

9.4 EQ: **HOW DO YOU FIND THE VOLUME OF A PYRAMID?**

Volume of a pyramid or cone = one third the product of the area of the base (β) and the height
(note: volume is measured in cubic units)

$$V = \frac{1}{3} \beta h \leftarrow \text{altitude}$$

Example 1:

“The Pyramid” is an arena in Memphis, Tennessee. The area of the base of The Pyramid is about 300,000 ft². Its height is 321 feet. What is the volume of The Pyramid?



$$\begin{aligned} V &= \frac{1}{3} \beta \cdot h \\ &= \frac{1}{3} (300,000) \cdot 321 \\ &= 32,100,000 \text{ ft}^3 \end{aligned}$$

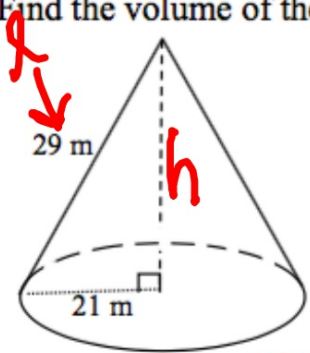
Example 2:

Find the volume of a square pyramid with base edges 12 in and height 8 in.

$$\begin{aligned} V &= \frac{1}{3} B \cdot h \\ &= \frac{1}{3} (12 \cdot 12) (8) \\ &= \boxed{384 \text{ in}^3} \end{aligned}$$

Example 3:

Find the volume of the cone. Leave your answer in terms of π .

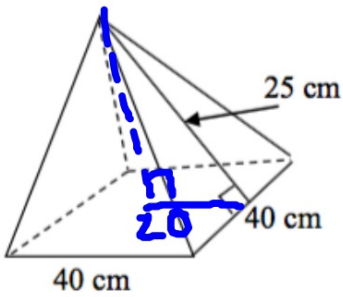


$$B = \pi r^2$$

$$\begin{aligned} V &= \frac{1}{3} B \cdot h & 21^2 + h^2 &= 29^2 \\ & & h &= 20 \\ V &= \frac{1}{3} (\pi \cdot 21^2) \cdot (20) \\ &= \boxed{2940 \pi \text{ m}^3} \end{aligned}$$

Example 4:

Find the volume of the pyramid.



$$V = \frac{1}{3}(40 \cdot 40)(15)$$

$$8000 \text{ cm}^3$$

$$h^2 + 20^2 = 25^2$$

$$h = 15$$

Example 5:

An ice cream cone is 7 cm tall and 4 cm in diameter. About how much ice cream can fit entirely inside the cone? Round your answer to the nearest whole number.

$$V = \frac{1}{3}\pi(2)^2 \cdot 7$$

$$29 \text{ cm}^3$$

Summary: