

STATION #1 - Atomic Radius (AR)

- 1) Define atomic radius. What unit is usually used to define AR?
- 2) Describe the trend for atomic radius within a group and provide an explanation for the trend.
- 3) Describe the trend for atomic radius across a period and provide an explanation for the trend.
- 4) Which of the following is likely to have the largest atomic radius?
a) H b) Mn c) Cl d) Rb e) Ag
- 5) Which of the following is likely to have the smallest atomic radius?
a) O b) La c) Rb d) Mg e) N
- 6) Which atom in each of the following pairs has the smaller atomic radius?
 - Cl or Na
 - B or F
 - Li or Cs
 - O or Te
- 7) Which is bigger? Na or Rb
- 8) Which is smaller? Br or F
- 9) Which is bigger? Mg or Cl
- 10) Which is smaller? Li or F
- 11) Is it easier to remove an electron from an atom with a smaller radius or an atom with a larger radius? ***Explain why.***

STATION #2 - Ionization Energy (IE)

- 1) Define ionization energy. What unit is usually used to define IE?
- 2) Describe the trend for ionization energy within a group and provide an explanation for the trend.
- 3) Describe the trend for ionization energy within a period and provide an explanation for the trend.
- 4) What element has the lowest ionization energy on the Periodic Table?
- 5) What element has the greatest ionization energy on the Periodic Table?
- 6) Which of the following has the greatest ionization energy?
 - a) K
 - b) Ca
 - c) Fe
 - d) Ga
 - e) Br
- 7) Which element in each pair that has a lower ionization energy?
 - Cl or Na
 - B or F
 - Li or Cs
 - O or Te
- 8) Which has a lower ionization energy: Na or Rb
- 9) Which has a higher ionization energy: Br or F
- 10) Which has a lower ionization energy: Mg or Cl
- 11) Which has a higher ionization energy: Li or F
- 12) Explain why Neon (Ne) has a greater ionization energy than Lithium (Li).
(Hint: you should include electrons in your response)

STATION #3 – Electronegativity (EN)

- 1) Define electronegativity.
- 2) Describe the trend for electronegativity within a group and provide an explanation for the trend.
- 3) Describe the trend for electronegativity within a period and provide an explanation for the trend.
- 4) Which of the following is the most electronegative element?
a) O b) La c) Rb d) Mg e) N
- 5) Which element in each of the following atoms has a GREATER electronegativity?
 - Fr or Na
 - Cl or F
 - Al or Cl
 - Fr or Mg
- 6) Which is more electronegative: Na or Rb
- 7) Which is less electronegative: Br or F
- 8) Which is less electronegative: Mg or Cl
- 9) Which is more electronegative: Li or F
- 10) Magnesium and chlorine are located in the same period on the periodic table. Explain why chlorine is much more electronegative than magnesium. *(Do not simply state that chlorine is further to the right of the period)*

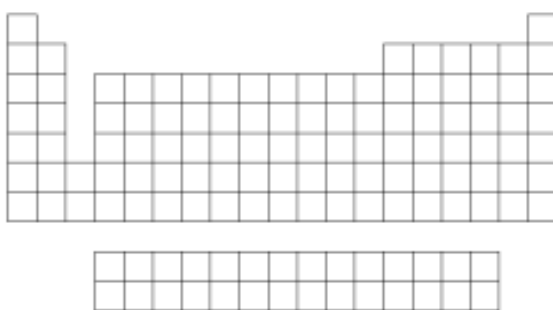
STATION #4 - Periodic Trends Review

- 1) Match the periodic trend to its correct definition. Write the corresponding letter in the blank space next to the definition.

_____ The ability an atom has to attract electrons	A. Ionization Energy
_____ Distance from nucleus to outermost energy level	B. Electronegativity
_____ Energy needed to remove electron from an atom	C. Atomic Radius

- 2) Draw an outline of the periodic table on your paper. Draw arrows for each of the three periodic trends in the direction the trend moves top-to-bottom within a group and left-to-right across a period. LABEL your arrows as increase or decrease, as well as which trend they represent.

Hint: You should have a total of 6 arrows.



