Thevnin and Norton Equivalents

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- Circuit Equivalence
  - If there are two circuits, and the same voltage, v_a is applied to both, if $I_A = I_B$ then the circuits are considered equivalent
  - Same thing for same current applied and same voltage output
- Resistor Equivalence
  - Resistors can be connected in circuits like a delta connection
  - As well as a Y connection
  - A delta connection can be transformed into a Y connection and vice versa using transformation technique
  - This will often help in circuits
- Transformations can be established from one to the other, as shown in Figure 1, using the following

$$\boxed{R_1 = \frac{R_bR_c}{R_a + R_b + R_c}, \quad R_2 = \frac{R_cR_a}{R_a + R_b + R_c}, \quad R_3 = \frac{R_aR_b}{R_a + R_b + R_c}}$$

$$\boxed{R_a = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_1}, \quad R_2 = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_2}, \quad R_c = \frac{R_1R_2 + R_2R_3 + R_3R_1}{R_3}}$$

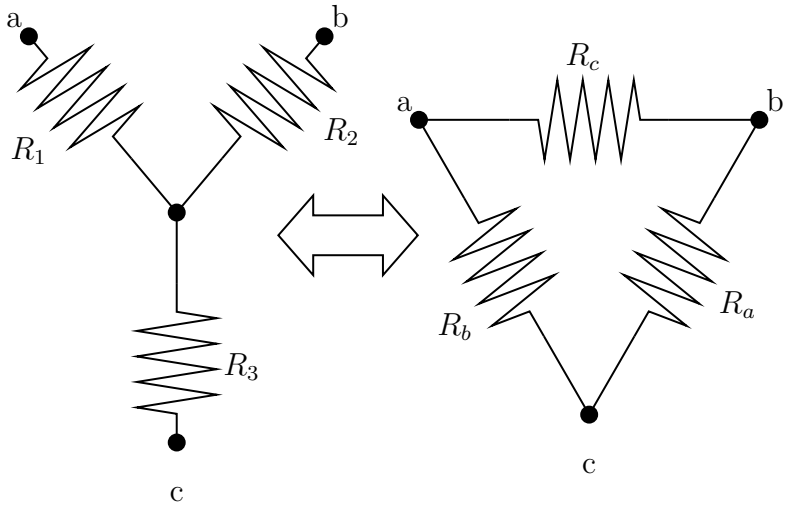

Figure 1: Delta and Y Circuit Configurations