

1. Use the table on page 65 as a guide.
2. First calculate how much heat is added to the calorimeter, then calculate how much heat is absorbed by the cold water. The difference between them is the heat absorbed by the calorimeter. The amount of heat absorbed by the water should be a lot more than that absorbed by the calorimeter.

$$[\text{heat in}] = [\text{heat absorbed by the water}] + [\text{heat absorbed by the calorimeter}]$$

$$[-m \times c_m \times \Delta T_H] = [m \times c_s \times \Delta T_C] + [C_{\text{cal}} \times \Delta T_C]$$

3. This is the general equation we always use for calorimetry problems:

$$-m \times c_m \times \Delta T_H = m \times c_s \times \Delta T_C + C_{\text{cal}} \times \Delta T_C$$

In this problem, you need to determine the final temperature (T_f), which is part of the ΔT terms:

$$\Delta T_H = T_f - T_H$$

$$\Delta T_C = T_f - T_C$$

So if you expand the ΔT terms into $T_f - T_H$ and $T_f - T_C$, you end up with this equation.

$$-m \times c_m \times (T_f - T_H) = m \times c_s \times (T_f - T_C) + C_{\text{cal}} \times (T_f - T_C)$$

Now you know everything except the final temperature, and can solve for T_f .

4 – 5. When you calculate the standard enthalpy of formation (enthalpy is just another word for heat), you're your reactants have to be elements in their standard state (so you can't have any reactants that contain more than one element) and your product has to be ONE MOLE of the compound of interest, and nothing else left over. To create that equation, you can flip the given equations around, add and subtract them, and multiply or divide them however you want to in order to get the equation you need. But whatever you do to the equation, you must also do to the ΔH^0 for the equation. So if you multiply an equation by 2, multiply the ΔH^0 by 2. If you reverse an equation, change the sign on the ΔH^0 .

Then add all the equations together and add all the ΔH^0 values together to get the final ΔH^0 .