Change in temperature of water

specific heat capacity (c) → $4.18 \frac{J}{g°C}$ (liquid water)

It takes 4.18J to increase the temperature of 1g of liquid water by 1°C.

$$Q = mc\Delta T$$

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

m is the mass (g)

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

ΔT is the change in temperature (°C)

$(\Delta T = T_f - T_i)$

* Water (liquid) has a very high specific heat capacity.

Example

What is the specific heat capacity of a substance if it takes $4.28 \times 10^3 J$ (Q) to increase (+ΔT) its temperature by 15.8°C (ΔT) for a mass of 525g (m)?

$Q = 4.28 \times 10^3 J$

$\Delta T = 15.8°C$

$m = 525g$

$c = ?$

$Q = mc\Delta T$

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

$c = \frac{4.28 \times 10^3 J}{(525g)(15.8°C)}$

$c = 0.516 \frac{J}{g°C}$