

Success 24/7 Chemistry: Calorimetry

Calorimetry is the measurement of heat changes for chemical and physical processes.

Heat released by the system = heat absorbed by the surroundings

Calorimeter – an insulated device used to measure heat change in a chemical or physical process.

Hint: You should create a “t-chart” any time the problem mentions a calorimeter being utilized.

Metal	Water
q =	q =
m =	m =
C =	C = 4.18 J/g°C
T _i =	T _i =
T _f = *	T _f = *
ΔT =	ΔT =

* T_f will be the same for the metal and the water.

Practice Problems:

A 45g piece of metal was heated to 45.9 °C and then placed in a calorimeter containing 100.0 g of water at 19.6 °C. The final temperature of the mixture was 33.7 °C. Calculate the specific heat capacity of the metal.

A 46.2 g sample of copper is heated to 45.9°C and then placed in a calorimeter containing 93.2 g of water at 18.6°C. The final temperature of the metal and water is 33.7°C. Calculate the specific heat capacity of copper.

A 55 g piece of metal was heated to 105 °C and then dropped into a calorimeter containing 177 g of water. The temperature of the water in the calorimeter changed from 11.0 °C to 24.2 °C. What is the specific heat of the metal?