

The MOLE

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

AVOGADRO'S NUMBER

602 000 000 000 000 000 000 000

The mole is a definite
number of items

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

1 mole of pennies = 6.02×10^{23} pennies

1 mole of water molecules =
 6.02×10^{23} molecules

1 mole of sulfur atoms =
 6.02×10^{23} atoms

From mole to mole,
the **NUMBER is the same**,
but **MASS varies**.

1 mole of carbon atoms has 12 times the mass of
1 mole of hydrogen atoms.

A mole of atoms (or molecules)
has a mass, in grams, which is
numerically equal to the atomic mass
(or molecular mass) of the substance.

In other words:

1 atom Na = 23.0 amu

1 mole Na = 23.0 g

1 molecule H₂O = 18.0 amu

1 mole H₂O = 18.0 g