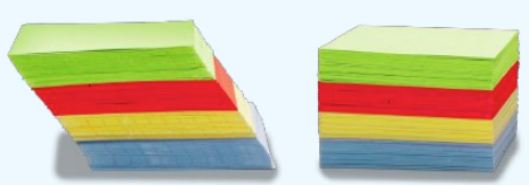
Lesson 11.4 Volume of Prisms & Cylinders (Clickers)

Volume is the space that a figure occupies. It is measured in cubic units. The volume V of a cube is the cube of the length of its edge e, or $V = e^3$.

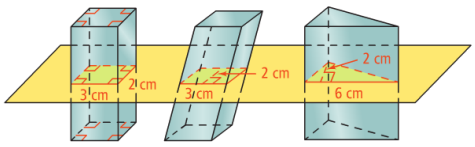
You can find the volume of a prism or a cylinder when you know its height and the area of its base.

Both stacks of paper below contain the same number of sheets. The first stack forms an oblique prism while the second forms a right prism. The stacks have the same height. The area of every cross section parallel to a base is the area of one sheet of paper. The stacks have the same volume.



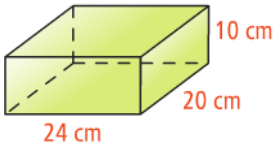
Cavalieri's Principle: If two space figures have the same height and the same cross-sectional area at every level, then they have the same volume.

Ex. The area of the shaded cross section below is 6 square cm. Since the prisms all have the same height, they will have the same volume by Cavalieri's Principle.

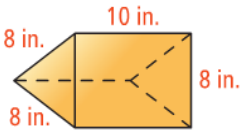


Volume of a Prism: V = Bh where B is area of the base and h is height.

Ex. What is the volume of the prism below?

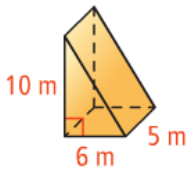


What is volume of the prism below?



1 What is the volume of a rectangular prism with dimensions 5 ft by 3 ft by 4 ft?

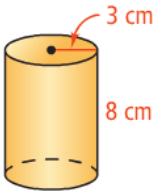
2 What is the volume of the triangular prism below?



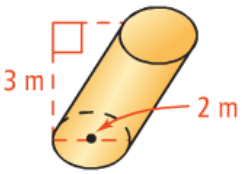
3 Suppose the height of a prism is doubled. How does this affect the volume of the prism?

Volume of a Cylinder: $V = \pi r^2 h$ where r is radius and h is height.

Ex. What is the volume of the cylinder below, in terms of pi?

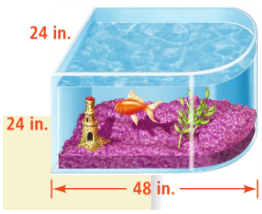
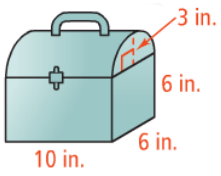


4 What is the volume of the cylinder below? Round to



A composite space figure is a three-dimensional figure that is the combination of two or more simpler figures. You can find the volume of a composite space figure by adding the volume of the figures that are combined.

Ex. What is the approximate volume of the bullnose aquarium to the nearest cubic inch?



5 What is the approximate volume of the lunch box shown below? Round to the nearest cubic inch.