

## Kirchoff's Laws

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Instructor: \_\_\_\_\_

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Instructions: Follow the steps on this worksheet, using your lab manual as a guide, unless directed to do otherwise by your lab instructor. Show at least one sample calculation for each step. Box final mathematical results.

### 1 Data

Build a circuit as shown in Figure 1 of your lab manual and set the voltage of the power supply to 5 V.

#### 1.1 Kirchoff's Loop Law

Measure and record the potential difference across each resistor in the circuit. Organize your data in a table.

#### 1.2 Kirchoff's Node Law

Measure and record the current flowing in and out of  $N_1$  and  $N_2$ . (The DMM must be connected in series to measure current.) You should have a total of 6 current measurements. Organize your data in a table.

## 2 Analysis

### 2.1 Kirchoff's Loop Law

Examine whether or not your data supports Kirchoff's Loop Law.

1. Make a sketch of the loop containing containing  $V_s$ ,  $N_1$ ,  $R_1$ ,  $N_2$ , and  $R_3$  showing all your measurements.

2. Write the algebraic sum of all the voltages around this loop and discuss the result.

3. Repeat the previous analysis for the loop that contains  $N_1$ ,  $R_1$ ,  $N_2$ , and  $R_2$ .





