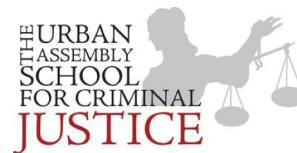


Name: _____ Date: _____

Chemistry ~ Ms. Hart

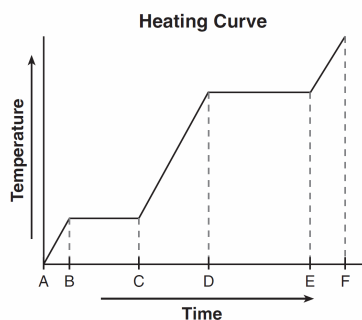
Class:

Anions or Cations



2.9 Cooling Curve

- The temperature of a sample of matter is a measure of the
 - Average kinetic energy of its particles
 - Average potential energy of its particles
 - Total kinetic energy of its particles
 - Total potential energy of its particles
- Which temperature is equal to 120 K?
 - 153°C
 - 120°C
 - +293°C
 - +393°C
- The temperature 30 K expressed in degrees Celsius is:
 - 243°C
 - 243°C
 - 303°C
 - 303°C
- Which phase change is accompanied by the release of heat?
 - $\text{H}_2\text{O(s)} \rightarrow \text{H}_2\text{O(g)}$
 - $\text{H}_2\text{O(s)} \rightarrow \text{H}_2\text{O(l)}$
 - $\text{H}_2\text{O(l)} \rightarrow \text{H}_2\text{O(g)}$
 - $\text{H}_2\text{O(l)} \rightarrow \text{H}_2\text{O(s)}$
- Which change of phase is exothermic?
 - Solid to liquid
 - Gas to liquid
 - Solid to liquid
 - Liquid to gas
- At STP, a sample of which element has the highest entropy?
 - Na(s)
 - Hg(l)
 - Br₂(l)
 - F₂(g)
- As carbon dioxide sublimates, its entropy
 - Decreases
 - Increases
 - Remains the same
- When a substance melts, it undergoes a process we call:
 - Condensation
 - Fusion
 - Sublimation
 - Vaporization
- Which phase change is an exothermic process?
 - $\text{CO}_2\text{(s)} \rightarrow \text{CO}_2\text{(g)}$
 - $\text{NH}_3\text{(g)} \rightarrow \text{NH}_3\text{(l)}$
 - $\text{Cu(s)} \rightarrow \text{Cu(l)}$
 - $\text{Hg(l)} \rightarrow \text{Hg(g)}$
- Given the diagram representing a heating curve for a substance:



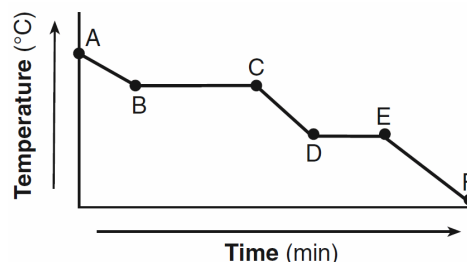
During which time interval is the average kinetic energy of the particles of the substance constant while the potential energy of the particles increases?

- AC
- BC
- CD
- DF

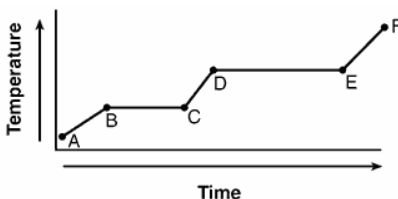
- Given the cooling curve of a substance:

During which intervals is potential energy decreasing and average kinetic energy remaining constant

- AB and BC
- AB and CD
- DE and BC
- DE and EF

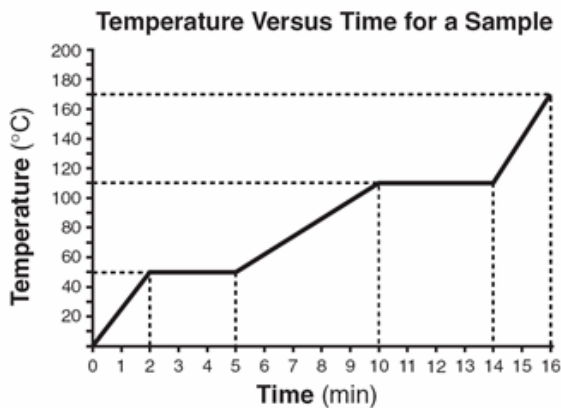


- The graph below represents the uniform heating of a substance, starting with the substance as a solid below its melting point.



Which line segment represents an increase in potential energy and no change in average kinetic energy?

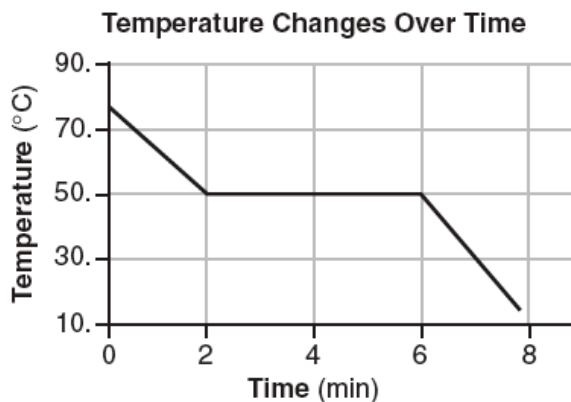
13. Starting as a solid, a sample of a substance is heated at a constant rate. The graph below shows the changes in temperature of this sample.



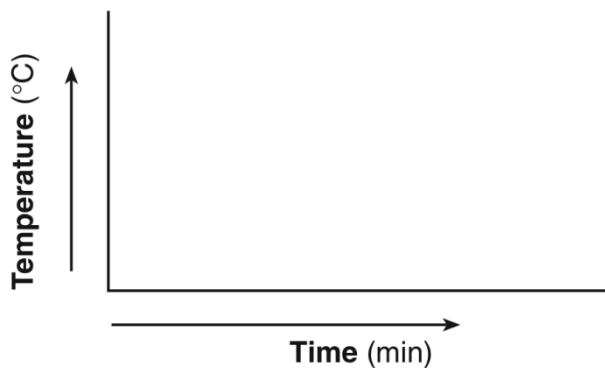
What is the melting point of the sample and the total time required to completely melt the sample after it has reached its melting point

- (1) 50°C and 3 min
- (2) 50°C and 5 min
- (3) 110°C and 4 min
- (4) 110°C and 14 min

14. The graph below shows a compound being cooled at a constant rate starting in the liquid phase at 75°C and ending at 15°C.



- a) What is the freezing point of the compound, in degrees Celsius? [1]
- b) State what is happening to the average kinetic energy of the particles of the sample between minute 2 and minute 6. [1]
- c) A different experiment was conducted with another sample of the same compound starting in the solid phase. The sample was heated at a constant rate from 15°C to 75°C. On the graph below, draw the resulting heating curve. [1]



- d) What Kelvin temperature is equal to 15°C? [1]