

P # 15

Ch 17 - pg 550

$$\begin{aligned} a) \quad V &= 12 \text{ V} \\ I &= .40 \text{ A} \end{aligned}$$

$$V = I \cdot R \quad \text{or} \quad (12 \text{ V}) = (.40 \text{ A}) \cdot R$$

$$R = 30 \Omega$$

$$\begin{aligned} b) \quad R &= 30 \Omega \\ l &= 3.2 \text{ m} \end{aligned}$$

$$A = \pi \cdot r^2 = \pi \cdot (.004 \text{ m})^2 = 5.03 \times 10^{-5} \text{ m}^2$$

$$R = \frac{\rho \cdot l}{A} \quad \text{so} \quad 30 \Omega = \frac{\rho \cdot (3.2 \text{ m})}{(5.03 \times 10^{-5} \text{ m}^2)}$$

$$\rho = 4.7 \times 10^{-4} \Omega \cdot \text{m}$$