

Wire's weight is mg

Find mass of 1m length of wire

$$d = \frac{m}{V}$$

$$V = \pi r^2 h$$

$$V = \pi \left( \frac{10^{-3} \text{ m}}{2} \right)^2 1 \text{ m}$$

$$V = 7.854 \cdot 10^{-7} \text{ m}^3$$

$$\text{density of Cu} = 8.92 \text{ g/cm}^3$$

$$\frac{8.92 \text{ g Cu}}{\text{cm}^3 \text{ Cu}} = \frac{\text{mass}}{7.854 \text{ m}^3 \text{ Cu}}$$

$$\frac{8.92 \text{ g} \cdot (100 \text{ cm})^3}{\text{cm}^3 \cdot (1 \text{ m})^3} \cdot \frac{1 \text{ kg}}{1000 \text{ g}} = \frac{8.92 \cdot 10^3 \text{ kg}}{\text{m}^3} = \rho_{\text{Cu}}$$

$$\text{We have } d = \frac{m}{V} \Rightarrow m = dV$$

$$m = \frac{8.92 \cdot 10^3 \text{ kg}}{\text{m}^3}$$

$$7.854 \cdot 10^{-7} \text{ m}^3$$

$$m = 1.135727 \cdot 10^{10} \text{ kg of Cu}$$