

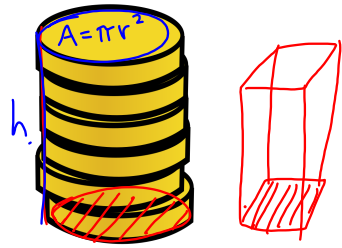
10-5 Volumes of spheres, cones and cylinders.

Objective: I can find the volume of spheres, cones and cylinders.

Mar 28-10:26 AM

Discovering the Volume of a Cylinder


Class discussion: How can we come up with the volume of a cylinder? What is a cylinder?



Apr 14-9:15 AM

Optional Other Possible reasoning

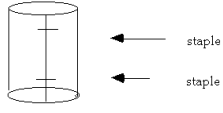
Take a piece of paper in your hand.



How do you calculate the area of this rectangle?

Mar 28-10:27 AM

Now fold this 2 dimensional piece of paper into a 3 dimensional cylinder.



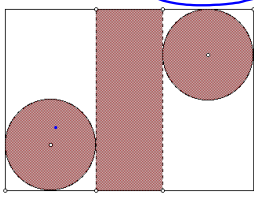
Find the volume of this rectangle transformed into 3 dimensions.

Hint: Find the BxH for the new figure.

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Volume of a cylinder

Base X Height = $(\pi r^2)h$ *I'm Talen*

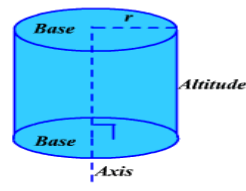


Think of it this way. The space taken up by the cylinder is the area of a circle stacked on top of each other for as tall as the height is.

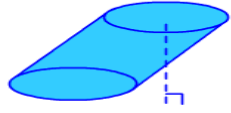
Mar 28-10:34 AM

Remember: Cylinders may be oblique. Height is always perpendicular to the base.

Right Cylinder



Oblique Cylinder

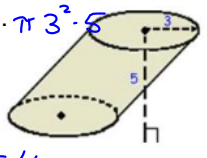
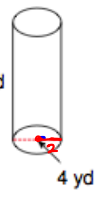


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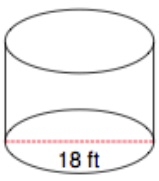
Find the volume of the cylinder.

1. $\pi r^2 h$
 $\pi 3^2 \cdot 5$
 $= 45\pi$ or 141.3

2. $\pi 2^2 \cdot 10$

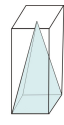
You try



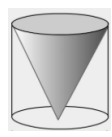
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Volume of a Cone $\frac{\pi r^2 h}{3}$

Remember the volume of a prism vs. the volume of a pyramid.



What do you conjecture the volume of a cone is (based on the volume of a cylinder)?



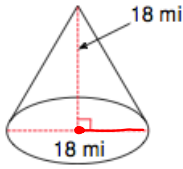
*Check conjecture by seeing how many cones of water will fill the cylinder!

Mar 31-7:48 AM

Find the volume of the cone.

$\frac{\pi r^2 h}{3}$

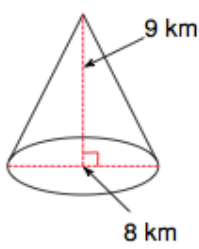
$\frac{\pi 9^2 \cdot 18}{3}$
 $= 486\pi \text{ mi}^3$



Mar 31-7:56 AM

You Try

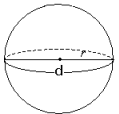
Find the volume of the cone.



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Volume of a sphere: $V = \frac{4}{3}\pi r^3$

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

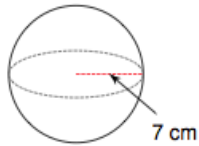


Mar 31-8:04 AM

Find the volume of the sphere.

$\frac{4\pi 10^3}{3}$
 $= \frac{4000\pi \text{ mi}^3}{3}$ or 4188.8 mi³

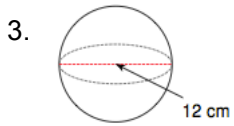
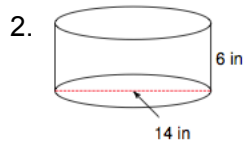
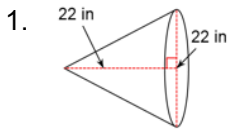
You Try



Mar 31-8:16 AM

Check for understanding.

Find the volume of each figure.



Mar 31-8:17 AM



Mar 31-2:48 PM