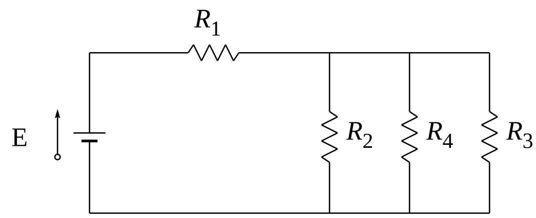
A circuit with four resistors



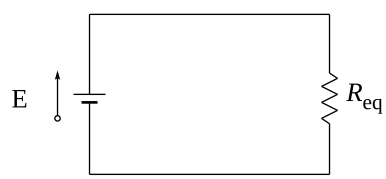
The equivalent resistance of the triplet R_2, R_4, and R_3 is R_T where

$$\frac{1}{R_T} = \frac{1}{R_2} + \frac{1}{R_4} + \frac{1}{R_3} = \frac{R_3R_4 + R_2R_3 + R_2R_4}{R_2R_4R_3},$$

and the equivalent resistance of the entire network is

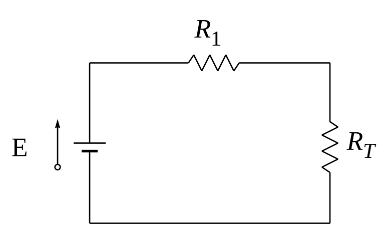
$$R_{\text{eq}} = R_1 + R_T = R_1 + \frac{R_2R_4R_3}{R_3R_4 + R_2R_3 + R_2R_4}.$$

Plugging in the numbers supplied, $R_{\text{eq}} = 1.5\ \Omega + 1.5\ \Omega = 3.0\ \Omega$.



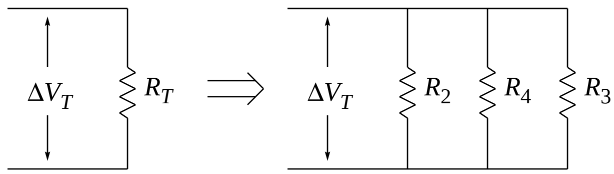
The fully reduced equivalent circuit above has

$$i = \frac{\mathcal{E}}{R_{\text{eq}}} = \frac{6.0\ V}{3.0\ \Omega} = 2.0\ \text{A}.$$



Undoing the last equivalencing gives

$$\begin{aligned} i_1 &= 2.0\ \text{A} \qquad \Delta V_1 = i_1R_1 = (2.0\ \text{A})(1.5\ \Omega) = 3.0\ \text{V} \\ i_T &= 2.0\ \text{A} \qquad \Delta V_T = i_TR_T = (2.0\ \text{A})(1.5\ \Omega) = 3.0\ \text{V}. \end{aligned}$$



Undoing the first equivalencing gives

$$
\begin{aligned}
i_2 &= \frac{\Delta V_T}{R_2} = \frac{3.0\ \mathrm{V}}{4.0\ \Omega} = 0.75\ \mathrm{A} \\
i_3 &= \frac{\Delta V_T}{R_3} = \frac{3.0\ \mathrm{V}}{4.0\ \Omega} = 0.75\ \mathrm{A} \\
i_4 &= \frac{\Delta V_T}{R_4} = \frac{3.0\ \mathrm{V}}{6.0\ \Omega} = 0.50\ \mathrm{A}
\end{aligned}
$$

(As a check, you can verify that $i_1 = i_2 + i_3 + i_4$.)

Grading: Students are asked to "Find the equivalent resistance of this network and the current through each resistor." They earn two points for each of these five items.