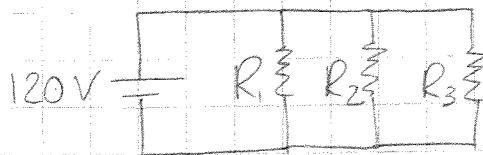


$$\begin{aligned}
 R_1 &= 150 \Omega && \text{(lamp)} \\
 R_2 &= 25 \Omega && \text{(heater)} \\
 R_3 &= 50 \Omega && \text{(fan)}
 \end{aligned}$$



$$a) \frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$R_{eq}^{-1} = (150 \Omega)^{-1} + (25 \Omega)^{-1} + (50 \Omega)^{-1}$$

$$R_{eq}^{-1} = .06$$

$$R_{eq} = 15 \Omega$$

$$\begin{aligned}
 V_{eq} &= I_{eq} \cdot R_{eq} \\
 (120 \text{ V}) &= I_{eq} \cdot (15 \Omega)
 \end{aligned}$$

$$I_{eq} = 8.0 \text{ A}$$

$$b) V_{eq} = V_1 = V_2 = V_3 \text{ (for parallel circuit)}$$

$$V_3 = 120 \text{ V}$$

$$\begin{aligned}
 c) R_1 &= 150 \Omega \\
 V_1 &= V_{eq} = 120 \text{ V}
 \end{aligned}$$

$$\begin{aligned}
 V_1 &= I_1 \cdot R_1 \\
 (120 \text{ V}) &= I_1 \cdot (150 \Omega)
 \end{aligned}$$

$$I_1 = .8 \text{ A}$$

$$\begin{aligned}
 d) R_2 &= 25 \Omega \\
 V_2 &= V_{eq} = 120 \text{ V}
 \end{aligned}$$

$$\begin{aligned}
 V_2 &= I_2 \cdot R_2 \\
 (120 \text{ V}) &= I_2 \cdot (25 \Omega)
 \end{aligned}$$

$$I_2 = 4.8 \text{ A}$$

$$P_2 = I_2 \cdot V_2 = (4.8 \text{ A})(120 \text{ V})$$

$$P_2 = 576 \text{ W}$$