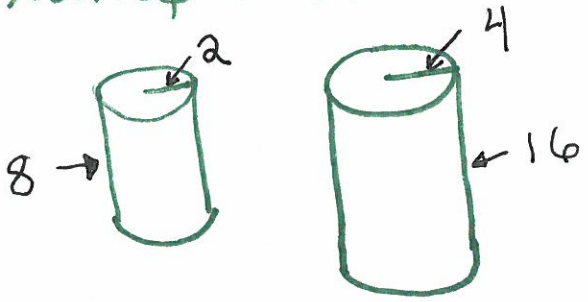
Similar 3-D Figures

Example 1:



These solids are similar if their corresponding lengths are proportional.

$$\frac{\text{radius}}{\text{radius}} \text{ should equal } \frac{\text{height}}{\text{height}}$$

reduce

$$\frac{2}{4} \stackrel{?}{=} \frac{8}{16}$$

$$\frac{1}{2} = \frac{1}{2}$$ Yes. So the two cylinders are similar.

We can put the scale factor of 1:2 into a table and look at the ratio for their Areas and Volumes.

Length	Area	Volume
$a:b$	$a^2:b^2$	$a^3:b^3$
1:2	1:4	1:8

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Example 2

Two pyramids have a surface Area ratio of 4:49. What is the ratio of their volume?

* Set up the length, Area, Volume table.

L	A	V
2:7	4:49	8:343

* The answer is 8:343

Example 3

The volume of two hemispheres is in the ratio 125:1728. If the radius of the small hemisphere is 10, what is the radius of the larger one?

* Make your LAV table.

L	A	V
5:12	25:144	125:1728

* You need to set up a proportion to solve for the radius. Radius is a length so you <u>must</u> use 5:12 as your scale factor <u>not</u> 125:1725.

$$\frac{5}{12} = \frac{10}{X}$$

$$\frac{120}{5} = \frac{5X}{5}$$

$$24 = X$$

The radius of the larger hemisphere is 24.