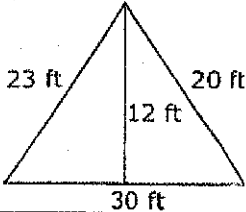
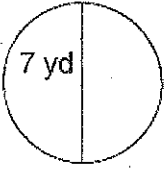



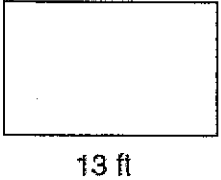
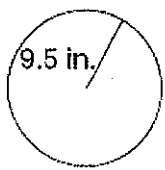
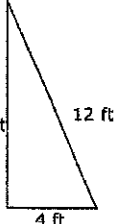
CC-M8-Unit 8  
**Area and Perimeter/Circumference Review Notes** Name \_\_\_\_\_

AREA			PERIMETER	CIRCUMFERENCE
<b>Rectangle</b>	<b>Triangle</b>	<b>Circle</b>	<u>Any polygon</u> Add up all of the sides	<b>Circle</b>
$A = lw$	$A = \frac{1}{2}bh$	$A = \pi r^2$		$C = 2\pi r$

Find the area and perimeter/circumference of each figure. Use 3.14 for  $\pi$ . Round to the nearest tenth.

Shape	Area	Perimeter/Circumference
1. 		
2. 		
3. 		

Pause the video and try the problems on the back on your own! Use 3.14 for  $\pi$ . Round to the nearest tenth. Then press play and check your answers with a color pen.

Shape	Area	Perimeter/Circumference
1. 		
2. 		
3. 		

Name \_\_\_\_\_

### 3-D Shapes: Vertices, Faces, and Edges Review

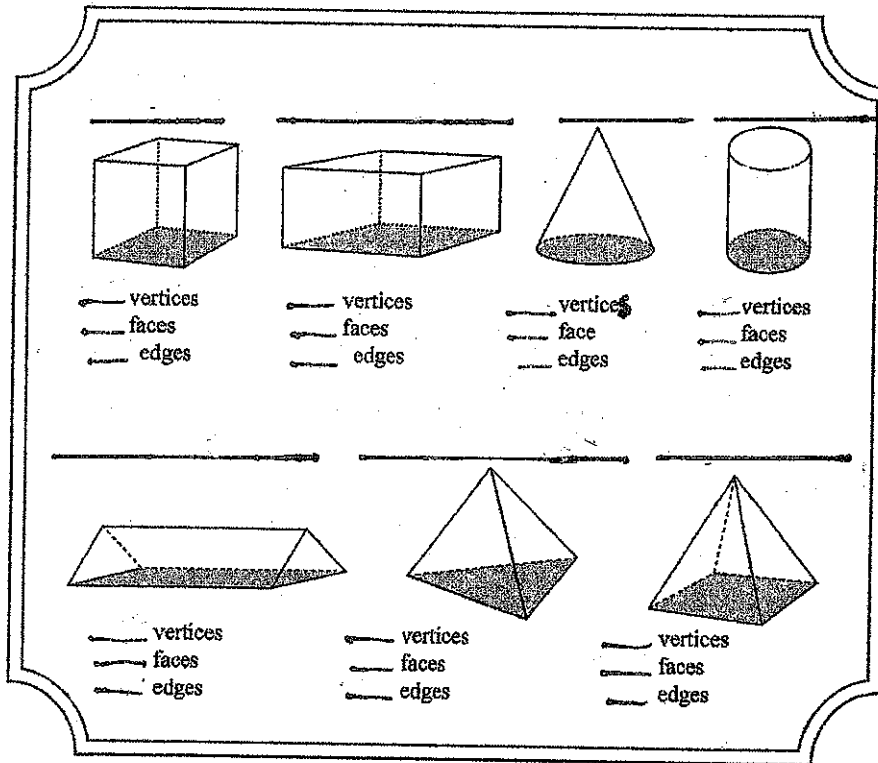
Vertices- the corners

Faces- the flat surfaces

Edges- line segments that join two vertices

Name each shape. Write the number of vertices, faces, and edges for each shape.

