IB Chem-I/ChemD: Periodicity Review Name:

1. Arrange the following elements in order of increasing size: Al, B, C, K, and Na.

2. Arrange the following elements in order of increasing size: Ca, Rb, P, Ge, and Sr.

3. Circle the atom or ion in each pair that has the larger radius.
   a. Cl or Cl^{1-} b. Al or O c. In or I

4. Select the atom or ion in each pair that has the larger radius.
   a. Cs or Rb b. O^{2-} or O c. Br or As

5. Which of the following groups of elements is arranged correctly in order of increasing ionization energy? (Answer by circling the correct answer)
   a. C < Si < Li < Ne
   b. Ne < Si < C < Li
   c. Li < Si < C < Ne
   d. Ne < C < Si < Li

6. Arrange the following atoms in order of increasing ionization energy: Li, K, C, and N.

7. Arrange the following atoms in order of increasing ionization energy: Si, K, As, and Ca.

8. Compare the elements Na, Mg, O, and P.
   a. Which has the largest atomic radius? ____
   b. Which has the highest electron affinity? ____
   c. Place the elements in order of increasing ionization energy.

9. **Explain** each answer briefly.
   a. Place the following elements in order of increasing ionization energy: F, O, and S.

   b. Which has the largest ionization energy: O, S, or Se?

   c. Which has the greatest electron affinity: Se, Cl, or Br?

   d. Which has the largest radius: $O^{2-,}$ F^{-}, or F?

   e. Rank the following in order of increasing atomic radius: O, S, and F.

   f. Which has the largest ionization energy: P, Si, S, or Se?

   g. Place the following in order of increasing radius: Ne, $O^{2-,}$ N^{3-}, or F^{-1}.