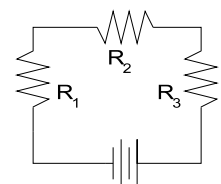


C. Using Concepts

SHOW ALL WORK!

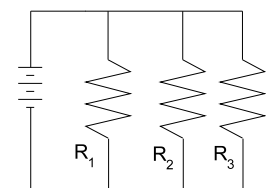
1. A $6.00\ \Omega$ resistor, a $54.0\ \Omega$ resistor, and a $32.0\ \Omega$ resistor are connected in series. Calculate their total resistance.
2. Calculate the total resistance of four $8.00\ \Omega$ resistors connected in parallel.
3. A $15.0\ \Omega$ resistor, a $6.00\ \Omega$ resistor, and a $39.0\ \Omega$ resistor are connected in series across a potential difference of $120\ \text{V}$.
 - a) Calculate the current flowing through the circuit.
 - b) Calculate the voltage drop across the $15.0\ \Omega$ resistor.
4. Three resistors are connected in parallel across $20.0\ \text{V}$. The resistors draw a total of $5.00\ \text{A}$. Two of the resistors have values of $24.0\ \Omega$ and $12.0\ \Omega$. What is the value of the third resistor? **Show your work, even if you use a table.**
5. Fill out the table for the circuit diagramed at right. Showing work is optional here.

Circuit Position	Voltage (V)	Current (A)	Resistance (Ω)
1			10.0
2			20.0
3			30.0
Total	6.00		



6. Fill out the table for the circuit diagramed at right. Showing work is optional here.

Circuit Position	Voltage (V)	Current (A)	Resistance (Ω)
1			10.0
2			20.0
3			30.0
Total	6.00		



7. A coffee pot rated at 360 W , an iron rated at 960 W , and an oven rated at 1200 W are connected in parallel across 120 V . The 15.0 A fuse in the circuit immediately blows. Calculate the total current drawn.
8. Fluffy's shock collar (she meows too much) delivers a current of 0.0500 A and runs on a 9.00 V battery.
- a) What is the power of the collar circuit in watts?
- b) Over a three month period the collar is in operation for a total of 600 seconds. How many joules of electrical energy was consumed during that period of time? **Show an equation for calculating energy when you know the power and the time.**