

For questions 1 – 3 consider this circuit

1. How many pathways are there for electricity to flow through?

One path

2. Is this a series or parallel circuit?

Series

3. If light bulb A was removed would light bulb B still work? Light bulb C?

No, all lights would go out.

For questions 4 through 7 consider this circuit

4. How many pathways are there for electricity to flow through?

Three paths

5. Is this a series or parallel circuit?

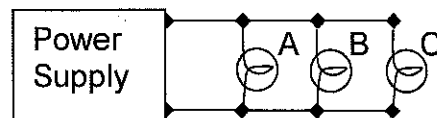
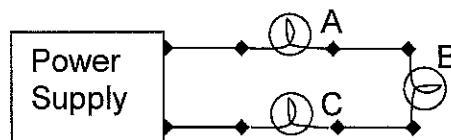
Parallel circuit

6. If a light bulb A was removed would light bulb B still work? Light bulb C?

All lights would still work

7. Would the removal of any light bulb affect the other two?

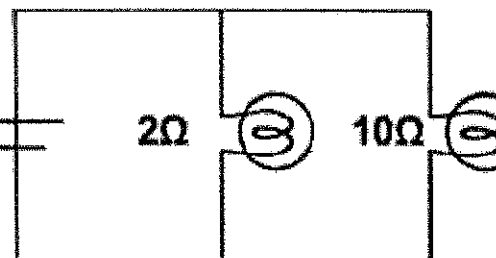
No they would all still work.



Use the parallel circuit pictured right to answer questions (a) - (d).

- a. What is the voltage across each resistor? $24V$
- b. What is the current in each branch? $\frac{24V}{2\Omega} = 12A$ $\frac{24V}{10\Omega} = 2.4A$
- c. What is the total current provided by the batteries? $12A + 2.4A = 14.4A$
- d. Use the total current and the total voltage to calculate the total resistance of the circuit.

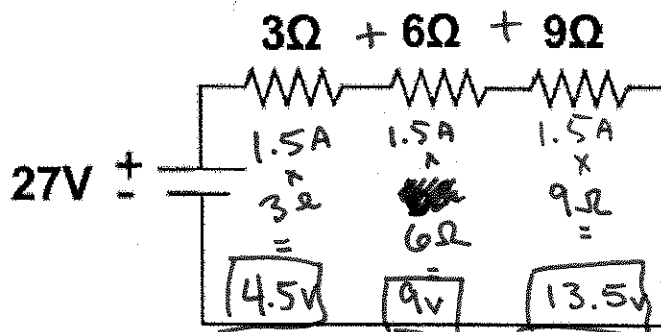
$$\frac{24V}{14.4A} = 1.67\Omega$$



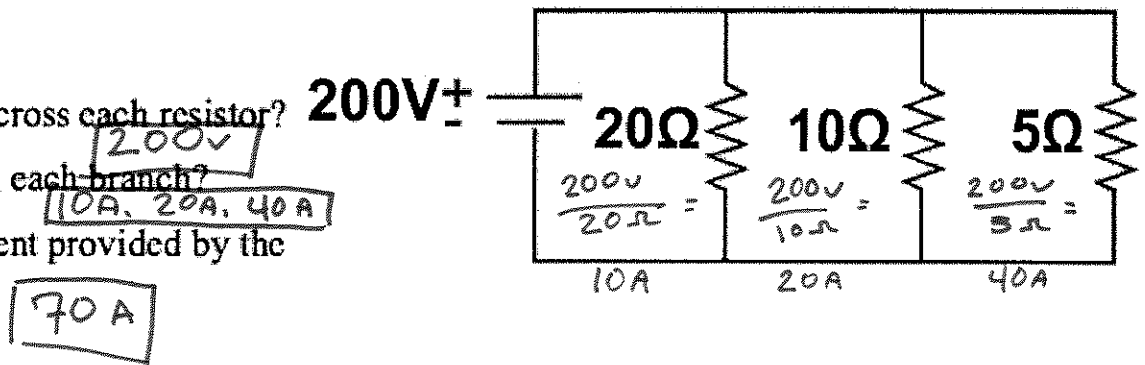
Use the series circuit pictured right to answer questions (a) - (d).

- a. What is the total resistance of the circuit? 18Ω
- b. What is the current in the circuit? $\frac{27V}{18\Omega} = 1.5A$
- c. What is the voltage drop across each resistor?
- d. What is the sum of the voltage drops across the three resistors? What do you notice about this sum?

27volts, Same amount as battery.

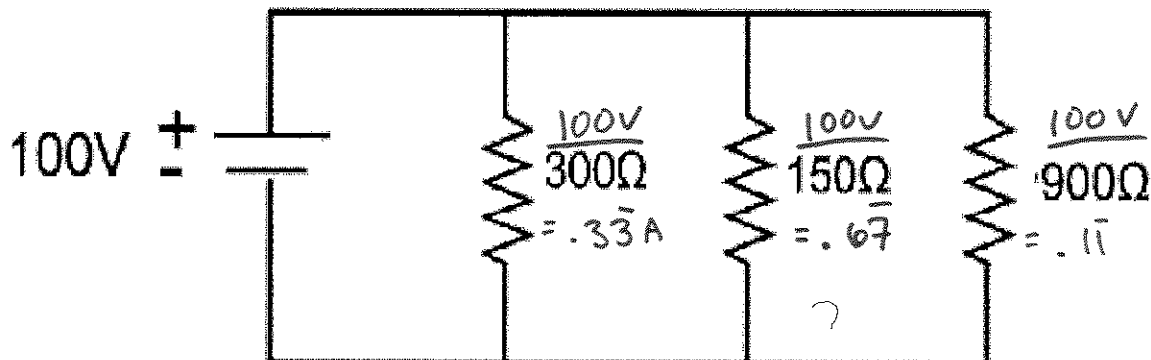
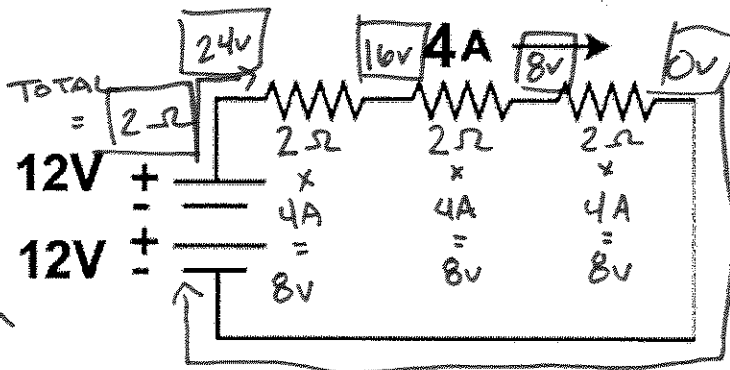


- What is the voltage across each resistor?
 What is the current in each branch?
 What is the total current provided by the battery?



Use the series circuit pictured right to answer questions (a), (b), and (c). Consider each resistor equal to all others.

- a. What is the resistance of each resistor?
 b. What is the voltage drop across each resistor?
 c. On the diagram, show the amount of voltage in the circuit before and after each resistor.



A. Find the TOTAL resistance

100V TOTAL V
 1.12A TOTAL A

$$\frac{100V}{1.12A} = 89.29$$

OR

$$R_{TOTAL} = \frac{R_1 \times R_2}{R_1 + R_2}$$

$$\frac{300 \times 150}{300 + 150} = \frac{45000}{450} = 100$$

$$\frac{100 \times 900}{100 + 900} = \frac{90,000}{1000} = 90\Omega$$

Answers are slightly different because of rounding!