#### Solids (DOK 1)



Answer each question about the solid shapes. (DOK 1)

1. Which solid has no vertex? \_\_\_\_\_
2. Between a cylinder, cube, and a cone, which solid is a prism? \_\_\_\_\_
3. Which two solids have 5 faces? \_\_\_\_\_ and \_\_\_\_\_
4. When I think of Volume of 3-D shapes, I think of \_\_\_\_\_

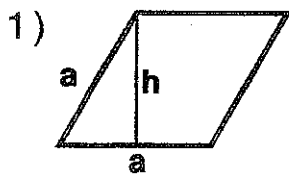
Name : \_\_\_\_\_

Score : \_\_\_\_\_

Teacher : \_\_\_\_\_

Date : \_\_\_\_\_

**Identify and Calculate the Area and Perimeter for each Quadrilateral.**

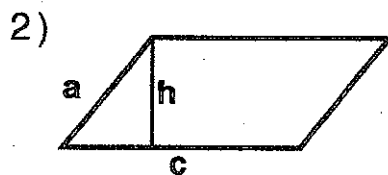


$a = 5.7 \text{ cm}$     $h = 4.94 \text{ cm}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

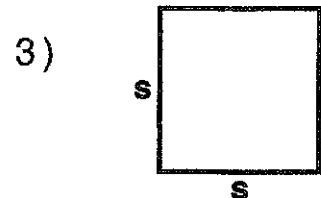


$a = 4.38 \text{ ft}$   
 $c = 8.9 \text{ ft}$     $h = 4.1 \text{ ft}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

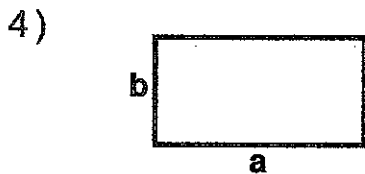


$s = 6.1 \text{ inches}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

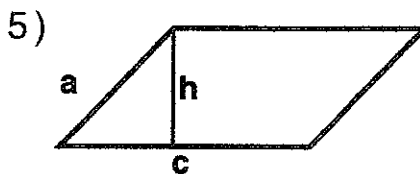


$a = 7.9 \text{ yds}$     $b = 4 \text{ yds}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

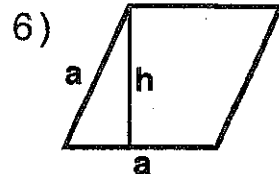


$a = 4.83 \text{ mm}$   
 $c = 9.4 \text{ mm}$     $h = 4.4 \text{ mm}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

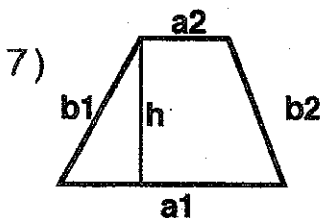


$a = 5.8 \text{ yds}$     $h = 5.26 \text{ yds}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

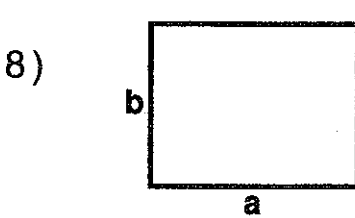


$a1 = 8.4 \text{ mm}$     $a2 = 3.3 \text{ mm}$   
 $b1 = 6.18 \text{ mm}$     $b2 = 5.79 \text{ mm}$   
 $h = 5.4 \text{ mm}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

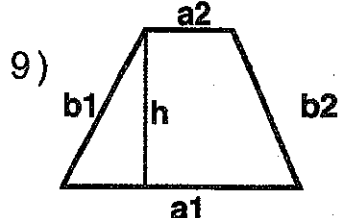


$a = 7.8 \text{ inches}$     $b = 6 \text{ inches}$

Area: \_\_\_\_\_

Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_



$a1 = 9.1 \text{ cm}$     $a2 = 3.4 \text{ cm}$   
 $b1 = 6.58 \text{ cm}$     $b2 = 6.35 \text{ cm}$   
 $h = 5.8 \text{ cm}$

Area: \_\_\_\_\_

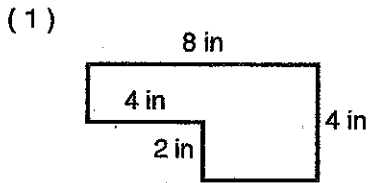
Perimeter: \_\_\_\_\_

Type: \_\_\_\_\_

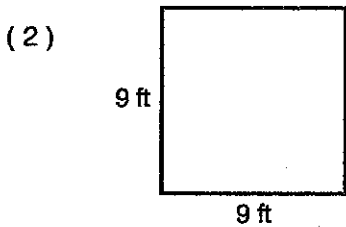


Name: \_\_\_\_\_ Date: \_\_\_\_\_

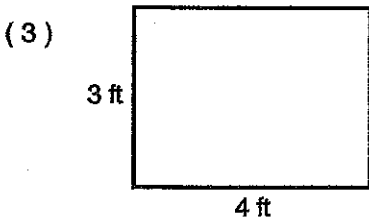
Calculate the area and perimeter of each shape.



