

**Worksheet 3-3**

**Periodic Trends**

Name \_\_\_\_\_

Period \_\_\_\_\_

1. Discuss the importance of Mendeleev's periodic law.
2. Identify each element as a metal, metalloid, or nonmetal.
  - a) fluorine \_\_\_\_\_
  - b) germanium \_\_\_\_\_
  - c) zinc \_\_\_\_\_
  - d) phosphorous \_\_\_\_\_
  - e) lithium \_\_\_\_\_
3. Give two examples of elements 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	B	b)	S	O	c)	Br	Cl
d)	Na	Al	e)	O	F	f)	Mg	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 form a 1+ ion ( $\text{Na}^+$ ) but magnesium forms a 2+ ion ( $\text{Mg}^{2+}$ ).
10. What trend in ionization energy do you see as you go down a group/family on the periodic table? What causes this trend?