

## B. Volume of a Prism

⇒ The volume of any prism can be found using:

$$V = A_{\text{base}} \times h \quad \text{* height of the prism is "h".}$$

⇒ The area of the base depends upon its shape:

$$A_{\text{Triangle}} = \frac{bh}{2} \quad A_{\text{Rectangle}} = lw \quad A_{\text{circle}} = \pi r^2 \quad A_{\text{Parallelogram}} = bh$$

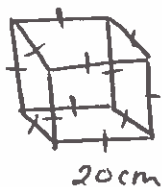
$$A_{\text{square}} = s^2$$

You need to know/memorize these formulas.

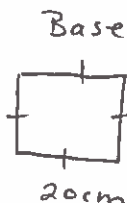
### Examples

1. Determine the volume of the following:

a)



⇒ shape/prism = cube



$$V = A_{\text{Base}} \times h$$

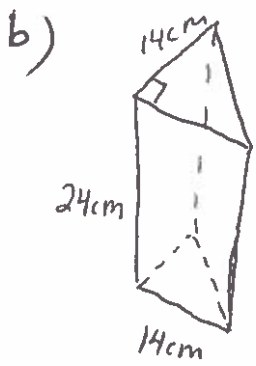
$$= (s^2)h$$

$$= (20)^2(20)$$

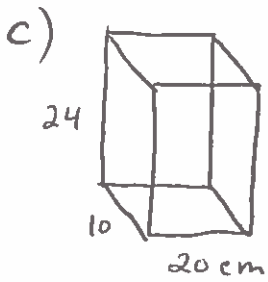
$$= (400)(20)$$

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

This is  $s^2$  because the base is a square.



$$\begin{aligned}
 V &= A_{\text{base}} \times h \\
 &= \left(\frac{bh}{2}\right) h_p \\
 &= \frac{(14)(14)(24)}{2} \\
 &= (98)(24) \\
 &= 2352 \text{ cm}^3
 \end{aligned}$$



$$\begin{aligned}
 V &= A_{\text{base}} \times h \\
 &= lwh \\
 &= (10)(20)(24) \\
 &= 4800 \text{ cm}^3
 \end{aligned}$$

2. Determine the volume of the empty space if the container is  $\frac{3}{4}$  full.

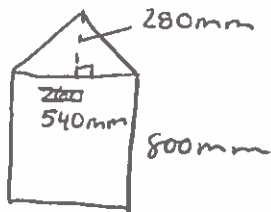


If  $\frac{3}{4}$  full  $\frac{1}{4}$  is empty.

$$\begin{aligned}
 V &= A_{\text{base}} \times h \\
 &= lwh \\
 &= (14)(8)(24) \\
 &= 2688 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 \frac{1}{4} \text{ of volume} &= \left(\frac{1}{4}\right)(2688) \\
 &= 672 \text{ cm}^3
 \end{aligned}$$

3. Determine the volume of the contents of:



$\frac{3}{4}$  full.

$$\begin{aligned}
 V &= A_{\text{base}} \times h \\
 &= \left(\frac{bh}{2}\right) h_p \\
 &= \frac{(540)(280)(800)}{2}
 \end{aligned}$$

$$= 60480000 \text{ mm}^3$$

$$\begin{aligned}
 \left(\frac{3}{4}\right)(60480000) \\
 = 45360000 \text{ mm}^3
 \end{aligned}$$

Assignment Pg. 258 # 4-10

