

V = voltage (units: volts, V)

I = current (units: amps, A)

R = resistance (units: ohms, Ω)

$$\mathbf{V = IR}$$

Physics
Series Circuits – Practice Sheet 1

Name _____
Date _____

Series Circuit Practice Problems

- Remember....** 1) **Current is the Same** ($I_{\text{total}} = I_1 = I_2 = I_3$)
2) **Resistance is Added** ($R_{\text{total}} = R_1 + R_2 + R_3$)
3) **Voltage is Added** ($V_{\text{total}} = V_1 + V_2 + V_3$)

1. A 47.0- Ω resistor and a 82.0- Ω resistor are connected in series and placed across a 45.0-V battery.
 - a) Draw the circuit.
 - b) What is the equivalent resistance of the circuit?
 - c) What is the value of the current in the circuit?
 - d) What is the potential drop (**voltage**) across each resistor?
 - e) What is the power at each resistor?
 - f) What is the total power of the circuit?

2. Three resistors of 2 Ω , 5 Ω and 3 Ω are connected in series across a 5-V battery.
 - a) Draw the circuit.
 - b) What is the equivalent resistance of the circuit?
 - c) What is the value of the current in the circuit?
 - d) What is the potential drop (**voltage**) across each resistor?
 - e) What is the power at each resistor?
 - f) What is the total power of the circuit?

3. A 20.0- Ω resistor and a 30.0- Ω resistor are connected in series and placed across a 120-V potential difference.
 - a) Draw the circuit.
 - b) What is the equivalent resistance of the circuit?
 - c) What is the value of the current in the circuit?
 - d) What is the potential drop (**voltage**) across each resistor?
 - e) What is the power at each resistor?
 - f) What is the total power of the circuit?