

# Volume – Prisms

G.GMD.A.3

Hw Section 17.1

Name \_\_\_\_\_

Determine the volume of the following prisms. (Lines that appear perpendicular are perpendicular.)

1. The same rectangular prism is provided three times below but in each instance a DIFFERENT BASE has been highlighted. Calculate the volume for each but change the base dimensions.

$V_{\text{Prism}} = B \cdot h$   
 $= 20 \cdot 11$   
 $B = b \cdot h$   
 $= 10(2)$   
 $B = 20 \text{ cm}^2$   
 $V_{\text{Prism}} = 220 \text{ cm}^3$

$V_{\text{Prism}} = B \cdot h$   
 $= 22 \cdot 10$   
 $B = b \cdot h$   
 $= 11(2)$   
 $B = 22 \text{ cm}^2$   
 $V_{\text{Prism}} = 220 \text{ cm}^3$

$V_{\text{Prism}} = B \cdot h$   
 $= 110 \cdot 2$   
 $B = b \cdot h$   
 $= 10(11)$   
 $B = 110 \text{ cm}^2$   
 $V_{\text{Prism}} = 220 \text{ cm}^3$

2.

$B = \frac{1}{2}(b_1 + b_2)h$   
 $= \frac{1}{2}(7 + 14)6$   
 $= 3(21)$   
 $B = 63 \text{ cm}^2$   
 $V_{\text{Prism}} = B \cdot h$   
 $= 63(8)$   
 $V_{\text{Prism}} = 504 \text{ cm}^3$

3.

$B = \frac{1}{2}bh$   
 $= \frac{1}{2}(7)(3)$   
 $B = 10.5 \text{ cm}^2$   
 $V_{\text{Prism}} = B \cdot h$   
 $= 10.5(11)$   
 $V_{\text{Prism}} = 115.5 \text{ cm}^3$

4.

$V_{\text{Prism}} = B \cdot h$   
 $= (24)(4)$   
 $V_{\text{Prism}} = 336 \text{ cm}^3$   
 $B = \frac{1}{2}bh$   
 $= \frac{1}{2}(12)(4)$   
 $B = 24 \text{ cm}^2$

5.

$V_{\text{Prism}} = B \cdot h$   
 $= (48)(7)$   
 $V_{\text{Prism}} = 336 \text{ cm}^3$   
 $B = b \cdot h$   
 $= 8(6)$   
 $B = 48 \text{ cm}^2$

6. Regular Hexagonal Prism

$m\angle C = \frac{360^\circ}{n}$   
 $= \frac{360^\circ}{6}$   
 $m\angle C = 60^\circ$   
 $V_{\text{Prism}} = B \cdot h$   
 $= (24\sqrt{3})(7)$   
 $V_{\text{Prism}} = 168\sqrt{3} \text{ cm}^3$

$B = \frac{1}{2}Pa$   
 $= \frac{1}{2}(24)(2\sqrt{3})$   
 $B = 24\sqrt{3} \text{ cm}^2$

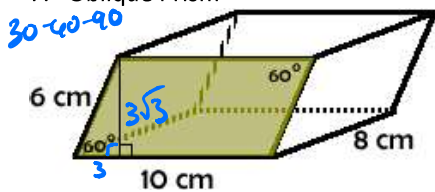
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7. Oblique Prism



$$B = b \cdot h$$

$$= 10(3\sqrt{3})$$

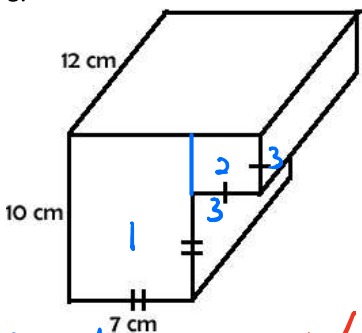
$$B = 30\sqrt{3} \text{ cm}^2$$

$$V_{\text{Prism}} = Bh$$

$$= (30\sqrt{3})(8)$$

$$V_{\text{Prism}} = 240\sqrt{3} \text{ cm}^3$$

8.



