

1. (3 points)

Even though they are in the same period, chlorine is smaller than sodium because it has more protons in its nucleus, making it stronger, pulling the electrons closer together.

2. (3 points)

Sodium, being a metal with one valence electron, will lose this electron and take on a +1 charge. Chlorine, being a nonmetal with seven valence electrons, will gain 1 electron and take on a -1 charge.

3. (3 points)

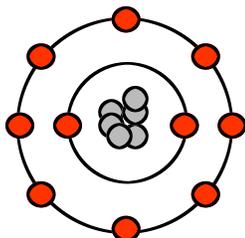
Because sodium is physically larger than chlorine, it will be easier to remove a valence electron from it. Therefore, sodium's ionization energy will be lower.

4. (3 points)

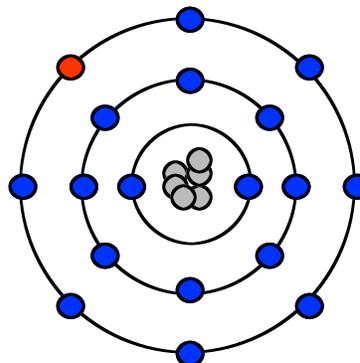
For the same reason as stated in question 3, sodium will have a lower electronegativity than chlorine.

5. (5 points)

Sodium



Chlorine



In order to form NaCl, the sodium loses an electron to chlorine. As a result, sodium becomes +1 and chlorine becomes -1. These charges then attracted each other, creating NaCl.

1 Point Each

1. K

2. Ca

3. Ga

4. C

5. Br

6. Ba

7. Si

8. Au

9. O

10. Be

11. F

12. Cu

13. I

14. V

15. Ca

16. Se

(1 Point Each)



1. (2 points)

Atomic radius is the distance from the nucleus to the valence electron shell.

2. (3 points)

Atoms get smaller as you move across a period due to increased nuclear charge pulling the electrons closer together.

3. (5 points)

Ionization energy is “keeping power”, whereas electronegativity is “stealing power.” Metal, because they are larger, have lower ionization energies and electronegativities than nonmetals.

4. (2 points)

Noble gases are inert because they have a complete valence shell of 8. Therefore, they do not want to gain or lose electrons. This is termed the octet rule.

5. (4 points)

Electronegativity is atom's ability to steal electrons from other atoms. Electronegativity decreases as you move down a group and increases as you move left to right across a period.