

Isotopes and Atomic Mass

Name KEY Per _____

1. Here are three isotopes of an element: ^{12}C ^{13}C ^{14}C

- The element is: Carbon
- The number 6 refers to the atomic # (or protons)
- The numbers 12, 13, and 14 refer to the mass #
- How many protons and neutrons are in the first isotope? 6, 6
- How many protons and neutrons are in the second isotope? 6, 7
- How many protons and neutrons are in the third isotope? 6, 8

2. Complete the following chart:

Isotope name	atomic #	mass #	# of protons	# of neutrons	# of electrons <small>same as protons</small>
Potassium-37	19	37	19	18	19
Oxygen-17	8	17	8	9	8
uranium-235	92	235	92	143	92
uranium-238	92	238	92	146	92
boron-10	5	10	5	5	5
boron-11	5	11	5	6	5

3. Argon has three naturally occurring isotopes: argon-36, argon-38, and argon-40. Based on argon's reported atomic mass, which isotope do you think is the most abundant in nature? Explain.

39.95 amu (from periodic table)

Ar-40 most abundant because 39.95 closest to 40

4. The two naturally occurring isotopes of element fluorine are ^{35}F (75%) and ^{37}F (25%). Estimate the average atomic mass.

needs to be closer to 35
~35.5 amu

5. How many naturally occurring isotopes exist for the element shown in the chart?

4

6. Estimate the average atomic mass of the element shown in the chart.

needs to be closer to 88
~87.7 amu

7. Lithium has two naturally occurring isotopes, Li-6 and Li-7. Using an average atomic mass of 6.9, estimate the abundance of each isotope.

6.9 is really close to 7

Li-6 10% Li-7 90%

