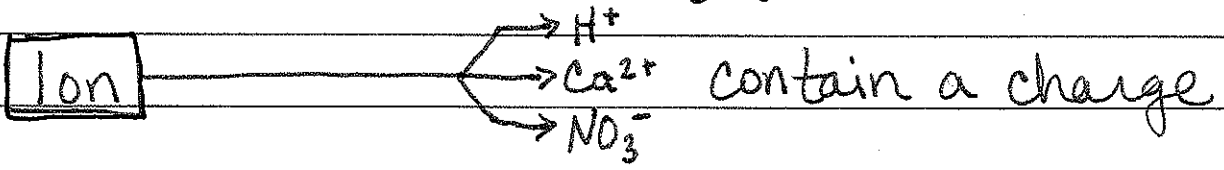
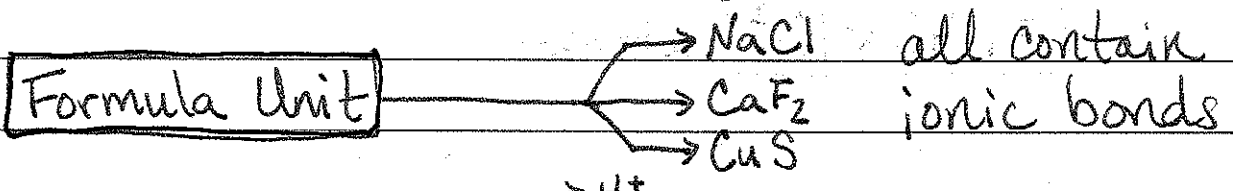
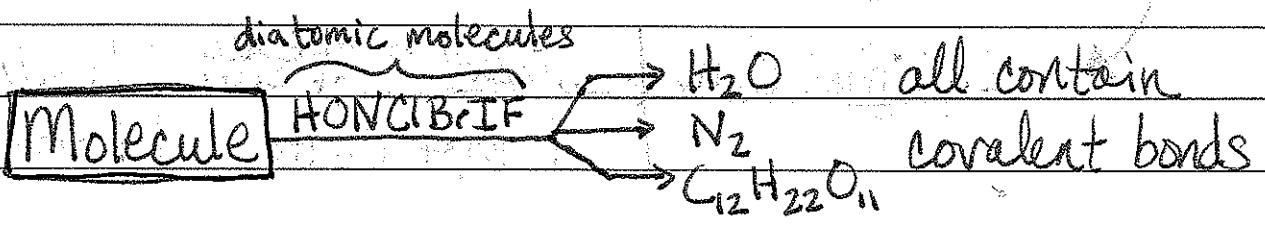
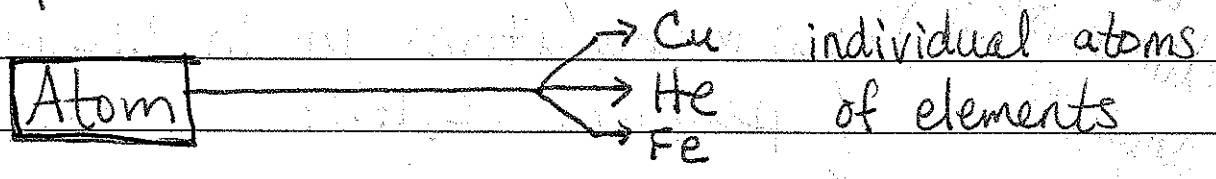


# 10.1 - The Mole

Measure matter: count  
mass  
volume } understand conversions between these

Mole (mol) - SI unit for measuring the amount of a substance. 1 mole contains  $6.02 \times 10^{23}$  particles, called Avogadro's number.

## Representative Particles



\* There are  $6.02 \times 10^{23}$  representative particles in 1 mol for each of these ①

Conversion factor:

$$\frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ rep. particles}}$$

ex) how many atoms are in 1 mole of  $\text{CO}_2$ ?

$$1 \text{ mol } \text{CO}_2 = 6.02 \times 10^{23} \text{ molecules}$$

rep. particle

$$3 \text{ atoms in } \text{CO}_2 \times 6.02 \times 10^{23} = \# \text{ of atoms in 1 mole of } \text{CO}_2$$

use dimensional analysis

ex) how many atoms are in 2.12 mol of propane ( $\text{C}_3\text{H}_8$ )?

$$\frac{2.12 \text{ mol } \text{C}_3\text{H}_8}{1 \text{ mol } \text{C}_3\text{H}_8} \times \frac{6.02 \times 10^{23} \text{ molecules of } \text{C}_3\text{H}_8}{1 \text{ molecule } \text{C}_3\text{H}_8} \times 11 \text{ atoms}$$

$$= 1.40 \times 10^{25} \text{ atoms}$$

②



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