Using the Heat Equation

$Q = mc\Delta T$

Where Q is the heat absorbed (+) or released (−) (J)

m is the mass (g)

c is the specific heat capacity $\left(\frac{J}{g \cdot °C}\right)$

(for liquid water $c = 4.18 \frac{J}{g \cdot °C}$)

ΔT is the temperature change (°C)

$\Delta T = T_f - T_i$

Example

How much heat is needed to heat 250g (m) of liquid water from 12°C (T_i) to 98°C (T_f)?

$c = 4.18 \frac{J}{g \cdot °C}$

$m = 250\,g$

$T_i = 12°C$

$T_f = 98°C$

$c = 4.18 \frac{J}{g \cdot °C}$

$Q = ?$

$Q = mc\Delta T$

$Q = mc(T_f - T_i)$

$Q = (250\,g)\left(4.18 \frac{J}{g \cdot °C}\right)(98°C - 12°C)$

$Q = (250\,g)\left(4.18 \frac{J}{g \cdot °C}\right)(86°C)$

$Q = 89870\,J$

$\boxed{Q = 9.0 \times 10^4\,J}$

9.0×10^4 J of heat is needed

Rearranging: $\frac{Q}{c\Delta T} = \frac{mc\Delta T}{c\Delta T}$

$m = \frac{Q}{(c\Delta T)}$

↑ be careful with products in the denominator.