Co-funded by the European Union

Erasmus+

This project has received funding from the European Union's Erasmus+ programme, under Grant Agreement No°000150994

Worksheet

This Worksheet is designed to guide educators on how the comic strips can be integrated into their classroom. Teachers can adjust based on student level and depth of discussion needed.

Topic N° 11 – Bonding Buddies: Chemical Bonds & Reactions!

Lesson Duration: 2 sessions (90 minutes total)]

Lesson Plan

1 Pedagogical objectives [15 minutes]

By the end of this activity, students will:

- Understand how atoms form bonds (ionic and covalent).
- Explore the Law of Conservation of Mass.
- Identify the role of acids, bases, and neutralization in everyday life.

2 Introduction: What is Future Technology? [10 minutes]

Atoms are like people—they love to connect! Through bonding, they form molecules and create everything around us—from water to salt to baking soda. Some atoms share, some give and take, and some create exciting reactions when they meet. Chemistry helps us understand the invisible interactions that shape our visible world.

3 Explore the Storyline [15 minutes]

Teacher's Role: Present the comic strip "Bonding Buddies: Chemical Bonds & Reactions!"
Student Task: Read the comic strip and analyze:

- What types of bonds and reactions are presented?
- What are the characters (atoms and molecules) doing to bond or react?
- How is chemistry shown in a fun and visual way?

Discussion:

- What is the difference between ionic and covalent bonding?
- Why must chemical equations be balanced?
- What happens during acid-base neutralization?

Co-funded by the European Union

Erasmus+

This project has received funding from the European Union's Erasmus+ programme, under Grant Agreement No°000150994

Activities

Activity 1: Observation and Reflection [10 minutes]

Objective: Identify wave-related concepts visually.

Instructions: Review the following images and identify whether each one shows ionic bonding, covalent bonding, a chemical reaction, or acid-base interaction.

Materials: (Include images like: NaCl formation, water molecule, vinegar + baking soda, pH scale, chemical equation diagram)

Discussion Questions:

- Which images show sharing vs transferring electrons?
- How can you tell a chemical reaction is happening?

Activity 2: Combine the Elements [10 minutes]

Objective: Understand wave behavior by linking terms and definitions.
Instructions: Match each concept to its correct definition.

Concept	Definition
Ionic Bond	A chemical bond where one atom donates an electron to another atom.
Covalent Bond	A bond where atoms share electrons to form a stable molecule.
Chemical Reaction	A process where substances are transformed into new products.
Conservation of Mass	The principle that matter cannot be created or destroyed in a chemical reaction.
Neutralization	A reaction between an acid and a base that forms water and salt.

Activity 3: Reflective questions (25 minutes)

Co-funded by the European Union

Erasmus+

This project has received funding from the European Union's Erasmus+ programme, under Grant Agreement No°000150994

Activity 3.1. Mini-challenge: Creation and Imagination [15 minutes]

Objective: Apply bonding concepts creatively.

Instructions: Create your own character team (atoms or molecules).

- Choose 2 atoms that would form a bond.
- Describe how they interact—do they share or donate electrons?
- Make a simple comic panel or sketch showing the bonding process.

Activity 3.2. Group or Pair Discussions (10 minutes)

Prompt:

- Why do atoms bond in the first place?
- Can we see chemical reactions in everyday life?
- How do acids and bases affect things like digestion, cleaning, or cooking?

Conclusion and Review (5 minutes)

Quick summary: Summarize the 3 most important points about the topic.

1. Atoms form ionic or covalent bonds depending on how they exchange or share electrons.
2. All chemical reactions follow the Law of Conservation of Mass—nothing is lost, only rearranged.
3. Acids and bases can neutralize each other, forming salt and water.

Final Quiz : Answer the following questions in one sentence.

1. What is the main difference between ionic and covalent bonds?
   Ionic bonds involve electron transfer; covalent bonds involve sharing electrons.
2. Give one example of a chemical reaction in daily life.
   Vinegar reacting with baking soda during cleaning or science experiments.
3. What is formed when an acid and base react?
   Water and a type of salt.

Remember: Chemistry is the story of how atoms connect, react, and create the world we live in—one bond at a time!