



## Ionic Bonding Teaching Ideas

**Learning Objective:** To understand how an ionic bond is formed.

**Success Criteria:**

- To recall knowledge from Unit 4.1 of the periodic table.
- To define keywords.
- To describe how an ionic bond is formed.
- To draw the formation of an ionic bond.

**Context:** This is the first lesson of the GCSE chemistry key stage 4 AQA 4.2 **Structure, Bonding and The Properties of Matter** topic.

**Resources**

[Lesson Pack](#)

Access to periodic tables.

### Starter

Display slide 3 as students enter the classroom. They are asked to write down anything they already know about sodium and chlorine on the Starter Ideas on [Sodium and Chlorine Activity Sheet](#). The instruction is intentionally vague and the teacher should restrict their input at this stage. There is an embedded two-minute timer. This starter activity allows students to reflect and apply their knowledge of the 4.1 topic and independently use the periodic table. This activity allows for you to gauge their current level of knowledge and correct any misconceptions.

### Main Activities

#### Big Question!

On slide 4, the context of the lesson is introduced with a question: 'How can a toxic gas and a reactive metal make the salt on my chips?'

#### Sodium and Chlorine Paired Research

Slides 5-6: Show students the instructions to complete the research activity. Students assemble in pairs, and choose who will research chlorine and who will research sodium. Distribute the [Sodium and Chlorine Information Cards](#) and [Sodium and Chlorine Research Venn Diagram Activity Sheet](#) for the students to use. There is a challenge question on the sheet asking students to link the two elements together. There are also prompts on the activity sheet to assist in extracting the key information from the information cards, needed for the next part of the lesson. Suggested answers are shown on slide 6.

#### Ionic Bonding

Slides 7-14: Slide 7 reminds students of the location of metals and non-metals and introduces the key point that ionic bonding occurs between a metal and a non-metal. Slides 8 and 9 introduce the location of sodium in group 1 and chlorine in group 7. Slide 10 shows a simplified diagram of the outer electron from sodium, moving across to complete the outer shell of chlorine. Slide 11 asks students to 'Pause for Thought' and consider what the charge on the sodium atom might now be, after losing an electron. The answer is explained on slide 12 and students are presented with the term 'ion', linking the name of bonding to the charged particles formed in this process. Slide 13 covers a similar point by asking what charge the chlorine atom now has. The answer is explained on slide 14 in a similar format.

## Keyword Definitions

Slide 15 shows students four keywords and their definitions: ionic bonding, ionic, cations and anions. The latter two keywords are more complex vocabulary but useful as a higher grade discriminator later in the SOLO taxonomy activity. Students are encouraged to write down these definitions.

## SOLO Taxonomy Activity

Slide 16 reminds students of the 'big question' posed at the beginning of the lesson. Students follow the prompts on the [Solo Taxonomy Activity Sheet](#) to write an extended answer to this question. There is also a space for students to reflect on their work, asking them to note where in their answer they have covered that particular key point. There is also a teacher assessment sheet where formative feedback can be given either during or after the lesson.

## Ionic Bonding Quick Assessment Sheet

Slide 17: Students follow the worksheet to demonstrate their knowledge of ionic bonding by answering exam style questions. There is also a teacher assessment sheet that could be completed after the lesson where formative feedback can be given.

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## Plenary

Slide 18: Ask students to solve the science behind the joke, 'Sodium goes on a date and says to chlorine - you complete me.' Suggested answers are shown on slide 19. Remind the students of today's success criteria on slide 20 of the PowerPoint.

## Suggested Home Learning

Students could research further into the properties and uses of sodium chloride (salt) in preparation for the next lesson on giant ionic structures. Alternatively, students could complete the [Ionic Bonding Quick Assessment Sheet](#) if not completed during class time.