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6.06 Volume and Figures Review and Practice Test

Circle Formulas

1. Circumference of a circle _____
2. Area of a circle: _____

Volume Formulas

1. Volume of a cylinder _____
2. Volume of a pyramid: _____
3. Volume of a cone: _____.

Cavalieri's Principle

1. States that if the areas of the cross-sections of two 3-D figures are congruent, and the heights of the figures are also congruent, then it can be concluded that the volumes of the two figures are congruent.

[Watch Video 1](#)

The volume of a square pyramid with a height of 6 cm is 32 cm^3 . Aleeza says a cone with the same base area and height will have the same volume. Is she correct?	
If the volume of a cylinder is 72 inches^3 , what is the volume of a cone that fits exactly inside the cylinder?	
A rectangle has a perimeter of 18 units. Derive the formula for the area of a circle with a circumference that equals the perimeter of the rectangle.	

Review of Volume Formulas

Volume of a cylinder formula:	Volume of a cone formula:
Volume of a sphere formula:	Volume of a pyramid formula:

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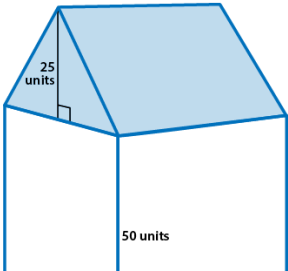
Change in Dimensions-The volume of similar figures can be expressed as a ratio. The similarity ratio for the constant change in dimensions is in the first power. The corresponding change in volume is in the third power.

Ex: Dimensions - $\rightarrow \frac{a}{b}$ Volume Ratio \rightarrow —

Calculating Change as a Percentage If each dimension is increased/decreased by the same scale factor, then you can **multiply the scale factor by itself three times to find the decimal number that the volume changed.** From there, move the decimal point two places to the right to find the percent change in volume.

Watch Video Two to review the problems below

[Watch Video 2](#)

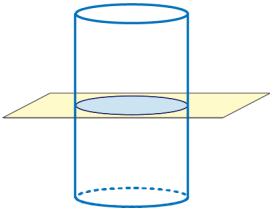
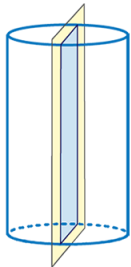
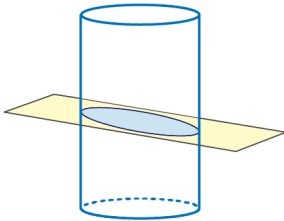
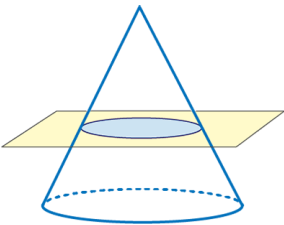
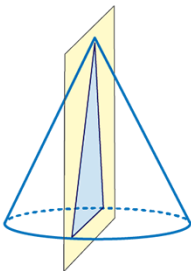
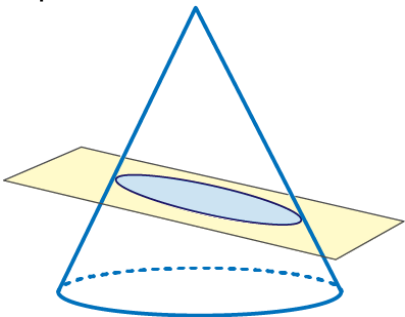
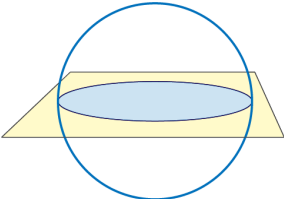
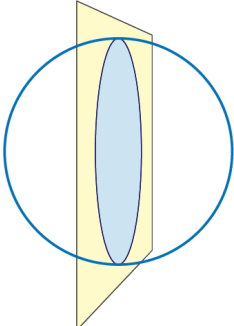
A cylinder has a diameter of 6 inches and a height that is triple the radius. A sphere also has a diameter of 6 inches. Is it possible to fit 3 spheres inside the cylinder? Use 3.14 for pi.	
If the dimensions of the cylinder in example 1 were doubled, what would be the new volume of the cylinder? If the dimensions of the sphere in example 1 were tripled, what would be the new volume of the sphere?	
What percent of the original volume is the volume of the bigger cylinder if the dimensions were doubled? What percent of the original volume is the volume of the bigger sphere if the dimensions were tripled?	
A cylinder has a volume of $125\pi\text{cm}^3$ and a height of 5 cm. If the volume of the cylinder is increased by 10 percent to create a new cylinder with the same height, what is the radius of the new cylinder? Round your answer to the nearest hundredth.	
What is the volume of the figure? 	

