

**Matter Quiz Review and Study Guide**

Name \_\_\_\_\_

Quiz is: \_\_\_\_\_

These are the topics that will be on this quiz:

- I can describe physical and chemical properties of matter.
- I can identify evidence that a chemical reaction has occurred.
- I can compare and contrast the properties of a substance before and after a chemical reaction.
- I can identify the reactants and products in a chemical reaction and equation.
- I can use the Law of Conservation of Matter and Mass to determine whether a chemical equation is possible.

Vocabulary to Know:

**physical property**

**chemical reaction/change**

**products**

**chemical property**

**reactants**

**Evidence of a chemical change includes:**

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

**Categorize each example as a physical change or a chemical change:**

crumpling a piece of paper, fireworks exploding, Statue of Liberty turning green, getting a haircut, a banana turning brown, painting a wall, baking a cake, boiling water

<b>Physical Change</b>	<b>Chemical Change</b>

**Categorize each of the properties as either a physical or a chemical property:**

flammability, state of matter, formation of a new gas, change in heat, mass, density, pH, boiling point

Physical Property	Chemical Property

**Describe the physical and chemical properties of an egg before and after placing it in vinegar overnight.**

Properties Before	Properties After

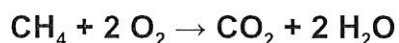
**Look at the properties before and after. Has a chemical change occurred?  
yes / no**

Properties Before	Properties After
grey-brown	grey-brown
sharp, rough edges and texture	rounded edges, soft texture
Mass= 55.6 grams	Mass = 49.2 grams

**yes / no**

Properties Before	Properties After
clear liquid and clear liquid	cloudy liquid and green light
Mass = 12.6 grams	Mass = 12.6 grams
Temperature = 21°C	Temperature = 21°C

Name the reactants and products in the chemical equation:



Reactants: \_\_\_\_\_

Products: \_\_\_\_\_

How many atoms?

- In a chemical formula, the subscript number to the right of the Element symbol tells how many of that type of atom.
  - Ex:  $\text{H}_2$  means two hydrogen atoms.
- The number in front of a molecule tells how many total molecules there are.
  - Ex.  $2 \text{H}_2\text{O}$  means two water molecules.
- The total number of atoms in the compound:  $2 \text{CO}_2$ 
  - 2 carbon atoms (2 molecules x 1 carbon atom per molecule)
  - 4 oxygen atoms (2 molecules x 2 oxygen atoms per molecule)

How many of each kind of atom in  $4 \text{H}_2\text{O}$ ?

H \_\_\_\_\_ O \_\_\_\_\_

How many of each kind of atom in  $2 \text{H}_2\text{SO}_4$ ?

H \_\_\_\_\_ S \_\_\_\_\_ O \_\_\_\_\_

How many of each kind of atom in  $3 \text{H}_2\text{O} + \text{CH}_4$ ?

H \_\_\_\_\_ O \_\_\_\_\_ C \_\_\_\_\_

What is the Law of Conservation of Matter?

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What is the Law of Conservation of Mass?

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In the equation:  $\text{CH}_4 + 2 \text{O}_2 \rightarrow \text{CO}_2 + 2 \text{H}_2\text{O}$

How many C atoms are on the left side of the arrow? \_\_\_\_\_

How many C atoms are on the right side of the arrow? \_\_\_\_\_

How many H atoms are on the left side of the arrow? \_\_\_\_\_

How many H atoms are on the right side of the arrow? \_\_\_\_\_

How many O atoms are on the right side of the arrow? \_\_\_\_\_

How many O atoms are on the right side of the arrow? \_\_\_\_\_

Is this equation possible? Explain.

$2 \text{SO}_2 + \text{O}_2 \rightarrow 2 \text{SO}_3$  \_\_\_\_\_

Is this equation possible? Explain.

$\text{C}_3\text{H}_8 + 3 \text{O}_2 \rightarrow \text{H}_2\text{O} + 3 \text{CO}_2$  \_\_\_\_\_

Which of the following would be a possible *product* of :  $2 \text{Cu} + \text{O}_2 \rightarrow ??$

(hint: the amount and type of atoms must match up)

- a.  $3 \text{Cu}_2 + \text{O}_6$       b.  $\text{NaCl}$       c.  $2 \text{CuO}$

Which of the following would be possible *reactants* for the product:  $2 \text{NH}_3$

(Hint: the amount and type of atoms must match up)

- a.  $3 \text{N}_2 + 3 \text{H}_2$       b.  $3 \text{H}_2 + \text{N}_2$       c.  $\text{CO}_2 + \text{NH}_3$

Is the formation of a gas (bubbles) always a sign of a chemical reaction? Explain.