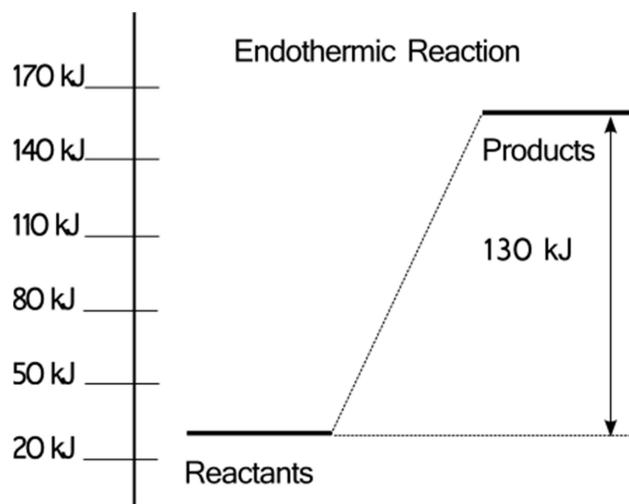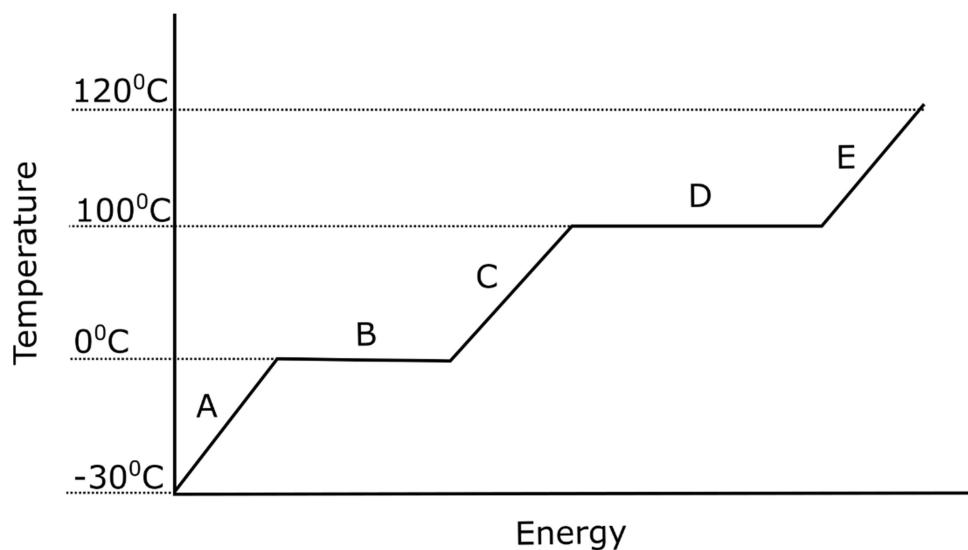# Graphing during heat changes

1. Draw a graph to represent an exothermic reaction. Write equations used to calculate the enthalpy changes in the reactions?

2. How would you rationalize the positive value for ΔH in the following graph?

Exothermic Reactions

SCH4U1/3 Graphing Phase changes and enthalpy

Heating Curves / Cooling curves: Graph not to scale

3. Using the above graph answer the following questions, if you start with 25 grams of ice. (Specific heat capacities of ice, water and steam can be taken from the data sheet.) Molar enthalpy of fusion of water ΔH_{fuion} is taken as 6.01 kJ/mol and molar enthalpy of vaporization is taken as ΔH_{fuion} 40.65 kJ/mol.
   a. Heat absorbed 'q' absorbed by any solid, liquid and gas phase **(same phase)** can be calculated using equations
      i. $q = mcT\Delta$
   b. Heat absorbed 'q' during **phase change** can be calculated using the equation
      i. $q = \Delta H_{phasechange}$ *moles of water
4. What states of matter does each of the portions of the graphs labelled represent
   a. A =
   b. B =
   c. C =
   d. D =
   e. E =
5. Why are B and D horizontal? Explain the significance. Give reasons and explain.

6. Calculate 'q' values for
    a. A

    b. B

    c. C

    d. D

    e. E

7. What relationship will you use to determine the specific heats of ice, water and steam from A, C and E. Only rearranged equations are needed, calculation not expected, you may do it though.