

Day 6 – Volume

Volume of a Prism or Cylinder:

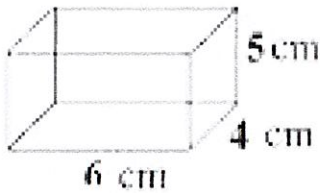
$$V = B \cdot h$$

Prisms:

1. $B = 20 \text{ cm}^2$, $V = 120 \text{ cm}^3$

$$\begin{array}{l} l \cdot W \\ 5 \cdot 4 \\ 20 \end{array}$$

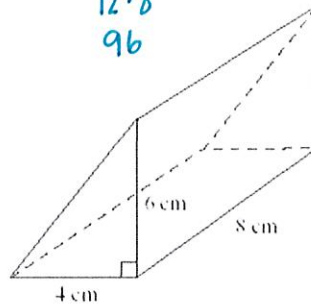
$$\begin{array}{l} B \cdot h \\ 20 \cdot 6 \\ 120 \end{array}$$



2. $B = 12 \text{ cm}^2$, $V = 96 \text{ cm}^3$

$$\begin{array}{l} \frac{1}{2} B \cdot h \\ \frac{1}{2} (4)(6) \\ 12 \end{array}$$

$$\begin{array}{l} B \cdot h \\ 12 \cdot 8 \\ 96 \end{array}$$

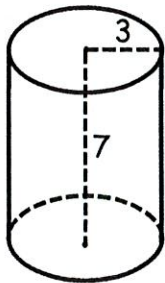


Cylinders:

3. $B = 9\pi \text{ units}^2$, $V = 63\pi \text{ units}^3$

$$\begin{array}{l} \pi r^2 \\ \pi (3)^2 \\ 9\pi \end{array}$$

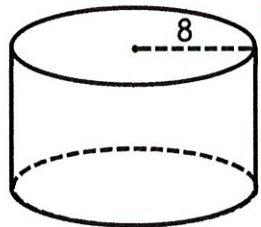
$$\begin{array}{l} B \cdot h \\ 9\pi (7) \\ 63\pi \end{array}$$



4. $B = 64\pi \text{ units}^2$, $V = 192\pi \text{ units}^3$

$$\begin{array}{l} \pi r^2 \\ \pi (8)^2 \\ 64\pi \end{array}$$

$$\begin{array}{l} B \cdot h \\ 64\pi (3) \\ 192\pi \end{array}$$



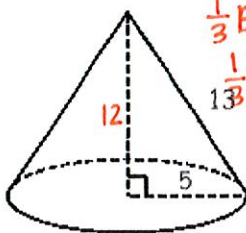
Volume of a Cone or Pyramid:

$$V = \frac{1}{3} B \cdot h$$

5. $B = 25\pi \text{ units}^2$, $V = 100\pi \text{ units}^3$

$$\begin{array}{l} \pi r^2 \\ \pi (5)^2 \\ 25\pi \end{array}$$

$$\begin{array}{l} \frac{1}{3} B h \\ \frac{1}{3} (25\pi)(12) \\ \frac{300\pi}{3} \\ 100\pi \end{array}$$



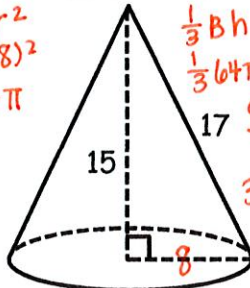
$$h^2 + 5^2 = 13^2$$

$$h = 12$$

6. $B = 64\pi \text{ units}^2$, $V = 320\pi \text{ units}^3$

$$\begin{array}{l} \pi r^2 \\ \pi (8)^2 \\ 64\pi \end{array}$$

$$\begin{array}{l} \frac{1}{3} B h \\ \frac{1}{3} (64\pi)(15) \\ \frac{960\pi}{3} \\ 320\pi \end{array}$$



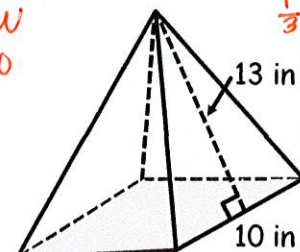
$$15^2 + r^2 = 17^2$$

$$r = 8$$

7. $B = 100 \text{ in}^2$, $V = 400 \text{ in}^3$

$$\begin{array}{l} l \cdot W \\ 10 \cdot 10 \\ 100 \end{array}$$

$$\begin{array}{l} \frac{1}{3} B h \\ \frac{1}{3} (100)(12) \\ \frac{1200}{3} \\ 400 \end{array}$$



$$h^2 + 5^2 = 13^2$$

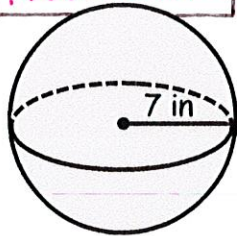
$$h = 12$$

Volume of a Sphere:

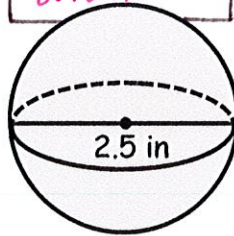
$$V = \frac{4}{3}\pi r^3$$

Find the volume of the sphere. Round your result to two decimal places.

8. $\frac{1372\pi}{3} \text{ in}^3$
 1436.76 in^3



9. $\frac{125\pi}{48} \text{ in}^3$
 8.18 in^3



$$\frac{4}{3}\pi r^3$$

$$\frac{4}{3}\pi(7)^3$$

$$\frac{1372\pi}{3}$$

$$\frac{4}{3}\pi r^3$$

$$\frac{4}{3}\pi(1.25)^3$$

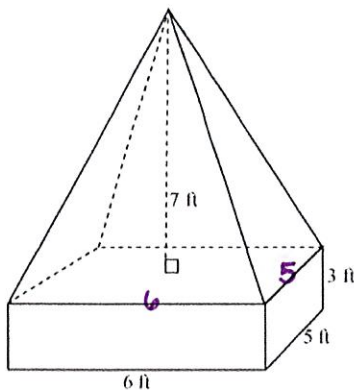
$$\frac{125\pi}{48}$$

10. What happens to the Volume of a sphere if you triple the radius?

$3^3 = 27$ The volume is multiplied by 27

Volume of Composite Figures

11. 160 ft^3

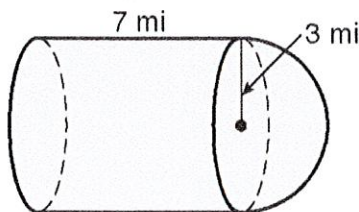


$$V_{\text{pyramid}} = \frac{1}{3}(5 \cdot 6) \cdot 7 = 70 \text{ ft}^3$$

$$V_{\text{prism}} = (5 \cdot 6) \cdot 3 = 90 \text{ ft}^3$$

$$V_{\text{total}} = 70 + 90 = 160 \text{ ft}^3$$

12. $81\pi \text{ mi}^3$



$$V_{\text{cylinder}} = (\pi \cdot 3^2) \cdot 7 = 63\pi \text{ mi}^3$$

$$V_{\text{hemisphere}} = \frac{\frac{4}{3}\pi(3)^3}{2} = 18\pi \text{ mi}^3$$

$$V_{\text{total}} = 63\pi + 18\pi = 81\pi \text{ mi}^3$$