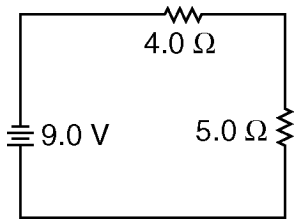
Name: _____

Series Circuits Worksheet

Directions: When answering the following questions show all work (equation, substitution and units) for credit. Draw the circuits in each of the following problems

1) A 10.-ohm resistor and a 20.-ohm resistor are connected in series to a voltage source. When the current through the 10.-ohm resistor is 2.0 amperes, what is the current through the 20.-ohm resistor?

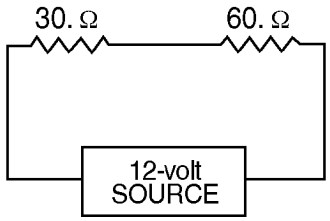
2) A 9.0-volt battery is connected to a 4.0-ohm resistor and a 5.0-ohm resistor as shown in the diagram below.



What is the current in the 5.0-ohm resistor?

3) A 100.-ohm resistor and an unknown resistor are connected in series to a 10.0-volt battery. If the potential drop across the 100.-ohm resistor is 4.00 volts, what is the resistance of the unknown resistor?

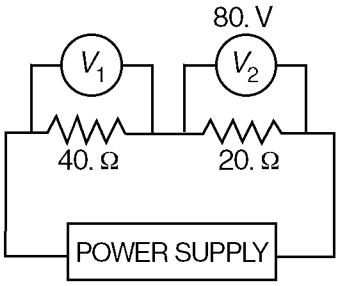
4) A 30.-ohm resistor and a 60.-ohm resistor are connected in an electric circuit as shown below.



Compared to the electric current through the 30.-ohm resistor, the electric current through the 60.-ohm resistor is

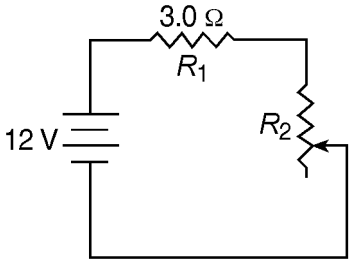
A) larger B) smaller C) the same

5) In the circuit shown below, voltmeter V_2 reads 80. volts.



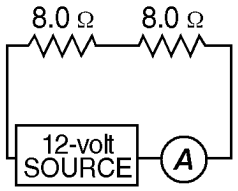
What is the reading of voltmeter V_1?

6) The diagram below represents an electric circuit consisting of a 12-volt battery, a 3.0-ohm resistor, R_1, and a variable resistor, R_2.



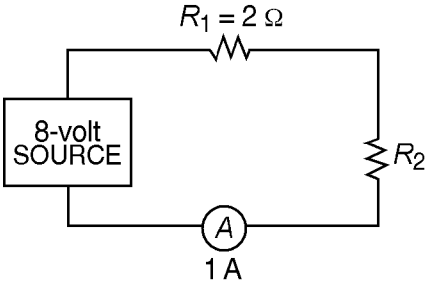
At what value must the variable resistor be set to produce a current of 1.0 ampere through R_1?

7) The diagram below shows a circuit with two resistors.



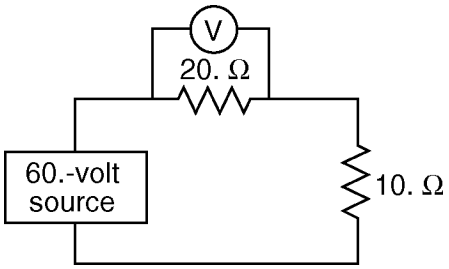
What is the reading on ammeter *A*?

8) The circuit shown below contains two resistors, R_1 and R_2.

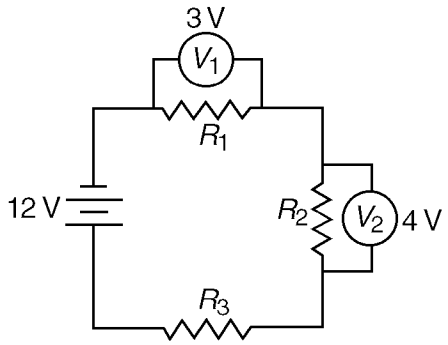


What is the resistance of resistor R_2?

9) In the circuit represented by the diagram below, what is the reading of voltmeter *V*?



10) The diagram below shows three resistors, R_1, R_2, and R_3. connected to a 12-volt battery.



If voltmeter V_1 reads 3 volts and voltmeter V_2 reads 4 volts, what is the potential drop across resistor R_3?