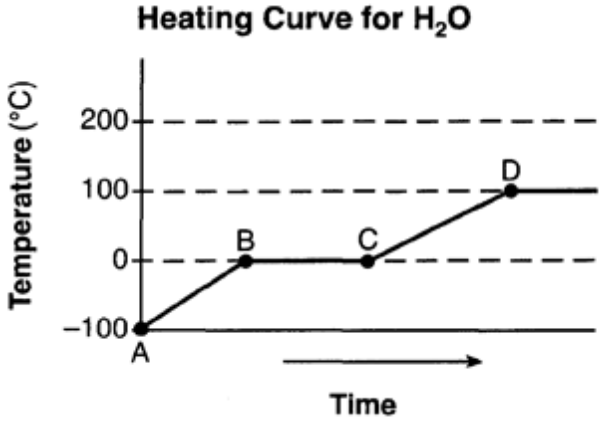
Name _____ **Energy and Calorimetry**

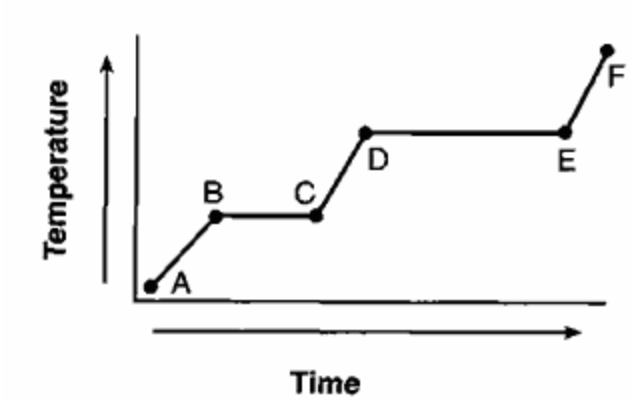
1) The graph below represents the relationship between temperature and time as heat is added to a sample of H_2O



Which statement correctly describes the energy of the particles of the sample during interval *BC*?

1) Potential energy decreases and average kinetic energy increases.
2) Potential energy increases and average kinetic energy increases.
3) Potential energy increases and average kinetic energy remains the same.
4) Potential energy remains the same and average kinetic energy increases.

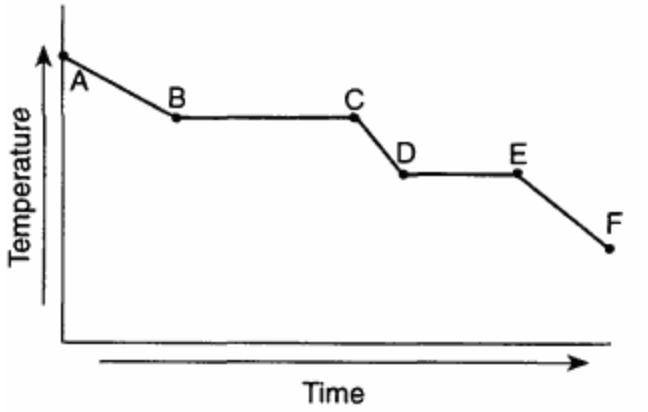
2) The graph below represents the uniform heating of a substance, starting below its melting point, when the substance is solid.



Which line segments represent an increase in average kinetic energy?

1) A-B and B-C
2) A-B and C-D
3) B-C and D-E
4) D-E and E-F

3) The graph below represents the uniform cooling of a substance, starting with the substance as a gas above its boiling point.



During which interval is the substance completely in the liquid phase?

1) *AB* 2) *BC* 3) *CD* 4) *DE*

4) As a solid is heated, its temperature increases from 10ºC to 25ºC, remains at 25ºC for 5 minutes, and then increases to beyond 45ºC. Based on this information, what conclusion can be drawn about the substance?

1) Its melting point is 45ºC.
2) Its boiling point is 45ºC.
3) Its melting point is 25ºC.
4) Its boiling point is 25ºC.

5) Which phase change is endothermic?

1) $H_2O(\ell) \rightarrow H_2O(g)$
2) $I_2(g) \rightarrow I_2(s)$
3) $Hg(\ell) \rightarrow Hg(s)$
4) $H_2S(g) \rightarrow H_2S(\ell)$

6) Base your answer to the following question on In an experiment using a calorimeter, the following data were obtained:

Mass of calorimeter + water . . . . . .150. g
Mass of calorimeter . . . . . .100. g
Final temperature of water. . . . . 55°C
Initial temperature of water . . . . . 25°C

What is the total number of Joules absorbed by the water?

7) A sample of water is heated from 10.0°C to 15.0°C by the addition of 126 Joules of heat. What is the mass of the water?

8) A 36-gram sample of water has an initial temperature of 22°C. After the sample absorbs 1200 joules of heat energy, the final temperature of the sample is

9) How much heat energy must be absorbed to completely melt 35.0 grams of $H_2O(s)$ at 0°C?

10) The heat of vaporization of a liquid is 1,340 Joules per gram. What is the minimum number of Joules needed to change 40.0 grams of the liquid to vapor at the boiling point?