

Lösungen zum Aufgabenblatt: Die physikalische Größe Dichte

Ergebnisse

E1	Berechne die Dichte in Gramm/Kubikzentimeter (g / cm ³).		
	m = 100 g	V = 10 cm ³	Dichte : $\rho =$ <input type="text" value="10"/> $\frac{\text{g}}{\text{cm}^3}$
	m = 2 kg	V = 2 dm ³	Dichte : $\rho =$ <input type="text" value="1"/> $\frac{\text{g}}{\text{cm}^3}$
	m = 10 g	V = 0,5 cm ³	Dichte : $\rho =$ <input type="text" value="20"/> $\frac{\text{g}}{\text{cm}^3}$
	m = 2000 mg	V = 20 ml	Dichte : $\rho =$ <input type="text" value="0,1"/> $\frac{\text{g}}{\text{cm}^3}$
E2	Berechne die Masse in kg.		
	$\rho = 12 \frac{\text{g}}{\text{cm}^3}$	V = 125 cm ³	Masse : m = <input type="text" value="1,5"/> kg
	$\rho = 11,7 \frac{\text{g}}{\text{cm}^3}$	V = 1000 cm ³	Masse : m = <input type="text" value="11,7"/> kg
	$\rho = 1 \frac{\text{g}}{\text{cm}^3}$	V = 51 cm ³	Masse : m = <input type="text" value="51,000"/> kg
	$\rho = 7500 \frac{\text{kg}}{\text{m}^3}$	V = 0,1 m ³	Masse : m = <input type="text" value="750"/> kg
E3	Berechne das Volumen in m ³ .		
	$\rho = 10 \frac{\text{g}}{\text{cm}^3}$	m = 10 g	Volumen : V = <input type="text" value="1·10<sup>-6"/> "/> m ³
	$\rho = 11,3 \frac{\text{g}}{\text{cm}^3}$	m = 113 g	Volumen : V = <input type="text" value="1·10<sup>-6"/> "/> m ³
	$\rho = 1 \frac{\text{g}}{\text{cm}^3}$	m = 10 kg	Volumen : V = <input type="text" value="0,01"/> m ³
	$\rho = 0,9 \frac{\text{g}}{\text{cm}^3}$	m = 1000 kg	Volumen : V = <input type="text" value="1,1"/> m ³

Ausführliche Lösungen

A1	Berechne die Dichte in Gramm/Kubikzentimeter (g / cm ³).
	$m = 100 \text{ g} \quad V = 10 \text{ cm}^3$ $\rho = \frac{m}{V} = \frac{100 \text{ g}}{10 \text{ cm}^3} = \underline{\underline{10 \frac{\text{g}}{\text{cm}^3}}}$
	$m = 2 \text{ kg} = 2000 \text{ g} \quad V = 2 \text{ dm}^3 = 1000 \cdot 2 \text{ cm}^3 = 2000 \text{ cm}^3$ $\rho = \frac{m}{V} = \frac{2000 \text{ g}}{2000 \text{ cm}^3} = \underline{\underline{1 \frac{\text{g}}{\text{cm}^3}}}$
	$m = 10 \text{ g} \quad V = 0,5 \text{ cm}^3$ $\rho = \frac{m}{V} = \frac{10 \text{ g}}{0,5 \text{ cm}^3} = \underline{\underline{20 \frac{\text{g}}{\text{cm}^3}}}$
	$m = 2000 \text{ mg} = 2 \text{ g} \quad V = 20 \text{ ml} = 20 \text{ cm}^3$ $\rho = \frac{m}{V} = \frac{2 \text{ g}}{20 \text{ cm}^3} = \underline{\underline{0,1 \frac{\text{g}}{\text{cm}^3}}}$

