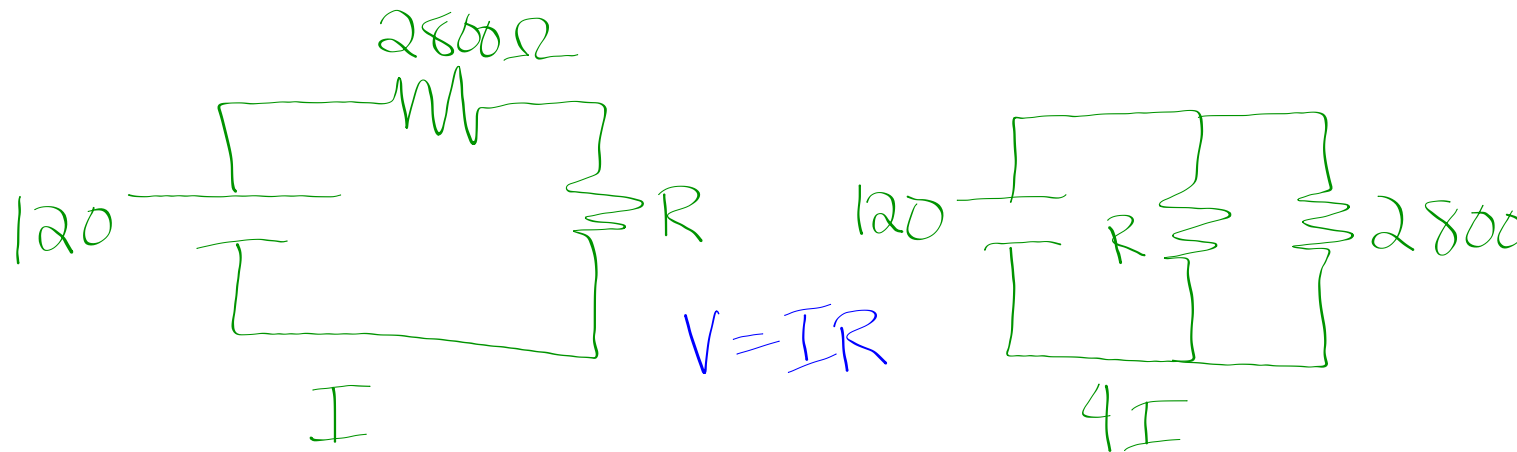


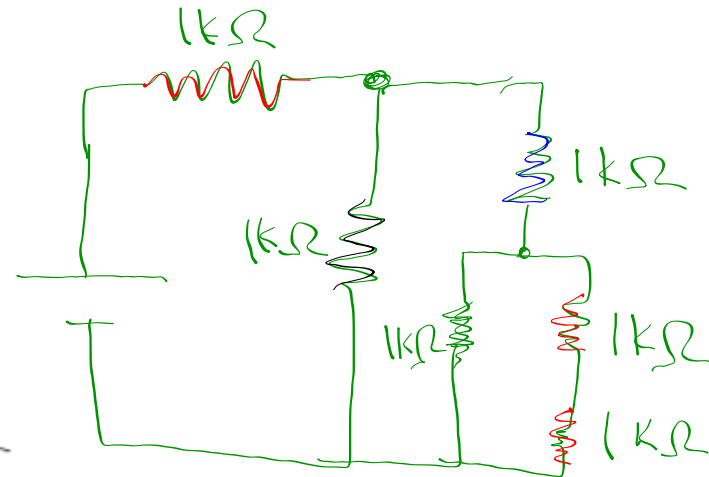
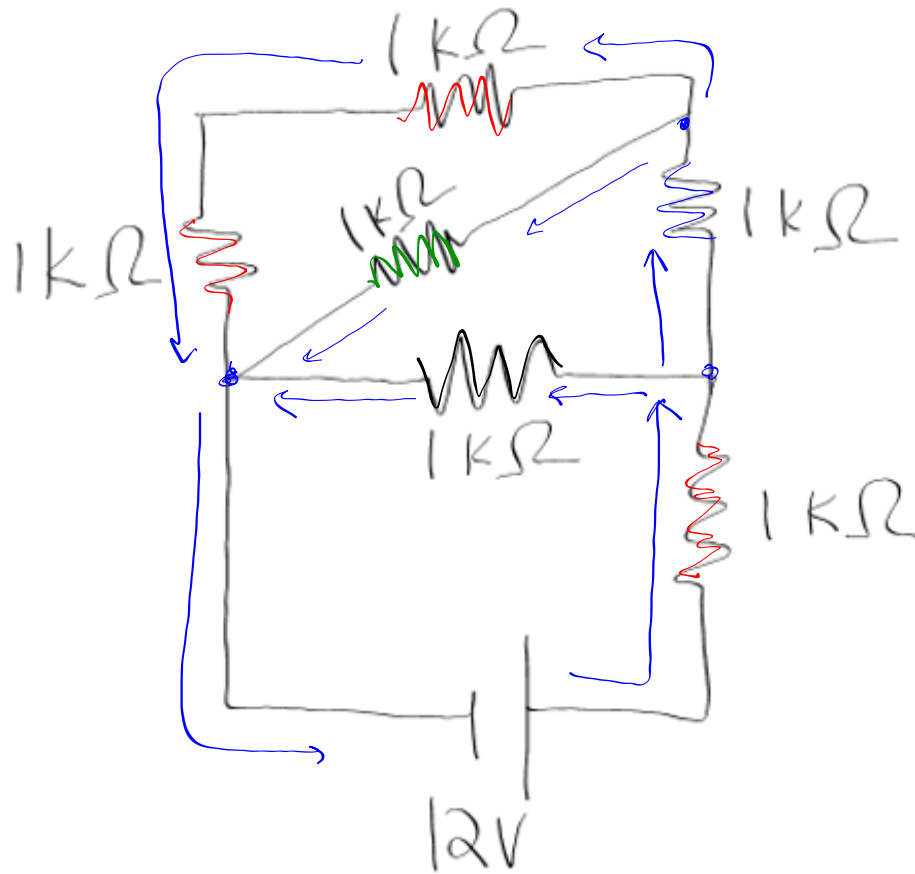
1. Two resistors when connected in series to a 120V power source draw one-fourth the current that is used when they are connected in parallel. If one resistor is 2.8 kOhms, what is the resistance of the other? ( $R = 2800 \Omega$ )



