

Skills Worksheet

Directed Reading B

Section: Forming New Substances

- The pigment that makes leaves green is called **chlorophyll**.
- Why are leaves orange and yellow in the fall?

The chlorophyll in the leaves break down to reveal the other pigments which have red, yellow and orange colors.

CHEMICAL REACTIONS

- A process in which one or more substances change to form new substances is called a(n) **chemical reaction**.
- How do the properties of the new substances compare with the properties of the original substances after a chemical change takes place?

The chemical and physical properties of the new substance are DIFFERENT, than the original substance.

A chemical change makes a new molecule with new properties.

- A solid substance that is formed in a solution is called a(n) **precipitate**.

Match the correct example of a chemical reaction with the correct clue. Write the letter in the space provided.

exothermic - energy change

6. Thermal energy is given off.

a. color change

solid formation

7. Precipitate forms.

b. energy change

gas formation

8. Nitrogen dioxide forms.

c. solid formation

color change

9. Bleach spots form.

d. gas formation

10. When a gas is given off as a liquid boils, it is an example of

a(n) **physical** change, not a(n) **chemical** reaction.

Directed Reading B *continued*

11. What is the most important sign that a chemical reaction is occurring?

The most important sign is the formation of a new substance that has new properties. This for sure indicates that a chemical reaction is occurring.

BONDS: HOLDING MOLECULES TOGETHER

12. What is a chemical bond?

A chemical bond is a force that holds two atoms together in a molecule.

ex. covalent bond, ionic bond, metallic bond.

13. How do new substances form during a chemical reaction?

First, atoms from the starting molecules (reactants) must break apart their bonds. Then these atoms must recombine to form new combinations of chemical bonds. Then a new molecule substance forms and is called the (product).

14. What causes chemical bonds to break?

When molecules collide with enough energy to break apart the old covalent bonds.

15. How many atoms make up a diatomic molecule?

2

16. What substance forms from the reaction of hydrogen and chlorine gas?

A new bond forms between a hydrogen and a chlorine forming H-Cl, this is called hydrochloric acid.

REACTIONS AND ENERGY

17. In an exothermic reaction, heat is released (exo = exit). In an endothermic reaction, heat is absorbed (endo = within).

Directed Reading B *continued*

18. What types of energy are released in exothermic reactions?

heat energy.

19. What does the law of conservation of energy state?

The law of conservation of energy stated that energy cannot be created or destroyed, only changed from one form to another.

ex. mechanical energy changes into heat when you rub your hands together.