Trends Worksheet - SCH 3U1

1. Briefly discuss the importance of Mendeleev's periodic law. In other words, why do think it's important...think about everything you've learned beginning with nomenclature.

2. Identify each element as a metal, metalloid, or nonmetal.
   a) fluorine _____
   b) germanium _____
   c) zinc _____
   d) phosphorous _____
   e) lithium _____

3. Give two examples for each category.
   a) noble gases _____
   b) halogens _____
   c) alkali metals _____
   d) alkaline earth metals _____

4. What trend in atomic radius do you see as you go down a group/family on the periodic table? What causes this trend?

5. What trend in atomic radius do you see as you go across a period/row on the periodic table? What causes this trend?

6. Circle the atom in each pair that has the largest atomic radius.
   a) Al or B b) S or O c) Br or Cl
   d) Na or Al e) O or F f) Mg or Ca

7. Define ionization energy.

8. Is it easier to form a positive ion with an element that has a high ionization energy or an element that has a low ionization energy? Explain.

9. Use the concept of ionization energy to explain why sodium forms a 1+ ion (Na^+) but magnesium forms a 2+ ion (Mg^{2+}).

10. What trend in ionization energy do you see as you go down a group/family on the periodic table? What causes this trend?

11. What trend in ionization energy do you see as you go across a period/row on the periodic table? What causes this trend?

12. Circle the atom in each pair that has the greater ionization energy.

a) Li or Be	b) Na or K	c) Cl or Si
d) Ca or Ba	e) P or Ar	f) Li or K

13. Define electronegativity.

14. What trend in electronegativity do you see as you go down a group/family on the periodic table? What causes this trend?

15. What trend in electronegativity do you see as you go across a period/row on the periodic table? What causes this trend?

16. Circle the atom in each pair that has the greater electronegativity.

a) Ca or Ga	b) Li or O	c) Cl or S
d) Br or As	e) Ba or Sr	f) O or S

17. Define electron affinity.

18. What trend in electron affinity do you see as you go down a group/family on the periodic table? What causes this trend?

19. What trend in electron affinity do you see as you go across a period/row on the periodic table? What causes this trend?

Elements and the Periodic Table
Building the Periodic Table

The following elements belong together in families as grouped below. The elements as listed are not necessarily in order. The letters are *not* the normal symbols for the elements.

ZRD, SIFP, JXBE, LHT, OKA, WOV, YMC, GUN

The assignment is to arrange these elements in the proper periodic form, according to the information given below. Fill in the answers in the periodic table provided at the bottom of this page.

1. U has a total of six electrons. *(Used as an example below — U is carbon, therefore G and N are either silicon or germanium.)*
2. A is the second most common element in the atmosphere.
3. E is a noble gas.
4. S is an alkali metal.
5. O is a halogen.
6. O has an atomic number larger than V but smaller than W.
7. The charge on an L ion is 2^+.
8. C has five electrons in its outer energy level.
9. The atomic mass of T is more than that of H but less than that of L.
10. M has an atomic number one less than that of A.
11. The electrons of atom N are distributed in three energy levels.
12. R has the largest atomic mass of its group.
13. F is a gas at room temperature.
14. Atom B contains 10 protons.
15. Q has an atomic mass less than that of K.
16. Y is more metallic than either M or C.
17. X has an atomic number one higher than F.
18. D has the smallest atomic mass in its group.
19. P is the most reactive element in its family.
20. J has the greatest density of the elements in its group as listed.
21. Atoms of I are larger than those of S.