

Episode 13 - The Driving Forces

SPECIFIC HEAT CAPACITY

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

To be able to:

Describe how heat flow from hot to cold.

Explain that some materials hold and release more energy than others (specific heat)

When in doubt, add a thermometer!

1. When wood burns, the system proceeds toward _____ energy and the energy of the system _____.

2. Describe the energy levels of reactants and products in an exothermic reaction.

3. In general, most chemical reactions _____ energy.

4. Why does an endothermic reaction feel cold if energy is being absorbed?

5. Describe the energy levels of reactants and products in an endothermic reaction.

6. Give two everyday examples of endothermic reactions.

7. What is meant by the term entropy?

8. In which of the following examples is entropy INCREASING?

- solid turns to liquid
- liquid turns to gas
- solid turns to gas

9. In general, reactions proceed toward _____ energy and _____ entropy.

10. What three factors were mentioned that determine how fast a chemical reaction takes place?

1. Is it possible to boil the water? Is it possible to freeze the water? (Make sure to attach the temperature gauge so you have a guide.) What do you need to do to make these changes?

2. Chill the water as much as possible- then add heat and observe. List below at least three things you noticed (Make sure the energy symbols box is checked.)

3. Add heat to the iron and heat to the brick at the same time. Which one can hold more energy? How/where do they lose their energy?

4. Add a heated up bit of iron to room temperature water. Describe in detail what happens below.

5. Place the brick on top of the iron and add heat. Describe what is happening in at least three sentences.

6. Take the same set up from #5, an instead of heating it up, cool it down. Describe what is happening in at least three sentences.

7. Once the brick and the iron are cooled down, do they have the same thermal energy? Do they have the same temperature? Does the room temperature water have more or less thermal energy?