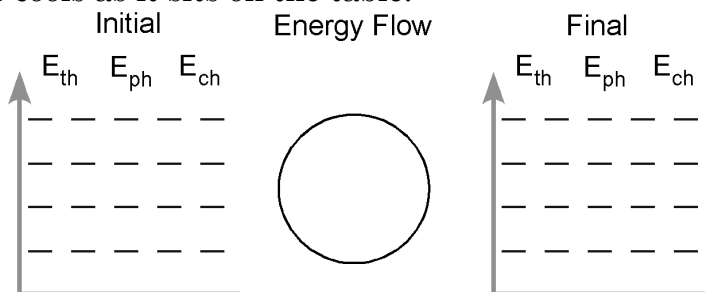


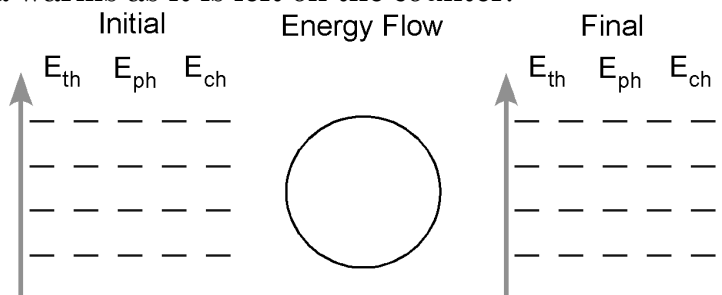
Unit 7 – Exercise 3 – Energy bar charts

For each of the situations described below, use an energy bar chart to represent the ways that energy is stored in the system and flows into or out of the system. Below each diagram describe how the arrangement and motion of the particles change from the initial to the final state.

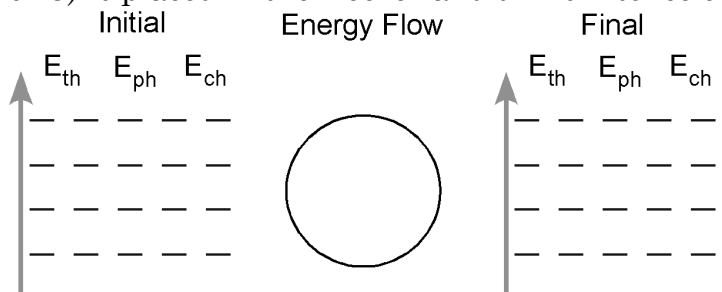
1. A cup of hot coffee cools as it sits on the table.



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

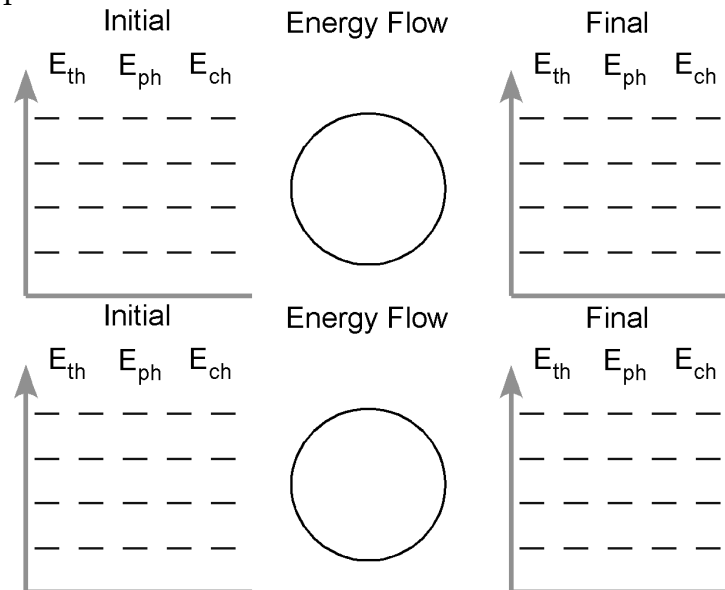


3. A tray of water (20 °C) is placed in the freezer and turns into ice cubes (- 8 °C)



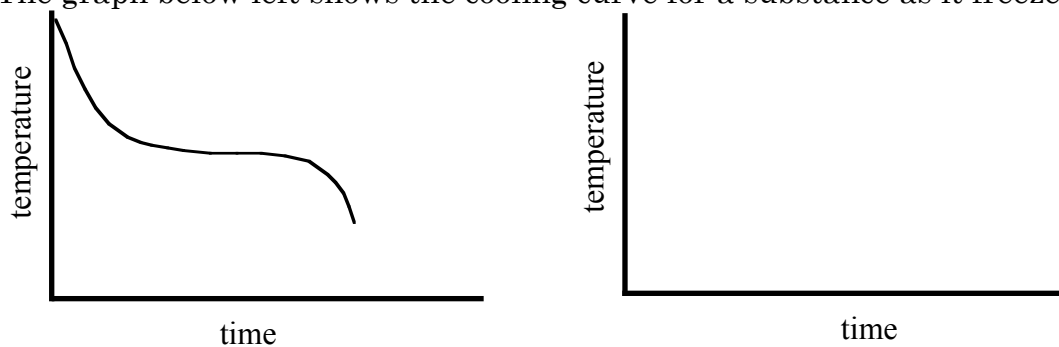
4. Where does the energy that leaves the system in #3 go? How does this energy transfer affect the room temperature in the kitchen? Do you have any experience that supports your answer?

5. One of the ice cubes described in #3 is placed in a glass of room temperature ($25\text{ }^{\circ}\text{C}$) soft drink. Do separate bar charts for the ice cube and the soft drink.



Describe how the arrangement and the motion of the particles in each system change from the initial to the final state.

6. The graph below left shows the cooling curve for a substance as it freezes.



- On the graph at right sketch the cooling curve for a larger sample of the same substance.
- Label which phase (or phases) of the substance is present in each of the three portions of the cooling curve.
- Describe the arrangement and motion of the particles during each portion of the graph.