

Significant Figures

1.

1) 3

2) 5

3) 3

4) 3

5) 1

6) 2

7) 5

8) 2

9) 3

10) 4

2.

a) 21.11

b) 237.4

c) 652

d) 7.66×10^2

e) 0.500

f) 34

g) 5.93×10^4

3.

a) 343

b) 9850

c) 0.0000454

d) 2.46

e) 76.9

f) 57.0

Science Notation

1.

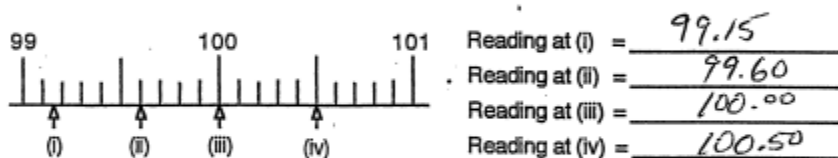
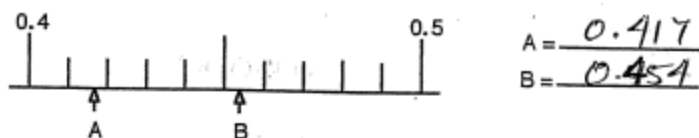
Write these numbers in scientific notation.

$$\begin{array}{ll} 240000 = \underline{2.4 \times 10^5} & 9808000 = \underline{9.808 \times 10^6} \\ 5550 = \underline{5.55 \times 10^3} & 0.091 = \underline{9.1 \times 10^{-2}} \end{array}$$

Write these numbers in regular notation.

$$\begin{array}{ll} 5.5 \times 10^{-7} = \underline{0.00000055} & 7.1 \times 10^{10} = \underline{71000000000} \\ 5.43 \times 10^3 = \underline{5430} & 1.0 \times 10^3 = \underline{1000} \end{array}$$

Reading Measurements



Unit conversion

- 1.) Convert a speed of $88 \frac{m}{s}$ to its equivalent measurement in $\frac{cm}{s}$.

Answer - $\frac{88 m}{1 s} \times \frac{100 cm}{1 m} = \frac{8800 cm}{s}$

- 2.) Convert a density of $\frac{9.45 g}{L}$ to its equivalence in $\frac{g}{mL}$.

Answer - $\frac{9.45 g}{1 L} \times \frac{1 L}{1000 mL} = \frac{0.00945 g}{mL}$

- 3.) The density of mercury metal is $\frac{13.6 g}{mL}$. What is the mass of 3.55 mL of the metal?

Answer - $3.55 mL \times \frac{13.6 g}{1 mL} = 48.28 g$

- 4.) The density of salt is $\frac{2.16 g}{mL}$. What is the mass of 100 mL of this solid?

Answer - $100 mL \times \frac{2.16 g}{1 mL} = 216 g$

- 5.) A particle moves through a gas at a speed of $\frac{15 km}{s}$. How far will it move in 5.5 s?

Answer - $5.5 s \times \frac{15 km}{1 s} = 82.5 km$

- 6.) A solution of barium nitrate contains $\frac{61.2 g}{L}$ of solution. How many grams of barium nitrate is contained in 2.75 L of this solution?

Answer - $2.75 L \times \frac{61.2 g}{1 L} = 168.3 g$

- 7.) A sample of seawater contains 0.00245 g of sodium chloride per mL of solution. How much sodium chloride is contained in 50.0 mL of this solution?

Answer - $50.0 \text{ mL} \times \frac{0.00245 \text{ g}}{1 \text{ mL}} = 0.1225 \text{ g}$ 0.123 g

- 8.) Convert $\frac{73.4 \text{ km}}{\text{h}}$ to its equivalent value in $\frac{\text{m}}{\text{s}}$.

Answer - $\frac{73.4 \text{ km}}{1 \text{ h}} \times \frac{1000 \text{ m}}{1 \text{ km}} \times \frac{1 \text{ h}}{60 \text{ min}} \times \frac{1 \text{ min}}{60 \text{ s}} = \frac{20.3888888 \text{ km}}{\text{h}}$ $\frac{20.4 \text{ m}}{\text{s}}$

- 9.) The density of iron is $\frac{7.86 \text{ g}}{\text{mL}}$. What volume will be occupied by 45.0 g?

Answer - $45.0 \text{ g} \times \frac{1 \text{ mL}}{7.86 \text{ g}} = 5.73 \text{ mL}$ 5.73 mL

- 10.) The density of helium gas is $\frac{0.178 \text{ g}}{\text{L}}$. What would be the mass of 150 L of the gas?

Answer - $150 \text{ L} \times \frac{0.178 \text{ g}}{1 \text{ L}} = 26.7 \text{ g}$ 27 g

- 11.) A particle moving through a gas at a speed of $\frac{45.8 \text{ m}}{\text{s}}$ will take how long to travel 25 cm?

Answer - $25 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1 \text{ s}}{45.8 \text{ m}} = 0.00545851 \text{ s}$ 0.0055 s

- 12.) A sample of seawater contains 6.277 g of sodium chloride per litre of solution. How many mg of sodium chloride would be contained in 25.0 mL of this solution?

Answer - $25.0 \text{ mL} \times \frac{1}{1000 \text{ mL}} \times \frac{6.277 \text{ g}}{1 \text{ L}} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 156.925 \text{ mg}$ 157 mg