

6.3-B- Volume of a Prism

Consider a pack of printer papers. With dimensions:
 $l = 28 \text{ cm}$; $w = 21.5 \text{ cm}$; $h = 5 \text{ cm}$.

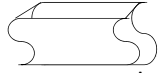
Area of one paper: $A = lw = (28)(21.5) = 602 \text{ cm}^2$

The space this pack occupies (volume):



$$= (602)(5) = 3010 \text{ cm}^3$$

If we shift the pack a little,
 the # of papers (height) stays the same and so does
 the area of each paper.



Therefore the volume stays the same too.

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$$V_{\text{prism}} = A_b \cdot h$$

Recall the **AREA** of (some possible bases):

1. Rectangle = $l \cdot w$

2. Square = b^2

3. Parallelogram = $b \cdot h$

4. Circle = πr^2

5. Triangle = $\frac{b \cdot h}{2}$

6. Trapezoid = $\left(\frac{B+b}{2}\right) \cdot h$

7. Rhombus = $\frac{D \cdot d}{2}$

8. Regular polygon = $\frac{P_{\text{base}} \cdot a}{2}$

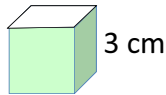
2

Ex 1: Determine the volume of this cube

$$V_{\text{cube}} = A_b \cdot h$$

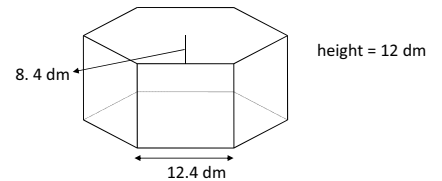
$$= w^2 \cdot w$$

$$V_{\text{cube}} = w^3$$



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Ex 2: Determine the volume of this prism



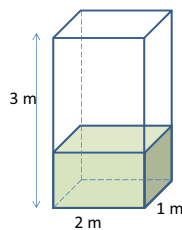
$$V_{\text{prism}} = A_b \cdot h$$

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Ex 3: Page 195 #29

This tank is filled with 1500 L of gas. How much time will
 be required to fill the rest of it at a rate of 20 L/min?

$$V_{\text{tank}} = A_b \cdot h$$



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Practice:

page 193 # 17, 21, 22, 26, 28, 30



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