

Laboratory Write-Ups

DATA & CALCULATIONS

Data Table and Calculation Table:

The data section of your write-up clearly shows what you have measured. A well thought out data table guides you efficiently through the lab. If you cannot figure out how to make a data table before the lab, you have not prepared for the lab carefully enough.

Make the distinction between data and calculations. For example, you do not *measure a change* in temperature, you measure the *initial* and *final* temperatures and *calculate* the change. Δ Temperature should not be part of your "data". This distinction is on the AP exam.

Examples:

DATA:

initial volume of water _____ ± 0.1 mL
 final volume of water _____ ± 0.1 mL
 initial temperature of water _____ ± 0.1 °C
 final temperature of water _____ ± 0.1 °C

CALCULATIONS:

mass of ice melted _____ g
 moles of ice melted _____ moles
 Δ Temperature _____ °C
 heat absorbed by ice _____ kJ
 ΔH_{fus} ice _____ kJ/mol

DATA:	Trial 1	Trial 2	Trial 3
initial volume of water (± 0.1 mL)			
final volume of water (± 0.1 mL)			
initial temperature of water (± 0.1 °C)			
final temperature of water (± 0.1 °C)			

Sample Calculations:

You need to show the reader how each value in your Calculation Table was derived. Units should be used. Here is a reasonably good example. Notice how the Mass of ice is given as mL, not grams (oops.)

Sample Calculations

$$\text{Mass of ice} = 115 \text{ mL} - 100 \text{ mL} = 15 \text{ mL}$$

$$\text{Heat lost by water} = -mc\Delta t = -(100 \text{ mL})(4.184 \text{ g} \cdot \text{C}^\circ)(32^\circ\text{C} - 16.5^\circ\text{C}) = -6485.2 \text{ J}$$

$$\text{Heat gained by ice} = 6485.2 \text{ J}$$

$$\text{Heat to melt 1 g of ice} = \frac{6485.2 \text{ J}}{15 \text{ g}} = 432.3 \text{ J/g}$$

$$\text{Heat to melt 1 mol of ice} = 432.3 \text{ J/g} \cdot \frac{18.016 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = 7783.3 \text{ J/mol} \approx 7.8 \text{ kJ/mol}$$