
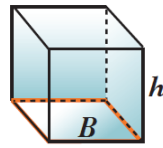
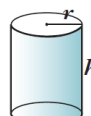

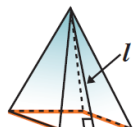
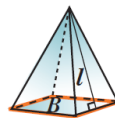
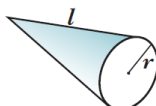
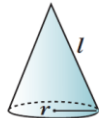


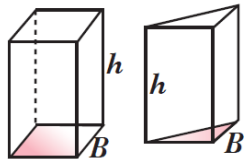
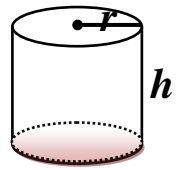
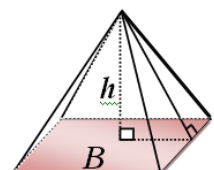
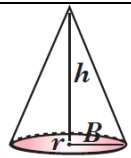
Notes: FINDING UNKNOWNNS GIVEN SURFACE AREA & VOLUME

Content Objective: *I will be able to use volume and surface area formulas to find missing measurements.*

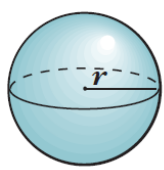
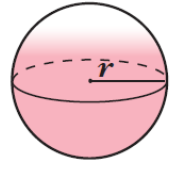
LATERAL & TOTAL SURFACE AREA

FIGURE	LATERAL	TOTAL	FIGURE	LATERAL	TOTAL
Prism	 $S \text{ (lateral)} = Ph$	 $S \text{ (total)} = Ph + 2B$	Cylinder	 $S \text{ (lateral)} = 2\pi rh$	 $S \text{ (total)} = 2\pi rh + 2\pi r^2$
Pyramid	 $S \text{ (lateral)} = \frac{1}{2}Pl$	 $S \text{ (total)} = \frac{1}{2}Pl + B$	Cone	 $S \text{ (lateral)} = \pi rl$	 $S \text{ (total)} = \pi rl + \pi r^2$

VOLUME

FIGURE	FORMULA	FIGURE	FORMULA
Prism	 $V = Bh$	Cylinder	 $V = Bh$
Pyramid	 $V = \frac{1}{3}Bh$	Cone	 $V = \frac{1}{3}Bh$

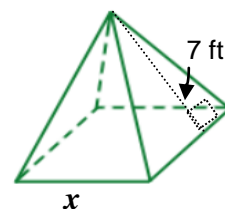
SURFACE AREA & VOLUME OF A SPHERE

 $S = 4\pi r^2$
 $V = \frac{4}{3}\pi r^3$

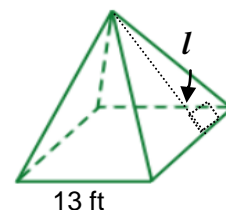
EXAMPLE 1: *The surface area of a cylinder is 56π square feet. The radius is 4 feet. What is the height of the cylinder?*

QUICK CHECK: The Dallas County Fair sells snow cones in paper cups shaped like cones. To make the cone-shaped cups the manufacturer uses 15π square inches of paper per cup. If the diameter of the cone-shaped cup is 6 inches, what is the height of the cup?

EXAMPLE 2: The roof of a gazebo is shaped like a regular square pyramid with a slant height of 7 feet as shown. Its lateral area is 224 square feet. What is the length of the base edge of the gazebo?



QUICK CHECK: The roof of a gazebo is shaped like a regular square pyramid with base edge length 13 feet as shown. Its lateral area is 208 square feet. What is the slant height of the gazebo?



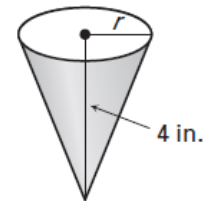
EXAMPLE 3: Liz baked a square-shaped cake with the dimensions shown below. She used 476 square inches of chocolate frosting to decorate her cake. If Liz spread chocolate icing on all four sides and the top, what is the height of the chocolate cake?



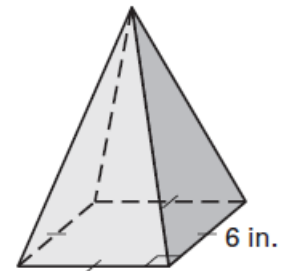
QUICK CHECK: In an effort to promote their business the Ooh La La Dessert Boutique provide customers with complimentary match boxes to be used for birthday candles. The company places their logo on the outer box (which has no ends as shown below). The company uses 132 square centimeters for a box with a length of 12 centimeters and a width of 4 centimeters. What is the height of the match box?



EXAMPLE 4: A snow cone cup shaped like a right cone has a volume of 10.8 cubic inches and a height of 4 inches. What is the radius of the opening of the cup, round to the nearest tenth of an inch?



QUICK CHECK: A candle shaped like a regular square pyramid has a volume of 108 cubic inches and a base side length of 6 inches. What is the height of the candle?



EXAMPLE 5: A rectangular fish tank when filled half way has a volume of 9 cubic feet. If the tank is 3 feet wide and 4 feet long, what is the height of the tank when the tank is filled to capacity?



QUICK CHECK: *Two square pyramids have the same volume. For the first pyramid the side length of the base is 20 inches and the height is 21 inches. The second pyramid has a height of 84 inches. What is the side length of the base of the second pyramid?*

Example 6: *A right pyramid with a square base has a volume of 16 cubic feet. The height is six times the side length of the base. What is the measure of the side length?*

QUICK CHECK: *Find the height in centimeters of a square pyramid with a volume of 72 cubic centimeters and a base edge length equal to the height.*

Example 7: *The volume of a sphere is 972π cubic centimeters. What is the diameter of the sphere?*

QUICK CHECK: *The surface area of a sphere is 196π square centimeters. What is the diameter of the sphere?*