Review Sheet: Unit 4 **Name**_____

I. Fill in the blanks

_____ arranged the periodic table in order of increasing atomic mass. He was able to use his periodic table to predict _____ of the missing elements.

_____ discovered that each element has a unique atomic number and arranged the elements in order of increasing atomic number.

The _____ _____ _____ states that the properties of the elements repeat when arranged by increasing atomic number.

A column on the periodic table is called a _____. Elements in the same column of the periodic table have _____ electron distributions. Elements in the same column of the periodic table have the same number of _____ _____.

A row on the periodic table is called a _____. Elements in the same row of the periodic table have the same number of _____ _____.

Elements in the Noble Gas family are considered stable because they have _____ outer energy levels.

Elements that have characteristics of both metals and nonmetals are called _____.

_____ _____ is defined as one half the distance between nuclei of two like atoms.

The amount of energy released when an atom gains an electron is called _____ _____.

The amount of energy required to remove an electron from a neutral atom is called _____ _____.

II. For each of the following, circle the appropriate element.

Li	P	Kr	member of the Alkali Metal family
Al	Cl	Br	gas at room temperature
O	S	Se	3 energy levels
O	F	Ne	8 valence electrons
Xe	I	Be	member of the Halogen family
Be	Mg	Ca	largest atomic radius
N	O	F	highest ionization energy
Na	Mg	Al	forms 3+ ions when bonding
Sn	Sb	Te	smallest atomic radius
K	N	B	metal
He	H	Li	member of the Noble Gas family
Br	Cl	F	higher electron affinity
Hg	H	S	liquid at room temperature
Zn	Bi	At	member of the Transition Metal family
K	Ca	Sc	electron distribution ending in s^1
N	O	F	forms 2- ions when bonding
N	P	As	highest ionization energy
C	P	Se	4 valence electrons

III. An element has the electron distribution $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^4$. Use this information to answer the following questions.

_____What is the symbol of the element?
_____What is the name of the element?
_____What is the atomic number of the element?
_____How many valence electrons are in an atom of this element?
_____How many energy levels are in an atom of this element?
_____What charge will an ion of this element have in bonding?
_____What family does this element belong to?
_____Is this element a metal, nonmetal, or metalloid?
_____Is this element a solid, liquid, or gas at room temperature?

IV. Write the Noble Gas Distribution for each of the following elements.

Pd	Ar
Li	Ra
N	Ge

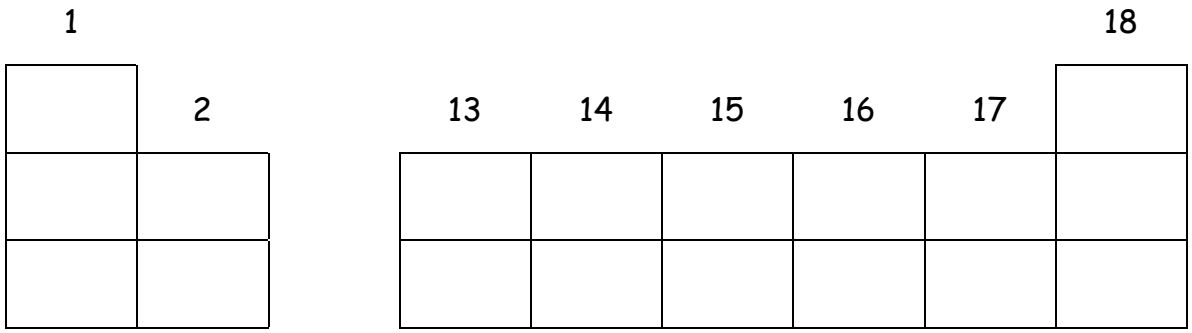
V. How many valence electrons do these atoms have?

_____ Al	_____ Ne	_____ Si
_____ K	_____ I	_____ Po

VI. Predict the charge on the ion for these elements when they are involved in bonding.

_____ Ca	_____ B	_____ Cl
_____ S	_____ Cs	_____ P

VII. Fictitious symbols are used for the first 18 elements in the periodic table. Use the clues below to write the fictitious symbol in the appropriate spot on the periodic table provided.



Clue 1 **Hi**, **Yi**, and **!** are noble gases. **Hi** has the smallest and **!** has the largest atomic radius.

Clue 2 **It** is the lightest element on the table.

Clue 3 **Sj** has the lowest ionization energy of any element on this chart.

Clue 4 **R** is a halogen on the in the second period.

Clue 5 **M** and **On** both have electron distributions ending in s^2p^2. **On** has the lower ionization energy of the two.

Clue 6 **E** has an ending electron distribution of $2p^1$. **De** has an ending electron distribution of $3p^3$.

Clue 7 **Nk** forms ions with a charge of +1. **Ch** atoms lose 2 electrons to become stable. **Ch** atoms are smaller than **Nk** atoms.

Clue 8 **Us** is an alkaline earth metal, and **Ul** is a halogen.

Clue 9 **Rf** atoms have 6 valence electrons.

Clue 10 **Tw** has 13 protons.

Clue 11 **T** and **Is** belong in the 2^{nd} period. **Is** atoms are larger than **T**.