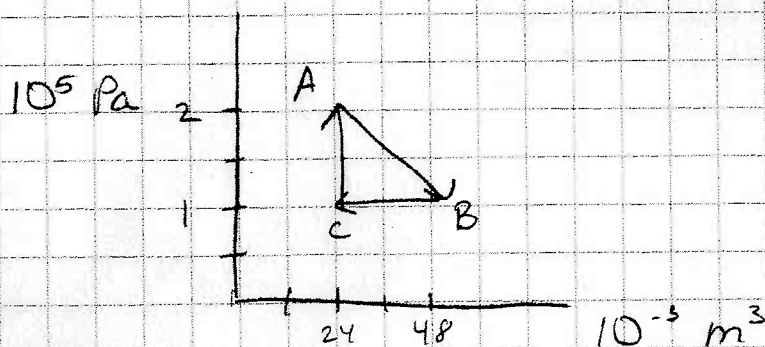


$$n = 1.03 \text{ mol}$$

$$T_A = T_B = 560 \text{ K}$$

$$T_C = 280 \text{ K}$$

$$Q_{\text{Absorbed}} = 7195 \text{ J}$$



$$\begin{aligned} a) \quad W &= \text{area within a cycle} \\ &= \frac{1}{2} \cdot b \cdot h \\ &= \frac{1}{2} \cdot (24 \times 10^{-3}) \cdot (1 \times 10^5 \text{ Pa}) \end{aligned}$$

$$W = -1200 \text{ J}$$

(negative because AB is largest process and increases in Volume)

$$\begin{aligned} b) \quad T_H &= T_A = T_B = 560 \text{ K (highest temp)} \\ T_C &= 280 \text{ K (lowest temp)} \end{aligned}$$

$$e_c = \frac{T_H - T_C}{T_H} = \frac{560 \text{ K} - 280 \text{ K}}{560 \text{ K}}$$

$$e_c = 50\%$$

$$\begin{aligned} c) \quad Q_{\text{Absorbed}} &= 7195 \text{ J} \\ W &= -1200 \text{ J (found in a)} \end{aligned}$$

$$e_{\text{actual}} = \left| \frac{W}{Q_H} \right| = \left| \frac{-1200 \text{ J}}{7195 \text{ J}} \right|$$

$$e_{\text{actual}} = 17\%$$