

Real-World Volumes - Math for Everyday Life Answer Key

1) Storage Box (rectangular prism)

$$V = lwh = 80 \times 40 \times 35 = 112,000 \text{ cm}^3 = \boxed{112 \text{ L}}$$

2) Garden Planter (triangular prism)

$$\text{Base area } A = \frac{1}{2}bh = \frac{1}{2}(50)(30) = 750 \text{ cm}^2$$

$$V = A \cdot \text{length} = 750 \times 100 = \boxed{75,000 \text{ cm}^3}$$

3) Coffee Mug (cylinder)

$$V = \pi r^2 h = 3.14 \times 4^2 \times 10 = 3.14 \times 16 \times 10 = \boxed{502.4 \text{ cm}^3}$$

4) Ice Cream Scoop (sphere & hemisphere)

$$\text{Sphere: } V = \frac{4}{3}\pi r^3 = \frac{4}{3} \cdot 3.14 \cdot 3.5^3 \approx \boxed{179.50 \text{ cm}^3}$$

$$\text{Half-scoop (hemisphere): } \frac{1}{2} \times 179.50 \approx \boxed{89.75 \text{ cm}^3}$$

5) Traffic Cone (cone)

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \cdot 3.14 \cdot 15^2 \cdot 45$$

$$= \frac{1}{3} \cdot 3.14 \cdot 225 \cdot 45 = \boxed{10,597.5 \text{ cm}^3}$$

6) Water Tower (cylinder + hemisphere)

$$\text{Cylinder: } V_c = \pi r^2 h = 3.14 \cdot 6^2 \cdot 10 = 3.14 \cdot 36 \cdot 10 = 1,130.4 \text{ m}^3$$

$$\text{Hemisphere: } V_h = \frac{2}{3}\pi r^3 = \frac{2}{3} \cdot 3.14 \cdot 6^3 = \boxed{452.16 \text{ m}^3}$$

$$\text{Total: } 1,130.4 + 452.16 = \boxed{1,582.56 \text{ m}^3}$$

7) Pyramid Lamp (rectangular pyramid)

$$V = \frac{1}{3}lwh = \frac{1}{3} \cdot 20 \cdot 12 \cdot 18 = \frac{1}{3} \cdot 4,320 = \boxed{1,440 \text{ cm}^3}$$

8) Toblerone (triangular prism, equilateral base)

$$\text{Base area } A = \frac{1}{2}bh = \frac{1}{2} \cdot 4 \cdot 3.5 = 7 \text{ cm}^2$$

$$V = A \cdot \text{length} = 7 \cdot 25 = \boxed{175 \text{ cm}^3}$$
