Name: Sey

Practice - 21.1 Resistors in Series and Parallel

1. You have ten 275- Ω resistors.

A. What is the resistance of these resistors if they are connected in series? $Req = R_1 + R_2 + ... + R_{10} = 10(2752) = 27500$

B. A. What is the resistance of these resistors if they are connected in parallel?

Reg = R1 + R2 + ... + R10 = 10 = 2752 > Reg = 27.52

2. You have a 1.00 x 10^2 - Ω resistor, a 2.50-k Ω resistor and a 4.00-k Ω resistor.

A. What is the resistance of these resistors if they are connected in series?

$$R_{eq} = ZR; \Rightarrow R_{eq} = 1.00 \times 10^{2} + 2.50 \times 10^{3} + 4.00 \times 10^{3} \Omega$$

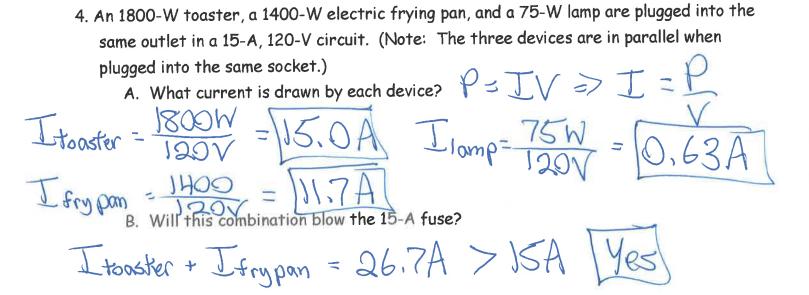
$$= 6.60 \times 10^{3} \Omega = 6.60 \times \Omega$$

B. A. What is the resistance of these resistors if they are connected in parallel?

| Reg = 0.100k2 2.50k2 + 4.00k? | Reg = 93.90

3. What are the largest and smallest resistances you can obtain by connecting a 36.0- Ω , a 50.0- Ω and a 700- Ω resistor together?

Rangest = Regres = 36.0+50.0+700 = [7862] Regradest = Regraded => Reg = 36 + 50 700 => Reg = 20.32



5. You have a 48.0-V battery and 24.0- Ω and 96.0- Ω resistors.

A. Find the current and power for each resistor when connected in series.

$$T = \frac{1}{R} = \frac{18.0 \text{ M}}{24.0 + 96.0 \Omega} = 0.400 A = T_{240} = T_{960}$$

$$P_{240} = T^{2}R = (0.400 A)^{2}(24.0 \Omega) = 3.84 \text{ M} P_{96} = (0.400 A)^{2}(96.0 \Omega) = 15.4 \text{ M}$$

B. Find the current and power for each resistor when connected in parallel.

$$I_{242} = \frac{1}{R} = \frac{18.0V}{24.00} = 2.004$$
 $I_{96} = \frac{18.0V}{96.00} = 0.500A$
 $P = IV = (2.0A)(48.0V) = 96.0W$ $P_{96} = (0.500A)(48.0V) = 24.0W$