

The Mole

What is a Mole?

- A mole is the amount of pure substance containing the same number of chemical units as there are atoms in exactly 12 grams of carbon-12

$$6.02 \times 10^{23}$$

Avagadro's Number

- This involves the acceptance of two dictates
 - the scale of atomic masses
 - the magnitude of the gram
 - (Both have been established by international agreement)
- Current usage tends to apply the term "mole" to an amount containing Avogadro's number of whatever units are being considered.

Molar Mass

- A sample of any element with a mass equal to that element's atomic weight (in grams) will contain precisely one mole of atoms (6.02×10^{23} atoms).
 - For example, helium has an atomic weight of 4.0 amu. Therefore, 4.0 g of helium will contain one mole of helium atoms