1. Rank the following elements by increasing atomic radius: carbon, aluminum, oxygen, potassium.
2. Rank the following elements by increasing electronegativity: sulfur, oxygen, neon, aluminum.
3. Why do elements in the same group generally have similar properties?
4. What trend in atomic radius occurs down a group on the periodic table? What causes this trend?
5. What trend in ionization energy occurs across a period on the periodic table? What causes this trend?
6. Circle the atom in each pair that has the largest atomic radius.
   1. Na or Al
   2. O or F
   3. Br or Cl
   4. Mg or Ca
7. Circle the atom in each pair that has the greater ionization energy.
   1. Li or Be
   2. Ca or Ba
   3. Na or K
   4. P or Ar
8. Circle the atom in each pair that has the greater electronegativity.
   1. Ca or Ga
   2. Li or O
   3. Ba or Sr
   4. O or S

# 11. For each of the following, circle or highlight the correct element that best matches the statement on the right.

|  |  |  |  |
| --- | --- | --- | --- |
| Li | Si | S | metal |
| N | P | As | smallest ionization energy |
| K | Ca | Sc | largest atomic mass |
| S | Cl | Ar | member of the halogen family |
| Al | Si | P | greatest electronegativity |
| Ga | Al | Si | largest atomic radius |
| V | Nb | Ta | largest atomic number |
| Te | I | Xe | member of noble gases |
| Si | Ge | Sn | 4 energy levels |
| Li | Be | B | member of alkali metals |
| As | Se | Br | 6 valence electrons |
| H | Li | Na | nonmetal |
| Hg | Tl | Pb | member of transition metals |
| Na | Mg | Al | electron distribution of:  1s2 2s2p6 3s2p1 |
| Pb | Bi | Sb | metalloid |
| B | C | N | gas at room temperature |
| Ca | Sc | Ti | electron distribution of:  1s2 2s2p6 3s2p6d2 4s2 |