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Name _____ Class _____ Date _____

Skills Worksheet

Active Reading

Section: Nature of Matter

Read the passage below. Notice that the sentences are numbered. Then answer the questions that follow.

[1] Covalent bonds are chemical bonds that form when two or more atoms share electrons to form a **molecule.** [2] A molecule is a group of atoms held together by covalent bonds. [3] Like the rivets and welds that connect steel girders in a skyscraper, covalent bonds join the atoms in molecules of living things. [4] Because the number of protons is equal to the number of electrons in a molecule, the molecule has no net electrical charge. [5] Some examples of molecules include carbon dioxide (CO_2), water (H_2O) and oxygen (O_2).

SKILL: READING EFFECTIVELY

Read each question, and write your answer in the space provided.

1. What Key Term is defined in Sentence 1?

_____

2. How are covalent bonds and atoms related?

_____

_____

3. Why does *molecule* appear in boldface type in Sentence 1?

_____

_____

4. An analogy is a comparison. What analogy is made in Sentence 3?

_____

_____

In the space provided, write the letter of the term or phrase that best completes the statement.

_____ **5.** All of the following are examples of molecules EXCEPT
- **a.** carbon dioxide.
- **b.** hydrogen.
- **c.** water.
- **d.** oxygen gas.

Answer Key

Directed Reading

SECTION: NATURE OF MATTER

1. atom
2. element
3. hydrogen bond
4. stable
5. electrons
6. polar
7. unequal
8. A molecule is a group of two or more atoms that are held together by covalent bonds. An atom is the smallest unit of matter that cannot be broken down by chemical means.
9. A compound is a substance made by joining atoms of two or more elements. An element is a substance that is made up of only one kind of atom.

SECTION: WATER AND SOLUTIONS

1. water
2. evaporation
3. cohesion, adhesion
4. The ions in an ionic compound are attracted to the ends of water molecules that have a charge opposite to that of the ion. These attractions pull apart the ions and cause the ions to dissolve in the water.
5. a mixture in which one or more substances are evenly distributed in another substance
6. Acids are compounds that form hydrogen ions when dissolved in water and increase the number of hydrogen ions in a solution. Bases are compounds that usually form hydroxide ions when dissolved in water and decrease the number of hydrogen ions in a solution.

SECTION: CHEMISTRY OF CELLS

1. covalent
2. carbohydrates, lipids, proteins
3. monosaccharides
4. twelve
5. cellulose
6. energy
7. oil
8. glycerol
9. unsaturated
10. amino acids
11. the sequence of amino acids and how the amino acids interact with one another and with water
12. Some proteins help chemical reactions, and others have important structural uses.
13. d
14. c
15. e
16. b
17. a

SECTION: ENERGY AND CHEMICAL REACTIONS

1. Energy powers the chemical reactions in cells.
2. through chemical reactions
3. e
4. d
5. a
6. c
7. b
8. f
9. The reactants of an energy-releasing reaction contain more energy than the products. The reactants of an energy-absorbing reaction contain less energy than the products.
10. Reactants are the starting materials for a chemical reaction. Products are the ending materials of a chemical reaction.
11. Catalysts are substances that reduce the activation energy needed for chemical reactions.
12. Enzymes are substances that increase the speed of chemical reactions.
13. substrate
14. peroxide
15. active site

Active Reading

SECTION: NATURE OF MATTER

1. molecule
2. Covalent bonds form when two or more atoms share electrons.

3. It is a key vocabulary word that is defined in this sentence
4. Covalent bonds that join atoms in molecules are similar to rivets and welds that join girders in a skyscraper.
5. b

SECTION: WATER AND SOLUTIONS

1. acids and bases; they appear in boldface type
2. Acids are compounds that form hydrogen ions when dissolved in water. Bases are compounds that reduce the concentration of hydrogen ions in a solution.
3. The concentration of hydrogen ions in the solution is increased above that of pure water.
4. **a.** form hydrogen ions when dissolved in water; have pH values below 7
   b. form hydroxide ions when dissolved in water; have pH values above 7
   c. water-soluble compounds
5. b

SECTION: CHEMISTRY OF CELLS

1. carbon, hydrogen, and oxygen
2. two atoms of hydrogen to each atom of carbon and oxygen
3. fruits, vegetables, grains
4. monosaccharide; single (one) sugar
5. $C_6H_{12}O_6$; 24 atoms
6. disaccharides; two joined monosaccharides
7. glucose and fructose
8. polysaccharides; three or more monosaccharides joined in a chain
9. d

SECTION: ENERGY AND CHEMICAL REACTIONS

1. A substrate is a substance on which an enzyme acts. Active sites are pockets on an enzyme's surface into which the enzyme's substrate fits.
2. starch
3. its shape
4. **a.** The substrate is attaching to an enzyme's active site.
   b. The enzyme reduces the activation energy of the reaction, and the reaction occurs.
   c. Products form and are released, signaling that the reaction is complete.
5. a

Vocabulary Review

1. c
2. a
3. b
4. g
5. f
6. h
7. d
8. e
9. substrate
10. carbohydrate
11. monosaccharide
12. lipid
13. protein
14. nucleotides
15. nucleic acid
16. Acids are compounds that form hydrogen ions when dissolved in water. Bases are compounds that reduce the concentration of hydrogen ions when dissolved in water.
17. Cohesion is an attraction between substances of the same kind. Adhesion is an attraction between different substances.
18. An enzyme is a substance that speeds up chemical reactions. An active site is the location on an enzyme that binds to a substrate.
19. Energy is the ability to move or change matter. Activation energy is the energy needed to start a chemical reaction.
20. DNA is a nucleic acid that stores hereditary information used to make proteins. RNA is a nucleic acid that is involved in protein synthesis.
21. ATP is an organic molecule that acts as the main energy currency of cells. Carbohydrates are organic molecules that act as a source of energy in cells.

Science Skills

ANALYZING INFORMATION/ INTERPRETING GRAPHS

1. The polar ends of the soap molecules are attracted to the water and pull the soap into the water. The nonpolar ends of soap molecules are attracted to the oil. The oil then mixes with the