

Name _____

Date _____

Comprehension**Section 4.3***Use with textbook pages 206–211.***Balancing equations**

Starting with the skeleton equations, balance the following equations by adding coefficients where appropriate.

1. $\text{H}_2 + \text{F}_2 \rightarrow \text{HF}$ _____
2. $\text{Sn} + \text{O}_2 \rightarrow \text{SnO}$ _____
3. $\text{MgCl}_2 \rightarrow \text{Mg} + \text{Cl}_2$ _____
4. $\text{KNO}_3 \rightarrow \text{KNO}_2 + \text{O}_2$ _____
5. $\text{BN} + \text{F}_2 \rightarrow \text{BF}_3 + \text{N}_2$ _____
6. $\text{CuI}_2 + \text{Fe} \rightarrow \text{FeI}_2 + \text{Cu}$ _____
7. $\text{Li} + \text{H}_2\text{O} \rightarrow \text{LiOH} + \text{H}_2$ _____
8. $\text{NH}_3 + \text{O}_2 \rightarrow \text{N}_2 + \text{H}_2\text{O}$ _____
9. $\text{V}_2\text{O}_5 + \text{Ca} \rightarrow \text{CaO} + \text{V}$ _____
10. $\text{C}_9\text{H}_6\text{O}_4 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
11. $\text{H}_2\text{S} + \text{PbCl}_2 \rightarrow \text{PbS} + \text{HCl}$ _____
12. $\text{C}_3\text{H}_7\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
13. $\text{Zn} + \text{CuSO}_4 \rightarrow \text{Cu} + \text{ZnSO}_4$ _____
14. $\text{C}_6\text{H}_{12}\text{O}_6 + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
15. $\text{C}_2\text{H}_5\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ _____
16. $\text{Al} + \text{H}_2\text{SO}_4 \rightarrow \text{H}_2 + \text{Al}_2(\text{SO}_4)_3$ _____
17. $\text{FeCl}_3 + \text{Ca}(\text{OH})_2 \rightarrow \text{Fe}(\text{OH})_3 + \text{CaCl}_2$ _____
18. $\text{Pb}(\text{NO}_3)_2 + \text{K}_2\text{CrO}_4 \rightarrow \text{PbCrO}_4 + \text{KNO}_3$ _____
19. $\text{Cd}(\text{NO}_3)_2 + (\text{NH}_4)_2\text{S} \rightarrow \text{CdS} + \text{NH}_4\text{NO}_3$ _____
20. $\text{Ca}(\text{OH})_2 + \text{NH}_4\text{Cl} \rightarrow \text{NH}_3 + \text{CaCl}_2 + \text{H}_2\text{O}$ _____

Use with textbook pages 202–211.

Word equations

Write the skeleton equation for each of the following reactions. Then balance each of the following chemical equations.

1. hydrogen + oxygen → water

2. iron(III) oxide + hydrogen → water + iron

3. sodium + water → sodium hydroxide + hydrogen

4. calcium carbide + oxygen → calcium + carbon dioxide

5. potassium iodide + chlorine → potassium chloride + iodine

6. chromium + tin(IV) chloride → chromium(III) chloride + tin

7. magnesium + copper(II) sulphate → magnesium sulphate + copper

8. zinc sulphate + strontium chloride → zinc chloride + strontium sulphate

9. ammonium chloride + lead(III) nitrate → ammonium nitrate + lead(III) chloride

10. iron(III) nitrate + magnesium sulphide → iron(III) sulphide + magnesium nitrate

11. aluminum chloride + sodium carbonate → aluminum carbonate + sodium chloride

12. sodium phosphate + calcium hydroxide → sodium hydroxide + calcium phosphate

Use with textbook pages 202–203, 206–211.

Chemical reactions and chemical equations

Rewrite the following sentences as chemical word equations. Then write the skeleton equation and balance the equation.

1. Iron combines with oxygen to form rust, which is also known as iron(II) oxide.

Word equation: _____

Balanced equation: _____

2. A solution of hydrogen chloride reacts with sodium carbonate to produce carbon dioxide, sodium chloride, and water.

Word equation: _____

Balanced equation: _____

3. When aluminum metal is exposed to oxygen, a metal oxide called aluminum oxide is formed.

Word equation: _____

Balanced equation: _____

4. Water reacts with powdered sodium oxide to produce a solution of sodium hydroxide.

Word equation: _____

Balanced equation: _____

5. Hydrogen gas reacts with nitrogen trifluoride gas to form nitrogen gas and hydrogen fluoride.

Word equation: _____

Balanced equation: _____

6. Chromium(III) sulphate reacts with potassium carbonate to form chromium(III) carbonate and potassium sulphate.

Word equation: _____

Balanced equation: _____

7. Potassium chlorate when heated becomes oxygen gas and potassium chloride.

Word equation: _____

Balanced equation: _____

8. A piece of metallic zinc is placed in a blue solution of copper(II) sulphate. A reddish brown layer of metallic copper forms in a clear solution of zinc sulphate.

Word equation: _____

Balanced equation: _____