Name _____

Pre-Test : Chemical Reactions

Directions: Circle the letter to indicate whether the following statements are either true ("T") or false ("F").

1. A physical reaction is the process of one or more substances converting to form new substances with different properties. T F

2. A chemical equation uses chemical symbols to represent a chemical reaction. T F

3. The Law of the Conservation of Mass states that mass cannot be lost or gained in a chemical reaction. T F

4. A coefficient is the number written after chemical compounds. T F

5. When iron and oxygen combine to form rust it is called a synthesis reaction. T F

6. A decomposition reaction is the opposite of a synthesis reaction. T F

7. It is impossible for an element to replace atoms of another element in a compound. T F

8. It is possible for atoms in two compounds to replace each other. T F

9. Exothermic reactions release energy. T F

10. Concentration can influence reaction rate. T F

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Video Quiz

Directions: Fill in the blank with the correct word from the list at the bottom of the page. Not all words from the list will be used.

1. A chemical _____ is the process of one or more substances converting to form new substances.

2. The substances that enter a chemical reaction are called _____ .

3. _____ are the substances produced by a chemical reaction.

4. In a chemical reaction _____ cannot be gained or lost.

5. In a chemical equation the number of atoms of reactants and products must _____.

6. Iron combining with oxygen to form a more complex substances is an example of a _____ reaction.

7. In a decomposition reaction a complex substance is broken down into a _____ substances.

8. In a single-replacement reaction atoms of one element _____ atoms of another elements in a compound.

9. An _____ reaction releases energy.

10. The reaction _____ is the speed with which reactant turn into products.

balance
coefficient
decomposition
exothermic
mass
products
rate
reactants
reaction
replace
simpler
synthesis
endothermic

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Discussion Questions

Directions: Answer the following questions in the spaces provided (use the back of the sheet if necessary) or as a group.

1. Describe what occurs in chemical reactions, and define the terms *reactants* and *products*.

2. Using the baking soda and vinegar chemical reaction from the video, describe the reaction in words.

3. Describe why chemical equations need to be balanced, according to the Law of the Conservation of Mass.

4. Describe and provide examples of a synthesis reaction, decomposition reaction, single-replacement reaction, and double-replacement reaction.

5. Describe and provide examples of exothermic and endothermic reactions.

6. Discuss the factors that influence the rate of chemical reactions including concentration, surface area, and temperature.

