LESSON 15
2 resistors in Series

Watch video Lesson 15

If you put **two resistors in series**, the total resistance in the circuit is equal to the sum of the two resistors.

If we put a 100 ohm resistor in series with a 330 ohm resistor, the total resistance in the circuit is 100 plus 330 or 430 ohms.

Use Ohm's Law to calculate the current:
E = 9 volts
R (total) = 100 + 330 = 430
I = ?
Ohm's Law says:
$I = E / R$
I = 9 / 430 = 0.02 Amps or 20 mA (twenty milliamps)

Practice Quiz

#1 **Schematic Diagram of two resistors, R1 and R2, in SERIES with a 9-volt battery**

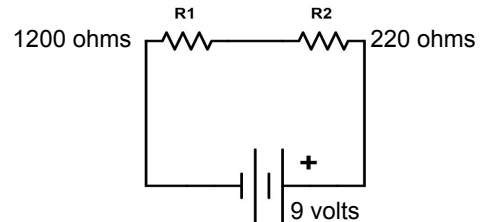**R1**   **R2**

100 ohms   **330 ohms**

+

9 Volt Battery
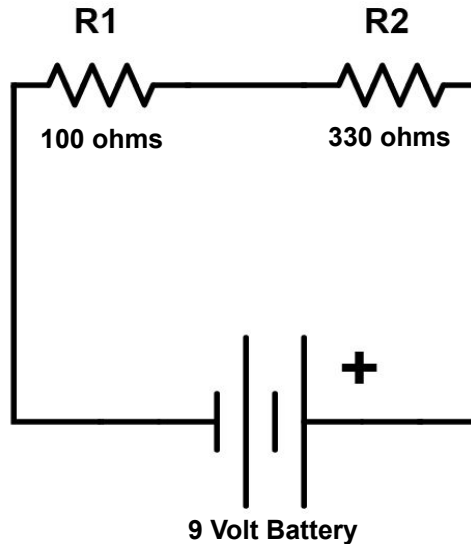
$$I = E / R$$
How much is the current flowing in this circuit?

_____

#2 Here is a schematic of two series resistors and a battery. Calculate the **current** flowing in this circuit?

R1   R2
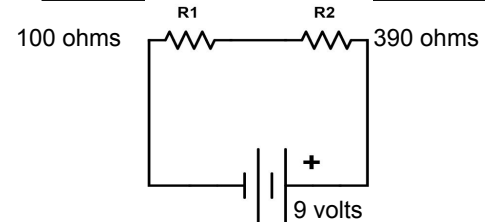1200 ohms   220 ohms

+
9 volts

Answer: Current (I) = E / R
I = 9 / 1420
I = 0.006 Amps or 0.6 mAmps

#3 Here is a schematic of two series resistors and a battery. Calculate the **current** flowing in this circuit?

R1   R2
100 ohms   390 ohms

+
9 volts

Answer: Current (I) = E / R
I = 9 / 490
= 0.018 Amps or 18 mAmps

MR CIRCUIT LAB #1201 - MULTIMETER FUNDAMENTALS "Ohm's Law and More!"

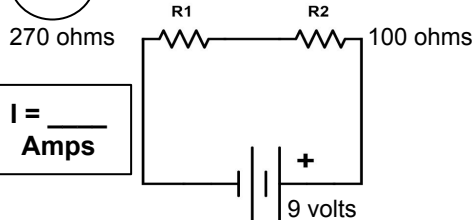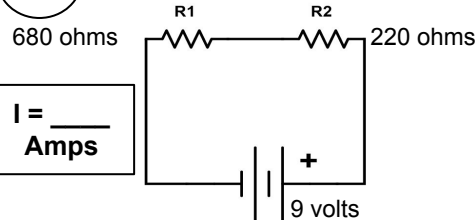| Solve the following problems using Ohm's Law | Activity Page | 2 resistors in Series With Ohm's Law | 15b |

Here are circuits with 2 resistors in Series. With Ohm's Law, calculate the **current** flowing in each circuit.

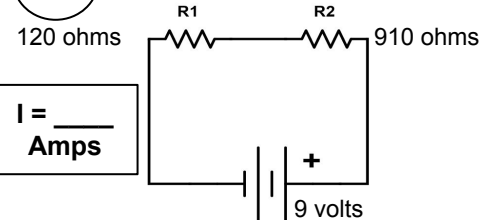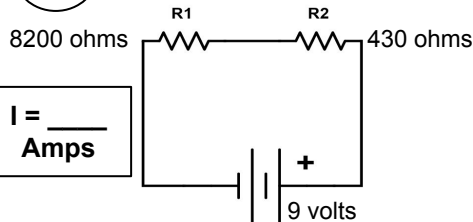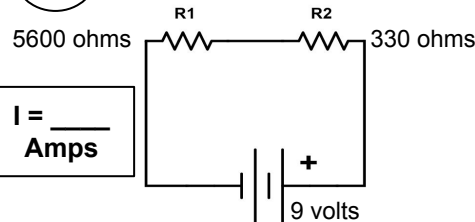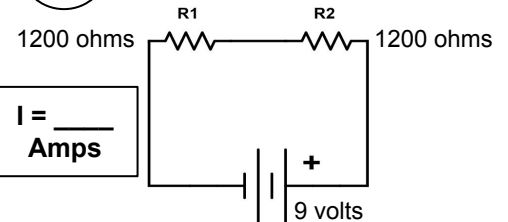(Round your answer to the nearest thousandth.)

1
270 ohms — R1 — R2 — 100 ohms
I = ____ Amps
9 volts

2
680 ohms — R1 — R2 — 220 ohms
I = ____ Amps
9 volts

3
120 ohms — R1 — R2 — 910 ohms
I = ____ Amps
9 volts

4
8200 ohms — R1 — R2 — 430 ohms
I = ____ Amps
9 volts

5
5600 ohms — R1 — R2 — 330 ohms
I = ____ Amps
9 volts

6
1200 ohms — R1 — R2 — 1200 ohms
I = ____ Amps
9 volts

Ans: 0.024, 0.010, 0.009, 0.006, 0.002, 0.004