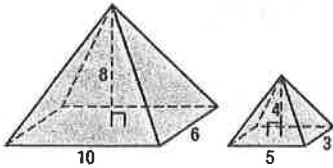


Geometry
SIMILAR SOLIDS

- Two solids that have the same shape are said to be similar if the ratios of all corresponding linear measurements are equal.
- Similarity Ratio: the scale factor of one measurement of the smaller solid to the corresponding measurement of the larger solid.

Examples: Determine whether each pair of solids is similar, congruent, or neither. If similar, state the similarity ratio.

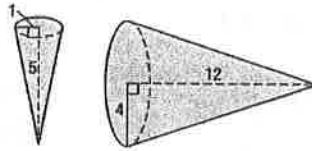
1.



$$\frac{4}{8} = \frac{5}{10} = \frac{3}{6} = \frac{1}{2}$$

Similar

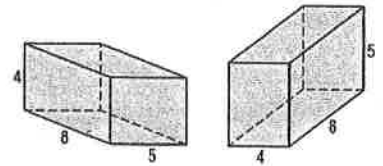
2.



$$\frac{5}{12} \neq \frac{1}{4}$$

Not congruent

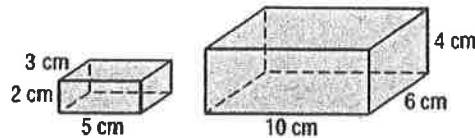
3.



$$\frac{8}{8} = \frac{4}{4} = \frac{5}{5} = 1$$

congruent

Properties of Similar Solids: Use the two similar solids below to answer the following questions.



- Find the similarity ratio from the smaller solid to the larger solid.

$$\frac{5}{10} = \frac{2}{4} = \frac{3}{6} = \frac{1}{2}$$

- Find the area of the base of each solid. Calculate the area ratio from the smaller to the larger solid.

$$B_{sm} = 10 \quad \frac{10}{40} = \frac{1}{4}$$

$$B_{lg} = 40$$

- Find the volume of each solid. Calculate the volume ratio from the smaller to the larger solid.

$$V_{sm} = 30 \quad \frac{30}{240} = \frac{1}{8}$$

$$V_{lg} = 240$$

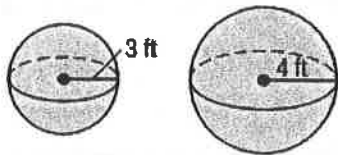
Properties of Similar Solids

Similarity Ratio	Area Ratio	Volume Ratio
$a:b$	$a^2:b^2$	$a^3:b^3$

Geometry
SIMILAR SOLIDS

Examples: Find the scale factor (similarity ratio) for each pair of similar figures. Then find the ratio of their areas and the ratio of their volumes.

4.

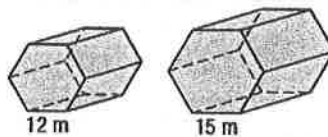


similarity ratio: $\frac{3}{4}$

area ratio: $\frac{3^2}{4^2} = \frac{9}{16}$

volume ratio: $\frac{3^3}{4^3} = \frac{27}{64}$

5.

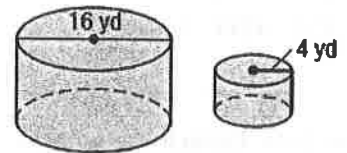


similarity ratio: $\frac{12}{15} = \frac{4}{5}$

area ratio: $\frac{4^2}{5^2} = \frac{16}{25}$

volume ratio: $\frac{4^3}{5^3} = \frac{64}{125}$

6.



similarity ratio: $\frac{4}{16} = \frac{1}{4}$

area ratio: $\frac{4^2}{16^2} = \frac{1}{16}$

volume ratio: $\frac{4^3}{16^3} = \frac{1}{64}$