

Acid Strength

Integrated Chemistry Concepts:

- Brønsted-Lowry acids and bases
- Strong vs. weak acids
- Neutralization reactions
- Amphoteric substances
- Electronegativity differences
- Percent dissociation
- Polyprotic acids
- Conjugate acids and bases
- Charge of resulting ions

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

Assign your students the first 7 levels of Acid Strength. During gameplay, ask your students to answer the following guided questions:

1. Describe what happens on the left (acid) side of the game space?
2. Describe what happens on the right (base) side of the game space?
3. What is a neutralization reaction? (Level 3)
4. After playing Level 5, what is unique about H_2O ?
5. Level 6 introduces strong and weak acids. What is the difference between a strong acid and a weak acid?

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 Acid Strength game, using some or all of the following keywords: acid, base, strong acid, weak acid, proton donor, proton acceptor.
2. In Level 8, which acid is stronger: HF or HI? Why?
3. What is created when H_2O acts as a base?
4. In Level 10, what happens to H_2SO_4 ?
5. What is a conjugate base?
6. What is a conjugate acid?
7. Is the conjugate base of a strong acid or a weak acid a stronger base? Explain.
8. Is the conjugate acid of a strong base or weak base a stronger acid? Explain.
9. How could you use the concepts from the LeChâtelier game to explain the degree to which acids ionize in solution?
10. Imagine that a 0.1 M solution was made of all acids available to you in the Acid Strength game. Which solutions would have the lowest pH? The highest? Explain.

Additional resources:

- Acid Strength Content Area Overview
- Acid Strength Extension Activity
- Acid Strength Formative Assessment