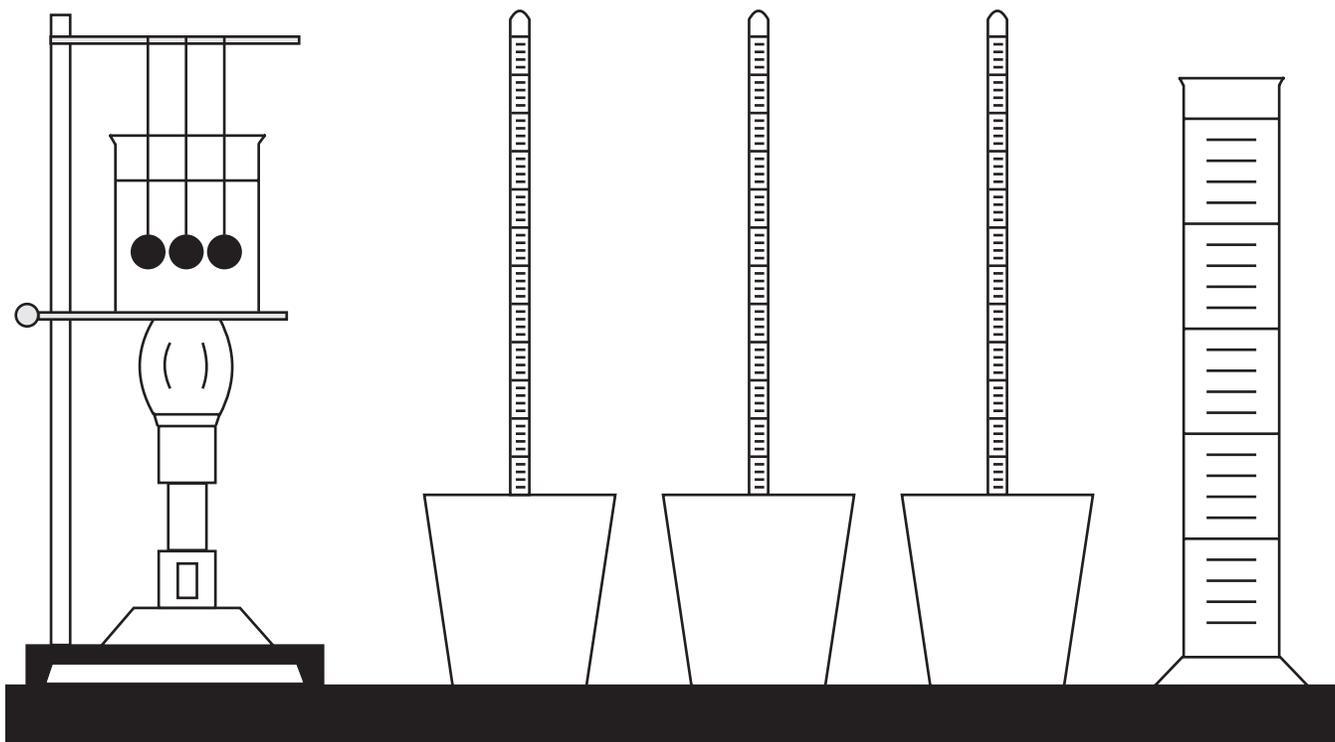


# LAB-SPECIFIC HEAT

**OBJECTIVE-**The goal of this lab is to measure the specific heat for a variety of different solids and to compare these measured values to standard values.

## **PROCEDURE-**

1. Set up the apparatus as shown below.



2. Using a balance, determine the mass of each of the three balls and record these masses. Thread each ball with a string (10-15 centimeters long) through the drilled hole. Tie several knots in one end of each string so that it can't pass back through the hole. Tie the other end of each string to a rod above the beaker.
3. Using a graduated cylinder, add 100.0 ml of water to each styrofoam cup. Allow the water to sit as long as possible (until you are ready to drop the balls in the water) so that it approaches room temperature.
4. Determine the mass of water in each cup using the density of water and the measured volume.
5. Heat the water in beaker bringing it to a boil and keep it boiling for several minutes so that the three metal balls are in thermal equilibrium with the water (the temperature of the balls is now the boiling point of the water).
6. While the water in the beaker is boiling, put the lid on each cup, insert a thermometer through each lid into the water, allow them to sit for several minutes until each thermometer is in thermal equilibrium with the water. Read and record the temperature of the water in the cup.
7. Take the balls out of the boiling water one at a time and place each in a different styrofoam cup (of course you'll have to remove the lid first), replacing the lid on each with the thermometer through the lid in the water. Allow the cups to sit until thermal equilibrium is reached between the water and each ball (this will be when the temperature of the water no longer rises). Read and record this equilibrium temperature.
8. Calculate the specific heat of each ball and compare with the accepted values in the text.