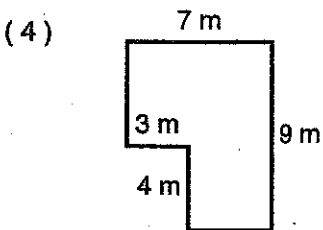
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



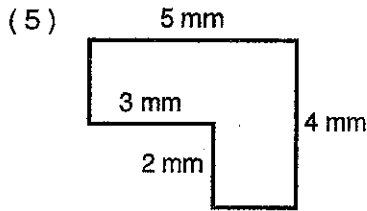
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



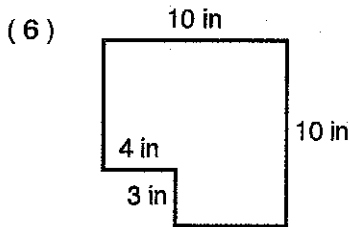
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



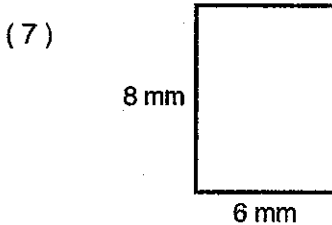
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



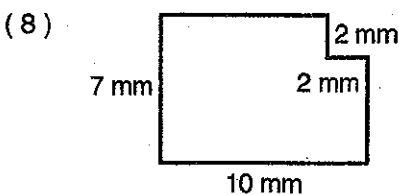
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



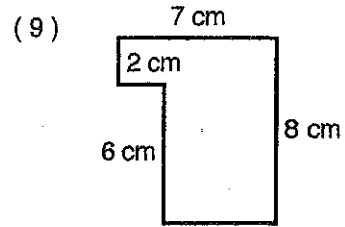
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



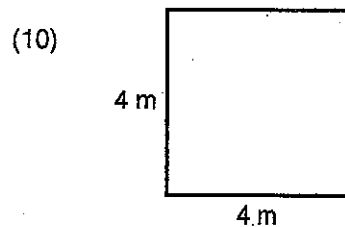
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



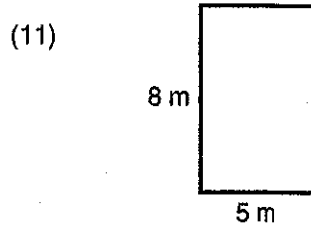
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



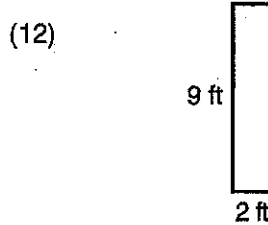
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_



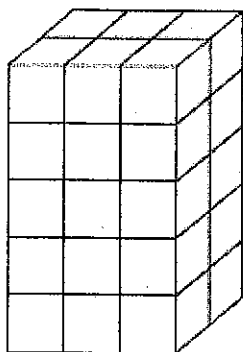
Perimeter: \_\_\_\_\_  
Area: \_\_\_\_\_

# Volume of Right Prisms Notes

Name \_\_\_\_\_

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

1.



How many cubes are in the top layer?

How many layers are there?

How many total cubes would you need to build this structure?

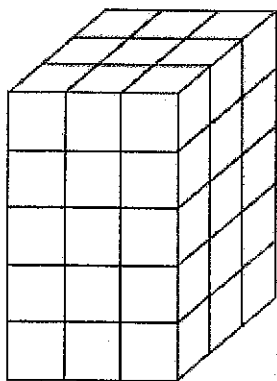
What is the:  
length? \_\_\_\_\_

width? \_\_\_\_\_

height? \_\_\_\_\_

How could you use the dimensions to find the volume?

2.



How many cubes are in the top layer?

How many layers are there?

How many total cubes would you need to build this structure?

What is the:  
length? \_\_\_\_\_

width? \_\_\_\_\_

height? \_\_\_\_\_

How could you use the dimensions to find the volume?

