

**Analysis and Interpretation of data for Energy in Foods Lab**

**DATA TABLE:** (After the calculations are finished record the answers here.)

Food sample	Initial Temp water (°C)	Final Temp Water (°C)	Mass water (1 mL = 1 g) (g)	Mass food sample (g)
Wheat Thin (Example Food 1)				
(Food 2)				
(Food 3)				
(Food 4)				

**CALCULATIONS:** (add this section, copied exactly, to a blank page in your lab book. Use values from your data table on the blanks. Make a Calculations Table like the one on the back of this paper. Write the ANSWERS in your Calculations Table)

1. Calculate the temperature change of water for each substance.

$$\text{final temperature} - \text{initial temperature} = \Delta T$$

Food 1: \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Food 2: \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Food 3: \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Food 4: \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_

Energy in Foods Analysis and conclusion

2. Calculate the heat gained by the water from each substance burned. Show all work in this format, writing a unit by each number.

$$Q = m \cdot c \cdot \Delta T$$

where Q = heat gained by the water

m = mass of **water** used in this trial

c = 1  $\frac{\text{cal}}{\text{g} \cdot ^\circ\text{C}}$

$\Delta T$  = change in temperature for this food

Food 1: \_\_\_\_\_

Food 2: \_\_\_\_\_

Food 3: \_\_\_\_\_

Food 4: \_\_\_\_\_

3. The heat gained by the water is equal to the heat lost by the food:

$$Q \text{ gained by water} = Q \text{ lost by food sample}$$

4. Calculate the amount of heat per gram of food for each type of food:

$$\text{Heat per gram for food sample} = \frac{Q \text{ lost by food}}{\text{Mass food}}$$

Food 1: \_\_\_\_\_

Food 2: \_\_\_\_\_

Food 3: \_\_\_\_\_

Food 4: \_\_\_\_\_

Energy in Foods Analysis and conclusion

**Calculations Table:** (After the calculations are finished record the answers here.)

Food sample	$\Delta T$ °C	Q gained by water = Q lost by food	Mass food	Q/gram food

**Calculations (in the format shown above)**

1. Calculate the average temperature change per gram for each food.
2. Calculate the amount of heat gained by the water for each food.
3. Calculate the amount of heat gained by each food.
4. Calculate the amount of heat gained per gram of food, for each food.

**Energy of Food Analysis Questions**

5. The manipulated (changed) variable was.....
6. The responding (measured) variable was.....
7. List at least 3 controlled variables.
8. Which food had the most energy per gram? Which food had the least?
9. Do your data support your hypothesis, or will you reject your hypothesis? Explain.
10. List 3 sources of error.
11. Explain how you could prevent these sources of error and make the experiment more valid.
12. Describe at least 2 energy transfers or transformations that occurred in your procedure. Give the beginning and ending forms of energy. For transformations, also tell where the transformation took place.

## Energy in Foods Analysis and conclusion

### **Conclusion:**

State the purpose of the lab.

Summarize your findings. How much energy was in each food you tested? Did your results match your predictions?