

Area, Surface Area Volume – Answer Sheet

Q1 27 cm^2	Q12 120 m^3
Q2 26.2 cm^2	Q13 $168\pi \text{ cm}^3 \approx 528$
Q3 36 m^2	Q14 192 m^3
Q4 34 m^2	Q15 $972\pi \text{ cm}^3 \approx 3.05 \times 10^3$
Q5 $112\pi \text{ cm}^2 \approx 351.9$	Q16 $9.45 \times 10^2 \text{ cm}^3$
Q6 96 m^2	Q17 $108\pi \text{ m}^3 \approx 339$
Q7 $33\pi \text{ cm}^2 \approx 103.7$	Q18 (a) $240\pi \text{ cm}^3 \approx 754$ (b) $S \approx 3.52 \times 10^2 \text{ cm}^2$
Q8 358 cm^2	Q19 600 L
Q9 5.4 m^3	Q20 1.20 m^3
Q10 $375\pi \text{ cm}^3 \approx 1.18 \times 10^3$	Q21 15.7 L
Q11 264 cm^3	

Q1 Worked Solution – Grain Silo

(a) *Volume*

Cylinder: $V_{\text{cyl}} = \pi r^2 h = \pi(3)^2(8) = 72\pi$. Cone: $V_{\text{cone}} = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(3)^2(2.5) = 7.5\pi$.

$$\begin{aligned} V_{\text{total}} &= 79.5\pi \approx 249.8 \text{ m}^3 \\ &= 2.50 \times 10^5 \text{ L} \end{aligned}$$

(b) *Mass at density 0.78 t/m^3*

$$m = 0.78 \times 249.8 \approx 195 \text{ t}$$

(c) *Time to empty at 1.8 t/h*

$$t = \frac{195}{1.8} \approx 108 \text{ h}$$

$V \approx 2.50 \times 10^5 \text{ L}, m \approx 195 \text{ t}, t \approx 108 \text{ h}$
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