7. Discuss how some of the chemical reactions conveyed in the video influence our daily lives.

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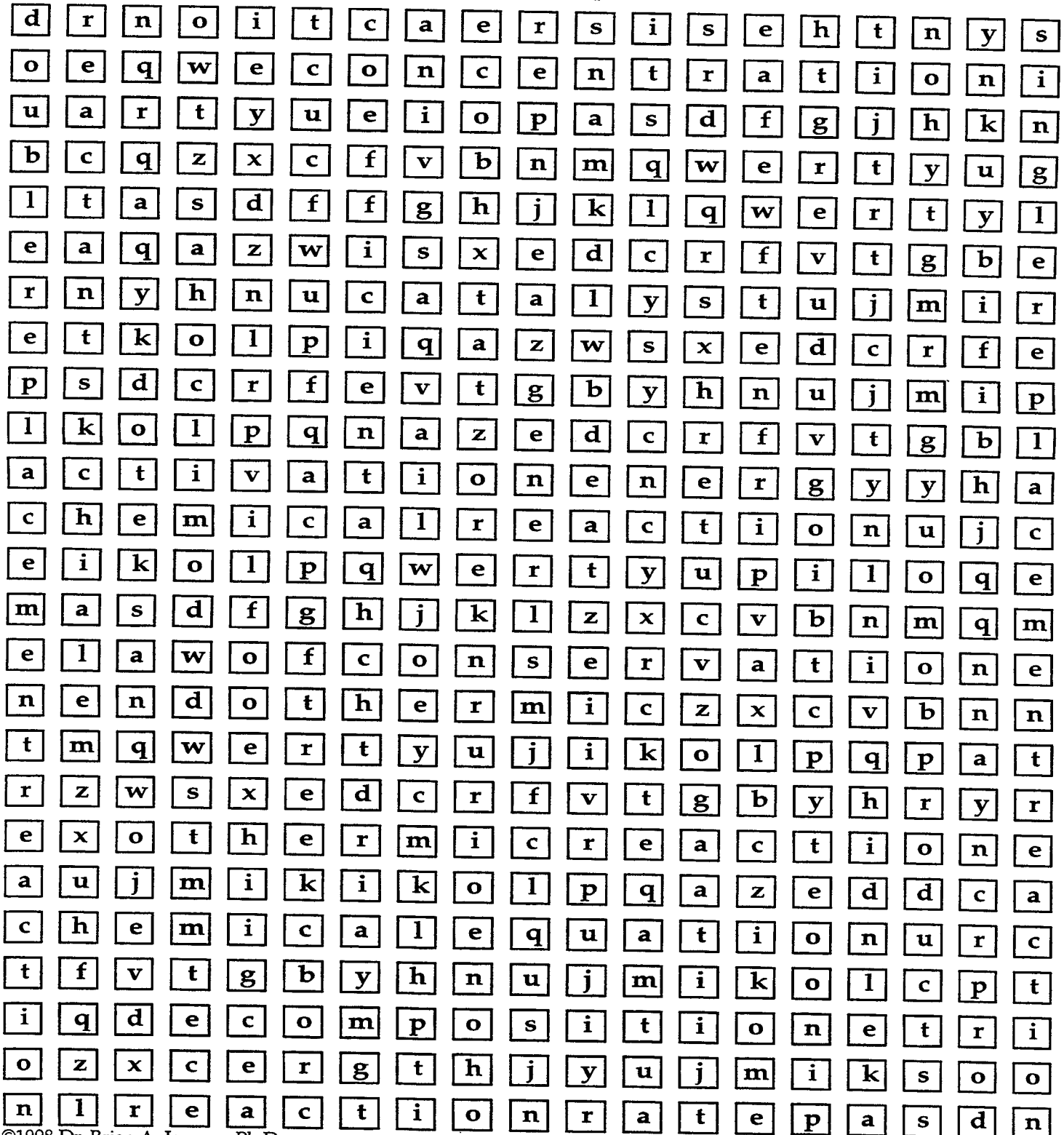
Word Search

Directions: Find and circle the following vocabulary words in the puzzle. After completing the puzzle, write the definition of each word on the back of the page.

catalyst	chemical equation	chemical reaction	coefficient
concentration	decomposition	double-replacement reaction	endothermic
reactants	reaction rate	exothermic reaction	products
	synthesis reaction	single-replacement reaction	



Name _____

Internet Lesson: Types of Reactions

Directions: Locate this web site at the following address:
http://www.sci.brooklyn.cuny.edu/~marciano/labs.htm
Read through the text and answer the following questions.

1. What is a synthesis reaction?

2. Provide an example of a synthesis reaction.

3. What is a decomposition reaction?

4. Provide an example of a decomposition reaction.

5. What is a single replacement reaction?

6. Provide an example of a single replacement reaction.

Name _____

Balancing Chemical Equations

Directions: In this exercise you will balance chemical equations of each element by following three simple steps:

Step 1 - Count the number of atoms on both the reactants and products sides of the equation.
Step 2 - Using coefficients, balance the number of atoms
Step 3 - Check your work by counting the number of atoms on each side of the equation.

