

Chapter 1 Worksheet
(USE SIG. FIGS.)

Number of sig. figs.:

1. 5.60002 \rightarrow 6
2. 0.000020 \rightarrow 2
3. 2.02456 \rightarrow 6
4. 600. \rightarrow 3
5. 6000 \rightarrow 1

Do the following calculations:

1. $5.326 + 3 = 8$
2. $39583 \times 8 = 300060$
3. $(385.004 / 92) + 45.69289 = 49.9$
4. $(495.0 + 384.9057) / 390 = 2.3$

	Density	Volume	Mass	Linear Measurement	Object
A	2.56 g/cm ³	9.0 cm ³	23 g	Side = 2.1 cm	cube
B	5.98 g/mm ³	76.9 L		Radius =	sphere
C			4.23 g	Side = 25 nm	cube
D			65 tons	Diameter = 69.9 km	sphere
E		78.5 cm ³	85.6 mg	Length = 56.3 mm Diameter =	cylinder

1 ton = 2000 lbs.
1 lbs. = 453.6 g

A

$$d = 2.56 \text{ g/cm}^3 = \frac{\text{mass}}{\text{Vol}} = \frac{23\text{g}}{\text{Vol}} \quad \text{So}$$

$$\text{Vol} = ? = 8.984375 \text{ cm}^3 \Rightarrow 9.0 \text{ cm}^3 \quad \leftarrow$$

$$\text{Mass} = 23\text{g}$$

$$\text{Side} = ?$$

$$\text{Vol} = s^3$$

$$8.984375 \text{ cm}^3 = s^3$$

$$\sqrt[3]{8.984375 \text{ cm}^3} = s$$

$$s = 2.1 \text{ cm}$$

B

$$d = 5.98 \text{ g/mm}^3 = \frac{\text{mass}}{\text{Vol}} = \frac{7.69 \times 10^7 \text{ mm}^3}{\text{Vol}}$$

$$\text{Vol} = 76.9 \text{ L} \times \frac{1000 \text{ mL}}{1 \text{ L}} \times \frac{1 \text{ cm}^3}{1 \text{ mL}} \times \left(\frac{1 \text{ m}}{100 \text{ cm}}\right)^3 \times \left(\frac{1000 \text{ mm}}{1 \text{ m}}\right)^3 = 7.69 \times 10^7 \text{ mm}^3$$

$$\text{Mass} = ? = 45 \text{ g} \quad 4.60 \times 10^8 \text{ g}$$

$$\text{radius} = ?$$

$$\text{Vol} = \frac{4}{3} \pi r^3$$

$$7.69 \times 10^7 = \frac{4}{3} \pi r^3$$

$$r = 2638027 \text{ mm} \rightarrow 264 \text{ mm}$$

C

$$d = ? = \frac{\text{mass}}{\text{Vol}} = \frac{4.23 \text{ g}}{15625 \text{ nm}^3} = 2.7072 \times 10^{-4} \text{ g/nm}^3 = 2.7 \times 10^{-4} \text{ g/nm}^3$$

$$\text{Vol} = ? = 15625 \text{ nm}^3 = 16000 \text{ nm}^3$$

$$\text{Mass} = 4.23 \text{ g}$$

$$\text{Side} = 25 \text{ mm}$$

D

$$d = ?$$

$$\text{Vol} = ? = 17885.7889 \text{ km}^3$$

$$\text{Vol} = \frac{4}{3} \pi r^3$$

$$\rightarrow 179000 \text{ km}^3$$

$$\text{Mass} = 65 \text{ tons}$$

$$\text{Diameter} = 69.9 \text{ km}$$

$$\text{radius} = 34.95 \text{ km}$$

E

$$d = ?$$

$$Vol = 78.5 \text{ cm}^3 = \pi r^2 \cdot h$$

$$Mass = 85.6 \text{ mg}$$

$$L = 56.3 \text{ mm} \Rightarrow 5.63 \text{ cm}$$

$$Dia = ?$$

$$78.5 \text{ cm}^3 = \pi r^2 \cdot \frac{85.6 \text{ mg}}{5.63 \text{ cm}}$$

$$radius = 2.106714549 \text{ cm}$$

$$Dia = 4.213429099 \text{ cm} \Rightarrow 4.21 \text{ cm}$$