Solutions

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

2.1

- $A = 9(7) - 3(2) = \mathbf{57}$ cm^2.

2.2

- $A = s^2 - \pi r^2 = 36 - \mathbf{4\pi}$ cm^2; the full answer is $(36 - 4\pi)$ **cm**^{2}.

2.3

- $V = V_1 + V_2 = 36 + 54 = \mathbf{90}$ cm^3.

2.4

- $V = (1/2)(4\pi r^3/3) = (1/2)(4\pi(6)^3/3) = \mathbf{144\pi}$ cm^3.

3.1

(a)

- $r = 8/2 = 4$; $A = 12(8) + \frac{1}{2}\pi(4)^2 = \mathbf{96 + 8\pi}$ cm^2.

(b)

- $P = 2(12) + 8 + \pi(4) = \mathbf{32 + 4\pi}$ cm.

(c)

- Two of the 12 faces are hidden: $S = (12 - 2)3^2 = \mathbf{90}$ cm^2.

3.2

(a)

- Each volume is $V = lwh = 6(4)(3) = 72$ cm^3.
- Combined $V_T = 2(72) = \mathbf{144}$ cm^3.
- New dimensions are $\mathbf{12 \times 4 \times 3}$ **cm**.

(b)

- Each surface is $S = 2(6 \times 4 + 6 \times 3 + 4 \times 3) = 108$ cm^2.
- Exposed $S_T = 2(108) - 2(4 \times 3) = \mathbf{192}$ cm^2.
- Check $S_T = 2(12 \times 4 + 12 \times 3 + 4 \times 3) = 192$ cm^2.

3.3

- Area of the square $= 20 \times 20 = 400$ cm^2.
- Area of the circle $= \pi r^2 = \pi \times 5^2 = 78.539\ldots$ cm^2.
- Remaining area $= 400 - 78.539\ldots = \mathbf{321.5}$ cm^2.

3.4

- Subtract the missing corner: $10 \times 6 - 4 \times 3 = 60 - 12$.
- **48** m^2.