

## Atoms and the Mole

### Mole:

- Number of atoms present in exactly 12 grams of  $^{12}\text{C}$ .
  - $1 \text{ mol} = 6.022 \times 10^{23}$  anythings (Avogadro's #,  $N_A$ )
  - Lets us think about chemical systems on a tangible (macroscopic) scale.
  - Reactions occur on an atom to atom (or molecule to molecule) basis. The mole allows us to translate to a larger scale
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- Mass of one mole of any element is the atomic mass taken in grams - *Molar Mass*
  - Moles are related to MASS, use the g/mol conversion to go back and forth.

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## Mole Calculations

EXAMPLE: How many moles are present in:

(a) 94.3 g of gold?

(b) 32.0  $\text{cm}^3$  of mercury if the density of mercury is 13.534  $\text{g}/\text{cm}^3$ ?

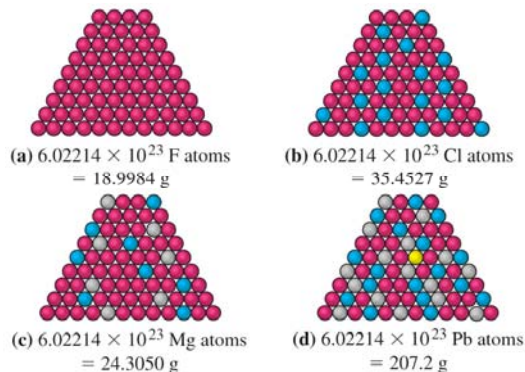


Fig 2-16

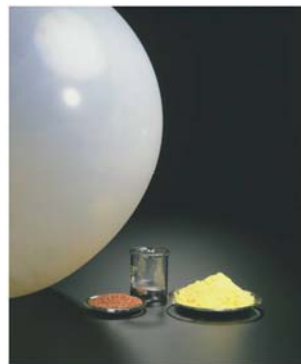


Fig 2-17

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