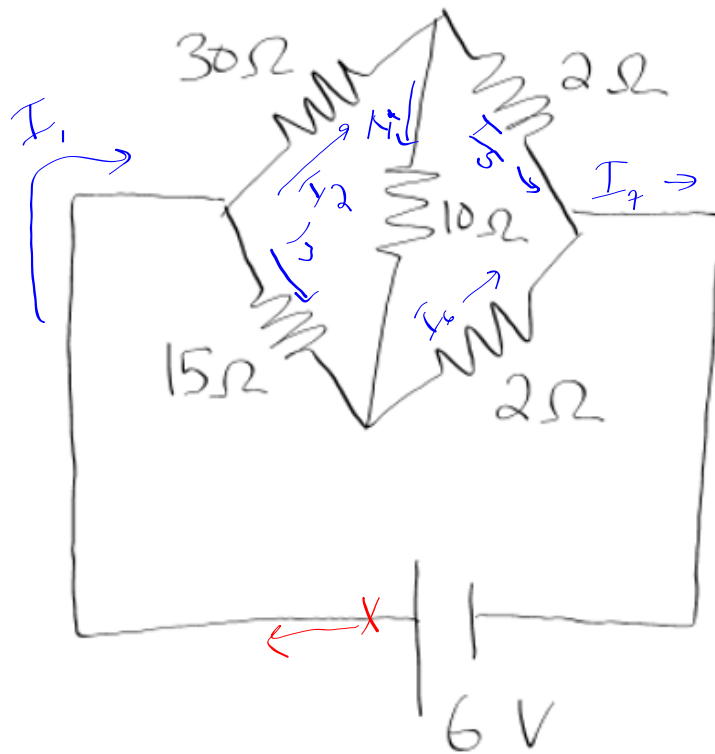
$$120 = I \cdot (2800 + R)$$

$$120 = 4I \left( \frac{1}{\frac{1}{R} + \frac{1}{2800}} \right)$$

2. What is the net resistance of the circuit below? ( $R = 1625 \Omega$ )



3. Determine the current through each of the resistors in the circuit below.



Junction Rule:

