

Journal Prompt: Trusting the Numbers in a Calorimetry Lab

Every calorimetry experiment produces a number, but not every number deserves your full confidence.

Suppose you burned a peanut to heat a known mass of water and calculated the molar enthalpy of combustion using $Q = mc\Delta T$ ([Outcome](#)), then compared your result to the accepted value and found it was 40% too low. Write a journal entry explaining where the heat likely went, and what a real experimenter does with a result like this.

Where to start:

- What assumptions does $Q = mc\Delta T$ make about where the heat goes ([Outcome](#))?
- In a real calorimeter, what happens to heat that never reaches the water?
- How does an open flame near a peanut, rather than an enclosed calorimeter, change your error sources ([Resource](#))?
- Would a polystyrene-cup calorimeter reduce this error, and why ([Resource](#))?

Stretch:

Using ΔH_{comb} and ΔH_{f} write both the theoretical and experimental enthalpy values for your reaction as signed quantities ([Outcome](#)), and explain in one sentence why the sign matters even when the magnitude is wrong ([Outcome](#), [Outcome](#)).