Use with textbook pages 206-211.

Balancing equations

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

1.
$$H_2 + F_2 \rightarrow HF$$

2.
$$\operatorname{Sn} + \operatorname{O}_2 \rightarrow \operatorname{SnO}$$

3.
$$MgCl_2 \rightarrow Mg + Cl_2$$

4.
$$KNO_3 \rightarrow KNO_2 + O_2$$

5.
$$BN + F_2 \rightarrow BF_3 + N_2$$

6.
$$CuI_2 + Fe \rightarrow FeI_2 + Cu$$

8.
$$NH_3 + O_2 \rightarrow N_2 + H_2O$$

9.
$$V_2O_5 + Ca \rightarrow CaO + V$$

10.
$$C_9H_6O_4 + O_2 \rightarrow CO_2 + H_2O$$

12.
$$C_3H_7OH + O_2 \rightarrow CO_2 + H_2O$$

13.
$$Zn + CuSO_4 \rightarrow Cu + ZnSO_4$$

14.
$$C_6H_{12}O_6 + O_2 \rightarrow CO_2 + H_2O$$

15.
$$C_2H_5OH + O_2 \rightarrow CO_2 + H_2O$$

16. Al +
$$H_2SO_4 \rightarrow H_2 + Al_2(SO_4)_3$$

17.
$$FeCl_3 + Ca(OH)_2 \rightarrow Fe(OH)_3 + CaCl_2$$

18.
$$Pb(NO_3)_2 + K_2CrO_4 \rightarrow PbCrO_4 + KNO_3$$

19.
$$Cd(NO_3)_2 + (NH_4)_2S \rightarrow CdS + NH_4NO_3$$

20.
$$Ca(OH)_2 + NH_4Cl \rightarrow NH_3 + CaCl_2 + H_2O$$

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Section 4.3

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 \rightarrow water
- 2. iron(III) oxide + hydrogen \rightarrow 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 \rightarrow 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

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Extension

Section 4.3

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.
4.	Word equation:
	Word equation: Balanced equation: Hydrogen gas reacts with nitrogen trifluoride gas to form nitrogen gas and hydrogen
	Word 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.
8.	Word equation:
	Word equation:Balanced equation: