

**Lesson 13: Volume, Pythagorean Theorem, Unit 5 Review**

**Instructions:**

Follow along with video and fill in the blanks as indicated. Space has been provided for you to show all work on this sheet and take any additional notes.

**Volume**

Fill in the blank(s):

Definition

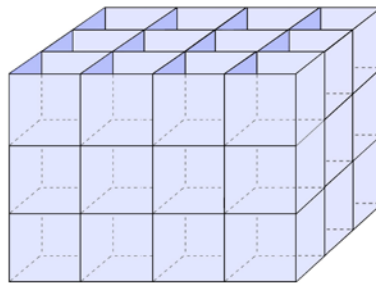


**Volume**

... is the \_\_\_\_\_ in a geometric figure.

Volume is \_\_\_\_\_-dimensional and is measured in cubic units.

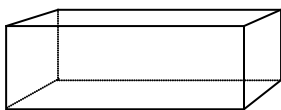
Volume is measured in \_\_\_\_\_ units.



Notes: \_\_\_\_\_

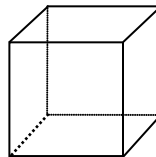
Developing Formulas for Volume: Copy work from video.

**Rectangular Box**



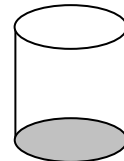
V = \_\_\_\_\_

**Cube**



V = \_\_\_\_\_

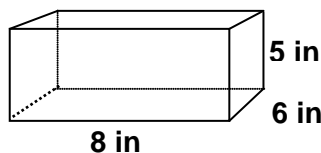
**Cylinder**



V = \_\_\_\_\_

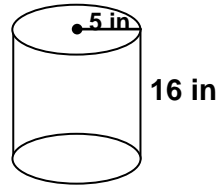
Examples: Copy steps/answers from video.

1) V = \_\_\_\_\_

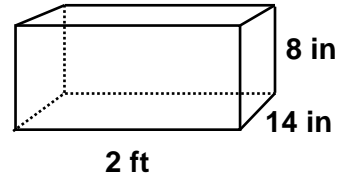


2) Find the volume of a cube that measures 6 ft. on each side.

3)  $V =$  \_\_\_\_\_



4) Find the volume.



5) Find the volume of a cylinder with a diameter of 8 feet and height of 12 feet.

6) Find the diameter of the base of a cylinder whose volume is 1540 cubic feet and has a height of 10 feet.  
(Use  $\frac{22}{7}$  for  $\pi$ )

Fill in the blank(s):

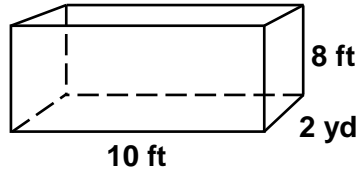
| Formula Summary |                 |                     |                 |
|-----------------|-----------------|---------------------|-----------------|
|                 | Perimeter       | Area                | Volume          |
| rectangle       | $P = 2L + 2W$   | $A = Lw$            | <b>Box</b>      |
|                 |                 |                     | $V =$           |
| square          | $P = 4s$        | $A = s^2$           | <b>Cube</b>     |
|                 |                 |                     | $V =$           |
| triangle        | $P = a + b + c$ | $A = \frac{1}{2}bh$ |                 |
| circle          | $C = 2 \cdot r$ | $A = \pi r^2$       | <b>Cylinder</b> |
|                 | $C = \pi d$     |                     | $V =$           |

# STOP THE LESSON AND WORK THE PROBLEM SET

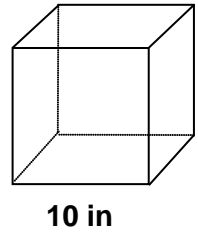
## Problem Set: Volume

Solve for the missing value.

1.  $V =$  \_\_\_\_\_

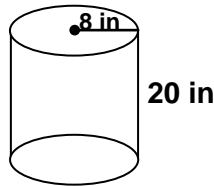


2.  $V =$  \_\_\_\_\_



3.  $V =$  \_\_\_\_\_

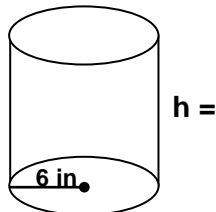
Use 3.14 for  $\pi$ .



