Mass and Volume
3rd Grade
Cheri Higgins

Benchmark:

3rd Grade SLC 3

Objectives:

Students will learn how to weight and measure common objects in metric and standard units

Materials:

• Triple beam balance
• Graduated cylinder
• Meter or yard stick
• Various objects to weigh (blocks, pennies or other coins, pencils, books)

Initial Demonstration:

The students are shown various objects and asked how to measure them. A balance, ruler, and graduated cylinder are introduced to the class. The class examines each instrument and is shown how to use each.

Target Observation:

• Length, mass, and volume are measured using different tools and have different units

Target Model:

• Length is measured using a ruler in meters or inches, weight is measured using a scale in grams or pounds, and volume is measure using a graduated container in liters or fluid ounces.

Procedure Day 1:

Various objects are weighed, and measured by volunteers, and the class should discuss what these objects have in common. For example substances measured in the graduated cylinder are all liquid. So liquid is usually measured in mL. The class can be given the mass volume worksheet to explore their early knowledge of weights and measurements.
Revised Target Model:

- Some objects have easily measured volumes, others do not
- Some have easily measured lengths, others do not
- Most objects can be easily weighed

Procedure Day 2:

A variety of objects (roll of toilet paper, milk, rice, rocks, coins, cake mix, canned food) are shown to the class. The students are asked to come up with the best ways to measure the objects. The demonstrator measures each object using the most popular methods, and the class discusses the outcome. For example the class is shown a graduated cylinder half full of coins, about 60 mL. The students are asked to comment on the accuracy of this method of measurement. The demonstrator then adds water to the cylinder up to the level of the coins. The demonstrator asks “where is the water?” The students give input about what happens to the water, and the demonstrator leads the discussion towards the answer. All the water is poured into another cylinder, and the class notes that the water fills the spaces in between the coins.

Target Revised Model:

- Solids can have their volumes measured by completely immersing them in a liquid, and recording the change in volume in a graduated cylinder

Summary:

Length, weight, and volume are introduced as concepts for measuring objects. Liquids are easiest to measure the volume of, but solids can have their volumes determined by completely dunking them in a liquid and measuring the change in volume in a graduated cylinder. Lengths are easiest to determine for a solid object. Weight is easy to find out for both solids and liquids. There are two main measuring systems in use in the US- standard units and the metric system.
Mass/ Volume/ Length Worksheet

Name________________________

a. 5g      b. 50g   a. 40g    b.400g     a. 70g     b.70cm      a. 9g    b. 9 ml

a. 15ml   b. 15g a. 50ml   b. 50cm a. 30cm  b. 30ml  a. 100ml  b. 25cm

a. 3g    b. 30g    a. 500ml   b. 500g a. 2g   b. 200g    a. 2cm b. 200g