- 3) Label your Periodic Table with these words: halogens, noble gases, alkali metals, alkaline earth metals, chalcogens, and most electronegative element.
- 4) In which of the following groups do all the elements have the same number of valence electrons?

a) P, S, Cl b) Na, Ca, Ba c) P, As, S d) Ag, Cd, Ar e) NONE

- 5) The symbols for a metal, a non-metal, and a noble gas in that order are:

a) Ag, Ga, Xe
b) Ba, P, Ar
c) Ce, Ge, Ne
d) P, Pb, Kr
e) Ca, Sn, Ks

STATION #5 - Periodic Families Review

- 1) The high school chemistry teacher found four unknown elements in a cupboard. She determined they had the following properties. Help her figure out what groups they are a part of.

Element A – metal that exploded violently when dropped into water

Element B – metal that has a reaction with water, but not violent

Element C – gas that reacts with no other elements

Element D – gas that reacts with elements like sodium (Na) or lithium (Li)

- Element A is a part of which group of elements?
- Element B is a part of which group of elements?
- Element C is a part of which group of elements?
- Element D is a part of which group of elements?

Group Names:

- Noble Gas
- Alkaline Earth Metals
- Halogens
- Chalcogens
- Alkali Metals
- Transition Metals

- 2) Which of the following is an alkali metal?

- a. H b. Cl c. Xe d. Cs

- 3) Which of the following is a noble gas?

- a. Li b. Ar c. Br d. F

- 4) Which of the following is a halogen?

- a. I b. Na c. K d. Ne

- 5) If you drop an element in water and it explodes, what family does it belong to?

- a. Halogens b. Noble gases c. Alkali metals d. Alkaline Earth metals

- 6) If you have an element that combines with alkali metals to make salt molecules, what family does it belong to? (*Hint: consider what ions are readily formed by elements of the different families*)

- a. Alkali metals b. Salts c. Halogens d. Noble gases

- 7) If you have an element that does nothing when mixed with other elements, what family does it belong to?

- a. Noble gases b. Non-metals c. Halogens d. Alkali metals

STATION #6 - Periodic Families Review II

1) Which of the following is a transition metal?

- a) Cl b) Ni c) P d) Ca e) C

2) Which of the following is an alkali metal?

- a) Mg b) Kr c) K d) Al e) H

3) Why do alkali metals and halogens like to chemical bond?

(Hint: Consider the electrons of ions formed by elements in each group/family)

4) Some alkali metals are stored in tubes of argon gas. Why would argon be a safe gas to store an alkali metal in?

5) Imagine you have just discovered element 118.

A. From its location on the periodic table, what predictions can you make about its chemical properties/characteristics?

B. Research the true chemical properties/characteristics of element 118.

6) Which element do you think Au (gold) acts like the most?

- a. Hg (mercury) b. Ag (silver) c. Pt (platinum) d. Cd (cadmium)

STATION #7 - Metals vs. Nonmetals

- 1) Students at the high school did an experiment to explore the physical properties of several elements. The results of their experiment are found in the table below. Help the students determine which elements are metals and nonmetals.

Table 1: Results of metal, metalloid, and non-metal experiment

	<i>Magnetic</i>	<i>Malleable</i>	<i>Color</i>	<i>Electrical Conductivity</i>	<i>Luster</i>	<i>State of Matter</i>
<i>Element P</i>	Yes	Yes	Silver	Yes	Shiny	Solid
<i>Element Q</i>	No	---	Colorless	No	---	Gas
<i>Element R</i>	No	No	Purple	No	Dull	Solid
<i>Element S</i>	No	No	Greenish-black	Yes, but not well.	Shiny	Solid
<i>Element T</i>	No	Yes	Black	Yes	Shiny	Solid

- a. Analyzing the data table above, list the elements that are metals.
- b. Analyzing the data table above, list the elements that are non-metals.
- 2) Which of these elements is a non-metal? Use the periodic table to help you.
- a. Sodium b. Chlorine c. Tin d. Silicon
- 3) Which of these elements is a metal? Use the periodic table to help you.
- a. Fluorine b. Neon c. Calcium d. Boron
- 4) Neon, Argon, and Krypton are:
- a. In the same period
- b. In the same group
- c. Contain the same amount of electrons
- d. Are all metals

STATION #8 –

Periodic Table

Multiple Choice