

2. Mass, weight and density

2.	$4 \times 3.142 \times r^2 = 18$ $\rightarrow R \approx 1.197$ $\text{Vol.} = \frac{4}{3} \times 3.142 \times 1.197$ $= 7.185 \text{cm}^3$ $\text{Density} = \frac{100}{7.185}$ $= 13.92 \text{g/cm}^3$	M1 M1 A1	
		03	
3.	(a) (i) 800×0.2 $= 160 \text{m}^3$ (ii) 160×2000 $= 320,000 \text{kg}$ (iii) Cement $= \frac{2}{8} \times 320,000$ $= 80,000$ (b) Bags $= \frac{80,000}{50}$ $= 1600$ (c) Ballast $= \frac{3}{8} \times 320,000$ $= 120,000 \text{ tonnes}$ $= 120 \text{ lorries}$	M1 A1 M1 A1 M1 A1 B1 B1 M1 A1 B1	
		10	
4.	$4\pi r^2 = 18$ $4 \times \frac{22}{7} \times r^2 = 18$ $r = 1.197 \text{cm}$ $\text{vol} = \frac{4}{3} \times \frac{22}{7} \times 1.197^3$ $= 7.187 \text{cm}^3$ $D = \frac{m}{v} = 100 \text{g} / 7.187 \text{cm}^3$ $= 13.91 \text{g/cm}^3$	 B1 B1 B1	
		03	

5. $\text{Density} = \frac{300 \times 1,000,000}{20 \times 1000}$
 $= 15,000 \text{ kg/m}^3$

6. $D = \frac{M}{V}$

$$\begin{aligned} \text{Mas} &= D \times V \\ &= \frac{1\text{g}}{\text{cm}^3} \times 2500\text{cm}^3 \\ &= 2500\text{g} \dots\dots\dots(i) \end{aligned}$$

$$\begin{aligned} \text{Mass} &= 0.8 \times 8000 \\ &= 6400\text{g} \dots\dots\dots(ii) \end{aligned}$$

$$\begin{aligned} \text{total mass} &= (2500 + 6400)\text{g} \\ &= 8900\text{g} \end{aligned}$$

$$\text{Density of mixture} = \frac{8900\text{g/cm}^3}{10500}$$