Procedure

1.   If it has ***not*** been done for you already, remove the
          little metal cup from the calorimeter and weigh it.
          Record the mass in the data table.
2.   Add 100 mL of water using a graduated cylinder.
3.   Find the total mass. Record the total mass in the
          data table.
4.   Subtract to obtain the mass of the H_2O. Record the
          water's mass in the data table.
5.   Place the cup of water into the calorimeter, and put
          the top back in place.
6.   Connect the top to the circuit shown in the
          diagram. Use the **5A scale** on the ammeter.
7.   Connect the voltmeter to the calorimeter. Connect
          the wire to the 5 scale on the voltmeter.
8.   Stir and record the initial temperature of the water
          in the data table.
9.   Turn the power on and adjust the voltage to 3 V.
          Start counting 10 minutes.
10.   Stir the water **gently** and periodically for exactly
          10 minutes. In the meantime, record the current
          reading from the ammeter.
11.   After 10 minutes, record the final temperature.
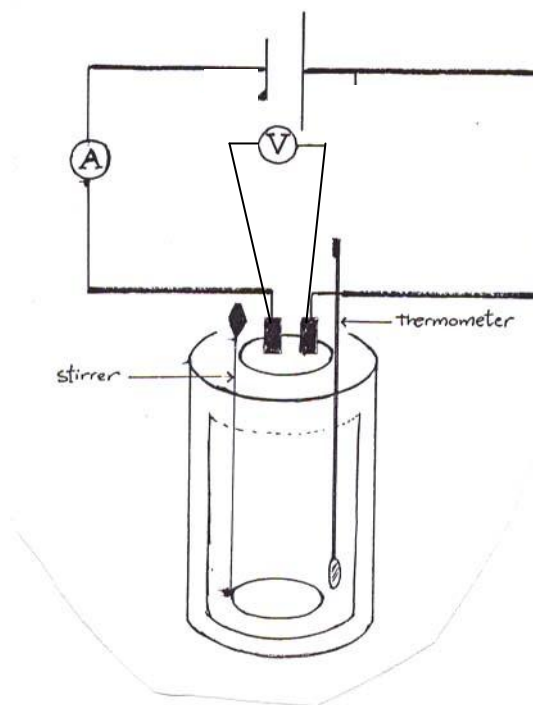
Data

Mass of cup (g)	
Mass of cup + water(g)	
Mass of water(g) (SUBTRACT ABOVE)	
Water's Initial Temperature (^{o}C)	
Voltage (V)	
Current (A)	
Water's Final Temperature (^{o}C)	
Time	10 minutes = _____ seconds

Analysis

1.   Calculate the amount of electrical energy (E) arriving at the calorimeter during 10 minutes using $E = VIt$ and the relevant values from the data table.

2.   To find the quantity of heat (Q) actually absorbed by the water, use $Q = mc\ \Delta T$ (see explanation in brackets) (m = mass of water; $c = 4.19$ J/(g ^{o}C); $\Delta T =$ change in water temperature during the 10 minutes.

3.   a.   Calculate Q - E.

       b.   As you can see, there is a difference between quantity of heat (Q) and electrical energy (E).
              How was electrical energy lost from the system? Think of three places where the energy could have gone instead of staying in the water.

       1._____
       2._____
       3._____

Conclusion: (What was measured and how? What was learned about the relationship between heat absorbed by water and electrical energy delivered by the power supply?)