Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_

**Summative 1.6, 2.1 and 2.2 – Study Guide**

Learning Target 1.6 – Systems and Energy Flow

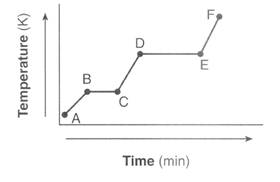
1. Identify the systems and the surroundings in the following examples. Which way is the energy flowing? (Draw a diagram using arrows to represent the energy flow).
   1. When a small quantity of ammonium chloride (NH4Cl) is dissolved in water in a test tube, the tube becomes colder than before.
   2. Burning a log in the fireplace to heat up the living room.
   3. A hot pack is made up of two bags (one contains water and one contains calcium chloride). When the calcium chloride reacts with the water, it gives off heat.
   4. Adding ice to a glass of soda will cool down the soda
2. Complete the following table by defining the types of energy and sorting the examples into the appropriate boxes.

|  |  |
| --- | --- |
| Kinetic Energy | Potential Energy |
| Definition: | Definition: |
|  |  |

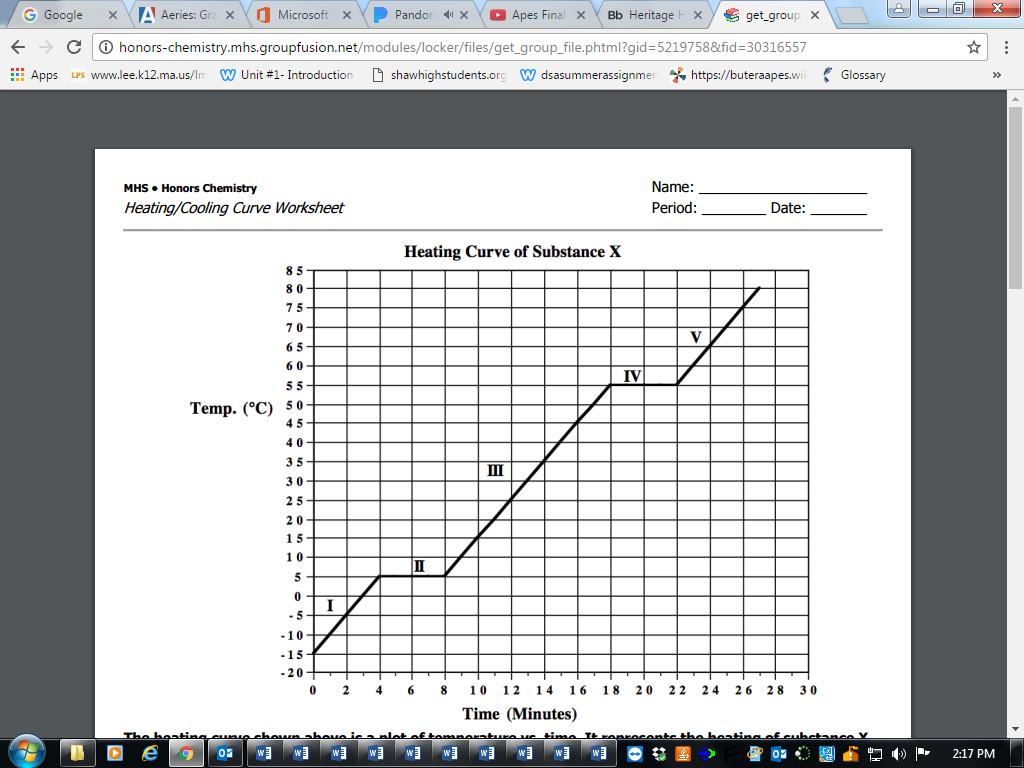
Examples to be sorted: Cheetos in a bag, A glass of milk on the table, Weasels weaseling, A student taking notes, chemical energy, a skier at the top of a mountain, a bird in its nest at the top of a tree

Learning Target 2.1 – Kinetic Molecular Theory

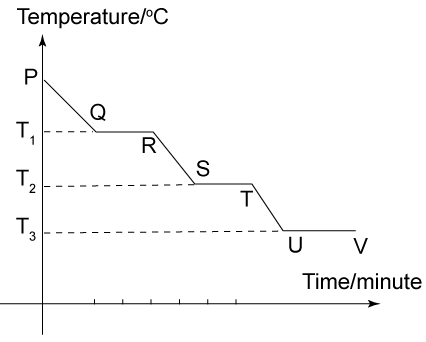
1. A substance at 10°C and a substance at 20°C are compared in a lab. Which has more energy? Why?
2. In the boxes below, draw the particles and movement for solids, liquids, gases. Which has the highest KE? Which has the largest spaces?
3. Which state(s) of matter can change its shaped?
4. Which state of matter is most easily compressed – why?

Learning Target 2.2 – Heating and Cooling Curves

1. Use the heating curve to the right to answer the following questions:
   1. Label the states of matter on the graph.
   2. Label the phase changes on the graph.
   3. What is happening to the energy (KE & PE) at line BC?
   4. What is happening to the energy at line DE?
2. Sketch the corresponding cooling curve for question 7. Label the states of matter, the phase changes, and discuss the changes in KE and PE along each line.



1. In what part of the curve would substance X have definite volume and shape?
2. What part of the curve represents a mixed liquid/vapor phase?
3. What is the melting point of substance X?
4. In what part(s) of the curve would increasing kinetic energy be displayed?
5. What is happening to the potential energy in part IV?



1. In what segment of the curve would substance Y have indefinite shape and definite volume?
2. What is the freezing point of substance Y?
3. What is happening to the energy at segment RS? (Indicate what type of energy you are talking about)
4. What is happening to the energy at segment ST? (indicate what type of energy you are talking about)