

## Lesson Plan for the Teacher:

### Elements, Compounds, and Chemical Bonds

#### Objective:

By the end of this lesson, students will:

- Identify and classify elements, compounds, and mixtures.
- Understand the different types of chemical bonds.
- Use correct scientific grammar to describe compounds using passive voice and prepositions.
- Improve their writing, speaking, and analytical skills in chemistry.

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#### Lesson Structure & Timing (Approx. 60 Minutes)

##### 1. Warm-Up (5 minutes)

Ask students: "What is the difference between an element, a compound, and a mixture?"

Write their answers on the board and guide them to a correct definition.

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##### 2. Elements, Compounds, and Mixtures (10 minutes)

Explain the definitions of elements, compounds, and mixtures with examples.

Draw simple diagrams on the board to show how elements form compounds.

Student Activity:

**Activity 1:** Categorizing substances as elements (E), compounds (C), or mixtures (M).

#### Answer Key:

1. E – Hydrogen (H)
2. C – Sugar (C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>)
3. M – Air
4. C – Sodium Chloride (NaCl)
5. E – Iron (Fe)
6. M – Milk
7. C – Carbon Dioxide (CO<sub>2</sub>)

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### 3. Types of Chemical Bonds (10 minutes)

Explain ionic, covalent, and metallic bonds with examples.

Show how ionic bonds transfer electrons, covalent bonds share electrons, and metallic bonds allow free-moving electrons.

Student Activity:

**Activity 2:** Fill in the blanks with the correct bond type.

**Answer Key:**

1. Covalent
2. Ionic
3. Metallic
4. Covalent
5. Ionic

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### 4. Grammar Focus: Describing Chemical Compounds (10 minutes)

Explain that in chemistry, we use passive voice and prepositions like composed of, made of, consists of, contains.

Provide sentence examples and ask students to practice saying them aloud.

Student Activity:

**Activity 3:** Rewrite the sentences using the correct structure.

**Answer Key:**

1. Water is composed of hydrogen and oxygen.
2. Table salt is made of sodium and chlorine.
3. This mixture contains nitrogen, oxygen, and carbon dioxide.
4. A diamond consists of carbon atoms.

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### 5. Properties of Elements, Compounds, and Mixtures (10 minutes)

Discuss how compounds have different properties than their elements.

Explain how mixtures can be separated by physical methods, while compounds require chemical reactions to break down.

Student Activity:

**Activity 4:** Choose the correct answer.

**Answer Key:**

1. b) Oxygen (O<sub>2</sub>)
2. a) Ionic
3. c) Iron filings mixed with sand
4. a) Covalent
5. b) Air

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6. Writing Practice: Describing a Chemical Compound (10 minutes)

Guide students to write a short scientific description of a compound.

Remind them to use passive voice and correct prepositions.

Student Activity:

**Activity 5:** Writing a compound description.

**Example Answer:**

"Carbon dioxide (CO<sub>2</sub>) is composed of carbon and oxygen. It has a covalent bond. It is used in photosynthesis and exists as a gas at room temperature."

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7. Correcting Mistakes (5 minutes)

Write incorrect sentences on the board and correct them together.

Explain why each sentence was wrong.

Student Activity:

**Activity 6:** Correct the mistakes.

**Answer Key :**

1. Incorrect: Oxygen is a compound that contains two atoms.

Correct: Oxygen is an element that contains two atoms.

2. Incorrect: Salt (NaCl) is formed by sharing electrons between sodium and chlorine.

Correct: Salt (NaCl) is formed by transferring electrons between sodium and chlorine.

3. Incorrect: Water (H<sub>2</sub>O) is a mixture of hydrogen and oxygen.

Correct: Water (H<sub>2</sub>O) is a compound of hydrogen and oxygen.

4. Incorrect: Compounds can be separated using filtration.

Correct: Mixtures can be separated using filtration.

5. Incorrect: Metallic bonds are found in salt compounds like NaCl.

Correct: Ionic bonds are found in salt compounds like NaCl.

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#### 8. Speaking Practice: Describing Chemical Substances (5 minutes)

Pair students up.

One student names a compound, and the other describes it using is made of, contains, has a bond type, is used for.

Example Dialogue:

Student A: "What do you know about ammonia?"

Student B: "Ammonia (NH<sub>3</sub>) contains nitrogen and hydrogen. It has a covalent bond. It is used in cleaning products and fertilizers."

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#### 9. Homework

Research a common compound (e.g., ammonia, methane, sulfuric acid).

Write five new words you learned and their meanings.

Describe the compound using at least three sentences.

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