Name _____

Date _____ Pd ____

Unit 3 Worksheet 4 – Quantitative Energy Problems
Part 2

Energy constants (H_2O)

334 J/g	Heat of fusion (melting or freezing) H_f
2260 J/g	Heat of vaporization (evaporating or condensing) H_V
2.1 J/g˚C	Heat capacity (c) of solid water
4.18 J/g˚C	Heat capacity (c) of liquid water

For each of the problems sketch a warming or cooling curve to help you decide which equation(s) to use to solve the problem. Keep a reasonable number of sig figs in your answers.

1. How much energy must be absorbed by a 150 g sample of ice at 0.0 ˚C that melts and then warms to 25.0˚C?

2. Suppose in the Icy Hot lab that the burner transfers 325 kJ of energy to 450 g of liquid water at 20.˚C. What mass of the water would be boiled away?

3. A 12oz can of soft drink (assume m = 340 g) at 25˚C is placed in a freezer where the temperature is – 12 ˚C. How much energy must be removed from the soft drink for it to reach this temperature?

4. 65.0 kilojoules of energy are added to 150 g of ice at 0.0˚C. What is the final temperature of the water?

5. 250 kJ of energy are removed from a 4.00×10^2 g sample of water at 60˚C. Will the sample of water completely freeze? Explain.

6. An ice cube tray full of ice (235g) at –7.0˚C is allowed to warm up to room temperature (22˚C). How much energy must be absorbed by the contents of the tray in order for this to happen?

7. If this same quantity of energy were removed from 40.0 g of water vapor at 100˚C, what would be the final temperature of the water?