

The Periodic Table and Periodic Law

For questions 1–5, do not use the periodic table.

1. Write the electron configurations for the elements in periods 2–4 of group 2A.
2. Determine the group, period, and block of the elements with the following electron configurations.
 - a. $[\text{He}]2s^22p^4$
 - b. $[\text{Xe}]6s^1$
 - c. $[\text{Ar}]4s^23d^{10}4p^2$
3. Categorize each of the elements in problem 2 as a representative element or a transition element.
4. Write the electron configuration of the element fitting each of the following descriptions. Use noble-gas notations.
 - a. Group 8A element in the third period
 - b. Group 4A element in the fourth period
 - c. Halogen in the second period
 - d. Group 1A element in the fourth period
5. What are the noble-gas notations of all the elements with the following valence electron configurations?
 - a. s^2
 - b. s^2p^1

For questions 6–9, do not use Figure 6-12, 6-15, or 6-20.

6. Rank the following atoms in order of decreasing radii.
 - a. Al, Na, P, S
 - b. Al, Ga, In
 - c. As, Ge, Ga
 - d. Br, Ca, Cl, K
7. Rank the following ions in order of decreasing radii.
 - a. Br^- , Cl^- , F^-
 - b. Be^{2+} , Ca^{2+} , Mg^{2+}
 - c. Ca^{2+} , Ga^{3+} , K^+
8. Rank the following particles in order of decreasing radii.
 - a. I, I^-
 - b. K, K^+
 - c. Al, Al^{3+}
9. Rank the following atoms in order of decreasing electronegativity.
 - a. Na, Li, K
 - b. K, Sc, Ca
 - c. As, Sn, S