

Atomic Mass - weighted average mass of the masses of all the isotopes of an element

$$A.M. = (\text{mass}_1 \cdot \%1) + (\text{mass}_2 \cdot \%2) + (\text{mass}_3 \cdot \%3) + \dots$$

(Ex 1) Find the atomic mass of chlorine...

✓ Cl-35

✓ Cl-37

34.969 amu

36.969 amu

75.53%

24.47%

amu = atomic mass units

$$AM = (34.969 \cdot .7553) + (36.969 \cdot .2447)$$

$$= 35.4584 = 35.46 \text{ amu}$$

(Ex 2) Calculate the atomic mass of sulfur if

the 1<sup>st</sup> isotope weighs 31.972 amu & has an abundance of 95.00%

2<sup>nd</sup> isotope weighs 32.971 amu & has an abundance of 0.76%

3<sup>rd</sup> isotope weighs 33.967 amu & has an abundance of 4.22%

$$A.M. = (31.972 \cdot .9500) + (32.971 \cdot .0076) + (33.967 \cdot .0422)$$

$$= 32.057387 = 32 \text{ amu}$$



(Ex 3) Copper has an atomic mass of 63.546 amu.

isotope	mass	%
Cu-63	<u>62.9298 amu</u>	<u>69.09%</u>
Cu-64	?	<u>30.91%</u>

$$63.546 = (62.9298 \cdot 0.6909) + (x \cdot 0.3091)$$

$$\begin{array}{r} 63.546 \\ - 43.47819882 \\ \hline 20.06780118 \end{array} = \begin{array}{r} (43.47819882) \\ - 43.47819882 \\ \hline 0 \end{array} + (x \cdot 0.3091)$$

$$\frac{20.06780118}{0.3091} = \frac{(x \cdot 0.3091)}{0.3091}$$

$$\underline{64.9233296} = x$$

$$\boxed{64.92 \text{ amu} = x}$$