Chemical Families in Detail

Name - _____

1.) Write the electron configurations for each of the following Noble Gases using core notation.

He	
Ne	
Ar	
Kr	
Xe	
Rn	

2.) Why are the Noble Gases so unreactive? (Hint – How many valence electrons do they have?)

3.) What should happen to the ionization energy of the Noble Gases going down the periodic table from He to Rn?

4.) Some of the Noble Gases can be made to react with fluorine gas. Which Noble Gas, He or Rn, would you expect to be more likely to react? Why?

5.) Suggest a reason why the Noble Gases were among the last naturally-occurring elements to be discovered?

6.) Write the electron configurations for each of the following Alkali Metals using core notation.

Li	
Na	
K	
Rb	
Cs	
Fr	

7.) Why are the Alkali Metals so reactive? (Hint – How many valence electrons do they have?)

8.) What happens to the ease with which the Alkali Metals lose an electron, going down the periodic table from Li to Cs? Why?

9.) What trend in ionization energy should exist going down the periodic table from Li to Fr?

10.) The electrical conductivity of a metal is governed by the ability of its valence electrons to move freely from one atom to the next. Would you expect the Alkali Metals to be good or poor conductors? Why?

11.) Write the electron configurations for each of the following Alkali Earth Metals using core notation.

Be	
Mg	
Ca	
Sr	
Ba	
Ra	

12.) Would you expect the Alkaline Earth Metals to be more or less reactive than their Alkali Metal counterparts? (Hint – What has to be done to form the ions of the metals in each family).

13.) What trend in ionization energy should exist going down the periodic table from Be to Ra?

14.) Write the electron configurations for each of the following Halogens using core notation.

F	
Cl	
Br	
I	
At	

15.) Based on the phases of the Halogens at room temperature, what can you conclude about the trend in melting/boiling temperatures going down the Halogens?

16.) Why are the Halogens so reactive? (Hint – How many valence electrons do they have?)

17.) What trend in ionization energy should exist going down the Halogen family on the periodic table? Why?