

Periodic Trends Worksheet

Directions: Use your notes to answer the following questions.

1. Rank the following elements by increasing atomic radius: carbon, aluminum, oxygen, potassium.

Oxygen < Carbon < Aluminum < Potassium

2. Rank the following elements by increasing electronegativity: sulfur, oxygen, neon, aluminum.

Neon < Aluminum < Sulfur < Oxygen

3. Why does fluorine have a higher ionization energy than iodine?

Fluorine has nine protons attracting 9 electrons which are much closer to the nucleus compared to iodine. This results in smaller size of Fluorine than Iodine making it difficult to remove an electron from the atom.

4. Why do elements in the same family generally have similar properties?

Because they have same number of electrons in the outer shell (valence electrons) which take part in chemical reaction.

5. Indicate whether the following properties increase or decrease from left to right across the periodic table.

- | | |
|--|------------------|
| a. atomic radius (excluding noble gases) | Decreases |
| b. first ionization energy | Increases |
| c. electronegativity | Increases |

6. What trend in atomic radius occurs down a group on the periodic table? What causes this trend?

Atomic radius **increases** down the group on the periodic table. As we compare the elements down the group, the effective nuclear charge increases, but at the same time the outermost electrons are found in the shell that is farther away from the nucleus. Also the number of screening electrons increases. This results in reduced attraction between the nucleus and the outermost electrons.

7. What trend in ionization energy occurs across a period on the periodic table? What causes this trend?

Ionization energy **increases** from left to right across the period. The atomic size becomes smaller from left to right. So it becomes harder to remove electron from the atom. Hence the energy required to do so (ionization Energy) increases.

Periodic Table Trends Worksheet Answer Key Bisd303

RD Boyd



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