

Mass and Moles

What is a mole?

12g of ^{12}C \rightarrow 1 mol = # of atoms



Why is a mole useful?

A way of counting large numbers of particles that have different masses

Atomic Mass of ^{12}C = 12 amu

Molar Mass of ^{12}C = 12 g/mol Mass required to get 1 mol of particles

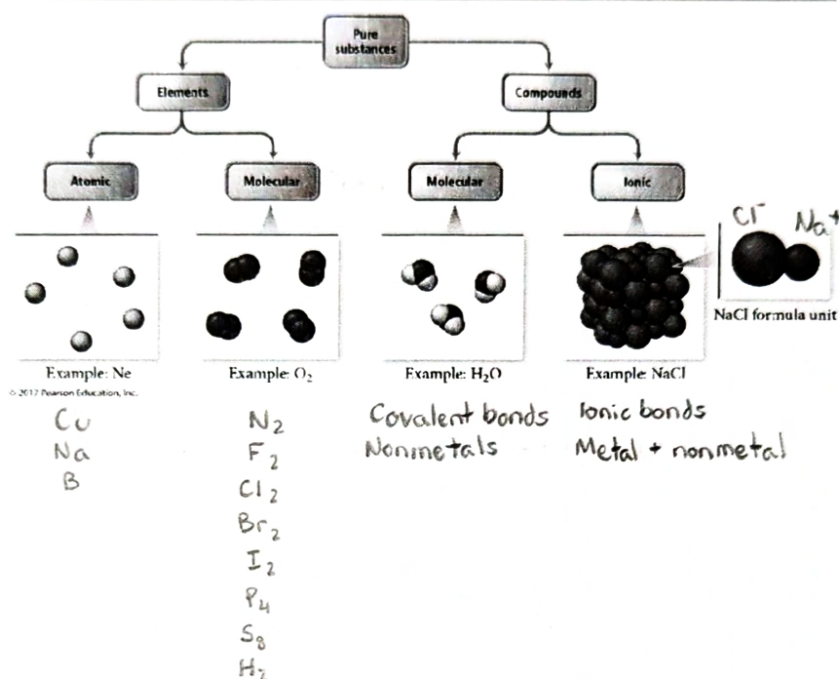
6.022×10^{23} = Avogadro's number # of particles in 1 mol

Molar Mass of H = 1.008 g/mol

3.27g 63.55 amu = 63.55 g/mol

$$\frac{3.27\text{g}}{63.55\text{g/mol}} \times \frac{6.022 \times 10^{23}}{1\text{ mol}} = 3.10 \times 10^{22} \text{ atoms Cu}$$

Classification of Elements and Compounds



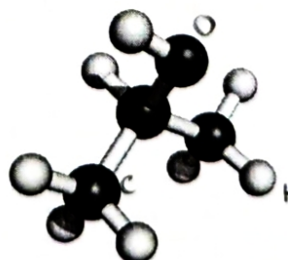
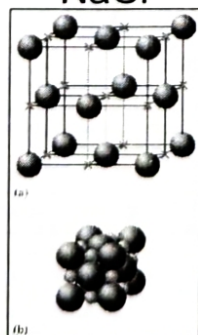
Compounds

Chemical formula:

Symbols of elements used to indicate types of atoms present

Subscripts used to indicate relative number of atoms

NaCl



C₃H₈O
C₃H₇OH

Chemical Bonds

Based on attraction between protons and electrons in atoms

Ionic Bonds	Covalent Bonds
Bonds present in ionic compounds	Bonds present in molecular compounds
Occur between metals and nonmetals (cations and anions)	Occur between nonmetals
	Electrons are shared