Ch 14 Questions: Heat of Fusion and Heat of Vaporization

	Specific Heat (Cp)	Heat of Fusion (ΔH_{fus})	Heat of Vaporization (ΔH_{vap})
Water (H_2O)	4.18 J/g °C	6.00 kJ/mol	40.6 kJ/mol
Ethanol (C_2H_5OH)	2.44 J/g °C	5.02 kJ/mol	38.6 kJ/mol
Mercury (Hg)	0.14 J/g °C	2.29 kJ/mol	59.1 kJ /mol

1) How much heat is required to increase the temperature of 20 grams of water by 26 °C?

2) How much heat is required to melt 2.5 moles of ice?

3) How much heat is transferred when 57 grams of mercury cools from 76 °C to 18 °C?

4) If you have 27 grams of 100 °C liquid water, how much heat is required to turn it into water vapor?

5) How much energy is transferred when 70 grams of ethanol is heated from 21 °C to 68 °C?

6) How much heat is transferred when 400 grams of mercury (Hg) is vaporized?

7) How much heat is transferred when 400 grams of mercury is cooled from 280 °C to 30 °C?

8) How much heat is transferred when 230 grams of ethanol is frozen?

9) How much heat is transferred when 100 grams of ethanol condenses from a gas to a liquid?

10) How much heat is transferred when 1 mole of mercury is heated from 80 °C to 125 °C?

11) How much heat is required to melt 40 grams of ice and then increase its temperature from 0°C to 25°C?

12) How much heat is required to heat 2 moles of water from 25°C to its boiling point and then turn it into water vapor?

13) How much heat is required to melt 50 grams of ice, heat it to its boiling point, and then turn it into vapor?

14) The boiling point of ethanol is 78°C. How much heat is required to heat 100 grams of ethanol from 25°C to its boiling point and then to turn it into a vapor?