Project 2A Notes:

Performance = $W_{comp} + Q_H$
$= Q_L + W_{turb}$

Signs TBD

Efficiency = $\frac{\text{Performance}}{Q_H}$

Cp: 1.005 → K = 1.4
n = 1/.4
R = .287 constant

Compressor - isentropic → $C = Pv^K$ = constant
Combustor - Isobaric → $P_1 = P_2$
Turbine - Isentropic → C
Nozzle - Isentropic → C

→ $Q_H = C_p(T_3 - T_2)$
$Q_L = C_p(T_5 - T_1)$ + h change

$W_{comp} = C_p(T_2 - T_1)$
$W_{Turb} = C_p(T_4 - T_3)$

$Pv = RT$

Non Cp) Table Air_data1.xls

Can use $Pv = RT$

→ interpl to find T, s, u or h if you have another

→ h_4 defined as $h_3 - (h_2 - h_1)$ → from notes

$$S_{T4} = T_{40} + R \ln\left(\frac{P_1}{P_c}\right)$$

Find h from tables → so:

$Q_H = h_3 - h_2$; $Q_L = h_5 - h_1$

$W_{comp} = h_2 - h_1$; $W_{turb} = h_4 - h_3$

Perf → same as Cp

efficiency → same as Cp