

Exam 1



$$T_3 = 577 \text{ K}$$

$$\gamma = \frac{5}{3}$$

$$P_1 V_1 = P_2 V_2$$

$$P_2 = \frac{P_1 V_1}{V_2} = 100,000$$

$$T_1 V_1^{\gamma-1} = T_3 V_3^{\gamma-1}$$

$$T_1 = T_3 \left(\frac{V_3}{V_1} \right)^{\gamma-1}$$

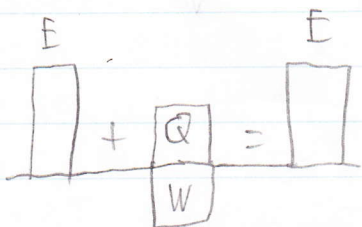
$$T_1 = 1200$$

$$\frac{T_2}{P_2} = \frac{T_3}{P_3} \quad P_3 = \frac{T_3 P_2}{T_2}$$

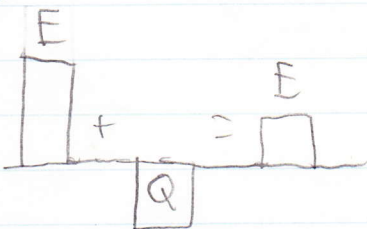
a)

	P	V	T
1	300,000	.001	1200
2	100,000	.003	1200
3	48,075	.003	577

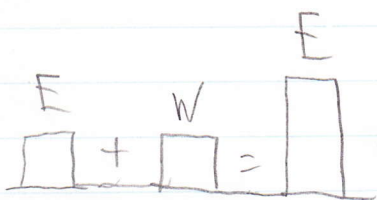
b) 12.



23



31



	ΔE	W	Q
12	0	-329.6	329.6
23	-233.7	0	-233.7
31	233.7	233.7	0

$$W_{12} = P_1 V_1 \ln\left(\frac{V_2}{V_1}\right) = 329.6$$

$$Q_{23} = n C_V \Delta T = \frac{3}{2} V_2 (P_3 - P_2) = -233.7$$

$$W_{31} = -n C_V \Delta T = \frac{3}{2} (P_1 V_1 - P_3 V_3)$$