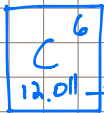


Warm-up:

- How many Carbon-12 atoms would have the same mass as a nickel-60 atom? $60 \div 12 = 5$ carbon atoms
- How many neutrons does Gold-197 have? $197 - 79 = 118$
- How many protons and electrons do the following atoms have?
a) Li $3p^+, 3e^-$ b) C $6p^+, 6e^-$ c) Mg $12p^+, 10e^-$ d) O $8p^+, 10e^-$ e) I $53p^+, 54e^-$

Calculating Atomic Mass:



Atomic Mass: weighted average of all masses of naturally occurring isotopes

Isotopes of Carbon:

type	% Abundance	Amu
C-12	0.9889, 89%	12.000
C-13	0.0111, 11%	13.003

Find the Atomic Mass:

$$0.9889 \cdot 12.000 = 11.867$$

$$0.0111 \cdot 13.003 = 0.144$$

$$12.011 \text{ amu}$$

Find the Percent abundance:

- chlorine has two isotopes:

- Cl-35 \rightarrow 34.969 amu
- Cl-37 \rightarrow 36.966 amu

Let x = fraction of Cl-35

Let $1-x$ = fraction of Cl-37

$$1 = \text{fraction Cl-35} + \text{fraction of Cl-37}$$

Weighted Average of [Cl]

$$35.453 \text{ amu} = x \cdot 34.969 + (1-x) \cdot 36.966$$

$$35.453 = x \cdot 34.969 + 36.966 - 36.966x$$

$$35.453 = -1.997x + 36.966$$
$$-36.966 \quad -36.966$$

$$\frac{-1.513}{-1.997} = \frac{-1.997x}{-1.997}$$

$$x = 0.7576 \rightarrow 75.76\% \text{ Cl-35}$$

$$1-x = 1 - 0.7576 = 0.2424 \rightarrow 24.24\% \text{ Cl-37}$$