

Similar Polygons & Solids

Name _____

**If the scale factor between 2 similar polygons is $\frac{a}{b}$, then

- the ratio of their perimeters is $\frac{a}{b}$ and the ratio of their areas is $\frac{a^2}{b^2}$.

**So...in 3-dimensions: If the scale factor between 2 similar solids is $\frac{a}{b}$, then

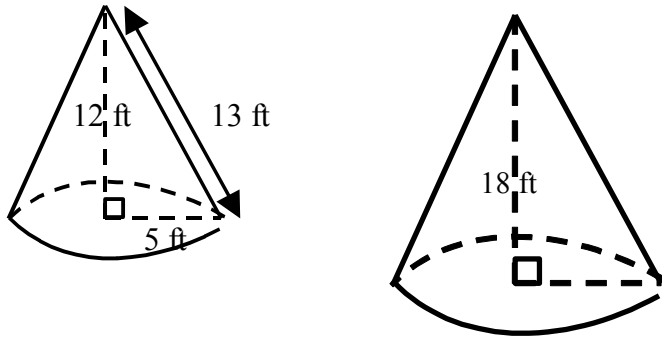
- the ratio of their surface areas is $\frac{a^2}{b^2}$ and the ratio of their volumes is $\frac{a^3}{b^3}$.

Shape	Scale Factor/ Ratio of Perimeters	Ratio of Surface Areas	Ratio of Volumes
Cone	$\frac{2}{3}$		
Sphere	$\frac{4}{6}$		
Pyramid		$\frac{9}{16}$	
Prism			$\frac{8}{64}$
Cylinder		$\frac{49}{64}$	
Cube			$\frac{125}{216}$

- Triangle A is similar to Triangle B. If the scale factor of ΔA to ΔB is 4 to 5, what is the ratio of the perimeters of ΔA to ΔB ? _____ What is the ratio of the areas of ΔA to ΔB ? _____
- Pyramid X is similar to Pyramid Y. If the scale factor of X:Y is 3:7, what is the ratio of the surface areas of X:Y? _____ What is the ratio of the volumes of X:Y? _____
- The ratio of the surface areas of two similar cones is 16:49. What is the scale factor between the similar cones? _____ What is the ratio of the volumes of the similar cones? _____

4. Two spheres have a scale factor of 1:3. The smaller sphere has a surface area of 16 ft^2 . Find the surface area of the larger sphere.

5. The cones below are similar. What is the volume of the larger cone?



6. Two rectangular prisms are similar and the ratio of their sides is 2:3. The surface area of the larger rectangular prism is 1944 cm^2 . What is the surface area of the smaller rectangular prism?

7. The ratio of the sides of two similar cubes is 3:4. The smaller cube has a volume of 729 m^3 . What is the volume of the larger cube?

8. Pyramid X is similar to pyramid Y. The Surface area of pyramid X is 135 cm^2 , and the surface area of pyramid Y is 240 cm^2 . If the volume of pyramid X is 189 cm^3 , then what is the volume of pyramid Y?