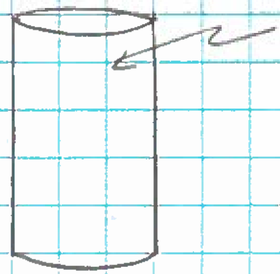


Argon, $M = 1.0\,g$, $p = 8$ atm

Also, $A = 40\,u \Rightarrow M_{mol} = 0.04 \frac{kg}{mol}$

So, $n = \frac{0.001\,kg}{M_{mol}} = 0.025$ mol

and, $C_V = 12.5 \frac{J}{mol\,°C}$ & $C_p = 20.8 \frac{J}{mol\,°C}$

a.) for $\Delta T = 100°C$ at constant volume:

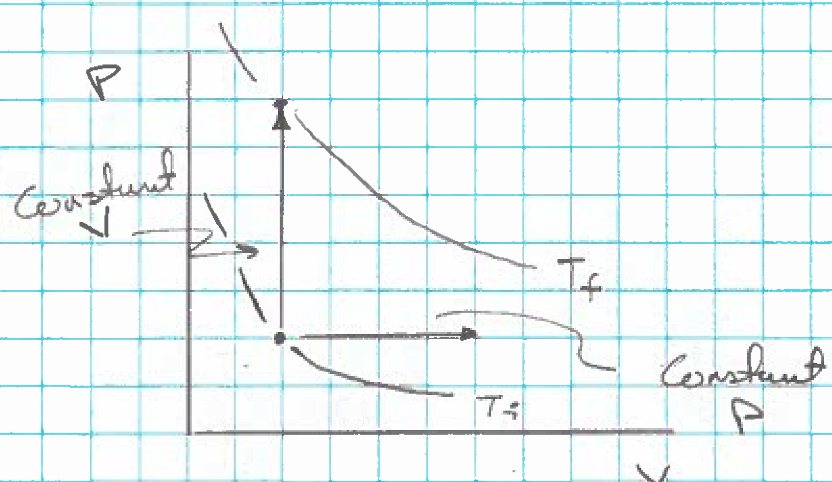
$$Q = nC_V\Delta T = \underline{31.25\,J}$$

b.) what is ΔT for $Q = 31.25\,J$ at constant pressure

$$Q = nC_p\Delta T$$

So, $\Delta T = \frac{Q}{nC_p} = \underline{60.1°C}$

Why the difference?



for p = constant, some of the heat is used in expanding the gas (negative work) instead of raising the temperature. for V = const, all of the heat is used in raising the temp.