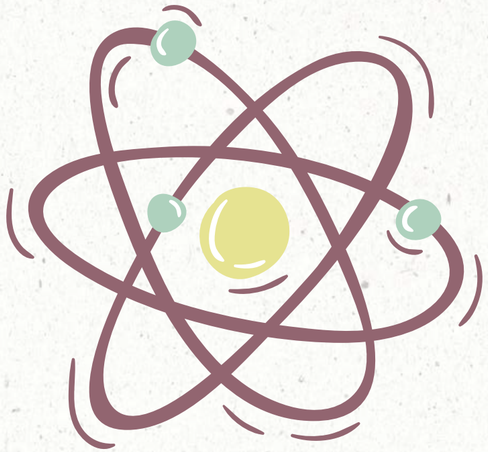
CHAPTER 5
STOICHIOMETRY

11C UNDARGA

INTRODUCTION

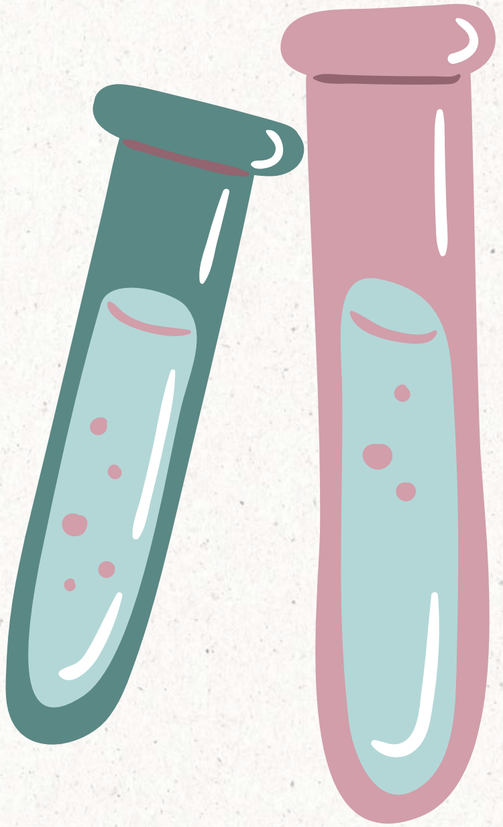
BALANCING EQUATIONS: A CHEMICAL EQUATION IS BALANCED WHEN THERE ARE EQUAL NUMBER OF ATOMS AND CHARGES ON BOTH SIDES OF THE EQUATION

STATE SYMBOLS:
O (S) = SOLID
O (L) = LIQUID
O (G) = GAS
O (AQ) = AQUEOUS SOLUTION



RELATIVE ATOMIC MASS (AR): MASS OF ONE ATOM OF AN ELEMENT RELATIVE TO ONE TWELFTH OF THE MASS OF ONE ATOM OF CARBON-12

RELATIVE MOLECULAR MASS (MR): SUM OF RELATIVE ATOMIC MASSES OF ALL THE ATOMS IN ONE MOLECULE OF THE COMPOUND



THE MOLE CONCEPT

1 MOLE OF A SUBSTANCE: CONTAINS 6.02 × 1023 (THE AVOGADRO CONSTANT) ATOMS, MOLECULES OR FORMULA UNITS

$$\text{NUMBER OF MOLES} = \frac{\text{MASS}}{\text{MOLAR MASS}}$$

$$\text{CONCENTRATION} = \frac{\text{MOLE NUMBER OF SOLUTE}}{\text{VOLUME OF SOLUTION}}$$

EMPIRICAL FORMULA: THE SIMPLEST WHOLE-NUMBER FORMULA

MOLECULAR FORMULA MUST BE CALCULATED USING THE RELATIVE MOLECULAR MASS (MR) OF THE COMPOUND.

$$percentage\ yield = \frac{actual\ yield}{predicted\ yield} \times 100\%$$

$$percentage\ purity = \frac{mass\ of\ pure\ product}{mass\ of\ impure\ product} \times 100\%$$