

Section 4: Chemical Reactions

Study Guide B**KEY CONCEPT**

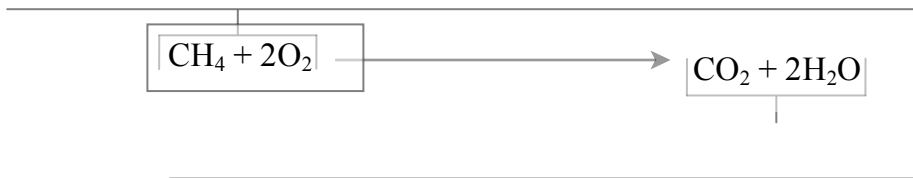
Life depends on chemical reactions.

VOCABULARY

chemical reaction	bond energy	exothermic
reactant	equilibrium	endothermic
product	activation energy	

MAIN IDEA: Bonds break and form during chemical reactions.

1. Label the reactants and products in the chemical reaction shown below. Write brief definitions for these terms next to their labels.



2. What causes chemical bonds to break during a reaction?

3. What is bond energy?

4. In a chemical equation, what symbol is used to show that a chemical reaction goes in both directions?

5. When does a chemical reaction reach equilibrium?

Study Guide B *continued*

MAIN IDEA: Chemical reactions release or absorb energy.

6. The _____ of the reactants and products determines whether energy will be released or absorbed during a chemical reaction.
7. Before a chemical reaction can start, _____ must be absorbed by the reactants. The amount that must be absorbed to start the reaction is called the _____.
8. In an exothermic reaction, the products have a _____ bond energy than the reactants. Overall, energy is _____.
9. In an endothermic reaction, the products have a _____ bond energy than the reactants. Overall, energy is _____.

Vocabulary Check

10. Write one sentence that uses the words *chemical reaction*, *reactant*, and *product*.

11. Write your own analogy to remember the meaning of *activation energy*.

12. The term *equilibrium* is based on two Latin roots that mean “equal” and “balance.” How do these meanings tell you the meaning of *equilibrium* in a chemical reaction?

13. The prefix *exo-* means “out,” and the prefix *endo-* means “in.” What do these prefixes tell you about *exothermic* and *endothermic* reactions?

