

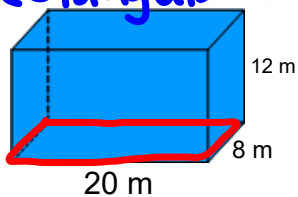


Warm Up Grade 8  
May 22



Find the volume (Show all work)

Rectangular Prism



$$\begin{aligned} V_{\text{prism}} &= A_{\text{base}} \times H \\ &= L \times W \times H \\ &= 20\text{m} \times 8\text{m} \times 12\text{m} \\ &= 1920\text{m}^3 \end{aligned}$$

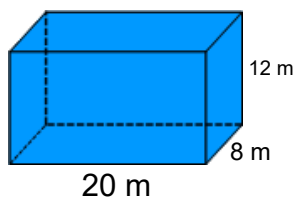


### Warm Up Grade 8

solution



Find the volume (Show all work)



$$\text{Area of base} = L \times W$$

$$= 20 \text{ m} \times 8 \text{ m}$$

$$= 160 \text{ m}^2$$

$$V = \text{Area of base} \times \text{height}$$

$$= 160 \text{ m}^2 \times 12 \text{ m}$$

$$= 1920 \text{ m}^3$$

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1. In Connect, the area of the base is  $30\text{cm}^2$ , so if the volume is  $210\text{cm}^3$  then the height must be  $7\text{cm}$

$$V = A_{\text{base}} \times h$$
$$210 = 30 \times \underline{7}$$

2. No, it does not matter which face you use as the base.

Draw sketches for each

4 a)  $\text{Vol} = A_{\text{base}} \times h$

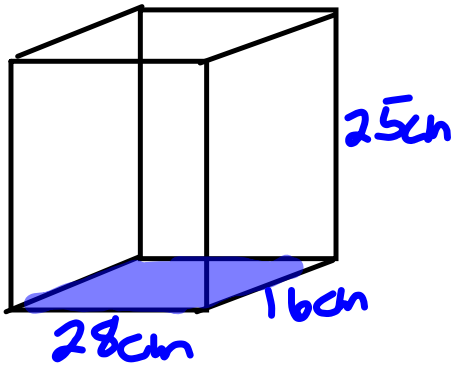
$$= 40 \times 3$$
$$= 120\text{cm}^3$$

b)  $\text{Vol} = A_{\text{base}} \times h$

$$= 81 \times 9$$
$$= 729\text{cm}^3$$

c)  $\text{Vol} = A_b \times h$

$$= 200 \times 30$$
$$= 6000\text{cm}^3$$

5.  
a)

b)

$$\begin{aligned}
 A_{\text{base}} &= l \times w \\
 &= 28 \times 16 \\
 &= 448 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= A_b \times h \\
 &= 448 \times 25 \\
 &= 12 \times 4 \times 25 \\
 &= 11200 \text{ cm}^3
 \end{aligned}$$

b Sketches

$$\begin{aligned}
 \text{a) } A_{\text{base}} &= l \times w \\
 A &= 5 \times 8 \\
 &= 40 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= A_b \times h \\
 &= 40 \times 3 \\
 &= 120 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{B } A_{\text{base}} &= l \times w \\
 &= 8 \times 3 \\
 &= 24 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= A_b \times h \\
 &= 24 \times 5 \\
 &= 120 \text{ cm}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{C } A_{\text{base}} &= l \times w \\
 &= 5 \times 3 \\
 &= 15 \text{ cm}^2
 \end{aligned}$$

$$\begin{aligned}
 V &= A_b \times h \\
 &= 15 \times 8 \\
 &= 120 \text{ cm}^3
 \end{aligned}$$

b) The volume is the same for each

c) No the volume doesn't change when you change the position, the dimensions are still 3, 5 and 8 cm

7. Sketches

$$\begin{aligned} a) A_b &= l \times w \\ &= 5 \times 3 \\ &= 15 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} V &= A_b \times h \\ &= 15 \times 4.5 \\ &= 67.5 \text{ cm}^3 \end{aligned}$$

