Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_

**WS Periodic Trends Notes Part 3 Cont.**

**Ionization Energy**

1. Define ionization energy: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. A lower ionization energy means that it is easier *or* harder to remove and electron.

Metals have lower *or* higher ionization energies than nonmetals because they more easily

\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons.

3. As you go down a group, the ionization energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This happens because \_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

### As you go across a period, the ionization energy \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This happens because \_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. Circle the element with the lower ionization energy.

1. Na K
2. Si Ge
3. Cl F
4. O S
5. K Ca

5. Order the ***symbols*** of the elements by ***decreasing*** ionization energy. (*highest to lowest*).

a) Na, Mg, S \_\_\_\_>\_\_\_\_>\_\_\_\_

b) Mg, Ba, Ca \_\_\_\_>\_\_\_\_>\_\_\_\_

c) N, F, Br \_\_\_\_>\_\_\_\_>\_\_\_\_

d) Li, K, Mg \_\_\_\_>\_\_\_\_>\_\_\_\_

6. Write the ***name*** of the element with the lowest ionization energy in each of the following.

a) Ca, Na, Mg, K \_\_\_\_\_\_\_\_\_\_\_\_

b) P, O, S, N \_\_\_\_\_\_\_\_\_\_\_\_

**Electronegativity**

7. Define electronegativity: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8. A higher electronegativity means that it is more *or* less likely to gain and electron.

Nonmetals have lower *or* higher electronegativities than metals because they more easily

\_\_\_\_\_\_\_\_\_\_\_\_\_ electrons.

9. As you go down a group, electronegativity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This happens because \_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

### As you go across a period, electronegativity \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This happens because \_**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

### \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

10. Circle the element with the higher electronegativity.

1. Mg Na
2. C N
3. S O
4. O N
5. Cl F

11. Order the ***symbols*** of the elements by ***increasing*** electronegativity. (*lowest to highest*).

a) Cl, Br, F \_\_\_\_<\_\_\_\_<\_\_\_\_

b) Al, Na, S \_\_\_\_<\_\_\_\_<\_\_\_\_

c) C, O, Ne \_\_\_\_<\_\_\_\_<\_\_\_\_

d) O, Cl, I \_\_\_\_<\_\_\_\_<\_\_\_\_

12. Write the ***name*** of the element with the highest electronegativity in each of the following.

a) S, O, Cl, F \_\_\_\_\_\_\_\_\_\_\_\_

b) P, O, S, N \_\_\_\_\_\_\_\_\_\_\_\_