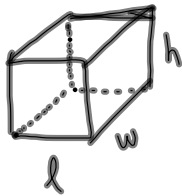


1.5 Volume of Right pyramid and Right Cone

Volume of Rectangular Prism:



$$V = \text{length} \times \text{width} \times \text{height}$$

$$V = \text{Area of Base} \times \text{height}$$

Volume of Cylinder:



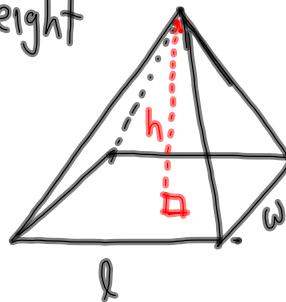
$$V = \pi r^2 h$$

$$V = \text{area of base} \times \text{height}$$

Volume of Rectangular Pyramid

$$V = \frac{1}{3} (\text{Area of Base}) \times \text{height}$$

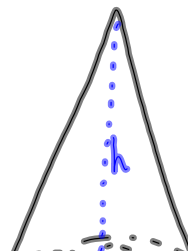
$$V = \frac{1}{3} l \times w \times h$$



Volume of Cone:

$$V = \frac{1}{3} (\text{Area of Base}) \text{height}$$

$$V = \frac{1}{3} \pi r^2 h$$



Example 1**Determining the Volume of a Right Square Pyramid Given Its Slant Height**

Calculate the volume of this right square pyramid to the nearest cubic inch.

 **SOLUTION**

using Pythagorean Theorem:

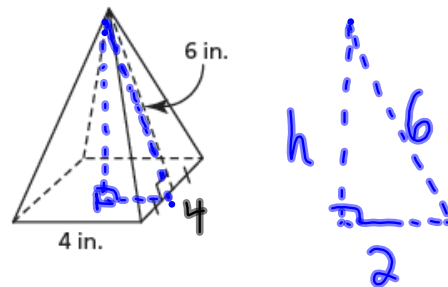
$$h^2 + 2^2 = 6^2$$

$$h^2 + 4 = 36$$

$$h^2 = 32$$

$$h = \sqrt{32}$$

$$h = 5.7$$



$$V = \frac{1}{3} l \times w \times h$$

$$V = \frac{1}{3} (4)(4)(5.7)$$

$$V = 30 \text{ in}^3$$

Example 2**Determining the Volume of a Right Rectangular Pyramid**

Determine the volume of a right rectangular pyramid with base dimensions 5.4 cm by 3.2 cm and height 8.1 cm.

Answer to the nearest tenth of a cubic centimetre.

$$V = \frac{1}{3} (5.4)(3.2)(8.1)$$

$$V = 51.03$$

$$V = 51.0 \text{ cm}^3$$

Example 3 Determining the Volume of a Cone

Determine the volume of this cone to the nearest cubic inch.

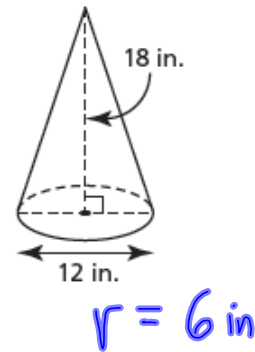
✓ **SOLUTION**

$$V = \frac{1}{3} \pi r^2 h$$

$$V = \frac{1}{3} (3.14) (6)^2 (18)$$

$$V = 678.58$$

$$V = 679 \text{ in}^3$$



Example 4 Determining an Unknown Measurement

A cone has a height of 4 yd. and a volume of 205 cubic yards.
Determine the radius of the base of the cone to the nearest yard.

$$V = \frac{1}{3} \pi r^2 h$$

$$205 = \frac{1}{3} (3.14) r^2 (4)$$

$$205 = \frac{1}{3} (3.14) (4) (r^2)$$

$$\frac{205}{4.2} = \frac{4.2}{4.2} r^2$$

$$r^2 = 48.8$$

$$r = \sqrt{48.8}$$

$$r = 6.98$$

$$r = 7 \text{ yd.}$$

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