

Ionic Bonding

Integrated Chemistry Concepts:

- Net Compound Neutrality
- Attraction and Repulsion
- One Type of Cation to One Type of Anion
- Cation-to-Anion Ratios
- Polyatomic Ions
- Lattice Structure

Use Collisions HE **PRE-INSTRUCTIONALLY** to engage your students and explore a topic.

Assign your students the first 5 levels of Ionic Bonding. During gameplay, ask your students to answer the following guided questions:

1. Try to make 2 ions repel one another. How did you get this result to happen?
2. Try to make 2 ions attract one another. How did you get this result to happen?
3. What combination of ions did you use to successfully match a target?
4. How many types of ions are in each compound you created?
5. Describe the difference between the compounds that you created in Level 5.
6. What is your goal in the Ionic Bonding game?

Use Collisions HE **POST-INSTRUCTIONALLY** to practice, review, and extend the learning.

After instruction, encourage your students to work through the remaining core game levels. To check for student understanding, here are some additional guided questions to incorporate into your lesson:

1. Explain the rules of the Ionic Bonding game, using some or all of the following keywords: cation, anion, ratios, neutrality, charge.
2. What is the overall charge of an ionic compound?
3. What is the difference between a compound that has a 2:3 ratio vs. a compound that has a 3:2 ratio?
4. What is the ratio of a compound that contains Ca^{2+} and O^{2-} ?
5. Was there a difference in your approach to making ionic compounds with the polyatomic ions versus the monatomic ones?
6. Did the game allow you to combine more than one type of cation and anion in a single formula unit?
7. After you successfully made a formula unit that was checked by the game, it showed you that what you created was just a small piece of a larger structure. Describe the structure that it showed.

You can also use the Ionic Bonding Sandbox to highlight a specific concept integrated into gameplay and encourage your students to earn the built-in Achievements.

Additional resources:

- Ionic Bonding Content Area Overview
- Ionic Bonding Formative Assessment
- Ionic Bonding Extension Activity