A2	Berechne die Masse in kg
	$\rho = 12 \frac{\text{g}}{\text{cm}^3} = 12 \frac{\text{kg}}{\text{dm}^3} \quad V = 125 \text{ cm}^3 = 0,001 \cdot 125 \text{ dm}^3 = 0,125 \text{ dm}^3$ $m = \rho \cdot V = 12 \frac{\text{kg}}{\text{dm}^3} \cdot 0,125 \text{ dm}^3 = 12 \cdot 0,125 \text{ kg} = \underline{\underline{1,5 \text{ kg}}}$
	$\rho = 11,7 \frac{\text{g}}{\text{cm}^3} = 11,7 \frac{\text{kg}}{\text{dm}^3} \quad V = 1000 \text{ cm}^3 = 1 \text{ dm}^3$ $m = \rho \cdot V = 11,7 \frac{\text{kg}}{\text{dm}^3} \cdot 1 \text{ dm}^3 = 11,7 \cdot 1 \text{ kg} = \underline{\underline{11,7 \text{ kg}}}$
	$\rho = 1 \frac{\text{g}}{\text{cm}^3} = 1 \frac{\text{kg}}{\text{dm}^3} \quad V = 51 \text{ m}^3 = 51.000 \text{ dm}^3$ $m = \rho \cdot V = 1 \frac{\text{kg}}{\text{dm}^3} \cdot 51.000 \text{ dm}^3 = 1 \cdot 51.000 \text{ kg} = \underline{\underline{51.000 \text{ kg}}}$
	$\rho = 7.500 \frac{\text{kg}}{\text{m}^3} \quad V = 0,1 \text{ m}^3$ $m = \rho \cdot V = 7.500 \frac{\text{kg}}{\text{m}^3} \cdot 0,1 \text{ m}^3 = 7.500 \cdot 0,1 \text{ kg} = \underline{\underline{750 \text{ kg}}}$

A3	Berechne das Volumen in m ³ .
	$\rho = 10 \frac{\text{g}}{\text{cm}^3} = 10 \cdot 10^3 \frac{\text{g}}{\text{dm}^3} = 10 \cdot 10^6 \frac{\text{g}}{\text{m}^3} \quad m = 10 \text{ g}$ $V = \frac{m}{\rho} = \frac{10 \text{ g}}{10 \cdot 10^6 \frac{\text{g}}{\text{m}^3}} = \frac{10 \cdot 1 \cancel{\text{g}} \cdot \text{m}^3}{10 \cdot 10^6 \cdot 1 \cdot \cancel{\text{g}}} = \frac{1}{10^6} \text{m}^3 = \underline{\underline{1 \cdot 10^{-6} \text{m}^3}}$
	$\rho = 11,3 \frac{\text{g}}{\text{cm}^3} = 11,3 \cdot 10^3 \frac{\text{g}}{\text{dm}^3} = 11,3 \cdot 10^6 \frac{\text{g}}{\text{m}^3} \quad m = 113 \text{ g}$ $V = \frac{m}{\rho} = \frac{113 \text{ g}}{11,3 \cdot 10^6 \frac{\text{g}}{\text{m}^3}} = \frac{113 \cancel{\text{g}} \cdot \text{m}^3}{11,3 \cdot 10^6 \cdot 1 \cdot \cancel{\text{g}}} = \frac{10}{10^6} \text{m}^3 = \underline{\underline{1 \cdot 10^{-5} \text{m}^3}}$
	$\rho = 1 \frac{\text{g}}{\text{cm}^3} = 1 \frac{\text{kg}}{\text{dm}^3} = 1000 \frac{\text{kg}}{\text{m}^3} \quad m = 10 \text{ kg}$ $V = \frac{m}{\rho} = \frac{10 \text{ kg}}{1000 \frac{\text{kg}}{\text{m}^3}} = \frac{10 \cancel{\text{kg}} \cdot \text{m}^3}{1000 \cdot 1 \cdot \cancel{\text{kg}}} = \frac{1}{100} \text{m}^3 = \underline{\underline{0,01 \text{m}^3}}$
	$\rho = 0,9 \frac{\text{g}}{\text{cm}^3} = 0,9 \frac{\text{kg}}{\text{dm}^3} = 900 \frac{\text{kg}}{\text{m}^3} \quad m = 1000 \text{ kg}$ $V = \frac{m}{\rho} = \frac{1000 \text{ kg}}{900 \frac{\text{kg}}{\text{m}^3}} = \frac{1000 \cancel{\text{kg}} \cdot \text{m}^3}{900 \cdot 1 \cdot \cancel{\text{kg}}} = \frac{10}{9} \text{m}^3 = \underline{\underline{1,1 \text{m}^3}}$