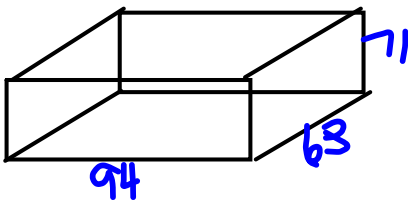
$$\begin{aligned} b) A_b &= l \times w \\ &= 7.5 \times 3.2 \\ &= 24 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} V &= A_b \times h \\ &= 24 \times 4 \\ &= 96 \text{ cm}^3 \end{aligned}$$

$$\begin{aligned} c) A_b &= l \times w \\ &= 3.5 \times 2.4 \\ &= 8.4 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} V &= A_b \times h \\ &= 8.4 \times 3 \\ &= 25.2 \text{ cm}^3 \end{aligned}$$

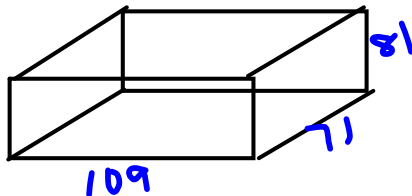
9. Rick



$$\begin{aligned} A_{\text{base}} &= l \times w \\ &= 94 \times 63 \\ &= 5922 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Vol} &= A_b \times h \\ &= 5922 \times 71 \\ &= \underline{420462} \text{ cm}^3 \end{aligned}$$

Susan



$$\begin{aligned} A_b &= l \times w \\ &= 109 \times 71 \\ &= 7739 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} \text{Vol} &= A_b \times h \\ &= 7739 \times 81 \\ &= \underline{626859} \text{ cm}^3 \end{aligned}$$

$$b) 400 \times 1 = 400$$

$$400 \times 2 = 800$$

$$400 \times 1.5 = 600$$

You would multiply the volume of Rick's by about 1.5 to get Susan's volume

## Finding Volume of Triangular Prisms

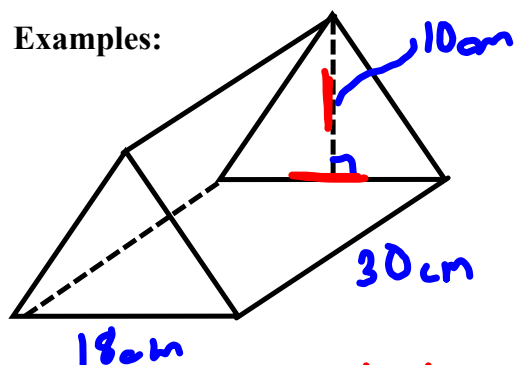
You can find the volume of any prism using the formula we stated yesterday.

$$\text{Volume} = \text{Area of base} \times \text{height}$$

First, determine the shape of the base, then find its area, finally multiply by the height of the prism.

Base shape of a triangular prism is ALWAYS a triangle

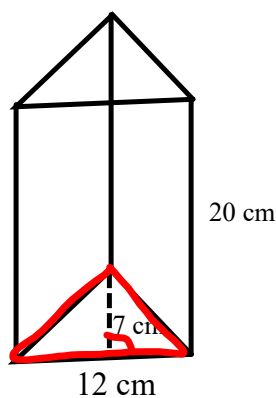
Examples:



$$\begin{aligned} V_{\text{tri Prism}} &= A_{\text{base } \Delta} \times H \\ &= \underline{90\text{cm}^2} \times \underline{30\text{cm}} \\ &= 2700\text{cm}^3 \end{aligned}$$

$$\begin{aligned} A_{\text{base}} &= \frac{b \times h}{2} \\ &= \frac{18\text{cm} \times 10\text{cm}}{2} \\ &= \frac{180\text{cm}^2}{2} \\ &= 90\text{cm}^2 \end{aligned}$$

Ex 2)



$$\begin{aligned} A_{\Delta} &= \frac{b \times h}{2} \\ &= \frac{12\text{cm} \times 7\text{cm}}{2} \\ &= \frac{84\text{cm}^2}{2} \\ &= 42\text{cm}^2 \end{aligned}$$

$$\begin{aligned} V &= A_{\text{base } \Delta} \times H \\ &= 42\text{cm}^2 \times 20\text{cm} \\ &= 840\text{cm}^3 \end{aligned}$$

# Class/Homework

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#5, #6, #7, #8, #9(don't sketch), #10, #11

Test Next week on Unit 4 Volume & Surface Area

8)

$$V = A_{\text{base}} \times H$$

$$\frac{30\text{cm}^3}{4\text{cm}} = \frac{4\text{cm}^2 \times H}{4\text{cm}^2}$$

$$\frac{30}{4} = \frac{4H}{4}$$

$$\boxed{7.5\text{cm} = H}$$