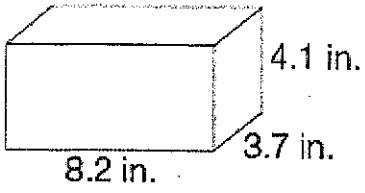
**Formula for VOLUME of a Rectangular Prism:**

$$V =$$

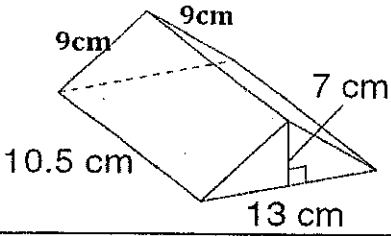
**Formula for VOLUME of a Triangular Prism:**

$$V =$$

3.

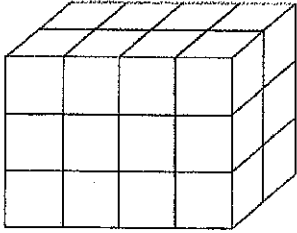


4.

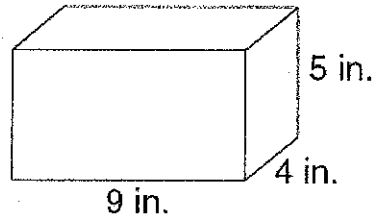


**Pause the video and try the problems on the back on your own!  
Then press play and check your answers with a color pen.**

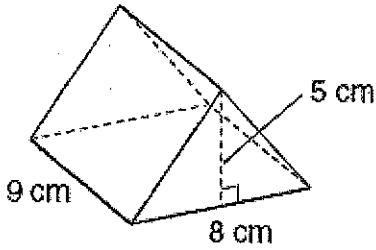
1.



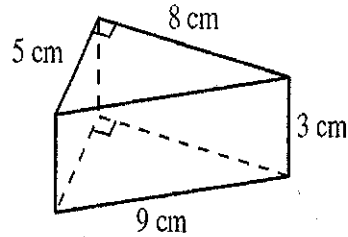
2.



3.



4.



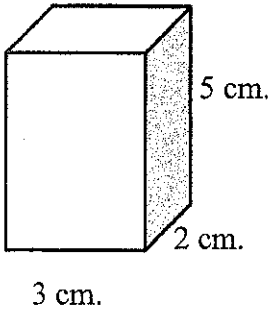
Name: \_\_\_\_\_

Date: \_\_\_\_\_ Period: \_\_\_\_\_

### Breaking Down Volume

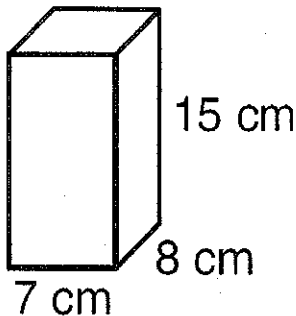
Now that you know how to find volume of a rectangular prism, let's break down what we are really doing. This will help us with future prisms.

1. Begin by looking at the specific dimensions of this rectangular prism.



- What are the dimensions of the base?
- How many 1 cm. cubes would it take to cover the base?
- How many layers of 1 cm. cubes would it take to fill the prism?
- Using your answers from parts b and c, find the volume of the prism. In other words, how many 1 cm. cubes will it take to fill the rectangular prism?

2. Now consider this rectangular prism:



- What are the dimensions of the base of this rectangular prism?
- How many 1 cm. cubes would it take to cover the base?
- How many layers of 1 cm. cubes would it take to fill the prism?
- Using your answers from parts b and c, find the volume of the prism. In other words, how many 1 cm. cubes will it take to fill the rectangular prism?

3. So when we find volume of a rectangular prism, we multiply the length by the width and then by the height. Using what you found above, explain why it works.

4. Thinking back to the last unit on perimeter and area, when we multiply the length by the width of a rectangle, what does that find?

Name: \_\_\_\_\_

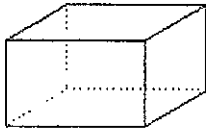
Date: \_\_\_\_\_

Period: \_\_\_\_\_

## Volume of Prisms and Cylinders

What is volume?

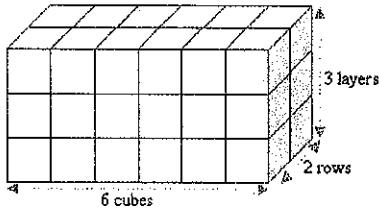
Standard VOLUME formula:



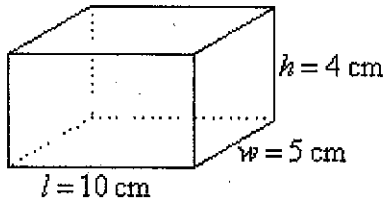
Rectangular Prism

Volume Formula:

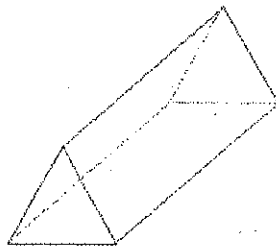
1.



