Latent Heat of Fusion and Vaporization

Name_____

$Q = mc\Delta T$ $Q=mL_f$ $Q=mL_v$ L_f = 333,000 J/kg L_v = 2,260,000 J/kg
Specific heat of water = 4186 J / kg-K
Specific heat of ice = 2090 J / kg-K
Specific heat of steam (water vapor) = 2010 J / kg-K
Freezing Point of Water = 0°C or 273 K Boiling Point of Water = 100°C or 373 K

Show all work including equations, knowns and drawing:

1.) How much heat is required to raise 450 grams of water from 15°C to 80°C?

2.) How much heat does it take to melt 360 grams of ice at 0°C?

3.) How much heat does it take to change 850 grams water at 100°C to Steam at 100°C?

4.) How much heat does 400 grams of water 0°C need to loss in order for it to turn to ice?

5.) How much heat does it need to raise 275 grams of ice from -65°C to 0°C?

6.) How much heat is needed to raise 100 grams of ice from -20°C and melt the entire amount (final temperature is 0°C)

7.) How much heat does it take to raise 300 grams of water from 50°C and just boil it entirely away? [convert it entirely to steam at 100°C]

8.) How much heat is required to melt 35 grams of ice at 0°C and then raise it's temperature to 100°C?

9.) How much heat would it take to melt 1500 grams of ice at 0°C, raise it to 100°C and then convert the entire amount from water to steam at 100°C?

10.) How much heat does 215 grams of water loss if it starts as steam at 100°C and cools down to ice at -5°C?

11.) How much heat does it take to raise 1200 grams of ice from –20°C to 0°C, melt it and raise it's temperature to 100°C, convert it to steam and raise the temperature of the steam to 145°C?

12.) Calculate the heat required to raise the temperature of 876 grams of ice at -56°C to steam at 275°C.