Compound Mixture Element Worksheet

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Part 1: Building a Foundation

What is a compound?

Hint: Think about the definition of a substance made from two or more elements.

- ◯ A) A pure substance consisting of only one type of atom
- ◯ C) A substance made from two or more different elements that are chemically bonded
- ◯ D) A mixture with a uniform composition throughout
- ◯ C) A combination of two or more substances where each retains its chemical properties

Which of the following are characteristics of mixtures? (Select all that apply)

Hint: Consider how mixtures behave compared to pure substances.

- ☐ A) Components retain their individual properties
- ☐ C) Can be separated by physical means
- ☐ D) Chemically bonded elements
- ☐ C) Fixed ratios of elements

Describe the difference between a homogeneous mixture and a heterogeneous mixture.

Hint: Think about how the components are distributed in each type of mixture.

List two types of chemical bonds and provide a brief description of each.

Hint: Consider the ways atoms can interact with each other.

1. Ionic bond

2. Covalent bond

Part 2: comprehension and Application

Which separation technique would you use to separate sand from water?

Hint: Think about the physical properties of sand and water.

- ◯ A) Distillation
- ◯ C) Chromatography
- ◯ D) Evaporation
- ◯ C) Filtration

Which of the following statements are true about elements? (Select all that apply)

Hint: Consider the properties that define elements.

- ☐ A) Elements can be broken down into simpler substances by chemical means
- ☐ C) Each element has a unique atomic number
- ☐ D) Elements can be found in both compounds and mixtures
- ☐ C) Elements are listed in the periodic table

Describe a real-world scenario where chromatography might be used to separate components of a mixture.

Hint: Think about applications in laboratories or industries.

You have a mixture of salt and water. Which method would be most effective to obtain pure salt?

Hint: Consider the properties of salt and water.

- ◯ A) Filtration
- ◯ C) Chromatography
- ◯ D) Decantation
- ◯ C) Distillation

Part 3: Analysis, Evaluation, and Creation

In a chemical reaction, if a compound breaks down into two or more simpler substances, what type of reaction is this?

Hint: Think about the different types of chemical reactions.

- ◯ A) Synthesis
- ◯ C) Replacement
- ◯ D) Combustions
- ◯ C) Decomposition

Which of the following are indicators of a chemical reaction? (Select all that apply)

Hint: Consider the signs that suggest a chemical change has occurred.

- ☐ A) Change in color
- ☐ C) Change in state
- ☐ D) Emission of gas
- ☐ C) Formation of a precipitate

Analyze the relationship between ionic and covalent bonds in terms of electron transfer and sharing.

Hint: Think about how these bonds form and their characteristics.

Which of the following scenarios best illustrates the law of conservation of mass?

Hint: Consider what happens to matter during a chemical reaction.

- ◯ A) Burning wood results in ash and smoke
- ◯ C) Melting ice into water
- ◯ D) Dissolving sugar in tea
- ◯ C) Mixing vinegar and baking soda produces bubbles

Evaluate the following statements and select those that accurately describe the properties of metallic bonds. (Select all that apply)

Hint: Consider how metallic bonds differ from ionic and covalent bonds.

- ☐ A) Electrons are shared between two specific atoms
- ☐ C) Metallic bonds result in high electrical conductivity
- ☐ D) Metallic bonds are stronger than ionic bonds
- ☐ C) Electrons are free to move throughout the metal lattice

Propose a method to separate a mixture of oil, water, and sand, explaining the rationale behind each step.

Hint: Think about the properties of each component in the mixture.