

Volume of Triangular Pyramids Answer Key

1) $b = 8 \text{ cm}$, $h_b = 6 \text{ cm}$, $H = 10 \text{ cm}$

$$A_{\text{base}} = \frac{1}{2}(8)(6) = 24 \text{ cm}^2$$

$$V = \frac{1}{3}(24)(10) = 80 \text{ cm}^3$$

2) Equilateral base: side 12 cm, (given) height 10.4 cm, $H = 15 \text{ cm}$

$$A_{\text{base}} = \frac{1}{2}(12)(10.4) = 62.4 \text{ cm}^2$$

$$V = \frac{1}{3}(62.4)(15) = 312 \text{ cm}^3$$

3) $A_{\text{base}} = 24 \text{ cm}^2$, $H = 9 \text{ cm}$

$$V = \frac{1}{3}(24)(9) = 72 \text{ cm}^3$$

4) $b = 14 \text{ m}$, $h_b = 9 \text{ m}$, $H = 11 \text{ m}$

$$A_{\text{base}} = \frac{1}{2}(14)(9) = 63 \text{ m}^2$$

$$V = \frac{1}{3}(63)(11) = 231 \text{ m}^3$$

5) $A_{\text{base}} = 45 \text{ cm}^2$, $H = 18 \text{ cm}$

$$V = \frac{1}{3}(45)(18) = 270 \text{ cm}^3$$

6) Right-triangle base with legs 5 cm and 12 cm; hypotenuse 13 cm; $H = 20 \text{ cm}$

$$A_{\text{base}} = \frac{1}{2}(5)(12) = 30 \text{ cm}^2$$

$$V = \frac{1}{3}(30)(20) = 200 \text{ cm}^3$$

7) $b = 10 \text{ m}$, $h_b = 8 \text{ m}$, $H = 12 \text{ m}$

$$A_{\text{base}} = \frac{1}{2}(10)(8) = 40 \text{ m}^2$$

$$V = \frac{1}{3}(40)(12) = 160 \text{ m}^3$$

8) $A_{\text{base}} = 60 \text{ m}^2$, $V = 180 \text{ m}^3$ — find H

$$V = \frac{1}{3}A_{\text{base}}H \Rightarrow H = \frac{3V}{A_{\text{base}}} = \frac{3(180)}{60} = 9 \text{ m}$$

9) $b = 16 \text{ cm}$, $h_b = 10 \text{ cm}$, $H = 9 \text{ cm}$

$$A_{\text{base}} = \frac{1}{2}(16)(10) = 80 \text{ cm}^2$$

$$V = \frac{1}{3}(80)(9) = 240 \text{ cm}^3$$