# 3.8 Finding Volumes of 3-Dimensional Shapes

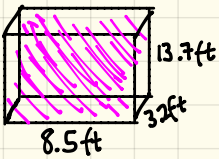
Part 3

## Pyramids & Cones

# Old Prisms & Cylinders

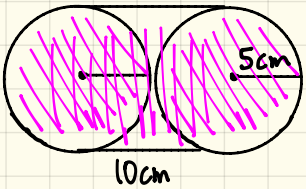
Find the Volume of the Prism.

1




Volume = Base * height
= (8.5ft)(3.2ft) * (13.7ft)
≈ 372.64 $ft^3$.

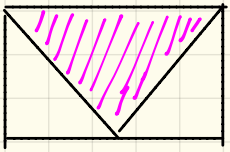
Find the volume of the Cylinder.




Volume = Base * height
= $\pi r^2$ * h
= $\pi(5cm)^2$ * (10cm)
≈ 785.4 $cm^3$

# NEW Pyramids & Cones

Let's consider a rectangle where one part of the figure is shaded.

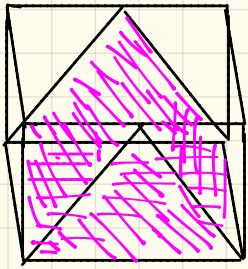


Find the area of the shaded region.

Area = Length * Width

Area of Shaded = $\left(\frac{1}{3}\right)$ (Length) (Width)

Let's consider a prism where one part of the solid is shaded.

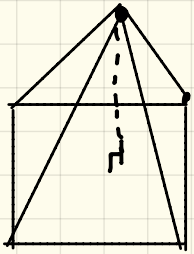


Find the volume of the shaded region.

Volume = Base * height

Volume of Shaded = $\left(\frac{1}{3}\right)$ (Base) * (height)

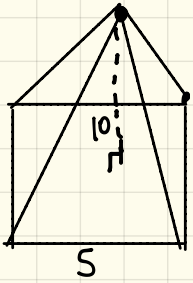
## PYRAMID



Volume = $\left(\frac{1}{3}\right)$ Area (L * W) * depth

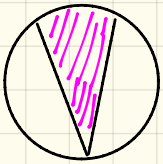
Volume = $\left(\frac{1}{3}\right)$ (Base) * (height)

[Example] Find the volume of the pyramid.




$$\text{Volume} = \frac{1}{3}(\text{Base})(\text{height})$$
$$= \frac{1}{3}(5)(5) * (10)$$
$$\approx 83.33 \text{ units}^3$$

Let's consider a circle where one part of the figure is shaded.



Find the area of the shaded region.

$\text{Area} = \pi r^2$

$\text{Area of Shaded} = \left(\frac{1}{3}\right)\pi r^2$

Let's consider a prism where one part of the solid is shaded.

Find the volume of the shaded region.

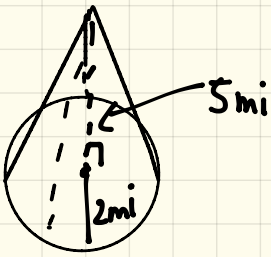
$\text{Volume} = \text{Base} * \text{height}$

$\text{Volume of Shaded} = \left(\frac{1}{3}\right)(\text{Base}) * (\text{height})$

$$\text{Volume} = \left(\frac{1}{3}\right) \underbrace{\text{Area}}_{(\pi r^2)} * \text{depth}$$

$$\text{Volume} = \left(\frac{1}{3}\right)(\text{Base}) * (\text{height})$$

[Example] Find the volume of the cone.




$$\text{Volume} = \frac{1}{3}(\text{Base}) * (\text{height})$$
$$= \frac{1}{3}(\pi(2\text{mi})^2) * (5\text{mi})$$
$$\approx 20.9\text{mi}^3$$