

MYP4 Chemistry

Periodic Trends

Use the periodic table, charts, and your knowledge of periodic trends to answer the following questions.

Atomic Radius

1. Which atom in each pair has the larger atomic radius? Circle your answer.

a) Li or **K** b) **Ca** or Ni c) **Ga** or B d) O or **C** e) Cl or **Br**
f) Be or **Ba** g) **Si** or S h) Fe or **Au**

2. What is the periodic trend for atomic size from top to bottom in a group? From left to right in a period?

Atomic size (atomic radius) increases from top to bottom in a group and decreases from left to right in a period.

3. Why do atoms get smaller as you move left to right in a period?

Atoms get smaller as you move left to right in a period due to the increase in effective nuclear charge (while the number of occupied energy levels remain constant) leading to an increase in the force of attraction, which pulls the outer electrons closer to the nucleus and decreases the atomic radius.

4. Why do atoms get larger as you move down a group?

Atoms get larger as you move down a group due to the increase in occupied energy levels.

5. Arrange the following in order of increasing atomic radius atomic radius.

Mg, Na, P, Si and Ar? They are in the same period: Ar, P, Si, Mg, Na

Ionic Radius

6. Define an ion.

a charged atom or group of atoms

7. What is the difference between a cation and an anion?

Cations are positively charged ions. They are formed when an atom loses electrons.
Anions are negatively charged ions. They are formed when an atom gains electrons.

8. Explain the relationship between the relative size of an ion to its neutral atom and the charge on the ions.

Cations are smaller than their neutral atom because they have less occupied energy levels.
Anions are larger than their neutral atom because of the increase in electron-electron repulsion.

9. Which particle has the larger radius in each atom/ion pair? Circle your answer.

a) **Na** Na⁺ b) S, **S²⁻** c) I, I⁻ d) **Al** Al³⁺

Periodic Trends Practice Answer Key

Sasha Hu

A red circular graphic with a gradient, appearing as a partial circle or a stylized arrow pointing to the right, located to the right of the author's name.

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