

* 55. 100 kJ @ 800 K HEAT IN - 2 -
50 kJ @ 300 K HEAT OUT

$$\text{IDEAL Eff} = \frac{T_{\text{HOT}} - T_{\text{COLD}}}{T_{\text{HOT}}} \\ = \frac{800\text{K} - 300\text{K}}{800\text{K}}$$

$$\text{Eff} = 62.5\%$$

ACTUAL

$$\text{Eff} = \frac{50\text{kJ}}{100\text{kJ}}$$

$$\text{Eff} = 50\%$$

* 57. $\text{Eff} = \frac{W_{\text{out}}}{Q_{\text{IN}}}$ $3800\text{J} = Q_{\text{out}}$

BUT $W = Q_{\text{IN}} - Q_{\text{OUT}}$ $1200\text{J} = W$

$Q_{\text{IN}} = W + Q_{\text{OUT}}$ Don't know Q_{IN}

$$\text{Eff} = \frac{W_{\text{out}}}{W_{\text{out}} + Q_{\text{OUT}}} \\ = \frac{1200\text{J}}{3800\text{J} + 1200\text{J}}$$

$$= 24\%$$