2.

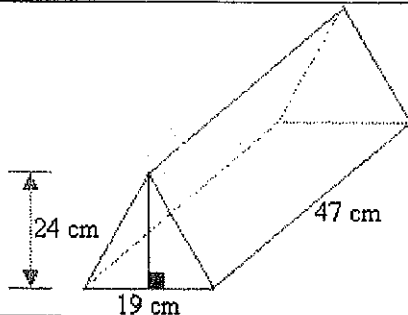


Volume Formula:



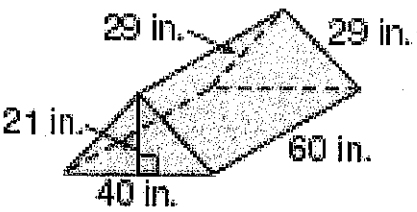
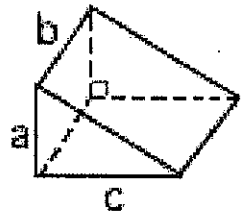
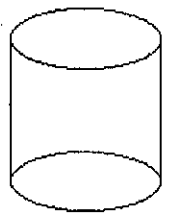
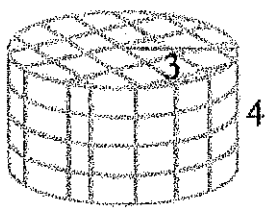
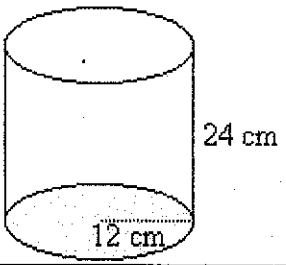
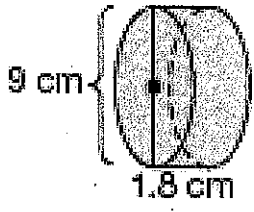
Triangular Prism

3.





# Volume of Prisms and Cylinders cont.

<p>4.</p> 	
<p>5.</p>  <p style="margin-left: 40px;"> <math>a = 8.55 \text{ km}</math>  <math>b = 5 \text{ km}</math>  <math>c = 11 \text{ km}</math> </p>	
 <p style="text-align: center;">Cylinder</p>	<p><b>Volume Formula:</b></p>
<p>6.</p> 	
<p>7.</p> 	
<p>8.</p> 	

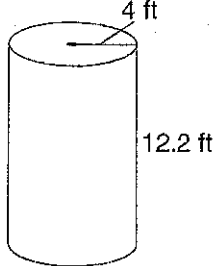
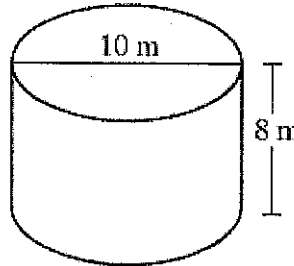
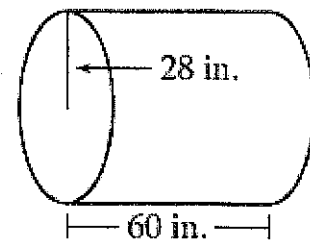
# Volume of Cylinders Notes

Name \_\_\_\_\_

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

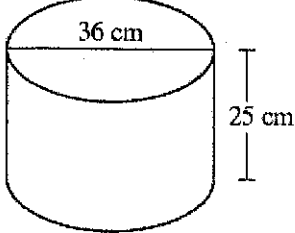
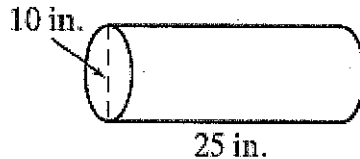
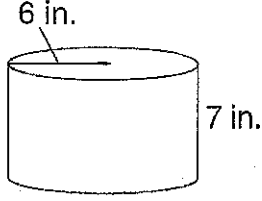
<b>Volume Formula for any right prism</b>	
<b>Volume Formula for a Cylinder</b>	

Find the volume of each cylinder. Use 3.14 for  $\pi$ . Round to the nearest tenth, if necessary.

