Name: _____ **Independent Practice: Mixtures and Compounds**

Elements are the building blocks of all matter. An element is made of just one type of atom and cannot be separated into simpler substances.

Elements combine in different ways to form every substance on Earth. You, me, everything is made of combinations of elements. Elements can combine to form mixtures or compounds. A mixture is a type of matter that forms when two or more substances combine physically, but do not join together chemically. Because they do not combine chemically, the parts of a mixture each keep their own physical properties. No new substance is formed.

You may have eaten a mixture for breakfast, Cereal and milk is a mix of many different substances. These substances are not combined, chemically, though. You could separate the cereal from the milk physically.

A mixture can contain both elements and compounds. For example, air is a mixture of many gases. Oxygen and Nitrogen are elements in air. Carbon dioxide is a compound in air. These gases mix together forming a mixture.

A compound is a type of matter that forms when two or more elements combine chemically. Unlike a mixture, the substances that join together to form a compound do not keep their own physical properties. A new substance with different properties is formed. For example, table salt is a compound that forms when the elements sodium (Na) and chlorine (Cl) combine chemically. Sodium is a metal that explodes when combined with water. Chlorine is a poisonous gas. However, when these elements combine to form sodium chloride (NaCl), they form the edible, white crystal you know as table salt.

Another example: water is a compound of two elements, Hydrogen and Oxygen. Even though Hydrogen and Oxygen are gases, they combine to form the compound water (H_20), which is a liquid.

Directions: Highlight in the text where you found the answer to each question and write your answers to the questions below in your composition notebook.

1. What is a compound?

2. Why do compounds form?

3. Which subatomic particle most influences an element's reactivity?

4. What is a mixture?

5. How are compounds and mixtures similar?

6. How are compounds and mixtures different?

7. Give an example of each: an element, a compound and a mixture.

8. How would you represent a chemical compound?

9. What would a chemical equation represent?
   a. Element b. compound c. mixture d. atom

10. What statement is true about elements and compounds?
    a) both can be combined differently to produce different substances
    b) both can produces the same chemical with different combinations
    c) both can be combined in different ways to produce different atoms
    d) both can form new compounds and new elements through different combinations

11. How many **different elements** combine to produce a molecule of water (H_2O)?
    a) one
    b) two

Mixtures vs. Compounds Anticipation Guide

BEFORE READING: Place a √ (check mark) next to the statements you agree with or think are true.

DURING or AFTER Reading: Add new check marks or cross through the ones you've changed your mind about.
You MUST find evidence either proving or disproving each statement and underline and number where the correct answers are found in the passage.

_____ **Elements are made of just one type of atom and cannot be separated into simpler substances.**

_____ **A mixture contains two or more different elements chemically joined together.**

_____ **A compound contains two or more different substances that are only physically joined together, not chemically.**

_____ **A mixture can contain both elements and compounds.**

_____ **Air is a mixture of many gases, such as oxygen, nitrogen and carbon dioxide. Water is a mixture of two gases, hydrogen and oxygen.**

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Station 3: Mixtures vs. Compounds

For questions 1-3, match the following vocabulary terms with the correct definition.

_____1. A substance that cannot be broken down into simpler substances by ordinary chemical means
_____2. When a _____ forms, elements chemically combine and something entirely new is created.
_____3. When a _____ forms, elements physically combine and nothing new is created.

A. Mixture
B. Compound
C. Element

For numbers 4-9, tell whether each is an element, compound or mixture.

4. Gold: _____
5. Table Salt (NaCl): _____
6. Air: _____
7. potassium hydrogen tartrate - $KHC_4H_4O_6$: _____
8. Xenon: _____
9. Jelly beans: _____

10. Which substance is composed of only one kind of atom?
a. air
b. dirt
c. copper
d. salt

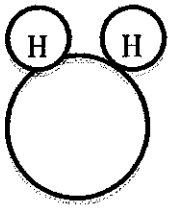
11. Which of the following represents a *mixture*?