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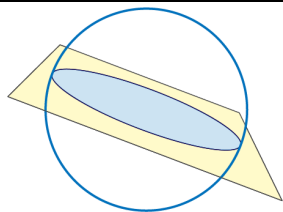
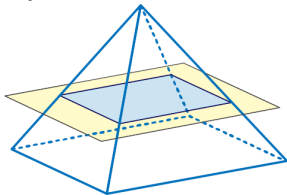
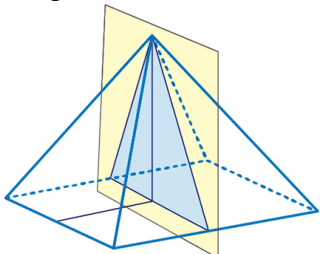
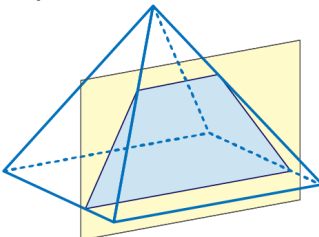
- Density _____
- Mass: _____
- Density Formula: $D = \frac{m}{V}$

Watch video 3 to review the problems below:

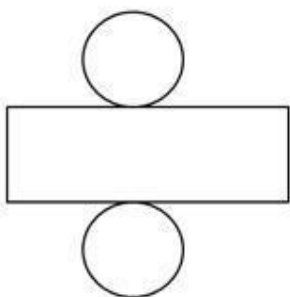
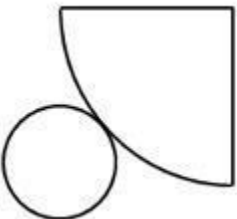
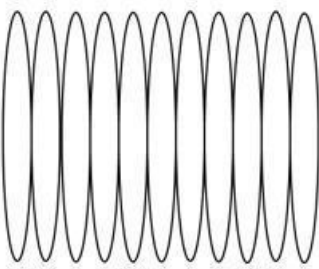
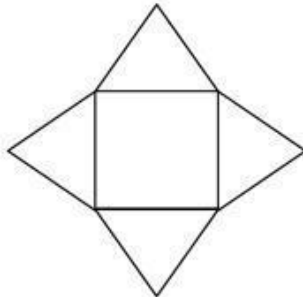
[Watch Video 3](#)

The population density of Flowerville is 16 flowers per acre. Exactly 800 flowers live in Flowerville. How many acres is Flowerville?			
The density of a fish tank is 0.4 fish per cubic foot, and the volume of the tank is 10 feet ³ . What is the number of fish in the tank?			
	Parallel Cross section	Perpendicular Cross Section	Diagonal Cross Section
Cylinder	circle 	rectangle 	ellipse 
Cone	circle 	triangle 	ellipse 
Sphere	circle 	circle 	circle

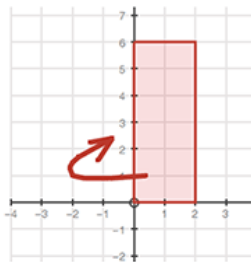
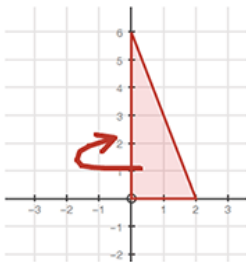
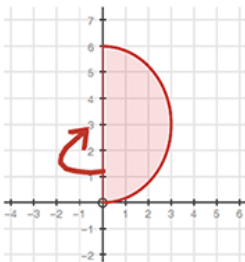
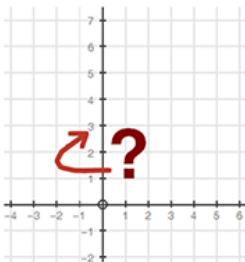
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Square Pyramid	square 	triangle 	trapezoid 

Net Drawings

Cylinder	Cone	Sphere	Square Pyramid
			

Rotating 2D figures

3D shape	Cylinder	Cone	Sphere	Pyramid
2D shape that rotates around the axis				
Picture				

SURFACE AREA REVIEW:

The surface area of a **square pyramid** is SA = _____

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The surface area of a **cone** is SA = _____

The surface area of a **cylinder** is SA = _____

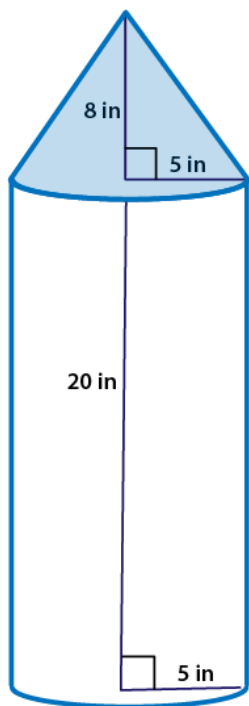
The surface area of a **sphere** is SA = _____

The surface area of a **rectangular prism** is SA= _____

Watch Video 3 after completing the problems below:

[Watch Video 4](#)

Figure X is a cylinder and figure Y is a cone. Which cross section of figure X is the same geometrically as a diagonal cross section of figure Y?



Find the surface area of the figure. Use 3.14 for π . Round your answer to the nearest tenth.