Area Volume – Answer Sheet

Q1 117 cm^2

Q2 38.5 m^2

Q3 60 cm^2

Q4 32 m^2

Q5 (a) 254.5 cm^2 (b) 56.5 cm

Q6 39.3 cm^2

Q7 34 m^2

Q8 6.79×10^2 cm^2

Q9 4.82×10^2 cm^2

Q10 2.16×10^2 cm^2

Q11 2.76×10^2 cm^2

Q12 29.4 m^3

Q13 1.37×10^2 m^3

Q14 180 cm^3

Q15 Radius $\approx$ 113 cm

Q16 One-third of cylinder

Q17 44.1 m^2

Q18 7.0 m^2

Q19 39 cm^3

Q20 11.3 m^2

Q21 147 m^2

Q22 (a) 1.5×10^4 cm^3 (b) 15 L

Q23 54 kL

Q24 2.88 t

Q1 Worked Challenge – Water Tower

(a) Surface area

$$SA = \underbrace{2\pi rh}_{\text{cyl. side}} + \underbrace{\pi r^2}_{\text{base}} + \underbrace{2\pi r^2}_{\text{hemi}} = (126 + 12.25 + 24.5)\pi \approx \boxed{5.11 \times 10^2 \text{ m}^2}$$

(b) Internal volume

$$V_{\text{cyl}} = \pi r^2 h = 220.5\pi,\ V_{\text{hemi}} = \tfrac{2}{3}\pi r^3 = 28.6\pi$$

$$V_{\text{tot}} \approx 9.73 \times 10^2 \text{ m}^3 = \boxed{973 \text{ kL}}$$

(c) Paint cost

Area = 511 m^2. Litres billed per 10 m^2:

$$\frac{511}{10} = 51.1 \to 52 \text{ lots}$$

Cost $= 52 \times \$42 \approx \boxed{\$2184}$