Name:_____ Date:_____-_____ Period:_____

Chemistry: Science Standards

8.1P.1 DESCRIBE the atomic model and EXPLAIN how the types and arrangements of atoms determine the physical and chemical properties of elements and compounds.

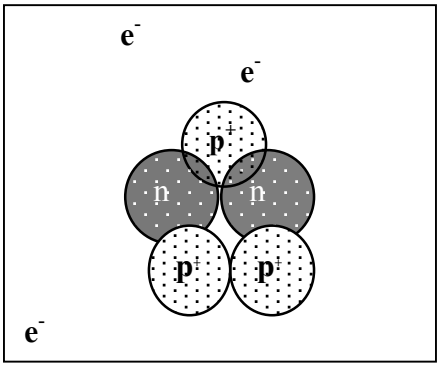
8.1P.2 EXPLAIN how the Periodic Table is an organization of elements based on their physical and chemical properties.

4.1: Introduction to Atoms, pp 92-99

I. Scientists use_____to represent_____since we cannot easily see them.
   A. Our understanding of what the atom is has changed since 430 B.C.
   B. The current day model: The Wave Model
      a. At the center of the atom is a tiny, dense _____ containing _____ an_____.
      b. Surrounding the nucleus is a cloudlike region of moving _____.
      c. Electrons_____follow fixed _____but tend to be in one area more often.
      d. The electrons cloud is _____times larger than diameter of the nucleus.

Wave theory (electron cloud): Picture	Definition: (you write)

II. Atoms – the_____of matter that still has the p_____ of the element.
   A. Protons – have a_____electrical charge, and a mass of _____.
   B. Neutrons – have a _____electrical charge, and a mass of _____.
   C. Electrons – have a_____electrical charge, and a mass of _____.
   D. Nucleus – Contains the_____and_____
      1. Contains most of the m_____of the atom.



P_____ = p+

N_____ = n

E_____ = e-

Number of P_____= Number of E_____.

E. Orbital: place you find the e_____. Also called . . .

F. Energy Levels: levels where electrons ____ in the atom.

Energy Level	Number (#) of electrons
1st	
2nd	
3rd	

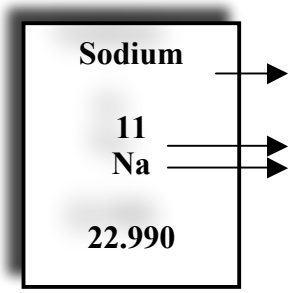
G: Valence Electrons: any and all electrons in the _____ energy level.

Picture:

H. Isotopes = atoms of the s_____element with d_____numbers of n_____. Atoms with the same number of protons and different number of neutrons are called i_____.

1. Isotopes are identified by their m_____number, which is the sum of the p_____ and n_____.

2. Number of neutrons equals atomics m_____– atomic n_____.



Name of Element

Atomic Number
Element Symbol

Atomic Mass

Number of protons in sodium = _____

Number of electrons in sodium = _____

Number of protons + neutrons = _____

Number of neutrons in sodium =_____

4.2 Organizing the Elements: The Periodic Table, pp. 100-107

III. Periodic Law = properties of_____tend to change in a regular _____ pattern of properties when elements are arranged in order of increasing _____number (of the protons in an atom).

A. Periods = The periodic table is arranged in _____ of elements that contain increasing numbers of p_____and e_____.

Atomic # →

P #

3	4	5	6	7	8

1. Elements in a period or row_____have similar properties.
2. Each row in the periodic table_____when an_____energy level is filled. The modern periodic table has _____ periods.

B. Group or Families = _____columns in the table

1. Elements in the same group (family) have s_____properties.
2. Elements in same group have the s_____number of e_____ in their outer shell.

Group → 1, 3, 11, 19, 37, 55

Group → 4, 12, 20, 38, 56

Group → 2, 10, 18, 36, 54, 86

IV. Atomic Number – the number of p_____in an atom.

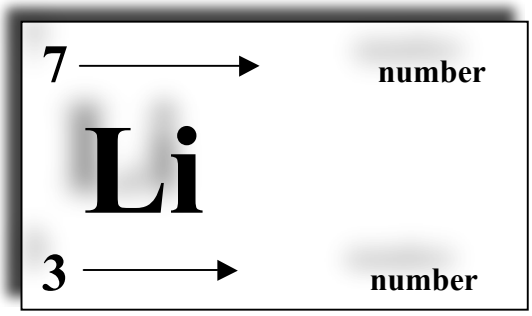
A. The number of protons_____the type of e_____.

B. The number of protons also e_____the number of electrons in a_____atom.

V. Mass number – the number of p_____and n_____in an atom.

A. Atomic mass unit (amu) – _____of measurement for atomic particles.

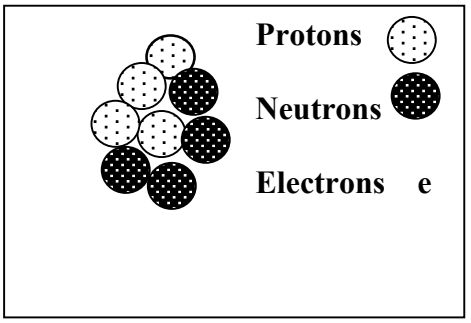
1. A p_____has a mass of____amu.
2. A n_____has a mass of____amu.
3. Electron mass is the # of n_____added in to the Atomic Mass of an atom.



Protons of Li = _____

Electrons of Li = _____

Neutrons of Li = _____



VI. An element's properties can be predicted from its location in the periodic table.

4.3-4.4: Metals, Nonmetals and Metalloids, pp. 108-125

I. Elements can be classified by their properties, including:

a. Melting temperature:_____

b. Density:_____

c. Hardness:_____

d. Thermal conductivity:_____

e. Electrical conductivity:_____

II. Metals = elements that are good conductors of h_____ and e_____, they are s_____ and b_____.

a. Physical Properties:

i. L_____

ii. M_____

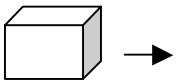
iii. D_____

iv. Thermal C_____

v. Electrical C_____

b. Chemical Properties:

i. R_____



c. Classification:

i. Alkali metals = highly _____metals located in Group_____

a. These metals have only_____electron in their outer shell.

b. Due to being so r_____, these metals are_____found in nature as pure elements – are always c_____.

ii. Alkaline-earth metals = _____most reactive metals and found in Group _____.

a. These metals have _____electrons their outer shell.

iii. Transition metals = metals located in Groups_____.

a. These metals t_____from very m_____to almost non

III. Nonmetals: Most nonmetals are located on the r_____side of the Periodic Table.

a. Physical Properties: elements that are n_____shiny, they are d_____; , c_____ be stretched or shaped, they are b_____; and are poor conductors of h_____ and e_____. Many are g_____ at room temperature. They usually have lower d_____.

b. Chemical Properties: They usually g_____ electrons when they react with other atoms.

c. Families containing nonmetals:

i. Carbon, Nitrogen, Oxygen

ii. Halogens = h_____reactive nonmetals in Group___. These nonmetals have electrons in their outer shells.

iii. Noble Gases = the_____gaseous elements located in Group___. These elements_____usually form compounds. Have a f_____outer shell.

IV. Metalloids = have properties of_____and _____.

a. Semiconductors = these elements are able to c_____ heat and e_____under certain conditions. They are used to make . . .