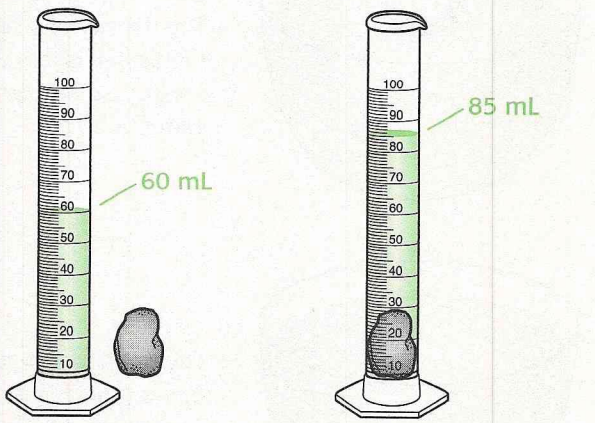
Matter

How is matter measured?

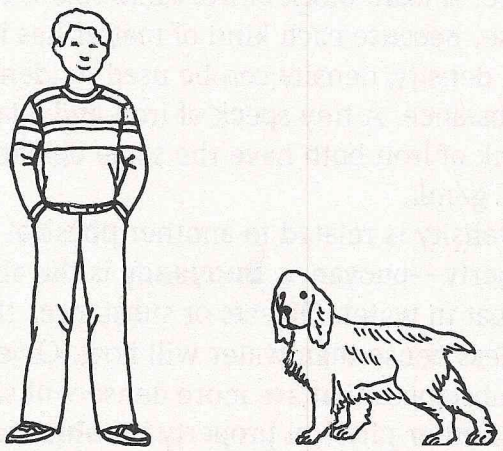
Matter is anything that has mass and volume. **Volume** is the amount of space something takes up. The volume of a rectangular solid, such as a book, can be found by measuring its length, width, and height using a ruler, and then multiplying the numbers together. The volume of a solid is expressed in cubic meters (m^3), or cubic centimeters (cm^3). The volume of an irregular solid can be found by placing the object in a graduated cylinder containing water. The increase in the water's volume is equal to the solid's volume.

The volume of a liquid can be measured using a measuring cup or graduated cylinder. A liquid's volume is often measured in units of liters (L) or milliliters (mL). One mL is equal to 1 cm^3, so the volume of a liquid can be compared with the volume of a solid.

All matter has **mass,** the amount of matter that an object contains. Mass is measured with a **balance** and expressed in units of kilograms (kg), grams (g), or milligrams (mg). **Weight** is a measure of the pull of gravity on an object. An object's weight depends on its mass, but weight and mass are not the same thing. Weight is measured with a spring scale. Because it is a measure of force, it is expressed in units of force, called newtons (N).



Finding the volume of a rock, an irregular solid



Mass and weight are not the same thing.

Show What You Know

Match the term with its correct unit of measurement.

1. _____ weight	a. mL
2. _____ mass	b. N
3. _____ volume	c. kg