1. Unbalanced equation: $H_2 + O_2 \rightarrow 2H_2O$

   Balanced equation:

2. Unbalanced equation: $Mg + O_2 \rightarrow MgO$

   Balanced equation

3. Unbalanced equation: $Zn + HCl \rightarrow ZnCl_2 + H_2$

   Balanced equation:

4. Unbalanced equation: $P + O_2 \rightarrow P_4O_{10}$

   Balanced equation:

5. Unbalanced equation: $Fe + Cl_2 \rightarrow FeCl_3$

   Balanced equation:

7a

Name _____

Experiment!
Types of Chemical Reactions

Objective

In this experiment, you will observe three different types of chemical reactions, identify reactants and products, and classify the types of reactions. Use the Data Table provided to record the results.

Materials

Protective eyeglasses or goggles
Baking soda
Vinegar
Steel wool
Test tube
Copper sulfate solution
Beaker
Iron nail

Procedure

Part A

1. Put on protective eyeglasses or goggles.
2. Mix baking soda and vinegar. Record the reactants in the data table.
3. Place about one teaspoon of baking soda in a beaker.
4. Add a few drops of vinegar.
5. Record your observations and products in the data table.
6. Classify the reaction as a synthesis, decomposition, single-replacement reaction or double-replacement reaction.

Part B

1. Put on protective eyeglasses or goggles
2. Place a small piece of steel wool in a test tube or other container.
3. Sprinkle enough water on the steel wool to moisten it.
4. Wait a few days and record your observations before recording your data in the data table.

Part C - Teacher Demonstration

1. In this demonstration, your teacher (wearing protective eyeglasses or goggles) will place a blue-colored copper sulfate solution in a beaker.
2. Your teacher will then place an iron nail in the copper sulfate solution.
3. Record the reactants in the data table.
4. After ten minutes, your teacher will remove the nail from the solution. Record your observations and complete the rest of the data table.

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Experiment!
Types of Chemical Reactions

Data Table

	Reactants	Products	Reaction Description	Type of Reaction
Part A Reaction				
Part B Reaction				
Part C Reaction				

Conclusion

For each of the reactions observed, write one or two sentences about what occurred chemically between the reactants to produce the products.

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8a

Name _____

Post - Test : Chemical Reactions

Directions: Answer the following questions in the spaces provided. Use the back of the sheet if necessary.

1. A chemical _____ is the process of one or more substances converting to form new substances with different properties.

2. _____ are substances that enter a chemical reaction.

3. Substances produced by a chemical reaction are called _____.

4. In a chemical equation the number of atoms in the products and reactants should _____

5. A _____ reaction occurs when two or more simples substances combine to form a more complex substance.

6. Energy is released in an _____ reaction.

7. The speed with which reactants turn into products is the reaction _____.

8. _____ is the amount of substance in a given unit of volume.

9. A _____ is a substance that increases the reaction rate but is not changed by the reaction.

10. Chemical reactions involve the rearrangement of atoms, not the production or destruction of _____.

Circle "T" if the statement is true, or "F" if it is false.

11. New substances are not created in chemical reactions. T F

12. Chemical reactions always occur when products combine. T F

13. Chemical equations often use chemical symbols to represent chemical reactions. T F

14. Rusting is an example of a synthesis reaction. T F

15. In an endothermic reaction, energy is released. T F

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8b

Name _____

Post - Test : Chemical Reactions

Circle the correct answer.

16. In a chemical equation an _____ signifies that the reactants yield the following products.
    a. plus sign
    b. minus sign
    c. arrow
    d. illustration

17. The Law of _____ states that mass cannot be lost or gained in a chemical reaction.
    a. Entropy
    b. Conservation of Mass
    c. Relativity
    d. Balance of Nature

18. A _____ is a number written in front of chemical elements or compounds.
    a. letter
    b. integer
    c. decimal
    d.coefficient

19. Water being broken down into oxygen and hydrogen gas is an example of a _____ reaction.
    a. decomposition
    b. synthesis
    c. single-replacement
    d. double-replacement

20. The reaction $H_2O + C \rightarrow H_2 + CO$ represents a _____ reaction.
    a. decomposition
    b. synthesis
    c. single-replacement
    d. double-replacement

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