## [tex52] Triple point phase changes

A vessel with insulating and rigid walls contains 1g of water, 1g of ice, and 1g of $H_2O$ vapor in thermal equilibrium. Now we add the amount $\Delta Q = 251$J of heat to the vessel. Find the amount (in grams) of ice, water, and vapor in the new equilibrium state. The densities of ice and water are taken to be equal and much larger than the density of vapor.

Triple point temperature: $T = 273$K.

Triple point pressure: $p = 611$N/m$^2$.

Latent heat of fusion: $L_{sl} = 335$J/g.

Latent heat of vaporization: $L_{lg} = 2495$J/g.

Latent heat of sublimation: $L_{sg} = L_{sl} + L_{lg} = 2830$J/g.

**Solution:**