

The mass of a cube of iron is 411 g. Iron has a density of 7.87 g/cm³.
What is the mass of a cube of lead that has the same dimensions?

Lead density = 2.6 g/cm³

$$\rho = \frac{m}{V} \Rightarrow V = \frac{m}{\rho}$$

$$V_{\text{Iron}} = V_{\text{Lead}}$$

$$\frac{m_{\text{Iron}}}{\rho_{\text{Iron}}} = \frac{m_{\text{Lead}}}{\rho_{\text{Lead}}} \Rightarrow m_{\text{Lead}} = \frac{m_{\text{Iron}} * \rho_{\text{Lead}}}{\rho_{\text{Iron}}}$$

$$m_{\text{Lead}} = \frac{411 * 2.6}{7.87} = 135.78 \text{ g}$$

$$m_{\text{Lead}} = 135.78 \text{ g}$$