

AP Chemistry - Worksheet #2 Atomic and Ionic Size WS

1. What is the meaning of effective nuclear charge? How does the effective nuclear charge felt by the outer electrons vary going down a group? How does it change as we go from left to right across a period?
2. Choose the larger atom in each pair:
(a) Na or Si; (b) P or Sb.
3. Choose the larger atom in each pair:
(a) Al or Cl; (b) Al or In.
4. Choose the largest atom from among the following: Ge, As, Sn, Sb.
5. In what region of the periodic table are the largest atoms found? Where are the smallest atoms found?
6. Place the following in order of increasing size: N^{3-} , Mg^{2+} , Na^+ , F^- , O^{2-} , Ne.
7. Why are the size changes among the transition elements more gradual than those among the representative elements?
8. Choose the larger particle in each pair:
(a) Na or Na^+ ;
(b) Co^{3+} or Co^{2+} ;
(c) Cl or Cl^-
9. Use the periodic table to choose the largest atom or ion in each set.
(a) Ge, Te, Se, Sn; (b) C, F, Br, Ga; (c) Fe, Fe^{2+} , Fe^{3+} ; (d) O, O^{2-} , S, S^{2-}
10. Which ion would be larger: (a) Fe^{2+} or Fe^{3+} , (b) O^- or O^{2-} ?
11. What two factors are most important in determining the size of an atom?
12. Explain the relative sizes of the atoms within a given group of the periodic table. Illustrate your answer with specific examples.
13. Compare the relative sizes of neutral atoms and their positive ions.
14. List the following particles in order of decreasing size: Kr, Sr^{2+} , Rb^+
15. Compare the sizes of a negative ion and its neutral atom. Illustrate with specific examples.
16. List the following particles in order of decreasing size: K^+ , Ar, S^{2-} , Cl^- , Ca^{2+}
17. Arrange the following elements in increasing order of their atom's size. Ca, Ba, Be
18. Arrange the following elements in increasing order of their atom's size. Li, Rb, K, Cs