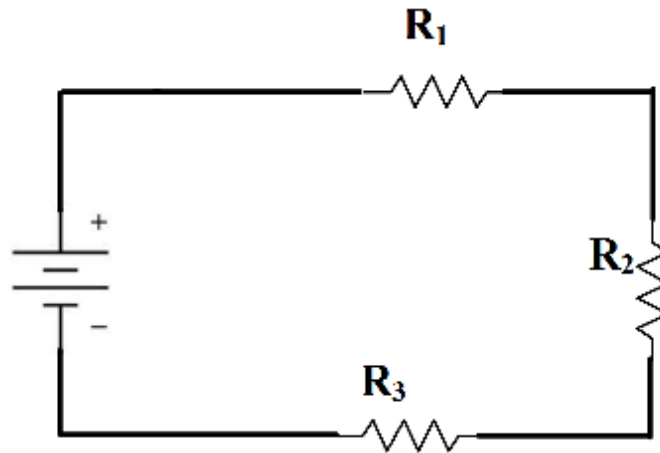


Four Key Circuits Problems

Group 1 – Series Circuit



The battery in the above circuit is providing a current of 0.6 amps. Resistor 1 has a resistance of 10 ohms, resistor 2 has a resistance of 20 ohms, and resistor 3 has a resistance of 40 ohms.

What is the equivalent (total) resistance of the circuit?

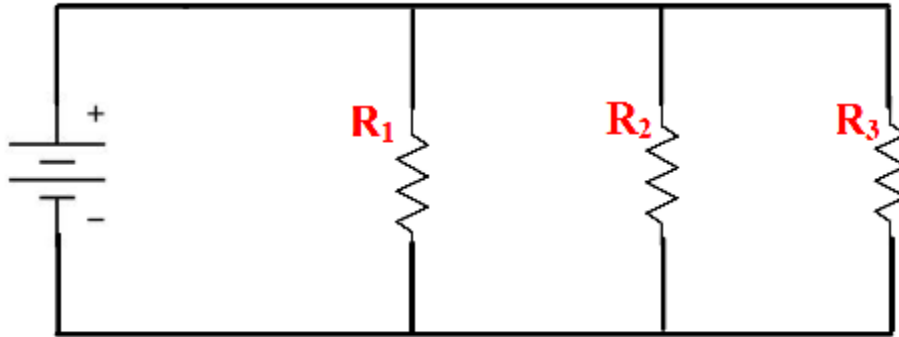
What is the voltage of the battery?

What is the voltage across each resistor?

What is the power across each resistor?

If we were to remove resistor 3 from the circuit, what would the new voltage and current for resistor 2 be?

Group 2 – Parallel Circuit



The potential difference across the battery in the above circuit is 20 volts. Resistor 1 has a resistance of 10 ohms, resistor 2 has a resistance of 20 ohms, and resistor 3 has a resistance of 20 ohms.

What is the equivalent (total) resistance of the circuit?

What is the current supplied by the battery?

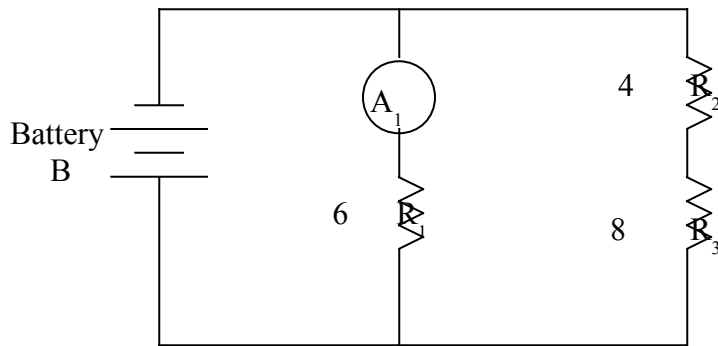
What is the current through each resistor?

What is the power across each resistor?

If we take resistor 3 and put it on the same branch as resistor 2, what would the new voltage be for resistor 3?

Group 3 – Combination Circuit

The following circuit contains a 10 volt battery, and three resistors with resistances of 6 ohms (R_1), 4 ohms (R_2) and 8 ohms (R_3).



What is the equivalent (total) resistance of the circuit?

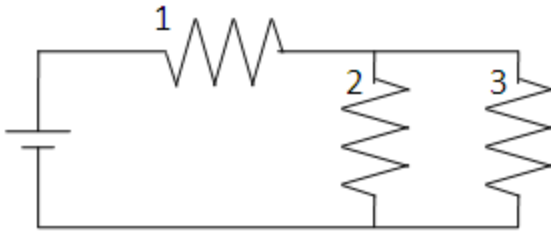
What is the current flowing through resistor 2?

What is the voltage across resistor 1?

What is the power dissipated by resistor 1?

Group 4 – Another Combination Circuit

In the circuit shown below, each resistor is $50\ \Omega$. The total current supplied by the battery is $4\ \text{A}$.



What is the equivalent (total) resistance of the circuit?

What is the current flowing through resistor 3?

What is the power used in resistor 2?

What is the voltage of the battery?

What is the voltage across resistor 1?