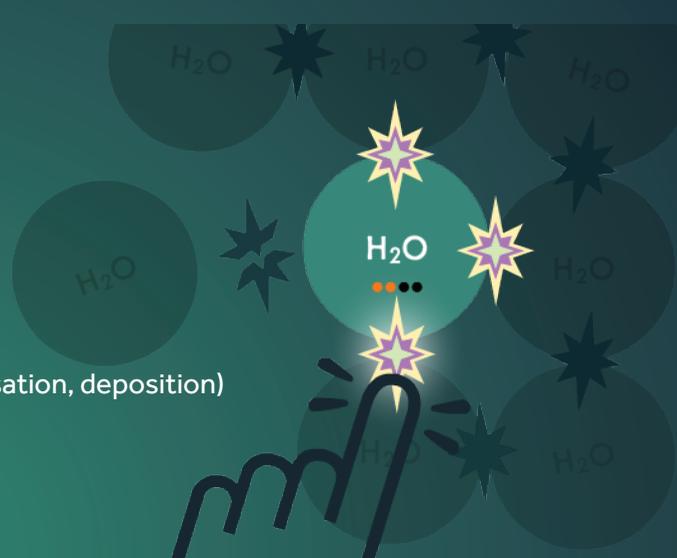


# PHASE CHANGE GAME

## Integrated chemistry concepts:

- 6 phase changes (melting, boiling, sublimation, freezing, condensation, deposition)
- Breaking/forming IMF's
- Constant temperature during a phase change
- IMF strength & boiling point



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

Assign your students the first 4 levels of Phase Change. During gameplay, ask your students to answer the following guided questions:

1. In Level 1, what phase did you start with (solid, liquid, or gas)? What phase did you end with?
2. In Level 1, did you heat or cool the particle? Did you break or form IMF's?
3. In Level 2, what phase did you start with (solid, liquid, or gas)? What phase did you end with?
4. Is energy used or released when heating a particle?  
Is energy used or released when breaking IMF's?
5. Is energy used or released when cooling a particle?  
Is energy used or released when forming IMF's?

## Use Collisions **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 Phase Change game, using some or all of the following keywords: solid, liquid, gas, phase change, energy, intermolecular forces
2. Which process requires energy? Solid → Liquid OR Gas → Liquid
3. In Level 5, what type of phase changes did you complete?
4. What is the relationship between IMF's and energy used? Which IMF's require more energy to break?
5. In Level 9, write out the phase change(s) that you completed for each target.

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

## Additional resources available at [www.playmadagames.com](http://www.playmadagames.com)

- **Phase Change Game Guide** - Teacher resource that provides an overview of the game.
- **Phase Change Student Quest** - Student activity designed to be completed during and after gameplay.
- **Phase Change Activity** (Student Version)