Volume: The Third Dimension

Suggested Time: 45 minutes

What's important in this lesson:

In this lesson, you will learn how to solve problems involving the volume of cylinders and prisms.

Complete these steps:

1. Read through the lesson portion of the package on your own.
2. Complete the exercises.
3. Check your answers with the Answer Key that your teacher has.
4. Seek assistance from the teacher as needed.
5. Complete the Evaluation and hand it in. Be sure to ask for assistance if you need it.

Hand in the following:

1. Practice Problems
2. Volume Evaluation

Questions for the teacher:

Volume: The Third Dimension

Volume

Volume is the amount of space a figure occupies.
Volume is a three-dimensional measurement, which means the units will be m^3, cm^3, km^3, etc.

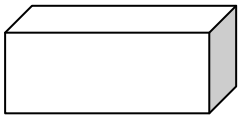
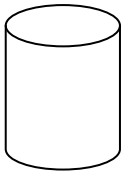
Any two-dimensional figure extended into a third dimension by stacking the same shape on top of itself is called a prism.

To calculate the volume of a prism or cylinder:

In general

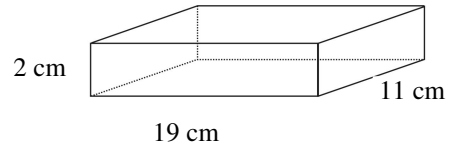
V = Area of base x height

$V = A_{base} \times h$

3-D Figure	Rectangular Prism	Cylinder
Defining Shape	Rectangle	Circle
Diagram		
Examples	Box of cereal CD or DVD case	Tennis ball container Can of vegetables
Volume Calculation	Area of base = l x w = _____ cm^2 Volume= area of base × height = _____ cm^2× _____ cm = _____ cm^3	Area of base= π × (_____ cm)^2 = _____ cm^2 Volume= area of base × height = _____ cm^2× _____ cm = _____ cm^3

Examples

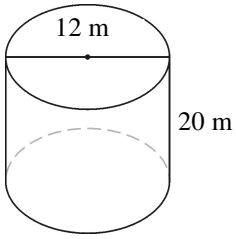
1.



Area of base = l x w
= 19 x 11
= 209 cm^2

Volume = Abase x height
= 209 cm^2 x 2 cm
= 418 cm^3

2.



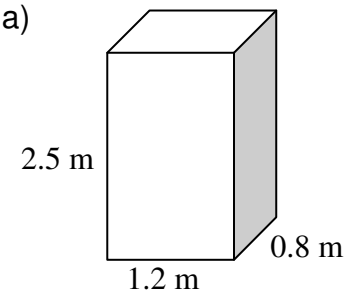
Area of base = π r2
= π x (6 m)^2
= 113.1 m^2

Volume = Abase x height
= 113.1 m^2 x 20 m
= 2262 m^3

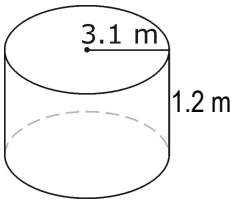
Practice Problems

1. Find the volume of each figure

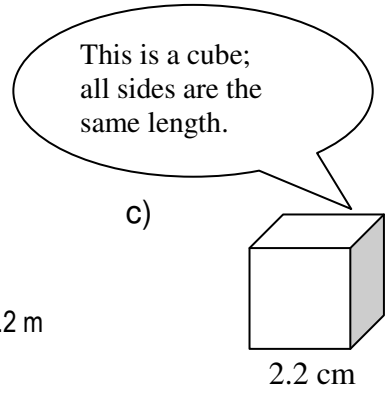
a)



b)



c)

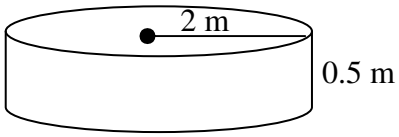
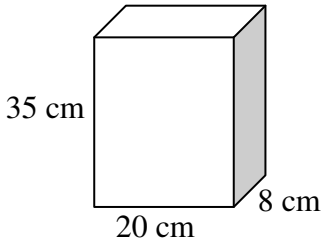
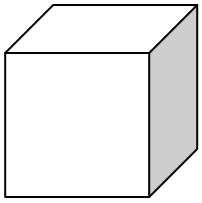
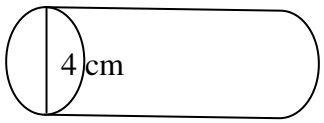


2. If 1 m^3 = 1000L, how many litres will the container in part a) hold?

_____ x 1000 L in 1 m^3 = _____ L.

Volume Evaluation

1. Find the volume of each figure in the chart. [16]

a) 	
b) 	
c) a cube 	
d) 	

2. The dimensions of a rain barrel are shown below. How many litres of water will the barrel hold? [5]