

Fuel Me Up

NAME _____ DATE _____



Objective To determine which type of fuel source produces the most energy.

NOTE: Temperature is measured in degrees Celsius ($^{\circ}\text{C}$). Heat is *not* measured in degrees Celsius.

Heat is measured in **calories (cal)**. One calorie is the amount of heat needed to raise the temperature of 1 g of water 1°C . For instance, it takes 1 cal of heat to raise the temperature of 1 g of water from 25°C to 26°C . *calories = mass of water \times change of temperature. (1 ml of water equals 1g).*

METHODS:

Materials:

- Graduated cylinder
- Stand with clamp
- Fuel 1
- Distilled water
- Datalog with temperature probe
- Fuel 2
- Boiling tube
- Spirit burners
- Fuel 3 (Bunsen burner)

Procedure

1. Using the graduated cylinder, measure out 15 ml of distilled water and pour into the boiling tube.
2. Attach the boiling tube to the stand.
3. Measure the initial temperature of the water.
4. Place the spirit burner with Fuel 1 under the boiling tube where the bottom of the tube touches the flame.
5. Allow the fuel to burn for 1 minute. If possible try to keep an eye on the flame. If it goes out quickly relight.
6. **Carefully** stir the water and then measure the temperature. You may have to leave the thermometer in the water for a while in order to get the highest reading. Record your data.
7. Repeat the procedure using the other fuel.
8. Graph your data

DATA

Fuel Type	Temperature of Water ($^{\circ}\text{C}$)		
	Initial Temperature	Final Temperature	Change in Temperature
Fuel 1			
Fuel 2			
Fuel 3			

CONCLUSIONS:

1. Which fuel produced the most energy? Explain your answer.
2. What was the amount of energy produced by each fuel (joules, calories)?
NOTE: 1 calorie = 4.2 joules
3. Did the shape of the graph tell you about the amount of energy in each fuel?
4. Was this a fair test? How do you know?