

GENERAL CHEMISTRY
EDUCATOR QUICK START GUIDE

LeChâtelier

Integrated Chemistry Concepts:

- Relative reaction rates (forward/reverse)
- Relative K_c
- LeChâtelier's Principle: disturbances in
 - concentration
 - temperature
 - pressure

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

Assign your students the first 11 levels of LeChâtelier. During gameplay, ask your students to answer the following guided questions:

1. What do the purple bursts represent?
2. What do the blue bursts represent?
3. What does it mean when a reaction is reversible?
4. What is equilibrium?
5. What does it mean to 'shift right'?
6. What does it mean to 'shift left'?
7. In Level 6, what are the reactants? When you add more reactants to a system, which way does the system 'shift'?
8. In Level 7, what are the products? When you add more products to a system, which way does the system 'shift'?
9. What happens when you remove reactants from a system?
10. In Level 9, is heat a product or reactant? Which way will equilibrium shift if more heat is added to the system?
11. In Level 11, what happens to the container size when you decrease pressure?

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 9, how do you increase the solubility of the ionic solid?
2. In Level 15, how did you increase pressure at equilibrium? Why did this work?
3. In Level 16, how did you increase $[\text{NH}_3]$ at equilibrium? Why did this work?
4. In Level 18, how did you decrease pressure? Explain how this happened.
5. In Level 19, how did you decrease $[\text{O}_2]$? Why did this work?
6. In Level 19, what happened to the pressure when you successfully decreased $[\text{O}_2]$? Why?
7. Which direction does equilibrium shift in Level 21, when attempting to increase $[\text{H}_2\text{O}]$?
8. In Level 21, does pressure ever change? Explain why or why not.
9. Explain what is happening when a system is returning to equilibrium after being disturbed.

Additional resources:

- LeChâtelier Content Area Overview
- LeChâtelier Extension Activity
- LeChâtelier Formative Assessment