

Lewis Structures

Integrated Chemistry Concepts:

- Single Bonds, Double Bonds, and Triple Bonds
- Octet and Duet Rules
- Electron Domains
- Electronegativity
- Bond Polarity
- VSEPR Theory and Molecular Geometry
- Coordinate Covalent Bonds

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

Assign your students the first 8 levels of Lewis Structures. During gameplay, ask your students to answer the following guided questions:

1. How many valence electrons must be around each atom in a molecule? Are there any exceptions?
2. In Level 4, how do unbonded electrons on the central atom seem to affect the shape of the molecule?
3. In Level 6, what atom did you use as the central atom? How many valence electrons does this atom have?
4. In Level 8, what is different about the bonds created in this level?
5. What is your goal in the Lewis Structures game?

Additional resources:

- Lewis Structures Content Area Overview
- Lewis Structures Extension Activity
- Lewis Structures Formative Assessment

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. In Level 11, what is different about the bonds in each molecule you created?
2. What influences the location of the shared electrons in a bond?
3. Which specific elements had the greatest pull on shared electrons?
4. Explain how the game is able to determine the geometry of the molecules that you build.
5. In Level 13, using your knowledge of VSEPR Theory, describe what molecular shapes you created.
6. Which element would you use as the backbone of a molecule that is very large and complex? Why?
7. Build SO_2 and CO_2 in the sandbox. In what way is it more difficult to build SO_2 than CO_2 ?
8. Explain the rules of the Lewis Structures game, using some or all of the following keywords: single bond, double bond, triple bond, valence electrons, molecular shape, bond polarity, electronegativity.

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