

Worksheet

1. KI 2. BaCl₂ 3. Li₂O 4. CoF₂ 5. Na₃P
6. CuBr₂ 7. Cr₂S₃ 8. ZnCl₂ 9. Ag₂O 10. SnI₄

11. Lithium iodide 12. Aluminum fluoride
13. Iron (II) chloride 14. Magnesium oxide
15. Sodium nitride 16. Silver iodide
17. Barium fluoride 18. Lead (II) sulfide
19. Zinc oxide 20. Potassium sulfide

1. FeSO₄ 2. CaCO₃ 3. NaC₂H₃O₂ 4. Mg₃(PO₄)₂
5. Ni(NO₃)₂ 6. Mg(OH)₂ 7. LiBrO₃ 8. (NH₄)₂CO₃
9. NiS₂O₃ 10. Ba(ClO₃)₂

11. Potassium iodate 12. Cobalt (II) cyanide
13. Magnesium peroxide 14. Ammonium bromate
15. Chromium (II) thiosulfate 16. Barium permanganate
17. Copper (II) dichromate 18. Potassium chromate
19. Ammonium silicate 20. Copper (II) dichromate (I repeat myself)

1. Magnesium sulfide 2. Sodium chlorate
3. Calcium acetate 4. Beryllium chloride
5. Calcium carbonate 6. Lead (II) chromate
7. Silver chloride 8. Potassium permanganate
9. Magnesium thiosulfate 10. Calcium nitride
11. Tin (II) hydroxide 12. Sodium iodate
13. Mercury (II) bromide 14. Lithium phosphate
15. Manganese (II) dichromate 16. Barium fluoride
17. Sodium peroxide 18. Potassium silicate
19. Copper (II) iodide 20. Barium cyanide

21. NaNO₃ 22. KSCN 23. CsS 24. LiBrO₃
25. Ba(OH)₂ 26. NaI 27. Sn(CN)₂ 28. Na₃PO₄
29. Cu₂O 30. SrSO₄ 31. K₂CO₃ 32. MgBr₂
33. Cr(C₂H₃O₂)₂ 34. Na₂SiO₃ 35. AgIO₃ 36. Al₂O₃
37. LiMnO₄ 38. CuClO₃ 39. Fe₂(CrO₄)₃ 40. SrS

Chapter 7

41. a, c, e, would form ionic compounds because they involve a metal and a nonmetal.
b, d, f, would form covalent bonds, because they involve two nonmetals.
67. a, c, e, f are not ionic because they involve two nonmetals. b and d are likely ionic because they involve a metal and a nonmetal.

47. In molten (liquid) magnesium chloride ions are free to move and conduct the electricity. In solid magnesium chloride the ions are fixed in place, can't move, and can't conduct.
66. Ionic compounds have an equal number of positive and negative charges, so the overall compound is neutral.
48. Metals have a "sea" of mobile valence electrons that can move through the metal, conducting electricity.
51. "Steel" is sort of a generic name for an alloy (mixture) of iron, carbon, and other elements. There are a lot of different ways that you can mix other elements with iron and carbon, producing different types of steel with different properties and useful for different things.
79. They are both crystalline substances. They can both conduct electricity, although metals always conduct and ionic substances conduct when liquids or dissolved in water. They generally have high melting and boiling points, are generally solids, and have fairly high attraction between particles. Ionic substances are brittle, metals are malleable. Ionic substances are a combination of two or more elements, metals just one element. You may have some other similarities or differences.
57. a. The order in the book is the correct order. I could also see first ball, third ball, second ball, fourth ball.
b. The correct order is third ball, first ball, fourth ball, second ball.

Worksheet

- | | | | |
|---------------------------------|-------------------------|---|----------------------------------|
| 1. Chlorate | 2. Chromate | 3. Ammonium | 4. Phosphate |
| 5. Permanganate | 6. Sulfate | 7. Nitrate | 8. Carbonate |
| 9. CN^{-1} | 10. SiO_3^{-2} | 11. $\text{C}_2\text{H}_3\text{O}_2^{-1}$ | 12. $\text{Cr}_2\text{O}_7^{-2}$ |
| 13. $\text{S}_2\text{O}_3^{-2}$ | 14. SCN^{-1} | 15. O_2^{-2} | |
-
- | | | |
|-------------------------|-------------------------|----------------------------|
| 1. Nitrogen trichloride | 2. Dihydrogen monoxide | 3. Dinitrogen tetrahydride |
| 4. Carbon disulfide | 5. Dichlorine heptoxide | 6. Sulfur trioxide |
| 7. Silicon tetroxide | 8. Dinotrogen pentoxide | |
-
- | | | | |
|---------------------|----------------------------|-------------------|----------------------------|
| 9. NO_2 | 10. IF_7 | 11. CF_3 | 12. N_2H_4 |
| 13. SiCl_4 | 14. C_3N_4 | 15. PI_3 | |

Chapter 8

1. Molecular compounds are liquids or gases at room temperature and have lower melting points and boiling points.
2. The type of atoms in the compound and the number of each type of atom in the compound.
39. Ionic. Molecular substances have lower melting and boiling points are liquids or gases at room temperatures. This substance is a solid at room temperature.
42. Neon is a noble gas and does not form chemical bonds. Chlorine must form a chemical bond to get a full set of valence electrons, so it is a diatomic molecule (Cl_2).

44. Ionic bonds are formed between a metal and a nonmetal, atoms have a large difference in electronegativity, and electrons are transferred between atoms forming ions. Covalent bonds are formed between two nonmetals, atoms have little to no difference in electronegativity, and electrons are shared between atoms.
45. Atoms in a double bond are sharing four electrons (two pairs). Atoms in a triple bond are sharing six electrons (three pairs).
54. a. linear b. tetrahedral c. omit d. bent e. omit f. bent
34. Covalent bonds are the strongest chemical bonds and have the weakest intermolecular forces. Ionic bonds are weak chemical bonds and have strong intermolecular forces.
35. Network solids are a 3-dimensional network of covalently bonded atoms. Because of the covalent bonds there is very strong attraction between atoms, and the substances have very high melting points.
58. c, d, a, f, b, e – arranged from the greatest difference in electronegativity to the least difference in electronegativity.
61. Compounds with strong intermolecular forces are held together very tightly. You have to give the molecules a lot of energy (heat them up a lot) before they can break away from each other and start to move around (melt). You don't have to give compounds with weak intermolecular forces as much energy (heat them up as much) to break the molecules apart (melt them).
68. a – trigonal planar b – pyramidal c – linear d – tetrahedral
74. Ethyl alcohol is a polar molecule, has higher intermolecular forces, and a higher boiling point. Dimethyl ether is a nonpolar molecule, has lower intermolecular forces, and a lower boiling point.
75. a. bent b. tetrahedral c. pyramidal

Across

- | | | | |
|------------------|----------------|--------------|--------------|
| 5. hydrogen bond | 7. vanderwaals | 10. isomers | 14. cation |
| 16. chemical | 17. ionic | 18. polar | 19. molecule |
| 20. single | 21. triple | 22. nonpolar | |

Down

- | | | | |
|----------------------|-------------|----------------|----------------|
| 1. electronegativity | 2. anion | 3. metallic | 4. formulaunit |
| 6. dipole | 7. VSEPR | 8. molecular | 9. diatomic |
| 12. structural | 13. crystal | 15. dispersion | 23. octet |
| 24. alloy | | | |