4. Find the width of a rectangular box whose volume is 10.5 cu. inches, length is 3.5 inches, and height is 2 inches.

5. Find the height of this cylinder.

Use 3.14 for  $\pi$ .  $V = 1582.56 \text{ in}^3$

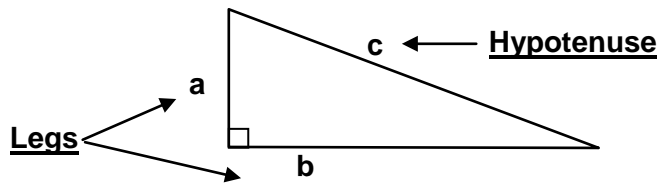
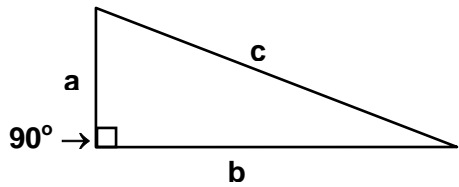


## RESUME THE LESSON FOR ANSWERS AND SOLUTIONS

(Note: On the video you will first see the answers only. Following the answers, solution steps for all problems are also shown on the video.)

Lesson 13 (cont'd): Pythagorean Theorem

**Right Triangle**



**Fill in the blank(s):**



The \_\_\_\_\_ are the two sides that meet to form the right angle. Typically designated by the letters **a** and **b**.

The \_\_\_\_\_ is the side that's always opposite the right angle. Typically designated by the letter **c**.

**Pythagorean Formula:  $a^2 + b^2 = \underline{\hspace{2cm}}$**

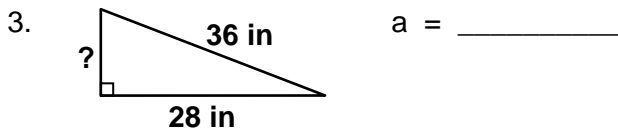
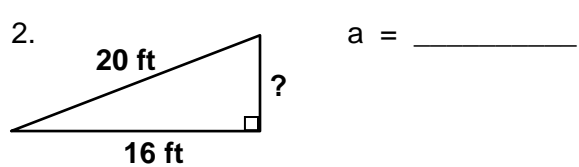
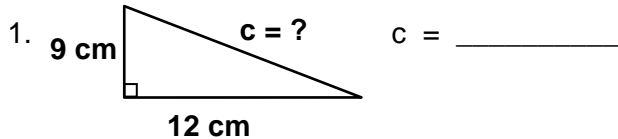


**Fill in the blank(s):**

The sum of the squares of the two legs of a right triangle equals the square of the hypotenuse.

**Notes:** \_\_\_\_\_

**Examples:**



4. Find the *diagonal of a rectangle* with a length of 2.4 m and width of 1.8 m.

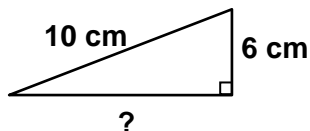
5. An 8-foot ladder is leaning up against the side of a building. You want to position the ladder so it will touch the building 6 feet up. How far from the base of the building should the ladder be placed?

## STOP THE LESSON AND WORK THE PROBLEM SET

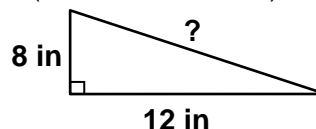
### Problem Set: Pythagorean Theorem

Solve for the missing measurements.

1.  $b =$  \_\_\_\_\_



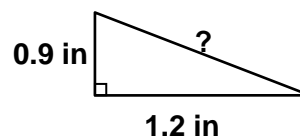
2.  $c =$  \_\_\_\_\_  
(to the nearest tenth)



3. Greg has let out 50 feet of string on a kite. He is standing 40 feet from a point on the ground directly under the kite. About how high above the ground is the kite?

4. Find the diagonal of a square whose side is 8 cm.

5.  $c =$  \_\_\_\_\_



## RESUME THE LESSON FOR ANSWERS AND SOLUTIONS

(Note: On the video you will first see the answers only. Following the answers, [solution steps](#) for all problems are also shown on the video.)

