

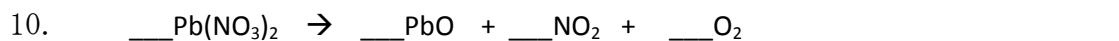
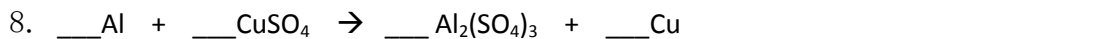
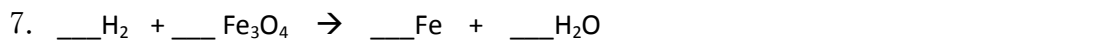
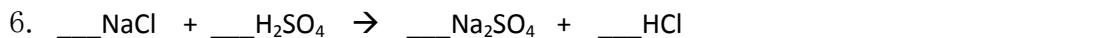
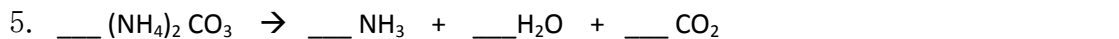
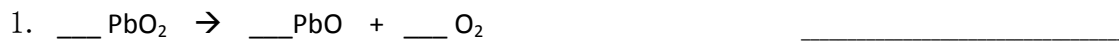
Study Guide

Chemical Equations and Reactions

- Recognize evidence of chemical change.
- Identify the reactants and products in a chemical reaction.
- Represent chemical reactions with equations.
- Know what is represented by the symbols: s, l, g, and aq.
- Categorize chemical reactions by type (synthesis/combination, decomposition, combustion, single replacement, and double replacement).
- Predict the products of a chemical reaction given the reactants.
- Apply the rules for balancing a chemical equation.
- Write complete ionic equations for reactions in aqueous solutions
- Identify spectator ions and write net ionic equations for reactions in aqueous Solutions

Chapter 8: Chemical Equations and Reactions

Balance each of the following equations. Then write the type of reaction (combination, combustion, decomposition, single replacement, double replacement).



Write balanced chemical reactions for each of the following reactions. Then state the type of reaction.

11. Bubbling hydrogen sulfide gas reacts with manganese (II) chloride resulting in the formation of the precipitate manganese (II) sulfide and hydrochloric acid

12. Solid magnesium reacts with nitrogen gas to produce solid magnesium nitride

13. Oxygen difluoride gas yields oxygen gas and fluorine gas
14. Solid zinc metal reacts with sulfuric acid to yield aqueous zinc sulfate and hydrogen gas.
15. The complete combustion of methane gas(CH_4).

Write the skeleton equation for each of the following reactions. Then balance each equation. State the type of reaction.

16. Boron + fluorine \rightarrow
17. Barium + oxygen \rightarrow
18. Liquid Acetone ($\text{C}_3\text{H}_6\text{O}$) + oxygen \rightarrow
19. Magnesium bromide \rightarrow

20. Nickel + Magnesium Chloride →

21. Magnesium + Silver Nitrate →

22. Calcium Nitrate + Aluminum Hydroxide →

23. Sodium Phosphate + Manganese (II) Chloride →

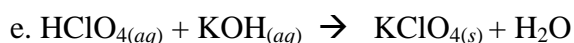
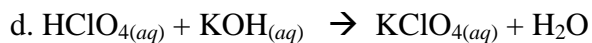
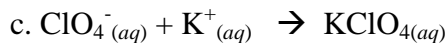
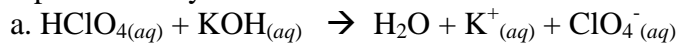
Write the complete ionic and the net ionic equations for each of the following. Then name the spectator ions.

24. $\text{H}_2\text{S}(\text{aq}) + \text{FeBr}_3(\text{aq}) \rightarrow \text{HBr}(\text{aq}) + \text{Fe}_2\text{S}_3(\text{s})$

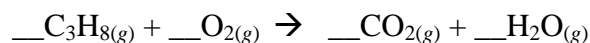
25. $\text{H}_2\text{SO}_3(\text{aq}) + \text{NaOH}(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{Na}_2\text{SO}_3(\text{aq})$

26. $\text{HNO}_3(\text{aq}) + \text{KHCO}_3(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g}) + \text{KNO}_3(\text{aq})$

27. What is the net ionic equation for the aqueous reaction of perchloric acid and potassium hydroxide?



28. When propane undergoes complete combustion, the products are carbon dioxide and water.



What are the respective coefficients when the equation is balanced with the smallest whole numbers?

a. 1: 1: 1: 1

b. 1: 1: 3: 4

c. 1: 3: 3: 8

d. 1: 3: 3: 4

e. 1: 5: 3: 4

29. Aluminum reacts with oxygen to form aluminum oxide. Which of the reactions below is correct and properly balanced?

