Heat of Fusion

Theory:

Purpose: To determine the amount of energy needed to melt one gram of ice.

Materials: Calorimeter, ice, thermometer, balance.

Procedure:
1. Mass the empty calorimeter. Record.
2. Fill the calorimeter half full of water.
3. Measure the mass of the calorimeter. Record.
4. Determine the temperature of the water in the calorimeter. Record.
5. Obtain a sample of ice and place it in the calorimeter.
6. Stir the mixture carefully with the metal stirring rod in the calorimeter. The thermometer should be in the center hole of the calorimeter. Stir the mixture until all the ice has melted and the temperature has stopped dropping.
7. Record the final temperature.
8. Mass the calorimeter and its contents. Record.
   The increase in mass is the mass of the ice that you added.
9. Repeat the procedure a second time.

Data Table:

	Trial 1	Trial 2
Mass of Calorimeter		
Mass of Calorimeter & Water		
Mass of Water		
Starting Temperature		
Final Temperature		
Mass of Calorimeter Water and Melted Ice		
Mass of Ice		

Observations:

Calculations:
Heat lost by water as it cools from the initial temperature to the final temperature = heat gained by ice as it melts at $0^{\circ}C$ + heat gained by melted ice as it warms from $0^{\circ}C$ up to the final temperature.
1. Calculate the heat gained by the water for each trial.
2. How does the value you obtained for the heat needed to melt a g of ice compare to the accepted value? First calculate % error by using:

   % error = accepted value – experimental value/accepted value x 100 %

Accepted value = 79.8 cal

Show calculations for each trial.

Conclusion: Write a conclusion below that ties the data to the expressed purpose and the results.