Name_____

Homework 16: Atoms and the Periodic Table

Atoms are made of three tiny subatomic particles: protons, neutrons, and electrons. The protons and neutrons are grouped together in the nucleus, which is at the center of the atom. The chart below compares electrons, protons, and neutrons in terms of charge and mass.

Sub atomic particle	Found in	Charge	Mass
Proton	Found in the nuclei	+1	1
Electron	Found outside the nucleus	0	1/2000
Neutron	Found in the nuclei	-1	1

The **atomic number** of an element is the number of protons in the nucleus of every atom of that element.

Isotopes are atoms of the same element that have different numbers of neutrons. The number of protons in isotopes of an element is the same.

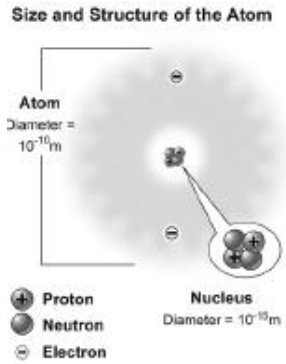
The **mass number** of an isotope tells you the number of protons plus the number of neutrons.

Mass number = number of protons + number of neutrons

The **atomic mass** of an element is based on the mass numbers of the elements isotopes. For example, a standard table of elements lists an atomic mass of 6.94 for the element lithium. That does NOT mean there are 3 protons and 3.94 neutrons in a lithium atom! On average, 94 percent of lithium atoms are lithium-7 and 6 percent are lithium-6 The average atomic mass of lithium is 6.94 because of the weighted average of the mixture of isotope.

1. What information can we get from the atomic number of an element?

2. What information can we get from the atomic mass of an element?



3. How many protons and neutrons are in the nucleus of each isotope?

a. hydrogen (mass number 2)

b. scandium-(mass number 45)

c. aluminum (mass number 27)

d. uranium (mass number 235)

e. carbon (mass number 14)