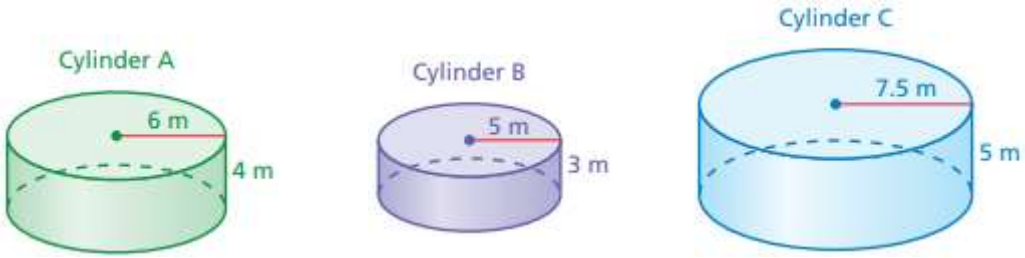
Section 10.4 : Surface Areas & Volumes of Similar Solids Name: _____
In Class Notes

_____ _____ are solids that have the same shape and proportional

corresponding dimensions.

Identifying Similar Solids

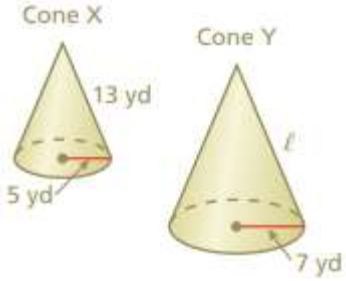
Ex:) Which cylinder is similar to Cylinder A? Notes:



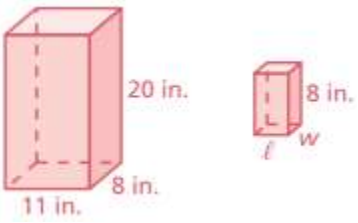
OYO:) Cylinder D has a radius of 7.5 meters and a height of 4.5 meters. Notes:
Which cylinder in Example 1 is similar to Cylinder D?

Finding Missing Measures in Similar Solids

Ex:) The cones are similar. Find the missing slant height ℓ. Notes:

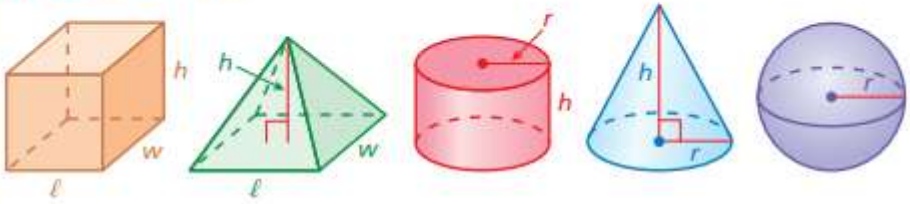


OYO:) The prisms below are similar. Find the missing width and length. Notes:



Key Ideas

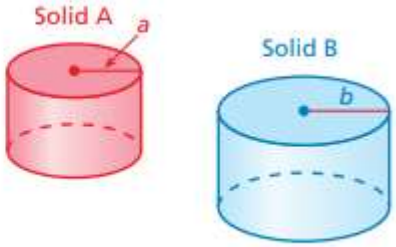
Linear Measures



Surface Areas of Similar Solids

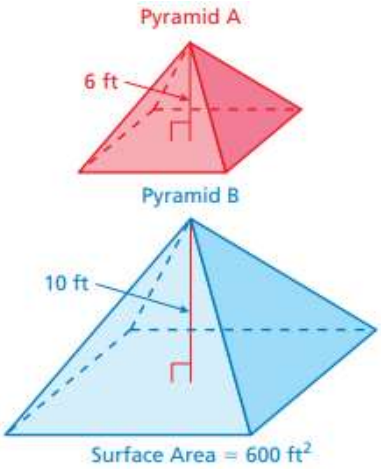
When two solids are similar, the value of the ratio of their surface areas is equal to the square of the value of the ratio of their corresponding linear measures.

$$\frac{\text{Surface area of A}}{\text{Surface area of B}} = \left(\frac{a}{b}\right)^2$$



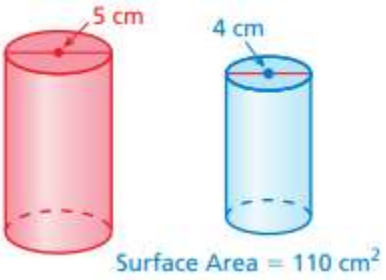
Finding Surface Area

Ex:) The pyramids are similar. What is the surface area of Pyramid A? Notes:



OYO:) The solids are similar. Find the surface area of the red solid. Round your answer to the nearest tenth.

Notes:

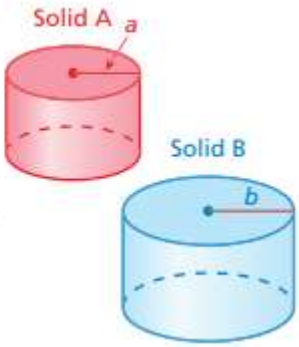


Key Idea

Volumes of Similar Solids

When two solids are similar, the value of the ratio of their volumes is equal to the cube of the value of the ratio of their corresponding linear measures.

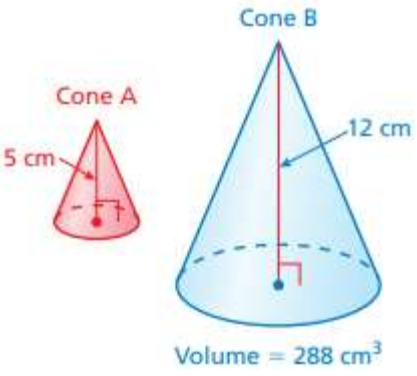
$$\frac{\text{Volume of A}}{\text{Volume of B}} = \left(\frac{a}{b}\right)^3$$



Finding Volume

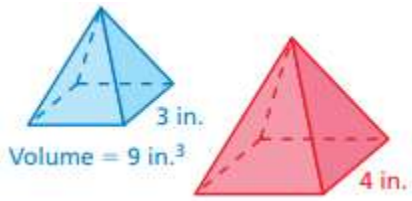
Ex:) The cones are similar. What is the volume of Cone A? Round your answer to the nearest tenth.

Notes:



OYO:) The pyramids below are similar. Find the volume of the red pyramid. Round your answer to the nearest tenth.

Notes:



Modeling Real Life

Ex:) The dimensions of the touch tank at an aquarium are doubled. How many pounds of water are contained in the new tank? (One cubic foot of water weighs about 62.5 pounds.)

Notes:

When the dimensions of a solid are multiplied by k, the surface area is multiplied by k^2 and the volume is multiplied by k^3.

OYO:) Two trunks are similar in shape. The larger trunk has a length of 6 feet and a surface area of 164.25 square feet. The smaller trunk has a length of 4 feet. The materials needed to manufacture each trunk cost $0.60 per square foot. What is the total cost of the materials needed to manufacture the smaller trunk?

Notes: