

36. (a) From $P = V^2/R$ we find $R = V^2/P = (120\text{ V})^2/500\text{ W} = 28.8\,\Omega$.

(b) Since $i = P/V$, the rate of electron transport is

$$\frac{i}{e} = \frac{P}{eV} = \frac{500\text{ W}}{(1.60 \times 10^{-19}\text{ C})(120\text{ V})} = 2.60 \times 10^{19}/\text{s} .$$