

Name _____

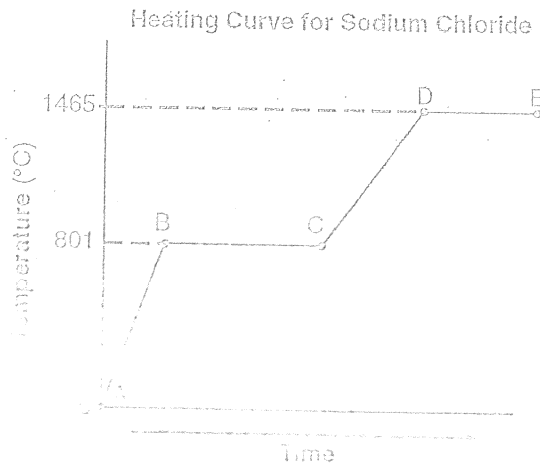
Thermochemistry Practice Problems

$q=mc\Delta T$	$q=mH_v$ $q=mH_f$	$H_v = 2260 \text{ J/g}$ $H_f = 334 \text{ J/g}$	Specific Heat of Water $4.18 \text{ J/g}^\circ\text{C}$
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1. A student melts 230 g of ice by placing the ice in a beaker in a cold room at 0°C . How much heat did the ice absorb to melt completely at 0°C ?
2. How much heat is needed to melt 250 g of ice at 0°C and then heat the water to 100°C ?
3. A sample of water required removing 1000 J for it to melt. What was the mass of the water?
4. 500 g of water was heated from 10°C to 45°C using a hot plate. How much heat was absorbed by the water?
5. 10,500 J of heat were added to a sample of water. The temperature changed from 25°C to 45°C . What was the mass of the water?
6. An ice cube was placed in 100 g of water at 20°C . The temperature of the water dropped to 4°C . when the ice completely melted. How much did the ice cube weigh?

Base your answers to questions 58 through 60 on the information below.

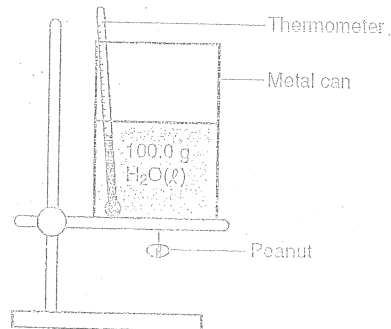
A 100.0-gram sample of NaCl(s) has an initial temperature of 0°C. A chemist measures the temperature of the sample as it is heated. Heat is *not* added at a constant rate. The heating curve for the sample is shown below.



- 58 Determine the temperature range over which the entire NaCl sample is a liquid. [1]
- 59 Identify *one* line segment on the curve where the average kinetic energy of the particles of the NaCl sample is changing. [1]
- 60 Identify *one* line segment on the curve where the NaCl sample is in a single phase and capable of conducting electricity. [1]

Base your answers to questions 75 and 76 on the information below.

A student performed an experiment to determine the total amount of energy stored in a peanut. The accepted value for the energy content of a peanut is 30.3 kilojoules per gram. The student measured 100.0 grams of water into a metal can and placed the can on a ring stand, as shown in the diagram below. The peanut was attached to a wire suspended under the can. The initial temperature of the water was recorded as 22.0°C. The peanut was ignited and allowed to burn. When the peanut finished burning, the final water temperature was recorded as 57.0°C. The student's experimental value for the energy content of this peanut was 25.9 kilojoules per gram.



- 75 In the space in *your answer booklet*, calculate the total amount of heat absorbed by the water. Your response must include *both* a correct numerical setup and the calculated result. [2]
- 76 Determine the student's percent error for the energy content of this peanut. [1]