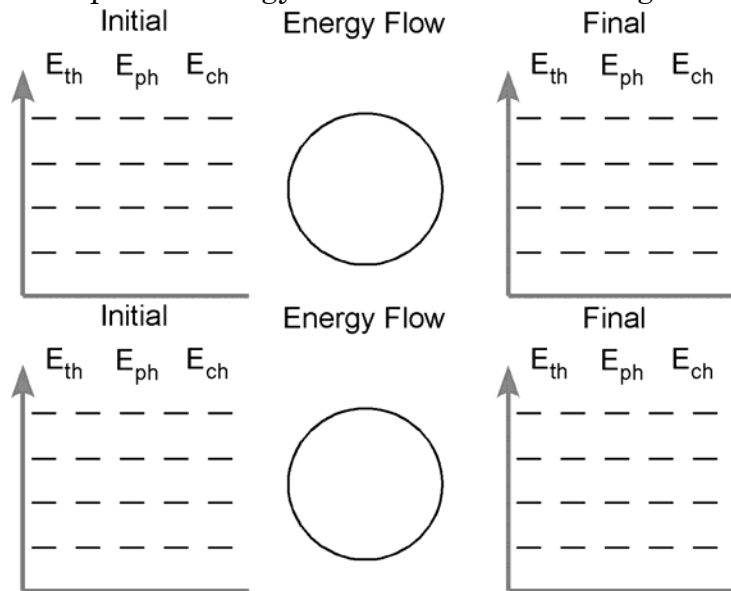


Unit 3 - Worksheet 2 Heating/Cooling Curve and Energy

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. Next to each diagram describe how the arrangement and motion of the molecules change from the initial to the final state.

1. 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.



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



liquid water

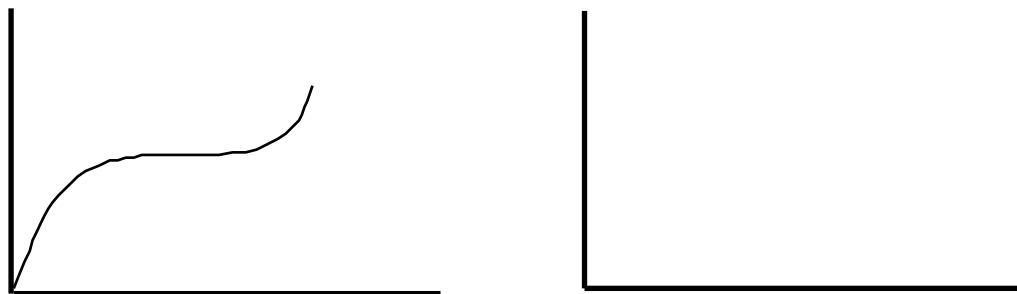


bubble

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

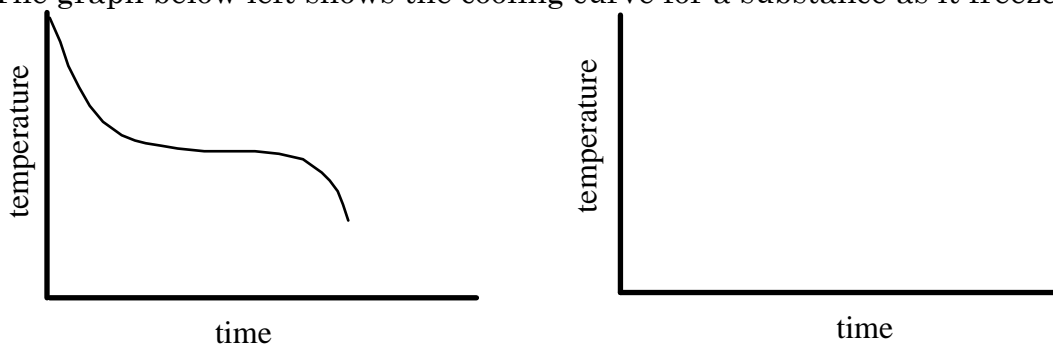
3. Suppose the burner under the pan of boiling water is turned to a higher setting. How will this affect the temperature of the water in the pan? Explain.

4. The graph below left represents the heating curve for a liquid heated from room temperature to a temperature above its boiling point.



- Sketch the heating curve for a larger sample of the same liquid.
- Label which phase (or phases) of the substance is present in each of the three portions of the heating curve.
- Describe the arrangement and motion of the molecules during each portion (AB, BC and CD) of the graph.
- Construct energy bar charts for points A, B, C and D; energy flow diagrams for each portion AB, BC, and CD.

5. 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 molecules during each portion of the graph.
- Construct energy bar charts for points A, B, C and D; energy flow diagrams for each portion AB, BC, and CD.