<p>1.</p>  <p>A cylinder with a radius of 4 ft and a height of 12.2 ft.</p>	<p>2.</p>  <p>A cylinder with a diameter of 10 m and a height of 8 m.</p>	<p>3.</p>  <p>A cylinder with a radius of 28 in. and a length of 60 in.</p>
--	--	--



Pause the video and try the problems on the back on your own!  
Then press play and check your answers with a color pen.

<p>1.</p>  <p>A cylinder with a diameter of 36 cm and a height of 25 cm.</p>	<p>2.</p>  <p>A cylinder with a radius of 10 in. and a length of 25 in.</p>	<p>3.</p>  <p>A cylinder with a radius of 6 in. and a height of 7 in.</p>
---	--	--

# Solid Geometry - Volume of Cylinders Practice

## Volume of Cylinders (DOK 2)

The formula for the volume of a cylinder is  $V = \pi r^2 h$ . The  $r$  is the radius of the circular face at the base of the cylinder. The  $h$  is the height of the cylinder.

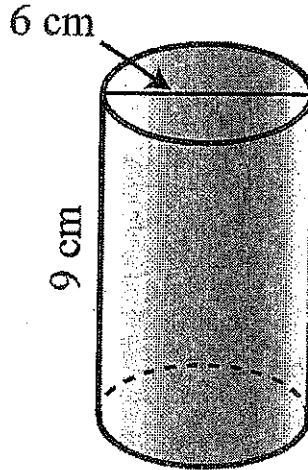
To find the volume of the cylinder to the right, plug in the measurements into the formula.

(Notice the diameter is given in the drawing, the radius is needed, so take  $\frac{1}{2}$  of the diameter to equal the radius.  $r = \frac{1}{2}d$ )

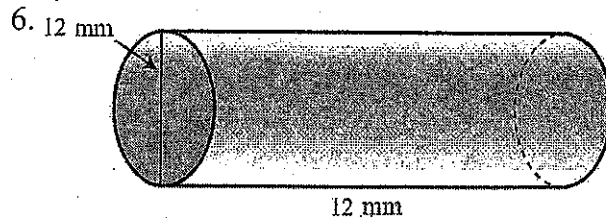
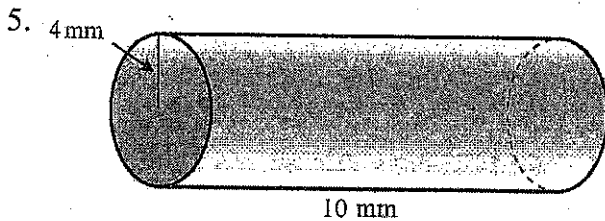
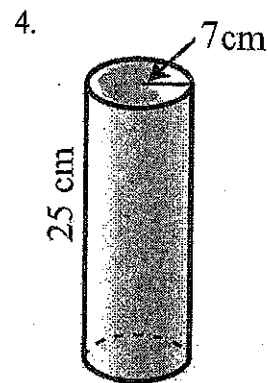
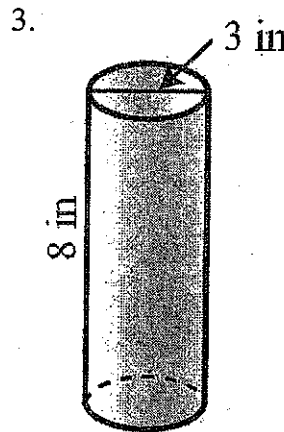
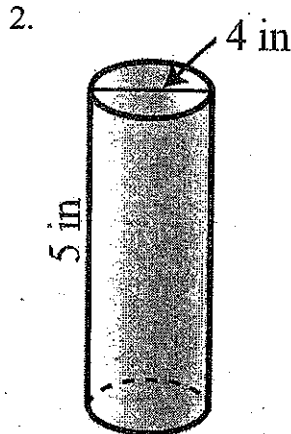
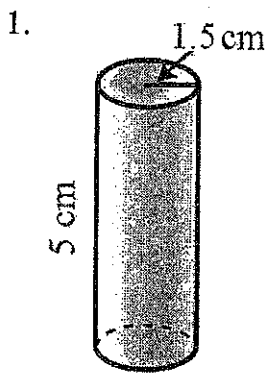
$$V = \pi r^2 h$$

$$V = \pi(3^2)9$$

$$V = \pi 81 \text{ or } V = 81\pi \text{ cm}^3$$





Find the volume of the cylinders below. Be sure to include the cubic measurement in your answer and leave your answer in the form of  $\pi$ . Use the formula  $V_{\text{cylinder}} = \pi r^2 h$ . (DOK 2)



7. What is the difference in volume between the cylinders in problems 2 and 3 above?
8. What is the difference in volume between the cylinders in problems 5 and 6 above?
9. What is the difference in volume between the cylinders in problems 1 and 4 above?