a. helium in a balloon
b. a rock
c. a copper penny
d. neon in a sign

12. Which of the following represents a *compound*?

A. a slice of pepperoni pizza
B. a bottle of sand and water
C. a bottle of table salt
D. a glass of Kool-aid

13. A molecule made up of only Hydrogen and Oxygen atoms is shown.



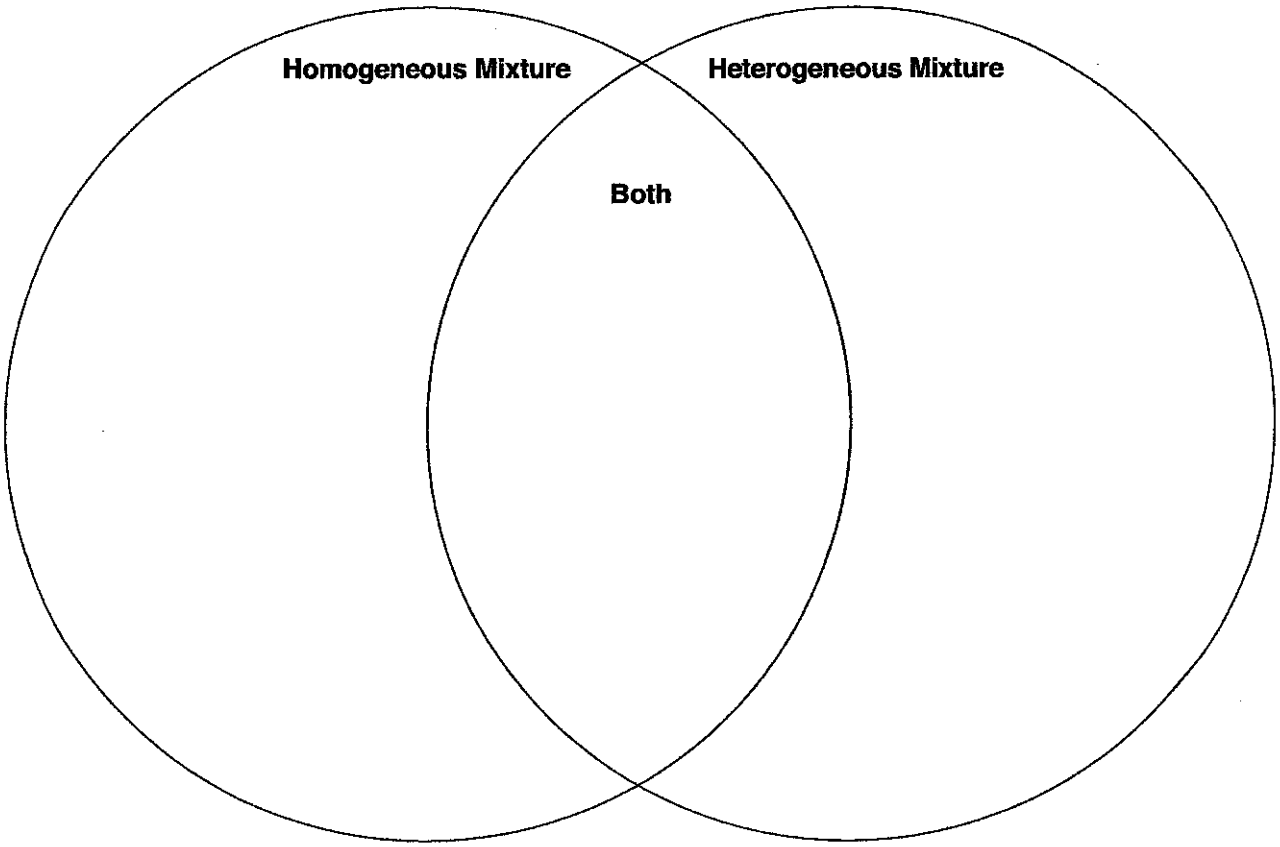
Which of the following shows the correct formula for this molecule?
a. HO
b. 2HO
c. H_2O
d. H_2O_2

14. In the chemical formula, $C_9H_8O_4$, how many different types of elements are present?
a. 1
b. 2
c. 3
4. 4

15. Which of the following is correctly arranged in going from simplest to most complex?
a. compound → element → atom
b. atom → element → compound
c. atom → compound → element
d. element → atom → compound

Date: _____

LEQ: Solubility (Mixtures) – Physical Property



- **Parts of a Homogenous mixture**
  1. **Solute**
     What is_____ dissolved...usually it is a _____.

  2. **Solvent**
     What is_____the dissolving...usually it is a_____.

     Example: _____is the universal solvent: almost anything will_____.
     - Example: Kool aid:
       - Solute = _____
       - Solvent = _____

Definition: Key Concept	Animation: *What happens to solubility of the gas?*
Solubility	_____ _____ _____
Video Clip: Identify the solvent and the solute in the example in the video clip.	Draw your own picture to remember the word.