CH 1: MATTER, ENERGY, MEASUREMENT

- $w = F \times d$ [1.1] Work done by a force in the direction of displacement
- $E_k = \frac{1}{2}mv^2$ [1.2] Kinetic energy
- $K = {}^\circ C + 273.15$ [1.3] Converting between Celsius (°C) and Kelvin (K) temperature scales
- ${}^\circ C = \frac{5}{9}({}^\circ F - 32)$ or ${}^\circ F = \frac{9}{5}({}^\circ C) + 32$ [1.4] Converting between Celsius (°C) and Fahrenheit (°F) temperature scales
- $\text{Density} = \frac{\text{mass}}{\text{volume}}$ [1.5] Definition of density

CH 2: ATOMS, MOLECULES, IONS

- $\text{Atomic weight} = \sum_{\substack{\text{over} \\ \text{all isotopes}}} [\text{isotope mass}) \times (\text{fractional isotope abundance}]$ [2.1] Calculating atomic weight as a fractionally weighted average of isotopic masses.

CH 3: CHEM. REACTIONS & REACTION STOICHIOMETRY

This is the formula to calculate the mass percentage of each element in a compound. The sum of all the percentages of all the elements in a compound should add up to 100%.

$$\% \text{ mass of element} = \left(\frac{\left(\begin{matrix}\text{number of atoms} \\ \text{of element}\end{matrix}\right) \times \left(\begin{matrix}\text{atomic weight} \\ \text{of element}\end{matrix}\right)}{\text{formula weight of compound}}\right) \times 100\%$$

This is the formula to calculate the percent yield of a reaction. The percent yield can never be more than 100%.

$$\text{Percent yield} = \frac{\text{actual yield}}{\text{theoretical yield}} \times 100\%$$

By aprilreynoldsss

cheatography.com/aprilreynoldsss/

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