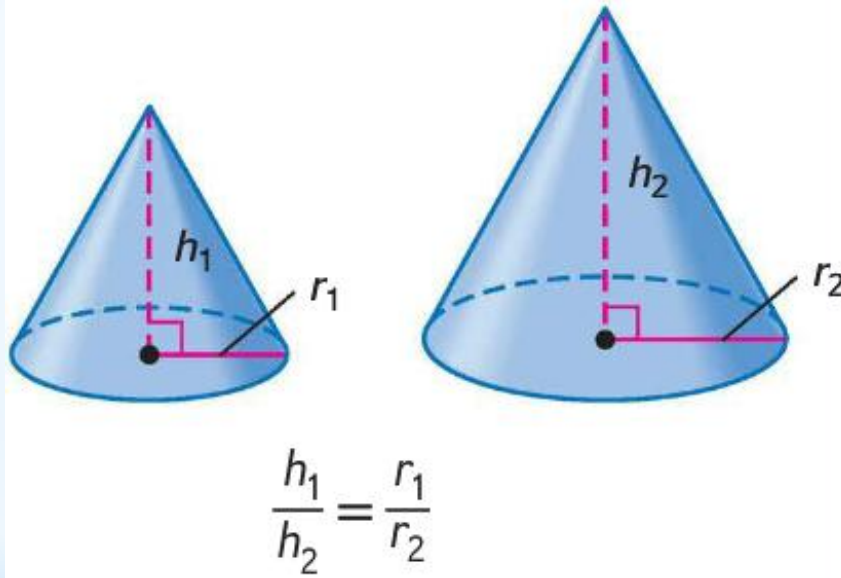


 **Congruent and  
Similar Solids**

\* Similar solids have exactly the same shape but not necessarily the same size. All spheres and all cubes are similar.

\* **Similar Solids**

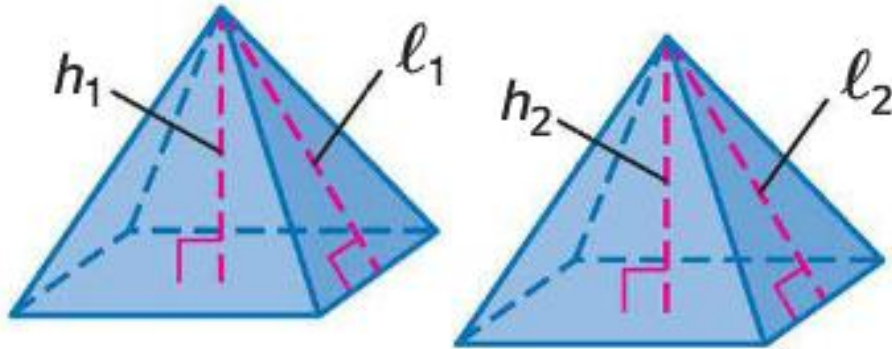
- \* Two solids are similar if they have the same shape and the ratios of their corresponding linear measures are equal.



$$\frac{h_1}{r_1} = \frac{h_2}{r_2}$$

\* **Similar Solids**

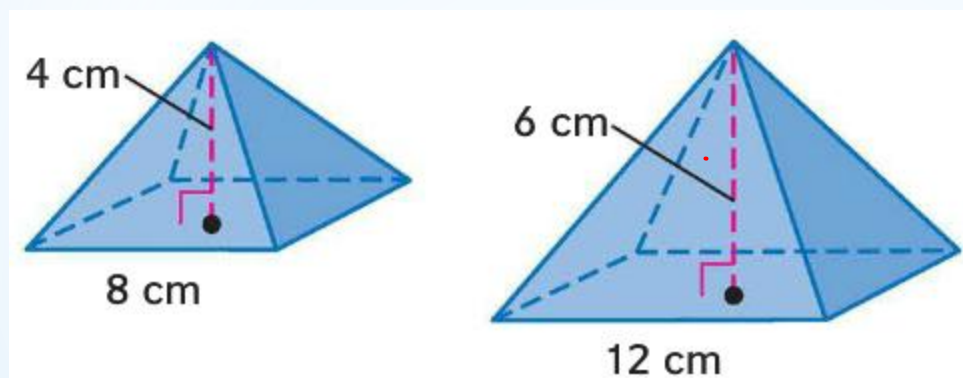
- \* Congruent solids have exactly the same shape and size. Congruent solids are solids that have a scale factor of 1:1.



$$\frac{h_1}{h_2} = \frac{l_1}{l_2} = 1$$

# \* Congruent Solids

\* Determine whether each pair of solids are similar, congruent, or neither. If the solids are similar, state the scale factor.

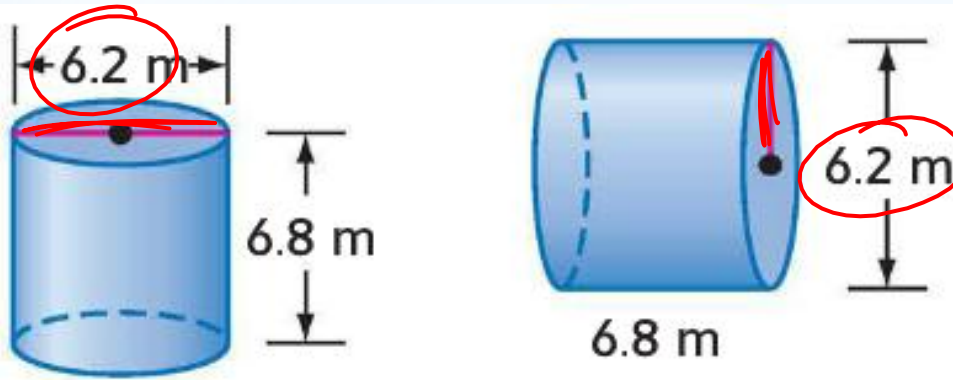


$$\frac{2}{3} \frac{4}{6} = \frac{8}{12} \frac{2}{3}$$

$$\frac{1}{2} \frac{4}{8} = \frac{6}{12} \frac{1}{2}$$

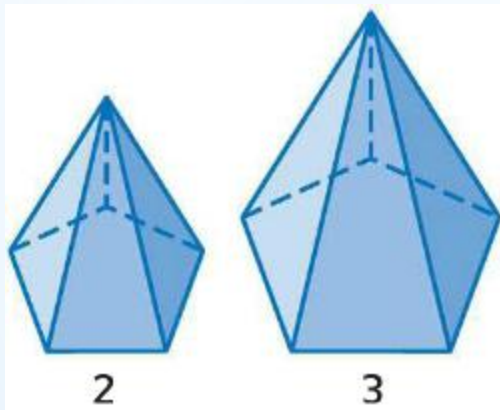
\* Examples

- \* Determine whether each pair of solids are similar, congruent, or neither. If the solids are similar, state the scale factor.



\* Examples

\* If two similar solids have a scale factor of  $a:b$ , then the surface areas have a ratio of  $a^2:b^2$ , and the volumes have a ratio of  $a^3:b^3$ .



scale factor	2:3
ratio of surface area	4:9
ratio of volumes	8:27

$2^2 : 3^2$   
 $2^3 : 3^3$

\* Theorem

\* A regulation volleyball has a circumference of about 66 cm. The ratio of the surface area of that ball to the surface area of a children's ball is approximately 1.6:1. What is the circumference of the children's ball? Round to the nearest cm.

$$\frac{66}{x} = \frac{1.6}{1}$$

$$\frac{66}{1.6} = \frac{1.6x}{1.6}$$

$$41 = x$$

\* Example