Calculate the ratio between the energy Q1 required to boil off 10 kg of water at 100°C and energy Q2 required to raise the temperature of 10kg of water from 0°C to 100°C.(Specific latent heat of vapourization of water is 22.5 *100000 J/Kg,Specific heat capacity of water is 4200J/Kg/°C.

$We\ will\ use\ well\ known\ formulas\ for\ Q1\ and\ Q2$

$Q1 = rm, where\ r - specific\ latent\ heat\ vapourization\ of\ water, m\ is\ the\ mass\ of\ water$
$Q2 = cm(t2 - t1), where\ c - specific\ heat\ capacity\ of\ water, t2 = 100^0C, t1 = 0^oC$

$$\frac{Q1}{Q2} = \frac{rm}{cm(t2 - t1)} = \frac{r}{c(t2 - t1)} = \frac{22.5 * 10^5}{4200 * (100 - 0)} \approx 5.357$$