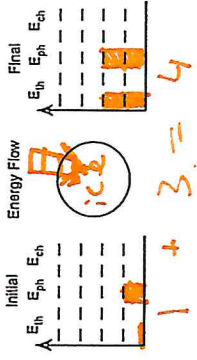


I can identify the system vs. surroundings in a situation or model.

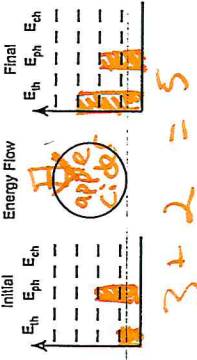
- Identify the system and the surroundings in the following scenarios:
 - When putting ice in a glass of water, one falls to the floor and melts.
System = ice Surrounding = **glass, air, universe**
 - A glass of cold apple cider is placed in the microwave to warm.
System = apple cider Surrounding = **microwave, air, universe**
 - Hot steam from the shower condenses on the mirror in the bathroom.
System = Steam Surrounding = **mirror, bathroom, universe**

I can model the exchange of energy between the system & surroundings.

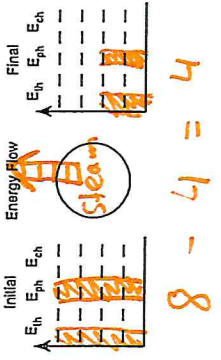
- Complete an energy bar chart for each of the following scenarios:
 - When putting ice in a glass of water, one falls to the floor and melts.



- A glass of cold apple cider is placed in the microwave to warm.



- Hot steam from the shower condenses on the mirror in the bathroom.



I can predict the transfer of energy between objects of different temperature due to particle collisions.

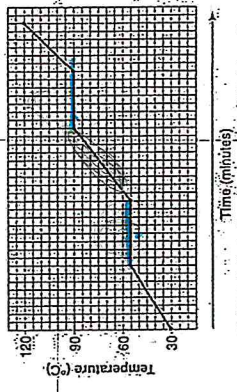
- Describe how the energy transfers between the hot steam and the mirror in the scenario in 2c above.
The energy exits the system (exothermic) to the surroundings. It becomes cooler and changes to a liquid. The transfer of energy occurs by the particles colliding.
- What is the law of conservation of energy? (back)
The energy came from the surroundings: floor, air, universe (in)
- Describe how the law of conservation of energy is supported by the scenario in 2a above.

I can identify the difference between kinetic & potential energy in terms of particle arrangement and motion.

- What is the difference between kinetic and potential energy?
movement → stored
- When does kinetic energy of particles change? When does potential energy of particles change?
→ when temperature increases/decreases for a phase change - when phase changes occur

I can interpret evidence from a heating curve.

Use the heating curve below to answer the questions:



- Label the phases and phase changes on the graph in both energy flow directions. (back)

- Which phase changes are endothermic?
melting, evaporation, sublimation
- What is happening to the kinetic and potential energy of the particles during these phase changes?
Phase changes

**Kinetic = constant
potential = increase**

- Which phase changes are exothermic?

- Explain why the melting point and freezing point of a substance can be the same.
Freezing, condensation, deposition
It is the same temperature. The phase changes occur at the same point.