

Chapter 11 Study Guide. Homework: do the front page first night, then back page later.

Matching

Match each item with the correct statement below.

- | | |
|----------------------|----------------------|
| a. product | d. balanced equation |
| b. reactant | e. skeleton equation |
| c. chemical equation | |

- _____ 1. a chemical equation that does not indicate relative amounts of reactants and products
 _____ 2. a new substance formed in a chemical reaction
 _____ 3. a starting substance in a chemical reaction
 _____ 4. a concise representation of a chemical reaction
 _____ 5. an equation in which each side has the same number of atoms of each element

Match each item with the correct statement below.

- | | |
|--------------------------------|---------------------------|
| a. activity series of metals | c. combustion reaction |
| b. single-replacement reaction | d. decomposition reaction |

- _____ 6. a reaction in which a single compound is broken down into simpler substances
 _____ 7. a reaction in which oxygen reacts with another substance, often producing heat or light
 _____ 8. a reaction in which the atoms of one element replace the atoms of a second element in a compound
 _____ 9. a list of metals in order of decreasing reactivity

Short Answer

10. Balance the everyday equation described in the following sentence. "A tricycle is made of a handle, a body, three wheels, and two axles. $H + B + W + A \rightarrow HBW_3A_2$
11. Complete and balance the following equation.
 $Cd(NO_3)_2 + NH_4Cl \rightarrow$
12. Balance the following equation.
 $NaClO_3 \rightarrow NaCl + O_2$
13. Balance the following equation.
 $Mg + H_3PO_4 \rightarrow Mg_3(PO_4)_2 + H_2$
14. Balance the following equation.
 $(NH_4)_2CO_3 + NaOH \rightarrow Na_2CO_3 + NH_3 + H_2O$
15. Balance the following equation.
 $C_3H_6 + O_2 \xrightarrow{\Delta} CO + H_2O$
16. Balance the following equation. Complete the equation first, if necessary.
 $Ba + H_2O \rightarrow Ba(OH)_2 + H_2$

17. Balance the following equation.
$$\text{Au}_2\text{O}_3 \rightarrow \text{Au} + \text{O}_2$$
18. Balance the following equation.
$$\text{Na}_3\text{PO}_4 + \text{ZnSO}_4 \rightarrow \text{Na}_2\text{SO}_4 + \text{Zn}_3(\text{PO}_4)_2$$
19. Complete and balance the following equation.
$$\text{Al} + \text{Cl}_2 \rightarrow$$
20. Complete and balance the following equation.
$$\text{CH}_4 + \text{O}_2 \xrightarrow{\Delta} \text{CO}_2 +$$
21. Complete and balance the following equation.
$$\text{Fe}_2(\text{SO}_4)_3 + \text{Ba}(\text{OH})_2 \rightarrow$$
22. Balance the following equation. Indicate whether combustion is complete or incomplete.
$$\text{C}_3\text{H}_8 + \text{O}_2 \rightarrow \text{CO} + \text{H}_2\text{O}$$
23. Balance the following equation. Indicate whether combustion is complete or incomplete.
$$2\text{C}_2\text{H}_5\text{OH} + \text{O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$$
24. Write a balanced net ionic equation for the following reaction.
$$\text{H}_3\text{PO}_4(aq) + \text{Ca}(\text{OH})_2(aq) \rightarrow \text{Ca}_3(\text{PO}_4)_2(aq) + \text{H}_2\text{O}(l)$$
25. Complete and balance the following equation:
$$\text{K}_3\text{PO}_4 + \text{BaCl}_2 \rightarrow$$

Essay

26. In general, how are word equations written to describe chemical reactions?
27. Describe how to write the skeleton equation for the following reaction:

iron + oxygen \rightarrow iron(III) oxide
28. Consider the description: copper(II) oxide reacts with sulfuric acid to produce copper(II) sulfate and water. List the steps required to write its balanced chemical equation. State how to determine which of the five general types of reaction this represents.
29. What determines whether one metal will replace another metal from a compound in a single-replacement reaction?
30. Predict the precipitate that forms when aqueous solutions of silver nitrate and potassium chloride react to form products in a double-replacement reaction. Include a discussion of how to write the complete chemical equation describing this reaction.