$$B = A_1 + A_2$$

$$= b_1h_1 + b_2h_2$$

$$= 7(10) + 3(3)$$

$$= 70 + 9$$

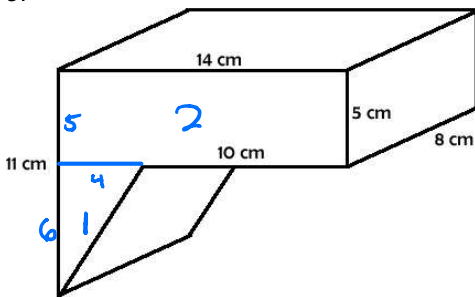
$$B = 79 \text{ cm}^2$$

$$V_{\text{Prism}} = Bh$$

$$= (79)(12)$$

$$V_{\text{Prism}} = 948 \text{ cm}^3$$

9.



$$B = A_1 + A_2$$

$$= \frac{1}{2}b_1h_1 + b_2h_2$$

$$= \frac{1}{2}(4)(6) + 14(5)$$

$$= 12 + 70$$

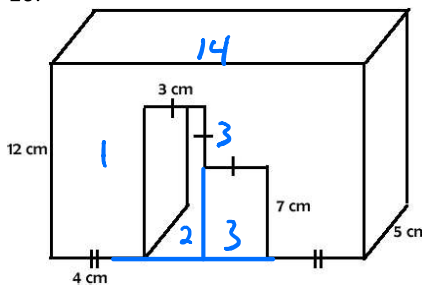
$$B = 82 \text{ cm}^2$$

$$V_{\text{Prism}} = Bh$$

$$= (82)(8)$$

$$V_{\text{Prism}} = 656 \text{ cm}^3$$

10.



$$B = A_1 - A_2 - A_3$$

$$= b_1h_1 - b_2h_2 - b_3h_3$$

$$= 14(12) - 3(10) - 3(7)$$

$$= 148 - 30 - 21$$

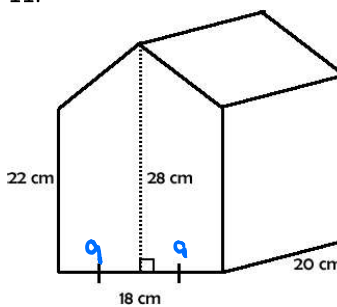
$$B = 117$$

$$V_{\text{Prism}} = Bh$$

$$= (117)(5)$$

$$V_{\text{Prism}} = 585 \text{ cm}^3$$

11.



$$B = 2 A_{\text{TRAP}}$$

$$= 2 \left[ \frac{1}{2} (b_1 + b_2) h \right]$$

$$= (22 + 18) 9$$

$$= (50) 9$$

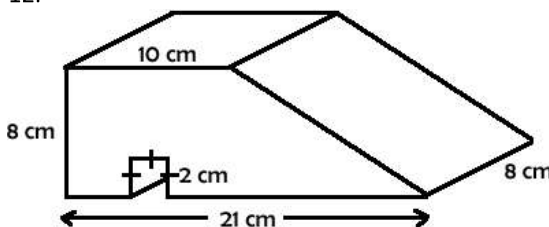
$$B = 450 \text{ cm}^2$$

$$V_{\text{Prism}} = Bh$$

$$= (450)(20)$$

$$V_{\text{Prism}} = 9000 \text{ cm}^3$$

12.



$$B = A_{\text{TRAP}} - A_p$$

$$= \frac{1}{2} (b_1 + b_2) h - b \cdot h$$

$$= \frac{1}{2} (31 + 10) 8 - 2(2)$$

$$= 4(31) - 4$$

$$= 124 - 4$$

$$B = 120 \text{ cm}^2$$

$$V_{\text{Prism}} = Bh$$

$$= (120)(8)$$

$$V_{\text{Prism}} = 960 \text{ cm}^3$$