

Name: _____

Section: _____

Data and Calculations

	Trial 1		Trial 2		Trial 3
Mass dry calorimeter	_____	=	_____	=	_____
Mass calorimeter + volume H ₂ O	_____		_____		_____
Initial temperature of water in calorimeter	_____		_____		_____
Mass of metal	_____	=	_____	=	_____
Initial temperature of hot metal (before adding it to calorimeter)	_____		_____		_____
Final temperature of water + metal in calorimeter	_____		_____		_____
Δt_{water}	_____		_____		_____
Δt_{metal}	_____		_____		_____

1. Calculate the specific heat of the metal from each trial and find the average value. If the two values do not agree to within 0.06 J/g °C, a third trial must be run. SHOW CALCULATIONS:

Trial 1 _____ Trial 2 _____ Trial 3 _____

Average Specific Heat _____ J/g °C

2. Find the actual value for the specific heat of your metal in a reference book. Give this value in J/g °C or J/g K. Calculate the % error of your average value.

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Post-lab Questions

1. Do objects that have the same temperature have the same amount of heat? Briefly explain.
2. What is the difference between something which is hot and something which has a lot of heat?
3. How much heat would it take to raise the temperature of 645 g of water by 25°C? SHOW CALCULATIONS.
4. When a 15.411 gram sample of metal gains 128.0 J of heat, its temperature changes from 18.55 °C to 83.00 °C. What is the specific heat of the metal? SHOW CALCULATIONS.
5. A metal sample weighing 71.9 g and at a temperature of 100.0 °C was placed in 41.0 g of water in a calorimeter at 24.5 °C. At equilibrium, the temperature of the water and metal was found to be 35.0 °C.
 - A. What was Δt_{water} ?
 - B. What was Δt_{metal} ?
 - C. How much heat flowed into the water?
 - D. Calculate the specific heat of the metal.