# STOP THE LESSON AND WORK THE PROBLEM SET

## Unit 5 Self-Quiz

1. Fill in the chart:

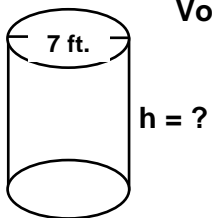
|           | Perimeter | Area | Volume   |
|-----------|-----------|------|----------|
| Rectangle | P =       | A =  | Box      |
|           |           |      | V =      |
| Square    | P =       | A =  | Cube     |
|           |           |      | V =      |
| Triangle  | P =       | A =  |          |
| Circle    | P =       | A =  | Cylinder |
|           | P =       |      | V =      |

Pythagorean Theorem =

\_\_\_\_\_

Find the missing values in the following problems. If a diagram is not provided, drawing one and labeling it with the given information might be helpful.

2.

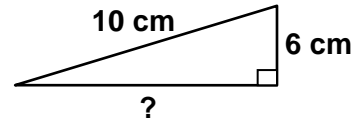


Volume =  $385 \text{ ft}^3$

a. Find the area of the *base* of this cylinder.

b. Find the height of this cylinder.

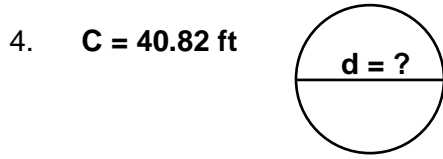
3.



a. Find the value of the missing side.

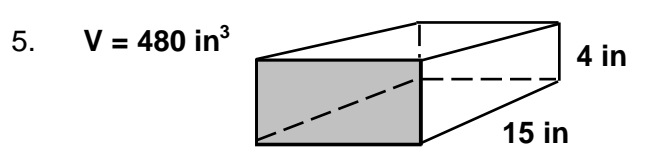
b. Find the area of this figure.  
Use the information from part a.

c. Find the perimeter.  
Use the information from part a.



a. Find the diameter.

b. Find the area of the figure.



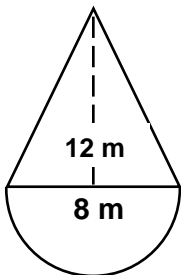
a. Find the width of the box.

b. Find the area of the shaded portion.

**Solve the following word problems using your knowledge of volume and the Pythagorean Theorem. Drawing a diagram and labeling it with the known values can be very helpful.**

6. A wheelchair ramp sets the same height as a porch, 6 feet, and extends 15 feet out from the base of the porch. What is the length of the ramp? Drawing a diagram will help.

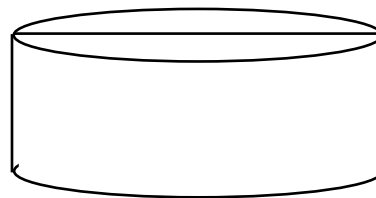
7. Find the total area of the given figure.



8. A baseball diamond is a square 90 feet on each side. How far will the second baseman have to throw a ball in order to reach the catcher?

9. Barb's pool has a diameter of 25 feet and the water is 5 feet deep. One cubic foot of water holds 7.5 gallons. One gallon of water weighs 8.3 pounds. Use this information and the diagram below to answer the following questions. Use this information to label the diagram provided. Then, use the given information to answer the following questions.

a. How many gallons of water does the pool hold?

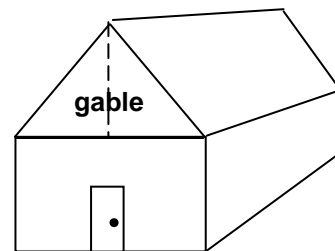


b. How much does the water weigh?

c. What square footage of her backyard does the pool cover?

10. The square footage of this house is 2100 square feet. The main body of the house is one story, 10 feet high. The height of the gable is 8 feet. Use this information to label the diagram provided. Then, use the given information to answer the following questions.

a. If the house is 30 feet across the front, how long is the house?



b. How many square feet of siding would it take to cover the outside of the house? Subtract 200 square feet for windows and doors. (NOTE: All sides of the house will be covered including the gable (triangular) ends.)

c. How many square feet of roofing material would be needed to re-roof the house? (HINT: The line that is shown as the height of the gable divides that triangle in half. This information will help you determine the dimensions of the roof)

## RESUME THE LESSON FOR ANSWERS AND SOLUTIONS

(Note: On the video you will first see the answers only. Following the answers, solution steps for all problems are also shown on the video.)