

**Changes in Matter Unit Test
Study Guide**

Name _____

Test Date is: _____

Topics on this Test:

Make sure you know the vocabulary terms and definitions!

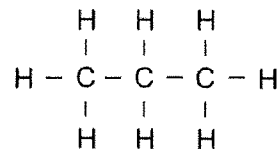
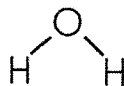
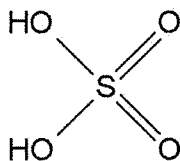
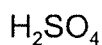
	Big Idea	Vocabulary
PS1-1	Describe the atomic composition of simple molecules and extended structures.	atom, molecule, matter, extended structure, pure substance
PS1-2	Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	chemical reaction, reactant, product, pure substance, physical property, chemical property, volume, mass, density, melting point, boiling point, solubility, flammability, odor
PS1-3	Describe that synthetic materials come from natural resources and impact society.	synthetic material
PS1-5	Describe how the total number of atoms does not change in a chemical reaction and thus mass is conserved.	conservation, Law of Conservation of Matter
PS1-6	Understand how a device can release or absorb thermal energy by chemical processes.	thermal energy, endothermic, exothermic

Be able to answer all of the questions in each Study Section below.

Study Section PS1-1: Atoms and Molecules

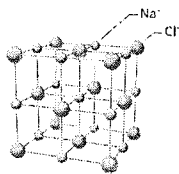
1. What is matter made of?

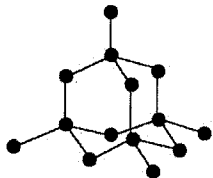
2. Match each molecule to its molecular formula below:

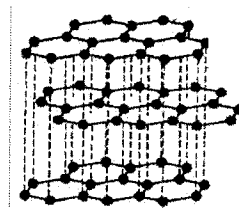


3. Identify each of the extended structures below:

Choices: graphite, diamond, table salt







4. What is a pure substance? Give 2 examples.

Study Section PS1-2: Properties and Changes in Matter

1. Explain why a bubble will float to the top of a glass of water, but a rock will drop to the bottom.

2. What makes one substance's properties different from another? (for example, why is water a liquid and carbon dioxide is a gas?)

3. Give 3 examples of physical properties and 3 examples of chemical properties.

4. When sulfuric acid is poured on sugar, a chemical reaction occurs. List physical and chemical properties of each substance before the reaction occurred and properties of the substance after.

a. Properties of the Reactants:

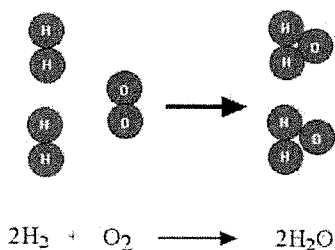
i. sugar- _____

ii. acid- _____

b. Properties of the Product:

5. What happens to the atoms and molecules when a chemical reaction occurs?

6. Explain what happens to the reactants in this chemical equation.



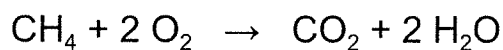
7. Look at the properties before and after. Has a chemical change occurred?
yes / no

Properties Before	Properties After
grey-black	black
powdered solid	gas and ash
	bright light and loud sound produced

8. Look at the properties before and after. Has a chemical change occurred?
yes / no

Properties Before	Properties After
brown, shiny metal	brown, shiny metal
malleable and ductile	malleable and ductile
straight wire	curved into coils

8. In the equation below, label the reactants and the products.



Study Section PS1-3: Synthetic Materials

1. How is a synthetic material different from a natural material?

2. Explain how a synthetic material is formed.

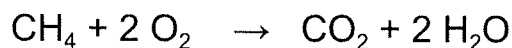
Study Section PS 1-5: Law of Conservation of Matter

1. What does the Law of Conservation of Matter say about atoms?

2. What does the Law of Conservation of Matter say about mass?

3. In a chemical reaction, atoms are not created or destroyed, they are just

4. Look at the equation below.

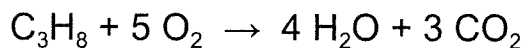


How many different types of atoms (elements) are in this equation? _____

How many total atoms are in this equation? _____

How many atoms of each element? _____

5. Tell the number of each type of atom in the equation below.



LEFT: C ___ H ___ O ___ → RIGHT: C ___ H ___ O ___

6. Which of the molecules below could be a product for the reactants: $2 \text{Hg} + \text{O}_2$

How do you know? _____

- a. $3 \text{Hg}_2\text{O}_6$
- b. H_2SO_4
- c. 2HgO
- d. HgCl_3

8. Which of the pairs of compounds below could be the reactants for the product:

2SO_3 How do you know? _____

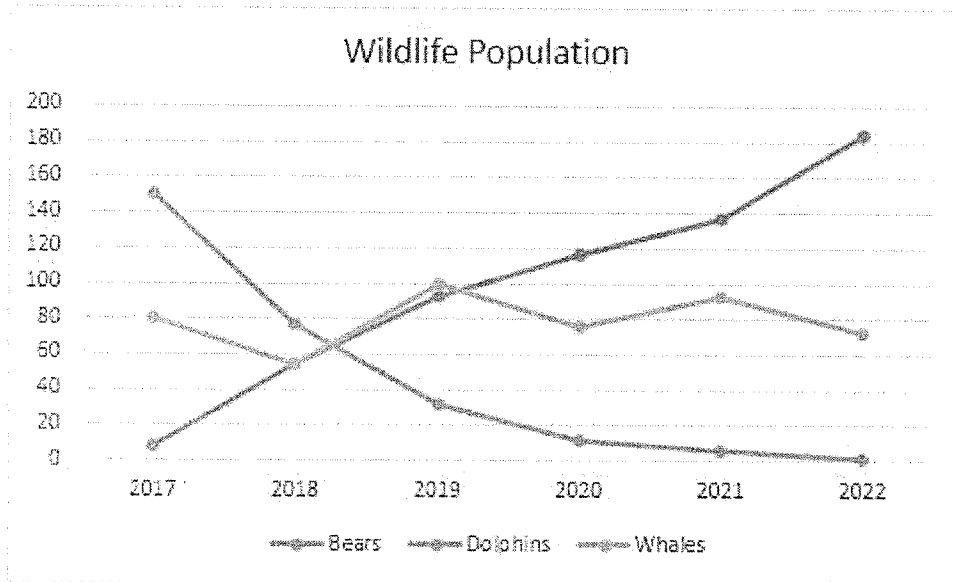
- a. $\text{CO}_2 + \text{H}_2\text{O}$
- b. $2 \text{SO}_2 + \text{O}_2$
- c. $\text{H}_2\text{O} + \text{SO}_4$
- d. $\text{NaCl} + \text{O}_2$

Study Section PS 1-6 Endothermic and Exothermic Reactions

- 1. An endothermic reaction _____ heat to/from the environment.
 - a. It feels _____ to the touch.
 - b. The temperature _____.
- 2. An exothermic reaction _____ heat to/from the environment.
 - a. It feels _____ to the touch.
 - b. The temperature _____.
- 3. Review the Handwarmer Experiment and analyze the graphs.

Graph Interpretation

Analyze the following graph, and answer the questions about it.



1. Which species has the greatest population overall? _____
2. Which species
 - a. Increase throughout the time period? _____
 - b. Decreased throughout the time period? _____
 - c. Both decreased and increased throughout the time period?

3. In 2019, which species had the greatest population? _____
4. What would the trendline look like if a species' population did not change over several years? _____