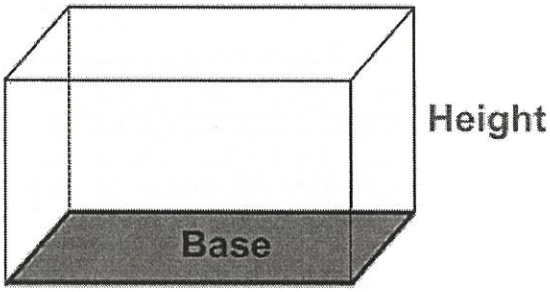
Section 12.4
Volume of Prisms and Cylinders

***VOLUME*: the number of cubic units contained in its interior.**

Volume of a Prism

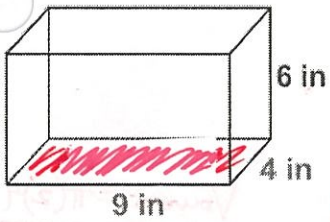


VOLUME OF A PRISM = (AREA OF THE BASE)(HEIGHT)

Examples

Find the volume of the prism.

1.



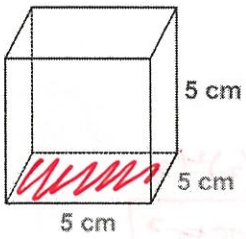
$B = 9(4) = 36 \text{ in}^2$

$H = 6 \text{ in}$

Volume $= 36(6)$

$\boxed{\text{Volume} = 216 \text{ in}^3}$

2.



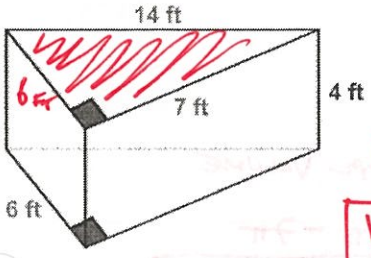
$B = 5(5) = 25 \text{ cm}^2$

$H = 5 \text{ cm}$

Volume $= 25(5)$

$\boxed{\text{Volume} = 125 \text{ cm}^3}$

3.



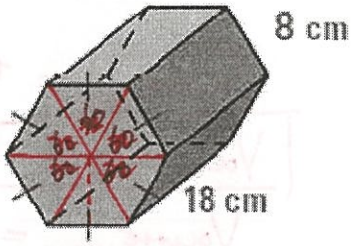
$B = \frac{6(7)}{2} = 21 \text{ ft}^2$

$H = 4 \text{ ft}$

Volume $= 21(4)$

$\boxed{\text{Volume} = 84 \text{ ft}^3}$

4.



$P = 8(6) = 48 \text{ cm}$

$B = \frac{48(4\sqrt{3})}{2}$

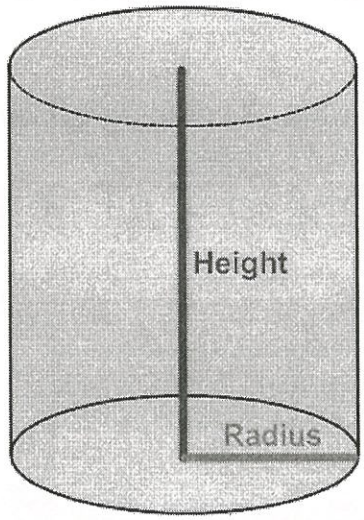
$B = 96\sqrt{3} \text{ cm}^2$

$H = 18 \text{ cm}$

Volume $= 96\sqrt{3}(18)$

$\boxed{\text{Volume} = 1728\sqrt{3} \text{ cm}^3}$

Volume of a Cylinder



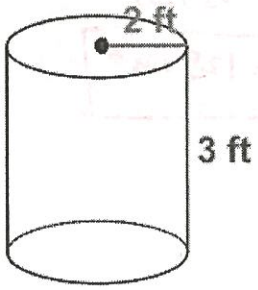
VOLUME OF A CYLINDER = (Area of Base)(Height)

VOLUME OF A CYLINDER = $\pi r^2 h$

Examples

Find the volume of the cylinder.

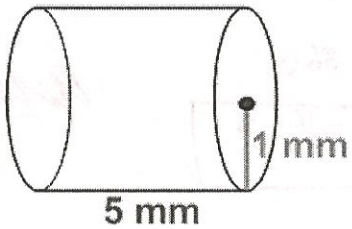
5.



Volume $= \pi(2)^2(3)$

$\boxed{\text{Volume} = 12\pi \text{ ft}^3}$

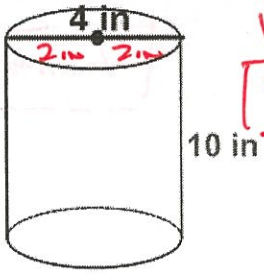
6.



Volume $= \pi(1)^2(5)$

$\boxed{\text{Volume} = 5\pi \text{ mm}^3}$

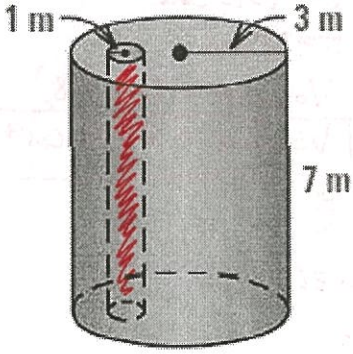
7.



Volume $= \pi(2)^2(10)$

$\boxed{\text{Volume} = 40\pi \text{ in}^3}$

8.



$\text{Volume}_{\text{BIG}} = \pi(3)^2(7)$

$\boxed{\text{Volume}_{\text{BIG}} = 63\pi \text{ m}^3}$

$\text{Volume}_{\text{SMALL}} = \pi(1)^2(7)$

$\boxed{\text{Volume}_{\text{SMALL}} = 7\pi \text{ m}^3}$

TOTAL VOLUME

$63\pi - 7\pi$

$\boxed{56\pi \text{ m}^3}$