findings.
- Introduce meters and complete an activity where students measure objects in the room using meters. Reflect on the activity.
- Practice converting within the metric system from millimeters to centimeters, centimeters to meters, meters to millimeters, and so forth.

- Have students walk a kilometer. Discuss distances they are familiar with in kilometers. MapQuest or some other mapping program can help with metric distances.
- Introduce mass. Discuss the difference between mass and weight. Introduce balance device and have students find the mass of numerous objects using grams and kilograms. Have students convert grams to kilograms and vice versa.
- Introduce volume—liters and milliliters. Have a variety of containers for students to estimate the volume of and measure those containers. Convert from liters to milliliters and vice versa.
- Introduce Celsius. Have students take part in a hands-on activity “feeling” different temperatures.