

Name: _____ Date: _____ Period: _____

WS Average Atomic Mass

1. Carbon exists naturally as carbon-12, carbon-13, and carbon-14.
Which isotope of carbon is the most abundant? Explain your answer.

Carbon-12 because the Avg. Atomic Mass on the Periodic Table is 12.011 which is closest to 12

2. Calculate the average atomic mass for neon. Neon exists in 2 naturally occurring isotopes: neon-20 (19.99 amu at 90.5%) and neon-22 (21.99 amu at 9.5%).

$$\begin{aligned} \text{Avg. Atomic Mass} &= (19.99)(0.905) + (21.99)(0.095) \\ &= 18.09 + 2.089 \\ &= \boxed{20.18 \text{ amu}} \end{aligned}$$

3. Silicon naturally exists of three stable isotopes listed in the table below.

<u>Isotope</u>	<u>% Relative Abundance</u>
Si-28	92.230%
Si-29	4.683%
Si-30	3.087%

- a) Calculate the average atomic mass of silicon.

$$\begin{aligned} &= (28)(0.9223) + (29)(0.04683) + (30)(0.03087) \\ &= 26 + 1.4 + 0.93 = \boxed{28 \text{ amu}} \end{aligned}$$

- b) In terms of atomic structure, describe the similarities and differences among the isotopes of silicon.

Same # of Protons

Different # of Neutrons