I can perform calculations using scientific notation, significant figures, and unit conversions.

4.1. I can define metric units and prefixes and explain how metric units are used in measurement.

4.2. I can express numbers in scientific notation and standard notation.

4.3. I can perform calculations using significant figures.

4.4. I can convert between units, both metric and US standard.

4.5. I can distinguish between accuracy and precision in a given set of data

1. 15.9 mm → km $15.9\,mm \times \frac{1\,m}{1000\,mm} \times \frac{1\,km}{1000\,m} = 0.0000159\,km$ or $1.59 \times 10^{-5}\,km$

2. 0.0982 hg → cg $0.0982\,hg \times \frac{100\,g}{1\,hg} \times \frac{100\,cg}{1\,g} = 982\,cg$

3. g → kg $13455\,g \times \frac{1\,kg}{1000\,g} = 13.455\,kg$

4. km/hr → m/s $13.5\,km \times \frac{1000\,m}{1\,km} \times \frac{1\,hr}{60\,min} \times \frac{1\,min}{60\,sec} = 20.4\,\frac{m}{sec}$

5. g/ml → kg/L $4.52\,\frac{g}{ml} \times \frac{1\,kg}{1000\,g} \times \frac{1000\,ml}{1\,L} = 4.52\,\frac{kg}{L}$

6. 50.00g → ? ml $50.00\,g \times \frac{1\,mL}{7.86\,g} = 6.361\,mL$

7. 375.0 ml → ? g $375.0\,ml \times \frac{1\,L}{1000\,ml} \times \frac{0.1178\,g}{1\,L} = 0.044175\,g$

8. cm → m; ? sec $25.0\,cm \times \frac{1\,m}{100\,cm} \times \frac{1\,sec}{45.8\,m} = 0.00546\,sec$ or $5.46 \times 10^{-3}\,sec$

9. atoms → ? mol $85.0 \times 10^{23}\,atom \times \frac{1\,mol}{6.02 \times 10^{23}\,atoms} = 4.15\,mol$

10. atoms → ? mol $25\,atoms \times \frac{1\,mol}{6.02 \times 10^{23}\,atoms} = 4.15 \times 10^{-23}\,mol$

11. cm/s → km/hr $3.0 \times 10^{9}\,\frac{cm}{sec} \times \frac{1\,m}{100\,cm} \times \frac{1\,km}{1000\,m} \times \frac{60\,sec}{1\,min} \times \frac{60\,min}{1\,hr} = 1080000000\,\frac{km}{hr}$ or $1.08 \times 10^{9}\,\frac{km}{hr}$

12. ml → mg $15.0\,ml \times \frac{1\,L}{1000\,ml} \times \frac{6.277\,g}{1\,L} \times \frac{1000\,mg}{1\,g} = 94.2\,mg$

1 mole = 6.022×10^{23} atoms or molecules = molar mass in grams from P.T. = 22.4 L (of gas)