$$I_3 + I_4 = I_6$$

$$I_2 = I_4 + I_5$$

Loop:

$$6 - 15I_3 - 2I_6 = 0$$

$$6 - 30I_2 - 2I_5 = 0$$

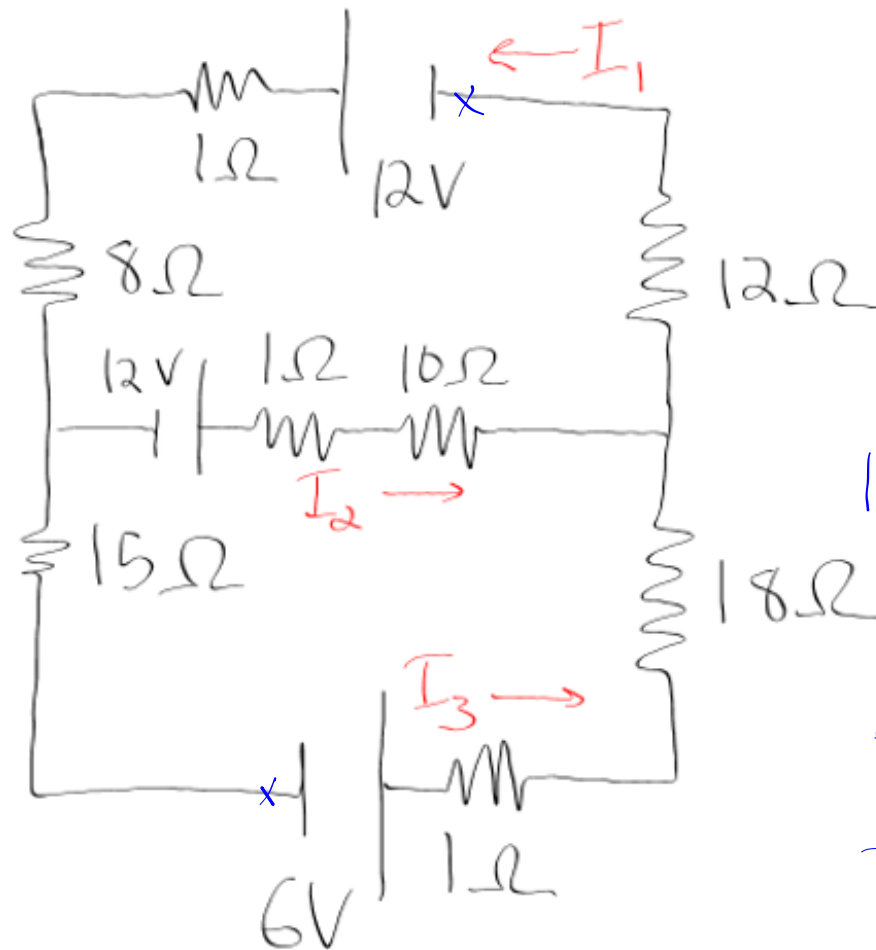
$$6 - 30I_2 - 10I_4 - 2I_6 = 0$$

$$I_2 = 0.186 \text{ A} \quad I_3 = 0.356 \text{ A}$$

$$I_4 = -0.026 \text{ A} \quad (\text{real direction is opposite my guess!})$$

$$I_5 = 0.33 \text{ A} \quad I_6 = 0.212 \text{ A}$$

4. Determine  $I_1$ ,  $I_2$ , and  $I_3$  in the circuit below.



Junction:

$$I_2 + I_3 = I_1$$

Loop:

$$12 - I_1 - 8I_1 + 12 - I_2 - 10I_2 - 12I_1 = 0$$

$$6 - I_3 - 18I_3 - 12I_1 + 12 - I_1 - 8I_1 - 15I_3 = 0$$

$$I_1 = 0.769 \text{ A} \quad I_2 = 0.714 \text{ A} \quad I_3 = 0.0546 \text{ A}$$