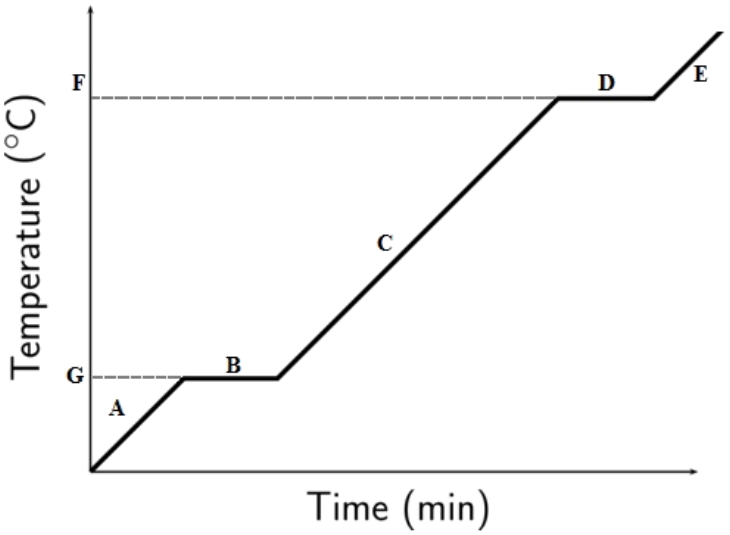
Name: _____ Per: _____

Heating Curve Calculations

Go to the website to the Honors Notes page. You'll see the Heating Curve Notes & a useful video. Check them out and complete this worksheet.



Heating curves show that energy is absorbed by a substance as it warms up, melts or boils and that energy is released from a substance as it cools down, condenses or freezes.

Specific heat equation ($q=mC\Delta T$) allows to calculate the energy changes as s substance warms or cools, because there's a change in temperature occurring. This happens at A, C & E on the graph shown to the left.

The energies involved with phase changes (B & D) are the Heat of Vaporization (liquid to gas) and the heat of fusion (solid to liquid).

Answer questions 1-4 about the heating curve above:

1) What equation is used at A, C & E?_____
2) Assuming the substance is water, what specific heat value is used at process A?_____.
   C? _____ E? _____
3) What equation is used at B? _____What phase change happens at B? _____.
   For water, what temperature corresponds to B? _____
   What constant for water is used at B? _____
4) What equation is used at D? _____What phase change happens at D? _____.
   For water, what temperature corresponds to D? _____What constant is used at D? _____.
5) Calculate the energy required to heat 30.0 g of H_2O from 42°C to 125°C. (Hint: 3 steps, all positive)

6) Calculate the energy released when cooling 10.0 g H_2O from 50°C to –23°C. (Hint: 3 steps, all negative)

7) How much energy is used to heat 250 g of ice from –15°C to steam at 105°C? (Hint: 5 steps, all positive)

8) How much energy is released from 23 g of H_2O at 109°C as it cools to –46°C? (Hint: 5 steps, all neg.)