

Solutions

Award method and answer marks as indicated; accept equivalent correct methods.

2.1

- $V = 5(3)(2) = \mathbf{30 \text{ cm}^3}$; $S = 2(15 + 10 + 6) = \mathbf{62 \text{ cm}^2}$.

2.2

- $A = 6(4)/2 = 12$; $V = Ah = 12(9) = \mathbf{108 \text{ cm}^3}$.

2.3

- $V = Ah/3 = 30(8)/3 = \mathbf{80 \text{ cm}^3}$.

2.4

- $V = 4\pi(3)^3/3 = \mathbf{36\pi \text{ cm}^3}$; $S = 4\pi(3)^2 = \mathbf{36\pi \text{ cm}^2}$.

3.1

(a)

- $V = \pi r^2 h = \pi(4)^2(10) = \mathbf{160\pi \text{ cm}^3}$.

(b)

- $S = 2\pi r h + \pi r^2 = 80\pi + 16\pi = \mathbf{96\pi \text{ cm}^2}$.

(c)

- $V_{\text{cone}} = \pi r^2 h/3 = \mathbf{160\pi/3 \text{ cm}^3}$, **one third** of the cylinder volume.

3.2

(a)

- Use $A = bh/2$ for the triangular cross-section.
- $A = 6(8)/2 = 24 \text{ cm}^2$.
- Then $V = Al = 24(10) = \mathbf{240 \text{ cm}^3}$.

(b)

- Two ends give $S_e = 2(24) = 48 \text{ cm}^2$.
- Rectangular faces give $S_r = 10(6 + 8 + 10) = 240 \text{ cm}^2$.
- Total $S = S_e + S_r = \mathbf{288 \text{ cm}^2}$.