

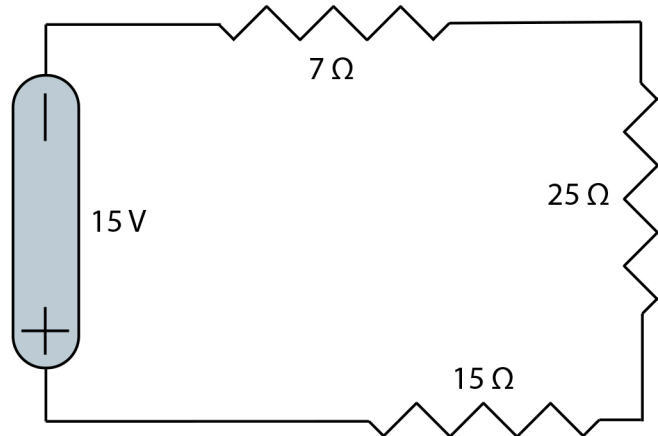
Work each of the following problems. SHOW ALL WORK.

1. For the following series circuit, solve for a) the total, equivalent resistance, b) the total current from the battery, c) the voltage drop across each resistor.

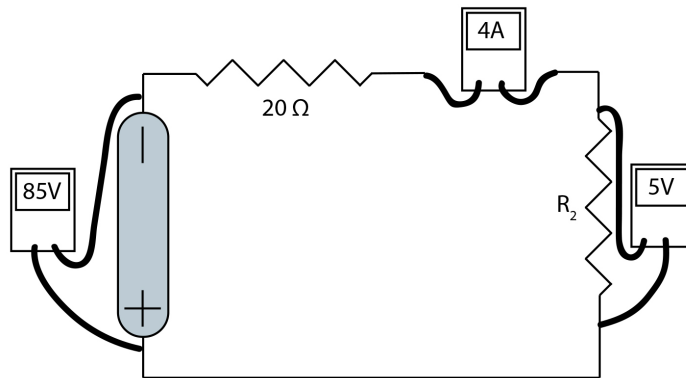
a)

b)

c)



2. You are presented with a circuit with a power supply of unknown voltage and two resistors - one with a resistance of 20 Ohms and the other of an unknown quantity. Using a voltmeter and multimeter, you make the following measurements:



What is a) the voltage drop across the 20 Ohm resistor, b) the current through R_2 , and c) the resistance value of R_2 ?

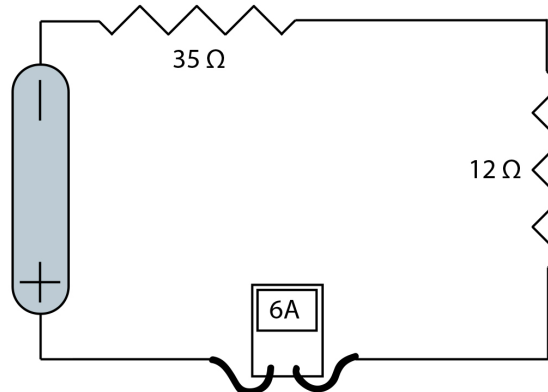
a)

b)

c)

Work each of the following problems. SHOW ALL WORK.

3. The circuit below has two known resistors and an unknown power supply. Using an ammeter you measure the current:



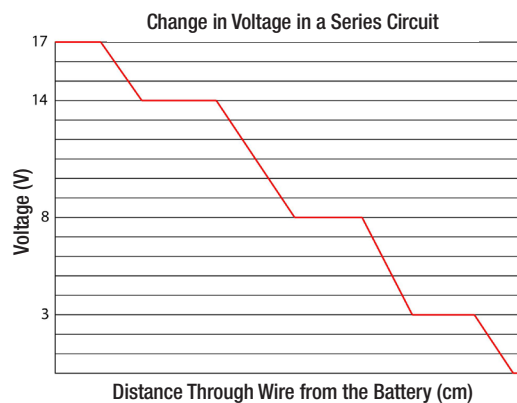
What is a) the voltage drop across the 35 Ohm resistor, b) the voltage drop across the 12 Ohm resistor, and c) the voltage supplied by the battery?

a)

b)

c)

4. This chart shows how voltage changes across a series circuit:



If the circuit is ideal (no loss in the wires) and carries a current of 3 Amps, a) how many resistors are in the circuit, and b) what are their values?

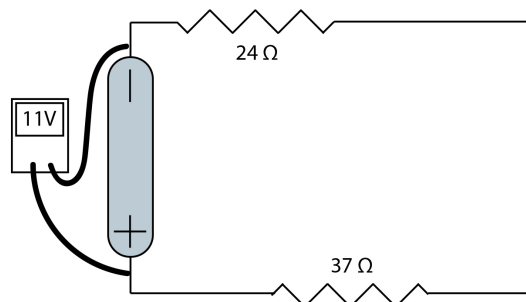
a)

b)

Work each of the following problems. SHOW ALL WORK.

5. A series circuits has 2 9-Volt batteries and 4 resistors with values of 10, 15, 6, and 117 Ohms. What current runs through the circuit?

6. In the following circuit:



Solve for a) the total resistance, b) the total current, c) the voltage drop across the 24 Ohm resistor and d) the voltage drop across the 37 Ohm resistor.

a)

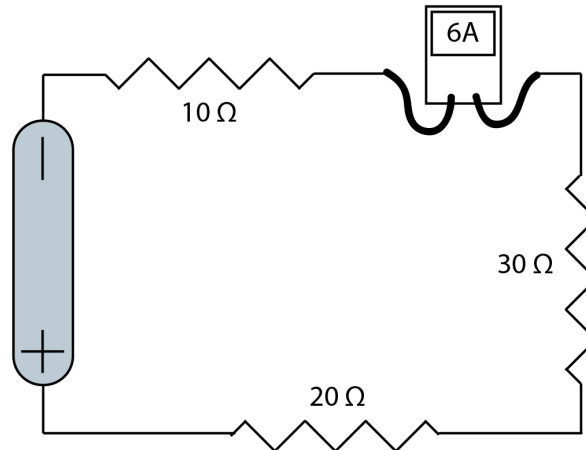
b)

c)

d)

Work each of the following problems. SHOW ALL WORK.

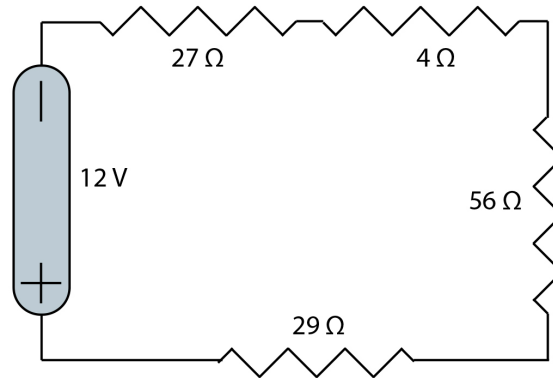
7. What is the DC source voltage in this circuit?



8. You are designing a circuit to power a night light, and want to keep the light level as low as possible. The wire you use can handle up to 3 Amps of current; higher than that and the circuit will shut down automatically. If the power supply is 120 V, what is the smallest number of 2.3 Ohm light bulbs you can put in series in the circuit without exceeding the maximum current?

Work each of the following problems. SHOW ALL WORK.

9. What is the voltage across each of the resistors in this circuit?



10. Three identical 40 Ohm light bulbs are arranged in series with a 15 V battery. If two more bulbs are added how much does the current change? After the addition, will all the bulbs keep the same brightness as before, or will they get dimmer?