Compound Mixture Element Worksheet Questions and Answers PDF

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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

> A compound is a substance made from two or more different elements that are chemically bonded.

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

> Mixtures have components that retain their individual properties and can be separated by physical means.

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

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

A homogeneous mixture has a uniform composition throughout, while a heterogeneous mixture has distinct, separate components.

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

A bond formed by the transfer of electrons from one atom to another.

2. Covalent bond

A bond formed by the sharing of electrons between two atoms.

Ionic bonds involve the transfer of electrons, while covalent bonds involve the sharing of electrons.

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 ✓**

> Filtration is the best method to separate sand from water.

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 ✓**

> Elements are listed in the periodic table, have unique atomic numbers, and can be found in compounds and mixtures.

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

Hint: Think about applications in laboratories or industries.

> **Chromatography can be used in laboratories to separate pigments in ink or in food industries to analyze flavors.**

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 ✓**

> Distillation is the most effective method to obtain pure salt from a saltwater mixture.

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 ✓**

> This is a decomposition reaction.

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 ✓**

> Indicators of a chemical reaction include change in color, formation of a precipitate, change in state, and emission of gas.

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.

> **Ionic bonds involve the transfer of electrons, while covalent bonds involve the sharing of electrons between atoms.**

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

> Burn burning wood results in ash and smoke, illustrating the law of conservation of mass.

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 ✓**

> Metallic bonds involve free-moving electrons, resulting in high electrical conductivity and strength.

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.

> **To separate oil, water, and sand, you can use filtration to remove sand, then decantation to separate oil from water.**