

Name _____ Date _____ Hour _____

Energy Reading Notes

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Summarize the three principles guiding our modern view of energy.

1.

2.

3.

Information is used as a metaphor to describe energy. Describe the ways information is like energy, according to the text.

Money accounts are another metaphor that can help us understand energy storage and transfer. Describe the ways money accounts are like energy.

Three storage “accounts” are described to understand the changes we see in chemistry. State their names and summarize how energy is stored in these three accounts (how would you recognize that energy is present in these accounts in a system of matter?).

1.

2.

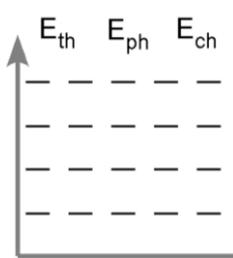
3.

Energy Bar Charts

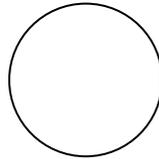
Energy bar charts are used to represent the ways energy is stored and flows into or out of the system.

Energy Bar Norms

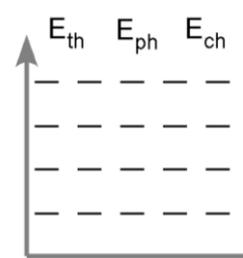
1



Temperature

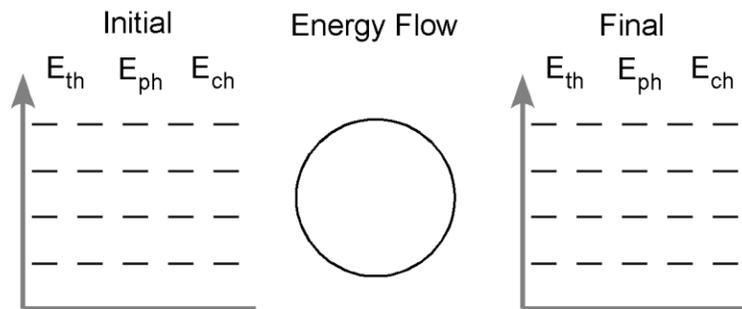


Phase

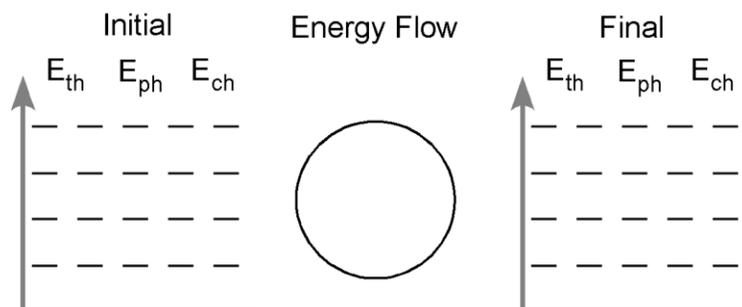
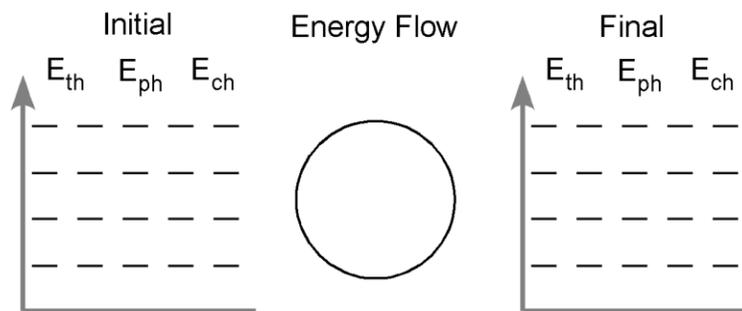


Examples:

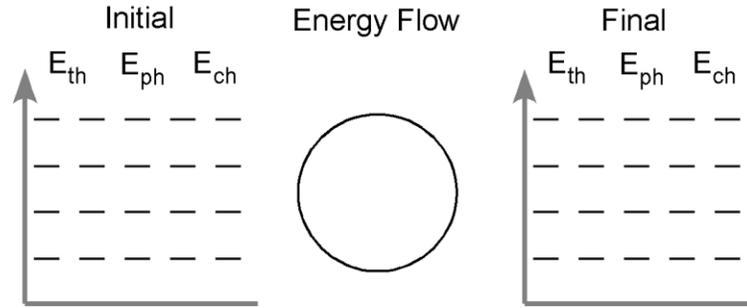
1. A cup of hot coffee cools as it sits on the table.



