

Cubic Units and Volume of a Cuboid

Objectives

- ◆ Find the volume of a solid in cubic units and cubic centimeters.
- ◆ Learn other units of volume and compare relative sizes.
- ◆ Use a formula to find the volume of a cuboid (rectangular prism).
- ◆ Convert between cubic centimeters and liters.

Material

- ◆ Cubes such as multilink cubes
- ◆ Centimeter cubes
- ◆ Boxes of various shapes to fill with cubes
- ◆ Inch cube (Can use net on appendix p. a31)
- ◆ Foot cube (Make from 6 squares of cardboard)
- ◆ Meter sticks
- ◆ Appendix pp. a29-a32
- ◆ Liter measuring cup
- ◆ 1000-cube from base-10 set
- ◆ Dropper or teaspoon

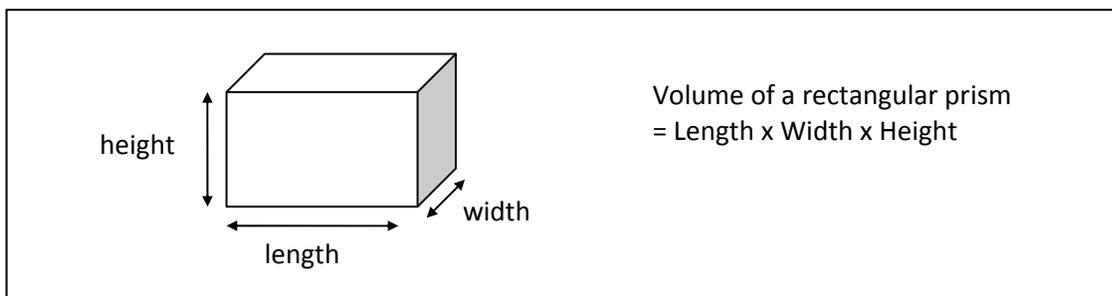
Prerequisites

Students should be able to interpret 2-dimensional drawings of cubes and count the number of cubes in those drawings, even if some are hidden.

Notes

In the previous unit students counted the number of cubes used to make a solid figure. They were essentially finding the volume in cubic units. In this unit they will be introduced to the standard units for volume, primarily the cubic centimeter, and their abbreviations (e.g., cm^3 , m^3 , in.^3 , ft^3 , yd^3).

In *Primary Mathematics* 3B students learned to find the area of a rectangle given its length and width. This was reviewed in *Primary Mathematics* 4A and students found the area of compound figures. In this unit students will learn to find the volume of a cuboid (rectangular prism) by multiplying its length by its width by its height.



In *Primary Mathematics* 2 and 3 students learned to find the capacity of containers in liters and milliliters. In this unit students will learn that liters and milliliters are also used to measure the volume of liquid in a container, not just the capacity of the whole container. Since they have used measuring cups or beakers to determine the capacity of other containers, this is not really a new concept. However, they will learn that 1 cm^3 is equivalent to 1 milliliter, and 1000 cm^3 is equivalent to 1 liter, and to convert cubic centimeters to liters and milliliters and vice versa.

Volume is also measured in cups, quarts, and gallons, such as using a measuring cup to measure out a volume of liquid to add to a recipe, or how many gallons of gasoline to add to the car tank. As students advance in science, the metric system will be used more often than the U.S. customary system.

Although the liter is the more common unit for volume, the international standard unit of volume is the cubic meter, which is equal to 1000 liters.