Chemistry Review

Chem1A, General Chemistry I

I. Classifications of Matter (1.2-3)

- physical change: alters appearance, not composition
- <u>chemical change:</u> alters composition (usually a reaction)
- <u>physical property:</u> observable without changing identity or composition
- <u>chemical property:</u> observable only by changing identity or composition
- <u>states/phases:</u>
 - <u>solid</u>: fixed volume/shape <u>liquid</u>: fixed volume, variable shape gas: variable volume and shape
- <u>mixture</u>: matter that can be separated by a physical process <u>homogeneous</u>: uniform throughout heterogeneous: different composition throughout)
- <u>pure substance</u>: composition does not vary, cannot be separated physically <u>compound</u>: more than one type of element chemically bonded together <u>element</u>: one or more atoms of the same type of element

II. Measurements (1.4)

- <u>Metric System</u>: also called SI, uses magnitudes of 10 for units (Table 1.5)
- <u>Temperature</u>: thermal energy, can be Kelvin (K), Celsius (°C), or Fahrenheit (°F)
- <u>Volume</u>: measure of the three dimensional space an object takes up, Liters (L)
- <u>Density</u>: measure of how closely packed a substance is, mass/volume (usually g/mL or g/cm³)

III. Significant Figures (1.5)

- Counting Significant Figures
 - <u>Non-Zero Integers:</u> *always* significant Leading Zeroes: *never* significant
 - Interior Zeroes: *always* significant
 - Trailing Zeroes: significant when a *decimal point is written*; otherwise not

• "Infinite" Significant Figures

- <u>Counted Units</u>: can be physically numbered or counted <u>Defined Quantities</u>: same system AND same measurement <u>Integral Numbers</u>: factors in equations
- In Calculations
 - <u>Multiplication/Division:</u> answer keeps the same *number* of significant figures as the factor with the fewest.
 - <u>Addition/Subtraction:</u> answer keeps the same number of *decimal places* as the factor with the smallest.