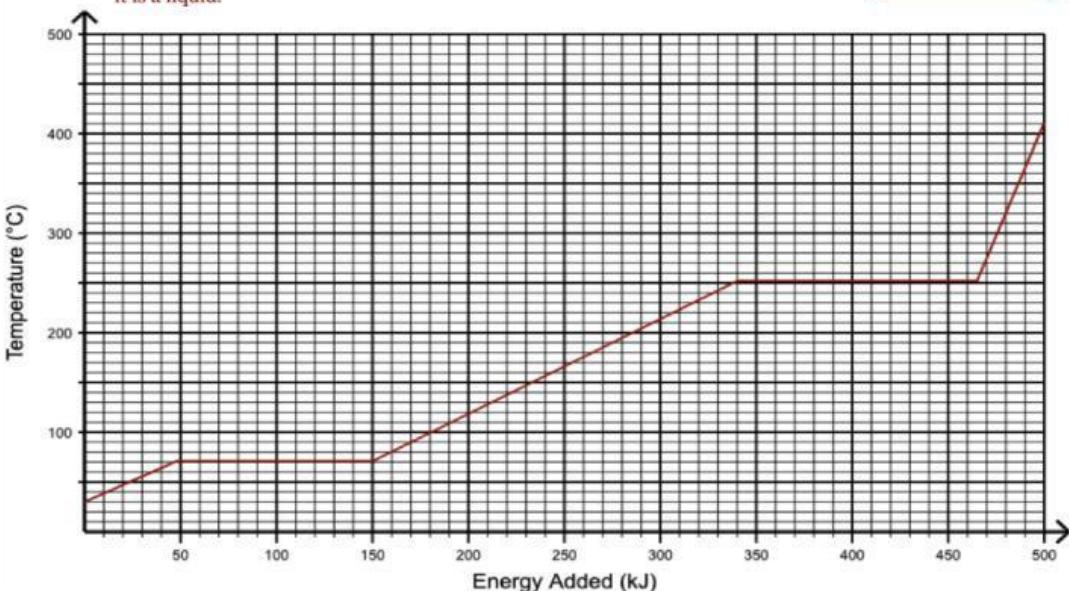


Q=mH Live Worksheet
Make sure all numbers are rounded to the nearest hundredth place
Heating Curve

Below is a heating curve for 757 grams of an unknown substance. Find the boiling point, the specific heat of the substance when it is a solid and the specific heat when it is a liquid.

End



1) What is the melting point and boiling point for this unknown substance?

Melting point:

Boiling point:

Temperature that freezing occurs?

Temperature that condensation occurs?

2) What states of matter are present at the following points?

- a) Temperature < 70°C:
- b) Temperature = 70°C:
- c) 70°C < Temperature < 250°C:
- d) Temperature = 250 °C:
- e) Temperature > 250 °C:

2) As illustrated by the heating curve above, we have 757 grams of an unknown substance. In order to melt the substance, heat needs to be added to go from 50 kJ to 150 kJ at the melting point. What is the molar heat of fusion for this substance (Hint: 1 kJ = 1000 J)?

3) As illustrated by the heating curve above, we have 757 grams of an unknown substance. In order to boil the substance, heat needs to be added to go from 340 kJ to 465 kJ at the boiling point. What is the molar heat of vaporization for this substance (Hint: 1 kJ = 1000 J)?

The information below gives you the heat of fusion, heat of vaporization, and specific heat constants for water.

Thermodynamic Constants	Symbol	Value
Heat of fusion of water	H_f (water)	334 J/g
Heat of vaporization of water	H_v (water)	2,260 J/g
Specific heat of water	C_p (water)	2.05 $\frac{\text{J}}{\text{g}^\circ\text{C}}$ for ice, 2.02 $\frac{\text{J}}{\text{g}^\circ\text{C}}$ for steam, 4.18 $\frac{\text{J}}{\text{g}^\circ\text{C}}$ for liquid

4) Answer the following:

- a) What is the molar heat of fusion for water?
- b) What is the molar enthalpy of freezing for water?
- c) What is the molar heat of vaporization for water?
- d) What is the molar enthalpy of condensation for water?

For questions 5 and 6, only positive values should be entered because the sign for heat and heat constant will be the same.

(heat absorbed means that both heat and heat constant are positive)

(heat released means both heat and heat constant are negative)

5) How much heat would be released if 75 grams of water vapor condenses into liquid water?

6) What mass of ice can be melted with the addition of 2500 Joules of heat? You may assume that the block of ice starts at a temperature of 0°C .

7) 25 moles of water is at the boiling point temperature and it begins to boil. How much heat is required to boil this amount of water?