

37 ≥ 26 + 3

Name Answerkey STURMAN Date _____ Class _____

6-3 Review and Reinforcement

Periodic Trends

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

Which atom in each pair has the larger atomic radius?

- 1. Li or K
- 2. Ca or Ni
- 3. Ga or B
- 4. O or C
- 5. Cl or Br
- 6. Be or Ba
- 7. Si or S
- 8. Fe or Au

Which ion in each pair has the smaller atomic radius?

- 9. K^+ or O^{2-}
- 10. Ba^{2+} or I^-
- 11. Al^{3+} or P^{3-}
- 12. K^+ or Cs^+
- 13. Fe^{2+} or Fe^{3+}
- 14. F^- or S^{2-}

Which atom or ion in each pair has the larger ionization energy?

- 15. Na or O
- 16. Be or Ba
- 17. Ar or F
- 18. Cu or Ra
- 19. I or Ne
- 20. K or V
- 21. Ca or Fr
- 22. W or Se

Name _____ Date _____ Class _____

6-3 Review and Reinforcement (continued)

Write the charge that each of the following atoms will acquire when it has a complete set of valence electrons.

- 23. O O^{2-}
- 24. Na Na^+
- 25. F F^-
- 26. N N^{3-}
- 27. Ca Ca^{2+}
- 28. Ar Ar^0

29. Define atomic radius.

Atomic radius is the distance from the center of the atom's nucleus to its outermost e^- .

30. Why do atoms get smaller as you move across a period?

The more $pt^+ e^-$ the stronger the attractive force \circ° . The e^- are pulled in towards the nucleus.

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

Positive ions are smaller than their atoms. Negative ions are larger than their atoms.

32. Contrast ionization energy and electron affinity. In general, what can you say about these values for metals and nonmetals?

Ionization energy is the energy needed to lose an e^- . Electron affinity is the energy change that occurs when an atom gains an e^- . Metals have lower ionization energies compared to non-metals.

33. Why is there such a large jump in ionization energy between the second and third ionization energies for magnesium?

Mg would easily lose 2 e^- since its valence is 2. To lose a 3rd means it has to lose an e^- from its noble core (the e^- are closer to the nucleus).

34. Explain why noble gases are inert and do not form ions.

Noble gases have a full set of valence e^- + e^- are very stable. No need to gain or lose e^- for stability.

35. Define the term electronegativity. What is the periodic trend for electronegativity?

e^- neg. is the ability of an atom to attract e^- . When you go from left to right and up (think of a chemical bond, e^- neg. \uparrow from left to right and up), more e^- 's, more and \downarrow as you move down a group, (more e^- 's, more repulsion).