

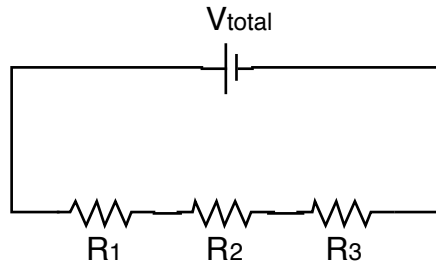
## Series & Parallel Circuits

**Purpose:**

1. Practice building circuits and taking measurements with the ammeter and voltmeter.
2. Practice calculating resistance, voltage, current for series and parallel circuits.

**Part 1: Series Circuit**

1. Build a series circuit with any three resistors. Fill in the values of the three resistors in BOTH the data table and the calculation chart shown below:
2. Set the power supply for 3 volts. *Measure* the current and voltage for each resistor and the power supply. Record the data in the data table:



Data:

| <b>R</b> | <b>V</b> | <b>I</b> |
|----------|----------|----------|
| $\Omega$ |          |          |
| $\Omega$ |          |          |
| $\Omega$ |          |          |

|                       |  |
|-----------------------|--|
| $V_{power}$<br>supply |  |
| $I_{power}$<br>supply |  |

3. Using the same three resistors and a total voltage of 3V, *calculate* all the missing numbers:

Calculations:

|       | $R$      | $I$ | $V$ |                  |
|-------|----------|-----|-----|------------------|
| $R_1$ | $\Omega$ |     |     | $V_{total} = 3V$ |
| $R_2$ | $\Omega$ |     |     | $I_{total} =$    |
| $R_3$ | $\Omega$ |     |     | $R_{total} =$    |

## Series & Parallel Circuits

### Part 2: Parallel Circuit

4. Build a parallel circuit with any three resistors. Fill in the values of the three resistors in BOTH the data table and the calculation chart shown below:
5. Set the power supply for 3 volts. *Measure* the current and voltage for each resistor and the power supply. Record the data in the data table:



Data:

| <b>R</b> | <b>V</b> | <b>I</b> |
|----------|----------|----------|
| $\Omega$ |          |          |
| $\Omega$ |          |          |
| $\Omega$ |          |          |

|                             |  |
|-----------------------------|--|
| <b>V</b><br>power<br>supply |  |
| <b>I</b><br>power<br>supply |  |

6. Using the same three resistors and a total voltage of 3V, *calculate* all the missing numbers:

Calculations:

|       | <i>R</i> | <i>I</i> | <i>V</i> |                  |
|-------|----------|----------|----------|------------------|
| $R_1$ | $\Omega$ |          |          | $V_{total} = 3V$ |
| $R_2$ | $\Omega$ |          |          | $I_{total} =$    |
| $R_3$ | $\Omega$ |          |          | $R_{total} =$    |

### Questions:

1. In general, are your *measured* values greater than, less than, or the same as your *calculated* values?
  
2. Give a possible explanation for your observation in #1.