

1. What is the atomic weight of Magnesium (Mg) in amu if it has the following isotropic distribution:
- 78.70 % of  $^{24}\text{Mg}$  with 23.985 amu
  - 10.13 % of  $^{25}\text{Mg}$  with 24.986 amu
  - 11.17 % of  $^{26}\text{Mg}$  with 25.983 amu

Solution:

The atomic weight of Mg according to the above data:

$$\begin{aligned}\text{Atomic weight} &= 78.7/100 * 23.985 + 10.13/100 * 24.986 + 11.17/100 * 25.983 \\ &= 24.3096 \text{ amu}\end{aligned}$$

---

2. How many atoms of copper (Cu) in 2 g of Cu? Atomic weight of Cu is 63.546 g/mol, Avogadro number =  $6.023 \times 10^{23}$

Solution:

Atomic weight of Cu = 63.546 g/mol

1 mole of Cu has  $6.023 \times 10^{23}$  atoms

63.546 g of Cu → contains 1 mole of Cu  
Or 63.546 g of Cu → contains  $6.023 \times 10^{23}$  atoms of Cu  
2 g of Cu → contains X atoms of Cu

$$\rightarrow \text{Number of atoms} = X = 2 * 6.023 \times 10^{23} / 63.546 = 1.8956 \times 10^{22} \text{ atoms}$$

---

3. Briefly cite the main differences between primary bonding (ionic, covalent, and metallic bonding) and give examples for each?

Solution:

See the book/slides.