**How are Mass and Volume Related?**

How can you measure the density of a substance? You could determine a substance’s density if you knew how much of the substance occupies a certain space. To find out how much of a substance occupies a space, you can first of all measure the mass of the substance. Mass is the amount of matter in a substance. Volume is a measurement of the amount of space occupies by the substance. To measure the volume of an object with a regular shape, such as a rectangular prism, you can use the mathematical formula “Volume = Length x Width x Height” to calculate its volume. However, if the object has an irregular shape, such as a strawberry, the volume can be found by using an overflow can and measuring the amount of water than spills out. The volume of a solid can be measured either directly or indirectly, depending on the shape of the solid. The volume of a liquid can be measured using a measuring cup or a graduated cylinder, for example. The volume of a gas can be determined by measuring the column of the container that holds it. The greatest amount of fluid that a container can hold is called its capacity. Capacity is usually measured in litres or millilitres.

Keep in mind that mass and weight are not the same. Weight is the force of gravity exerted on an object. A force is a push or pull, or anything that causes a change in motion of an object. Gravity is the natural force that causes an object to move toward the centre of Earth. All forces, including weight, are measured in Newtons (N). The pull of gravity everywhere on Earth’s surface is essentially the same. On Earth, gravity pulls on an object with a downward force of 9.8 N for every kilogram of its mass. Thus, a bag of sugar with a mass of 2.26 kg weighs 22.1 N on Earth.