11. Place the calorimeter and stirrer on the balance, and carefully add 100 g of the water. Record the mass of the water in your data table. Replace the cup in its insulating shell, and cover.

12. Determine the temperature of the metal shot by observing the temperature readings in degrees Celsius displayed on the calculator. When the readings are stable, record the displayed temperature in your data table as the metal's initial temperature.

13. Carefully remove the temperature probe from the dipper.

14. Use the stirring rod to stir the water in the calorimeter. Place the temperature probe in the calorimeter. Determine the initial temperature of the water in the calorimeter by observing the temperature readings displayed on the calculator. When the readings are stable, record the displayed temperature in your data table as the calorimeter's initial temperature. Leave the probe in the calorimeter.

15. From the DataMate® main screen, select START to begin collecting the temperature readings for the water in the calorimeter.

16. Quickly transfer the metal shot to the cold water in the calorimeter and replace the cover. Use a mitt when handling the metal heating dipper. Use the stirring rod to gently agitate the sample and to stir the water in the calorimeter. If you are not doing any more trials, make sure the hot plate is turned off. Otherwise, make sure there is plenty of water in the heating vessel, and do not leave the hot plate unattended.

17. When data collection is finished, a graph of temperature and time will be displayed. Time in seconds is graphed on the *x*-axis, and the temperature readings are graphed on the *y*-axis. Use the arrow keys to trace along the curve. Record the highest temperature reading displayed on your graph in the data table. Press ENTER to return to the main screen.

18. If time permits, perform additional trials with other samples. Record data for all trials in your data table.

ANALYSIS, CONCLUSIONS, AND EXTENSION

Complete the Analysis and Conclusions items for the Skills Practice Lab "Specific Heat Capacity." Your teacher may also instruct you to complete the Extension exercise.

Figure 1

Step 5: Start heating the water before you set up the calculator and temperature probe. Never leave a hot plate unattended when it is turned on.

Step 7: Be very careful when pouring the metal shot into the dipper around the temperature probe.

Step 15: Begin taking temperature readings a few seconds before adding the shot to the calorimeter.

Step 17: Record the *highest* temperature reached by the water, shot, and calorimeter combination, not the final temperature.