Thermodynamics Unit – Specific Heat and Heating Curves

1. What is the difference between a Calorie and a Joule? (Which is bigger, by how much?)

2. Heat is exchanged from _____ substances to _____ substances. (Choices for each blank: warmer or colder)

3. Examine the specific heat values given below (units $J/g°C$). If the same amount of heat is added to identical masses of each of these substances, which substances reaches the highest temperature change? (Hint: No calculations needed.)

Copper	0.384
Lead	0.159
Water	4.18
Glass	0.502

4. Determine the specific heat of iron if 6.1 J of energy are needed to warm 1.50g of iron from 20.0°C to 29.0°C.

5. Calculate the amount of heat (in kJ) required to raise the temperature of 140 grams of water from 30°C to 70°C.

6. Calculate the amount of heat (in kJ) required to raise the temperature of 140 grams of water from -30°C to 110°C. Do you expect it to require more or less heat than in the problem above?

C_{ice} = 2.09 $J/g°C$ C_{water} = 4.18 $J/g°C$ C_{steam} = 2.00 $J/g°C$
$\Delta H_{fus}H_2O$ = 334 J/g ΔH_{vap} H_2O = 2260 J/g