# Volume of Cones Notes

Name \_\_\_\_\_

	Cylinder	Cone	Ratio of Volumes Cone : Cylinder
			
1	Length of Radius: 6 cm Height of Cylinder: 10 cm Volume: _____	Length of Radius: 6 cm Height of Cone: 10 cm Volume: 376.8 cm <sup>3</sup>	
2	Length of Radius: 9 in Height of Cylinder: 15 in Volume: _____	Length of Radius: 9 in Height of Cone: 15 in Volume: 1271.7 in <sup>3</sup>	
3	Length of Radius: 18 ft Height of Cylinder: 7 ft Volume: _____	Length of Radius: 18 ft Height of Cone: 7 ft Volume: 2373.84 ft <sup>3</sup>	

Looking at the ratios you wrote for the volume of the cone to the volume of the cylinder, what conclusions can you make?

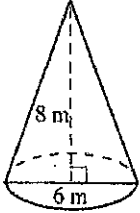
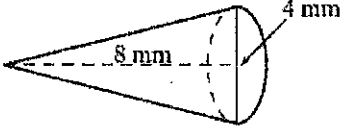
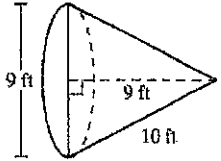
Volume of a Cylinder	Volume of a Cone

Using the formula, find the volume of the cones from above. Use 3.14 for  $\pi$

1)	2)	3)



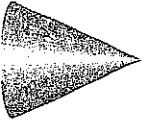
Pause the video and try the problems on your own! Round to the nearest tenth if necessary. Then press play and check your answers with a color pen.

1) 	2) 	3) 
--	--	--

Name \_\_\_\_\_

Volume of a Cone Practice

Volume of a Cone

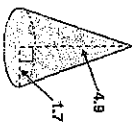
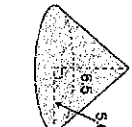
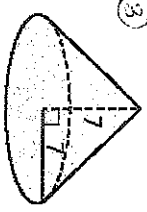


Formula for volume of a cone:

$$V = \frac{1}{3} Bh$$

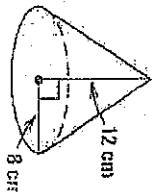
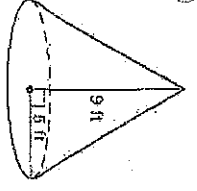
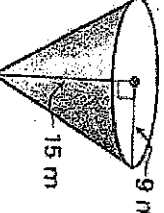
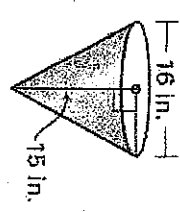
Where  $B$  = area of the base and  $h$  is the height of the cone

Find the volume of each cone. Round all answers to the nearest hundredth. (Images taken from Holt Middle School Math Course 3.)

<p>1</p> 	<p>2</p> 
<p>3</p> 	<p>4</p> <p>What would be the volume of a cone with a diameter of 10 in and a height of 50 in?</p>

Name \_\_\_\_\_

Volume of a Cone Practice

<p>5</p> 	<p>6</p> 
<p>7</p> 	<p>8</p> 
<p>9</p> <p>What would be the volume of a cone with a diameter of 10 in and a height of 50 in?</p>	<p>10</p> <p>Is the volume of an ice cream cone the cone or the ice cream inside the cone?</p>

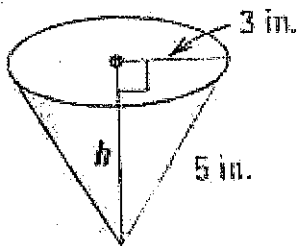
Sometimes you will be given the slant height of the cone, and you want the perpendicular height of the cone.

