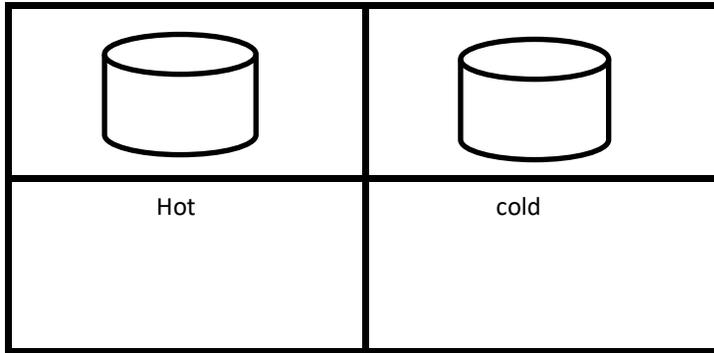


## Introduction to Heat and Energy

pHhet Sim: <https://phet.colorado.edu/en/simulation/energy-forms-and-changes>

### Learning Objectives:

- Be able to describe the relationship between energy and temperature.
  - Be able to describe in words and pictures how energy is transferred between two objects at different temperatures and explain when and why this process stops.
  - Be able explain, using data and models, how the system of a hot object and a cold object will change with time.
1. In the boxes below, draw in the energy model given in the simulation and draw a model of the molecules in an object when the object is cold and when the object is hot. Assume that the object in both pictures is the same object just at different temperatures.



2) At the molecular level, what form of energy do the molecules have? \_\_\_\_\_.

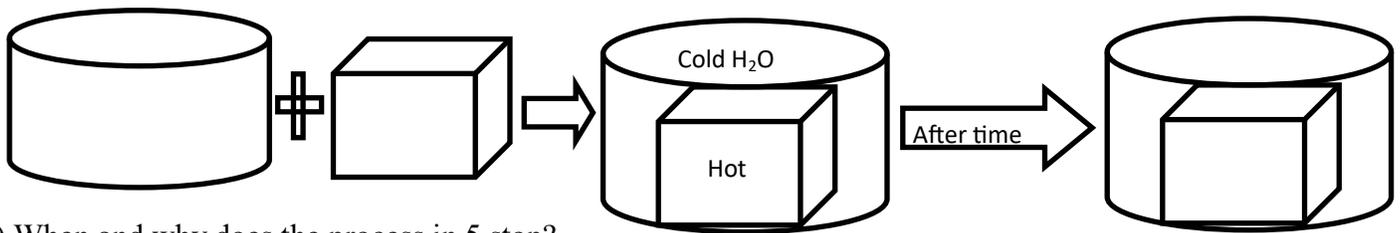
3) Heat up the brick and the iron to the same temperature. What differences do you notice?

A. Brick

B. Iron

4) What does temperature measure? *Support your answer with evidence from the sim.*

5) Put a hot object into cold water. Draw what happens to the energy in each stage



6) When and why does the process in 5 stop?

7. The substance that gives off heat is \_\_\_\_\_. The substance that absorbs heat is the \_\_\_\_\_.

8. The evidence of the heat exchange is the change \_\_\_\_\_.

9. The cube of \_\_\_\_\_ requires more heat to change its temperature than the cube of \_\_\_\_\_.

10. The liquid \_\_\_\_\_ requires more energy to change its temperature than the \_\_\_\_\_.

11. The liquid that cools (*loses heat*) faster is the \_\_\_\_\_.

12. The cube that retains (*holds onto*) heat better is the \_\_\_\_\_.

13. If you want to heat the water to the highest possible temperature which cube would you use?