2. An ice cube is placed in a glass of warm ($35\text{ }^{\circ}\text{C}$) soda. Do separate bar charts for the ice cube and the soft drink.



3. A tray of water ($20\text{ }^{\circ}\text{C}$) is placed in the freezer and turns into ice cubes ($-8\text{ }^{\circ}\text{C}$).

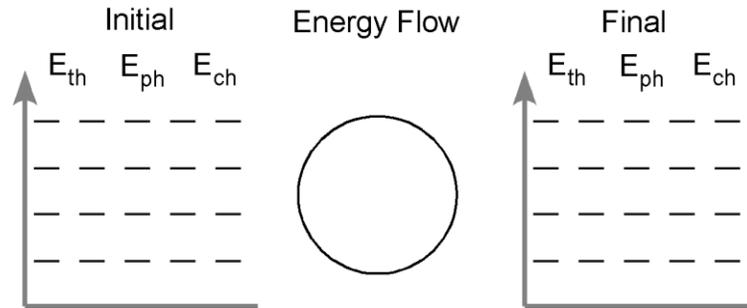


2

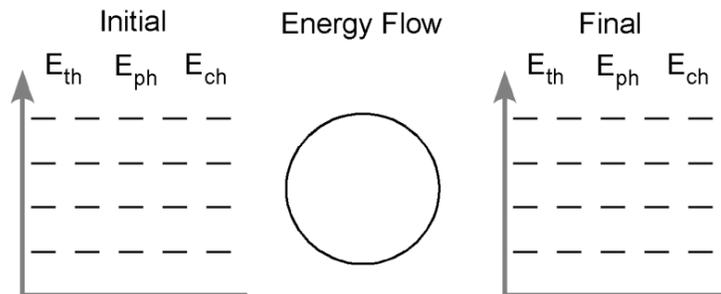
4. Where does the energy that leaves the system in #3 go? How does this energy transfer affect the room temperature in the kitchen? Do you have any experience that supports your answer?

Practice:

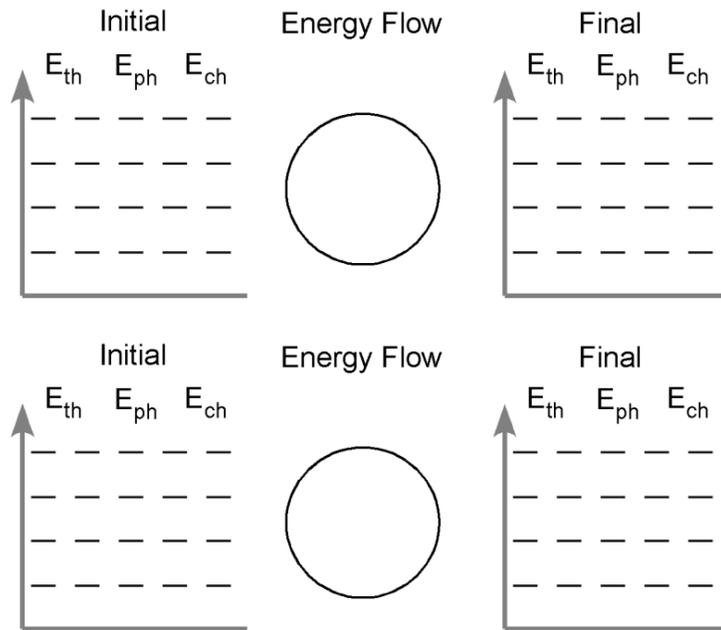
1. A can of cold soda warms as it is left on the counter.



2. Water vapor in the room condenses on a cold surface



3. A pan of water (25°C) is heated to boiling and some of the water is boiled away. Do separate energy bar charts for each stage of the process.



3

4. During boiling, bubbles appear in the liquid water. In the boxes below represent the arrangement of molecules inside the liquid water and inside a bubble.



liquid water



bubble

What is inside the bubble? Why do you think so?

5. Suppose the burner under the pan of boiling water is turned to a higher setting. How will this affect the temperature of the water in the pan? Explain.

4