- To find the perpendicular height, you are going to use the right triangle formed and the Pythagorean Theorem, which is

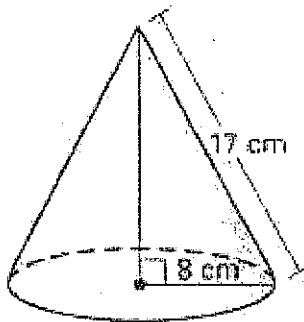
$$a^2 + b^2 = c^2$$

**Ex 3** First find the height of the cone. Then find the volume of the cone. Round your answer to the nearest whole number.

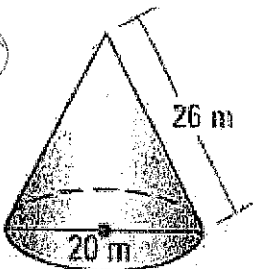
11



12.



13.



14

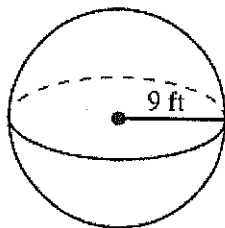
# Volume of Spheres Notes

Name \_\_\_\_\_

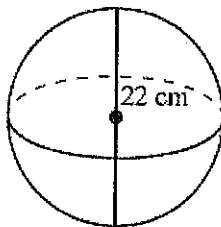
$$V = \frac{4}{3} \pi r^3$$

Using the formula, find the volume of the sphere. Use 3.14 for  $\pi$ . Round to the nearest tenth.

1)



2)

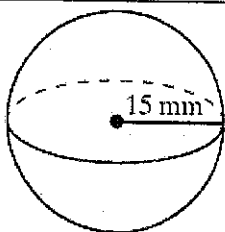


3) Sphere with radius of 6cm

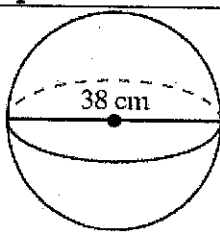


Pause the video and try the problems on your own! Using the formula, find the volume of the sphere. Use 3.14 for  $\pi$ . Round to the nearest tenth, if necessary. Then press play and check your answers with a color pen.

1)

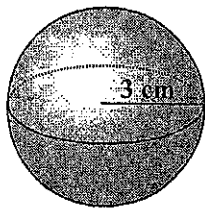


2)



3) Sphere with radius of 8m

## Volume of Spheres (DOK 2)



$$\text{Volume} = V = \frac{4}{3}\pi r^3 \quad \pi \approx 3.14$$

$$\text{Volume} \approx \frac{4}{3} \times 3.14 \times 27$$

$$\text{Volume} \approx 113.04 \text{ cm}^3$$

Find the volume area of a sphere given the following measurements where  $r$  = radius and  $d$  = diameter. Use  $\pi \approx 3.14$ . (DOK 2)

1.  $r = 2$  in  $V \approx$  \_\_\_\_\_

7.  $d = 14$  cm  $V \approx$  \_\_\_\_\_

2.  $r = 6$  m  $V \approx$  \_\_\_\_\_

8.  $r = \frac{1}{8}$  km  $V \approx$  \_\_\_\_\_

3.  $r = \frac{3}{4}$  yd  $V \approx$  \_\_\_\_\_

9.  $d = 3$  in  $V \approx$  \_\_\_\_\_

4.  $d = 8$  cm  $V \approx$  \_\_\_\_\_

10.  $d = \frac{2}{3}$  ft  $V \approx$  \_\_\_\_\_

5.  $d = 50$  mm  $V \approx$  \_\_\_\_\_

11.  $r = 10$  mm  $V \approx$  \_\_\_\_\_

6.  $r = \frac{1}{4}$  ft  $V \approx$  \_\_\_\_\_

12.  $d = 5$  yd  $V \approx$  \_\_\_\_\_

## Solid Geometry Word Problems (DOK 2)

Carefully read and solve the problems below. (DOK 2)

- Robert is using a cylindrical barrel filled with water to flatten the sod in his yard. The circular ends have a radius of 1 foot. The barrel is 3 feet tall. How much water will the barrel hold? The formula for volume of a cylinder is  $V = \pi r^2 h$ . Use  $\pi \approx 3.14$ .
- If a basketball measures 24 centimeters in diameter, what volume of air will it hold? The formula for volume of a sphere is  $V = \frac{4}{3}\pi r^3$ . Use  $\pi \approx 3.14$ .
- What is the volume of a cone that is 2 inches in diameter and 5 inches tall? The formula for volume of a cone is  $V = \frac{1}{3}\pi r^2 h$ . Use  $\pi \approx 3.14$ .