6. Nitrogen's electronegativity value is between those of phosphorus and oxygen. Which of the following correctly describes the relationship between the three values?

   a. The value for nitrogen is less than that of phosphorus because nitrogen is larger, but greater than that of oxygen because nitrogen has a greater effective nuclear charge.
   b. The value for nitrogen is less than that of phosphorus because nitrogen has fewer protons, but greater than that of oxygen because nitrogen has fewer valence electrons.
   c. The value for nitrogen is greater than that of phosphorus because nitrogen has fewer electrons, but less than that of oxygen because nitrogen is smaller.
   d. The value for nitrogen is greater than that of phosphorus because nitrogen is smaller, but less than that of oxygen because nitrogen has a smaller effective nuclear charge.

7. Which of the following, argon or krypton, has a higher IE_1 and why?

   a. Argon, because argon has fewer principal energy levels than krypton.
   b. Argon, because argon has a larger effective nuclear charge than krypton.
   c. Krypton, because krypton has more principal energy levels than argon.
   d. Krypton, because krypton has a larger effective nuclear charge than argon.

8. The first five ionization energies for an element are listed in the table below.

First	Second	Third	Fourth	Fifth
8 eV	15 eV	80 eV	109 eV	141 eV

   Based on the ionization energy table, the element is most likely to be

   a. Sodium b. Magnesium c. Aluminum d. Silicon

9. Which of the following statements is true regarding sodium and chlorine?

   a. Sodium has a greater electronegativity and a larger first ionization energy.
   b. Sodium has a larger first ionization energy and a larger atomic radius.
   c. Chlorine has a larger atomic radius and a greater electronegativity.
   d. Chlorine has a greater electronegativity and a larger first ionization energy.

10. Consider the halogens chlorine and bromine. Which has a larger atomic radius and why?

    a. Chlorine has a larger atomic radius because it has an increased number of principal energy levels.
    b. Chlorine has a larger atomic radius because it has a higher effective nuclear charge.
    c. Bromine has a larger atomic radius because it has an increased number of principal energy levels.
    d. Bromine has a larger atomic radius because it has a higher effective nuclear charge.

11. Which of the following species is NOT isoelectronic to Br^-?

    a. Se^{2-} b. Kr c. Rb^+ d. K^+

Multiple Choice Practice

	Ionization Energy
First	740 kJ/mol
Second	1,450 kJ/mol
Third	7,730 kJ/mol
Fourth	10,540 kJ/mol
Fifth	13,610 kJ/mol

2 val. e⁻ [~ big jump!

1. Given the table of ionization energies for the unknown element M shown above, which of the following is the most probable empirical formula for the compound element M would form with fluorine?

   a. MF (b.) MF_2 c. MF_3 d. MF_4

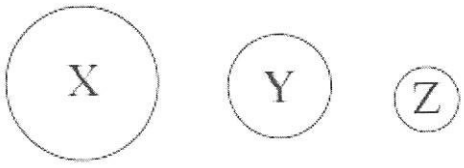
2. Why does an ion of phosphorus, P^{3-}, have a larger radius than a neutral atom of phosphorus?

   a. There is a greater Coulombic attraction between the nucleus and the electrons in P^{3-}.
   b. The core electrons in P^{3-} exert a weaker shielding force than those of a neutral atom.
   c. The nuclear charge is weaker in P^{3-} than it is in P.
   (d.) The electrons in P^{3-} have a greater Coulombic repulsion than those in the neutral atom.

3. Which of the following, sodium or magnesium, has greater metallic character and why?

   a. Sodium, because sodium has fewer principal energy levels than magnesium.
   (b.) Sodium, because sodium has a lower first ionization energy than magnesium.
   c. Magnesium, because of the repulsion of magnesium's paired 4s electrons.
   d. Magnesium, because magnesium has a greater effective nuclear charge than sodium.

4. The diagram below shows the relative atomic sizes of three different elements from the same period. Which of the following statements must be true if trend exceptions are ignored?



   a. The effective nuclear charge will be the greatest in element X.
   (b.) The first ionization energy will be greatest in element X.
   c. The electron shielding effect will be greatest in element Z.
   (d.) The electronegativity value will be greatest in element Z.

oops!

5. Which of the following isoelectric species has the smallest radius?

   a. S^{2-} b. Cl^- c. Ar (d.) K^+