

Name _____ Date _____



ELEMENTS, COMPOUNDS, & MIXTURES QUIZ-

Answer Key

1. Use the word bank below to fill in blank spaces

Elements

Compounds

Chemical

Release

Absorb

Mixtures

Fixed

Variable

Physical

Retain

- a. A mixture consists of either two or more **elements** or **compounds** not chemically combined.
- b. Mixtures can be separated by **physical** or **chemical** means.
- c. Compounds have a **fixed** composition with elements combined in a specific ratio, while mixtures have a **variable** composition with their components varying in proportion.
- d. Compounds often **release or absorb** heat during formation or reaction due to strong chemical bonds, whereas mixtures typically show minimal heat changes as their components **retain** their individual properties.

2. Here are a few descriptions related to mixtures and compounds:

A: A pure element

B: A mixture of elements

C: A pure compound

D: A mixture of compounds

E: A mixture of elements and compounds

Which of the above descriptions best describes each of the following substances:

Copper: A	Sodium: A
Stainless steel : B	Bronze : B
Air : E	Salty water: D
Petroleum (crude oil) : D	Helium : A
Sodium chloride: C	Water : C
Glucose : C	Carbon : A

3. Classify each of the materials below. In the center column, state whether the material is a pure substance or a mixture. If the material is a pure substance, further classify it as either an element or compound in the right column. Write one entire word in each space.

substance	Pure substance or Mixture	Element or compound
Iron	PS	E
Sugar +pure water	M	
Limestone	PS	C

Orange juice	M	
Pacific ocean	M	
Air inside a balloon	M	
Aluminum	PS	E
Pure water	PS	C

4. Indicate whether each of the following statements is True or False

- Compounds can only exist as molecules: **_F_**_____
- Mixtures can include atoms and molecules: **_T_**_____
- Compounds can be broken down into new substances physically:
_F______
- Mixtures can be separated into their component substances by chemical reactions: **___F___**
- In compounds, the properties of new substances are different from those of constituent elements: **_____T_____**
- Mixtures can be represented by chemical formulae:
F_____

5. A solution is always a mixture but not every mixture is a solution

A solution contains more than one component, therefore it is always a mixture. A mixture does not necessarily have to be a liquid or uniform.

6. Explain why water is a compound and not a mixture

- Its composition is fixed**
- Hydrogen and Oxygen atoms are chemically combined**
- Hydrogen and Oxygen elements can only be obtained from water by chemical means e.g. electrolysis**

7. Explain why air is a mixture and not a compound

- Its components are not chemically combined and can be separated by physical means
- Its composition varies from place to place and from time to time
- Properties of air are the sum properties of its components
- Little heat is involved during its mixing/making

8. When oil and water are combined, they separate into two layers. Is this a mixture? If so, what type?

Since oil and water separate into two different layers, they do not mix (immiscible). Therefore, this is not a mixture at all.

9. With regards to composition, what is the difference between a compound and a solution?

In a compound, the elements are present in a fixed ratio. In a solution, the elements are not in any fixed ratio.

10. Complete the table below by giving the differences between mixtures and compounds

	Mixture	Compounds
Composition	Variable	Fixed
Separation	Can be separated by physical means	Can only be separated by chemical means
Chemical properties	Depends on the substances present	Known and fixed