

Homework Key

P. 293 # 1-3

1. $I = 1.5A, V = 12V, R = ? \Omega$

$$R = \frac{V}{I} = \frac{12V}{1.5A} = 8\Omega$$

2. $R = 15\Omega, I = 0.80A, V = ?$

$$V = IR = 15 \times 0.8 = 12V$$

3. $V = 60V, R = 15\Omega$
 $I = ?$

$$I = \frac{V}{R} = \frac{60}{15} = 4.0A$$

P. 294 # 1-3

1. a) Convert units first!

$$I = 15mA \times \frac{1A}{1000mA} = 0.015A$$

$$0.015mA \times \frac{1A}{1000mA}$$

* need

$$I = 15mA \rightarrow 0.015A$$

$$R = 400\Omega$$

$$V = ?$$

b) Solve! $V = IR$

$$= 0.015A \times 400\Omega$$

$$= 6.0V$$

2. a) $R = 12k\Omega$ need $\Omega \rightarrow 12k\Omega \times \frac{1000\Omega}{1k\Omega} = 12000\Omega$

$$V = 90V$$

$$I = ? \text{ in } mA$$

$$b) I = \frac{V}{R} = \frac{90V}{12000\Omega} = 0.0075A$$

Convert to milliamps for final answer.

$$c) 0.0075A \times \frac{1000mA}{1A} = 7.5mA$$

3. $I = 1.2 \text{ mA} \rightarrow \text{need } \underline{\underline{A}}$
 $V = 120 \text{ V}$

$R = \underline{\underline{\Omega}}$ and $\underline{\underline{k\Omega}}$?

① Convert to A

$$1.2 \text{ mA} \times \frac{1 \text{ A}}{1000 \text{ mA}} = \boxed{0.0012 \text{ A}}$$

② Solve for R $R = \frac{V}{I} = \frac{120 \text{ V}}{0.0012 \text{ A}} = \boxed{100000 \Omega}$

③ Convert $100000 \Omega \rightarrow k\Omega$

$$100000 \cancel{\Omega} \times \frac{1 \text{ k}\Omega}{1000 \cancel{\Omega}} = \boxed{100} \text{ k}\Omega$$

