Name_____ Period _____ Date _____

⟨⟩ Calorimetry

Lesson 6: Specific Heat of Coal
Coal is a common fossil fuel that is burned for electricity. How does the burning of coal affect the temperature increase of the water?

Doing the Science
1.   Start the Calorimetry Simulation by clicking on the "Sim" tab.
2.   Using the mouse, drag the coal from the shelf to the balance to measure its mass.
3.   Record the mass into the "Mass of Coal Before Ignition" cell in Table 1 below.
4.   Move the coal from the balance to the hot plate underneath the flask of water.
5.   Record the temperature of the water in "Temperature of Water Before Ignition."
6.   Click on "Ignite" to set the coal on fire.
7.   Clicking on "10*X*" will speed up the timer.
8.   Record the maximum temperature of the water in "Temperature of Water After Ignition".
9.   Reweigh the coal on the balance and record the data in "Mass of Coal After Ignition".
10.   Place the coal back onto the shelf.
11.   Click on "Show Data" to compare the data you collected.
12.   Click on "Hide Data" after analyzing your results.
13.   Calculate the difference in mass by subtracting the "Mass of Coal After Ignition" from "Mass of Coal Before Ignition" and record the number in "Difference in Mass".
14.   Calculate the difference in temperature by subtracting the "Temperature of Water After Ignition" from "Temperature of Water Before Ignition" and record the number in "Difference in Temperature".

Table 1.

Mass of Coal Before Ignition	Mass of Coal After Ignition	Difference in Mass	Temperature of Water Before Ignition	Temperature of Water After Ignition	Difference in Temperature

Do You Understand?
1.   The amount of calories from the burning of the material can be calculated by multiplying the mass of water by the difference in temperature increase and by the specific heat of water. The specific heat for water is 1 calorie/(gram × °Celsius). Assume the flask of water contains 100 grams. Calculate the number of calories released by the coal when burned.

2.   Determine the heat content of the coal. To do this, divide the number of calories released by burning the coal by the difference in the coal's mass.