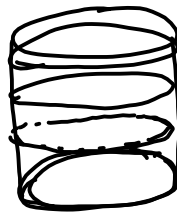


11.4 Volume of Prisms & Cylinders

Volume: the amount of space an object occupies.

Volume formula for Prisms & Cylinders

$$V = Bh$$



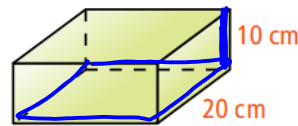
Ex 1

a) Find the Volume of the Prism.

$$V = Bh$$

$$480(10)$$

$$4800 \text{ cm}^3$$

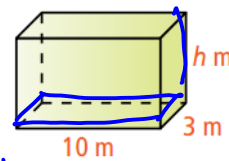


$$A = 24 \cdot 20 = 480$$

b) Find the height of the prism if the Volume is 180 m^3 .

$$V = Bh$$

$$V = l \cdot w \cdot h$$



$$180 = (10 \cdot 3)h$$

$$180 = 10 \cdot 3h$$

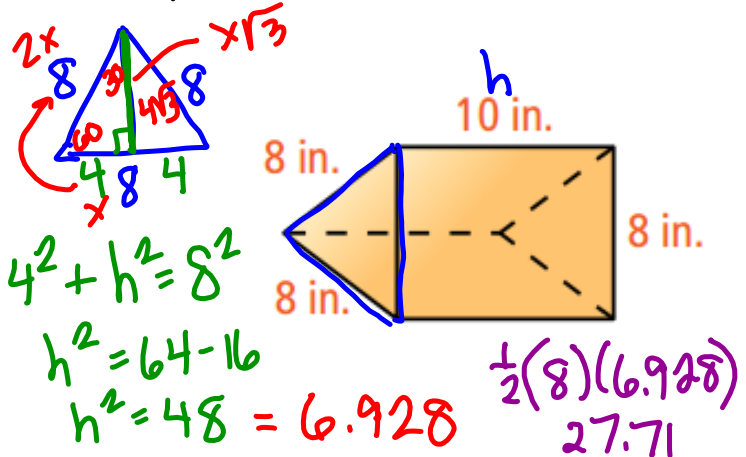
$$\frac{180}{30} = \frac{30h}{30}$$

$$h = 6 \text{ m}$$

Ex 2

a) Find the volume of the triangular prism. Round to the nearest tenth.

$$\begin{aligned}
 V &= Bh \\
 &= \underline{27.71} \cdot 10 \\
 &= 277.1 \text{ in}^3
 \end{aligned}$$



b) The base of a triangular prism is a $45^\circ-45^\circ-90^\circ$ Δ , with a leg of 5 in. The height of the prism is 1.8 in. Find the Volume

$$\begin{aligned}
 V &= B \cdot h \\
 \frac{25}{2} (1.8) &= \boxed{22.5 \text{ in}^3}
 \end{aligned}$$

Diagram showing a right-angled triangle with legs of 5 in. and 5 in., and a hypotenuse of 5 in. The area of the base is $B = \frac{1}{2}(5)(5) = \frac{25}{2}$.

Ex 3

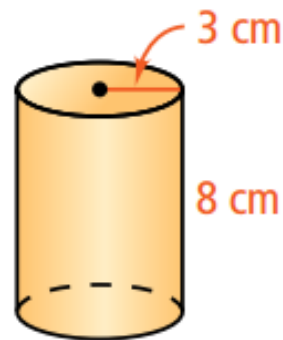
a) What is the volume of the cylinder in terms of π ?

$$V = B \cdot h$$

$$9\pi \cdot 8$$

$$72\pi$$

$$A = \pi r^2 = 9\pi$$

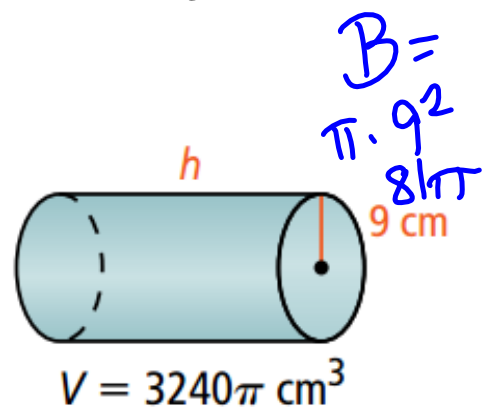


b) Find the height of the cylinder.

$$V = B \cdot h$$

$$\frac{3240\pi}{81\pi} = \frac{81\pi \cdot h}{81\pi}$$

$$40\text{cm} = h$$



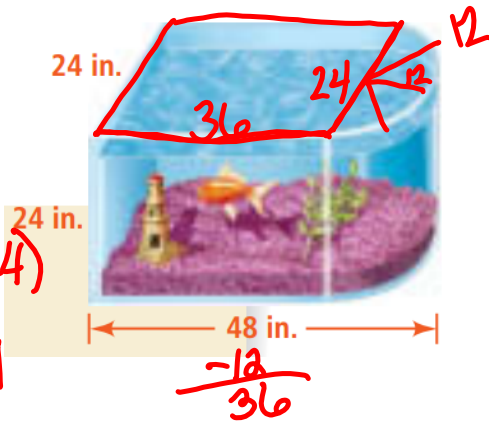
Ex 4 | What is the approximate volume of the bullnose aquarium to the nearest cubic inch?

$$V = Bh$$

$$36 \cdot 24(24) + 72\pi(24)$$

$$20,736 + 5429$$

$$26,165 \text{ in}^3$$



$$\frac{1}{2} \pi (12)^2$$

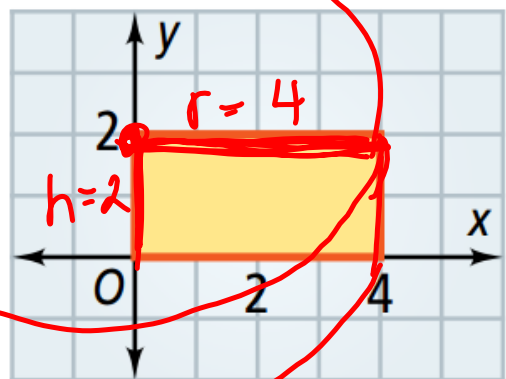
$$72$$

Ex 5 | Revolve the plane region about the y-axis. Describe the solid and find the volume in terms of π .

$$V = Bh$$

$$16\pi \cdot 2$$

$$32\pi \text{ units}^3$$



$$B = \pi \cdot 4^2 = 16\pi$$

