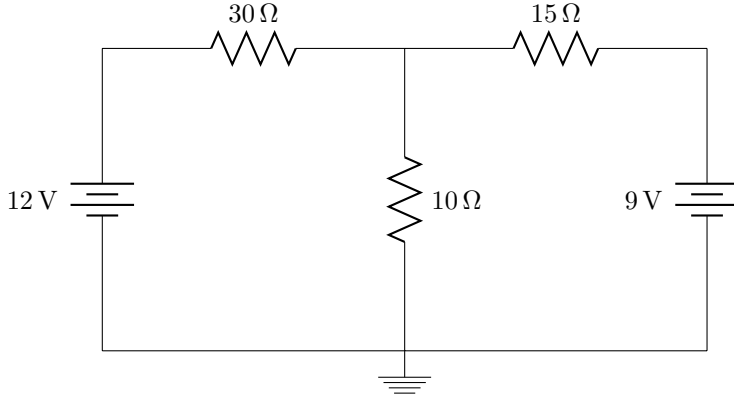
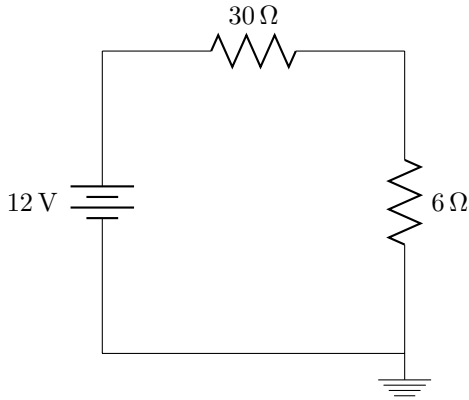


1 Example

Determine the values of V_1 , V_2 , and V_3 :



Begin by splitting the circuits based on their individual power supplies:

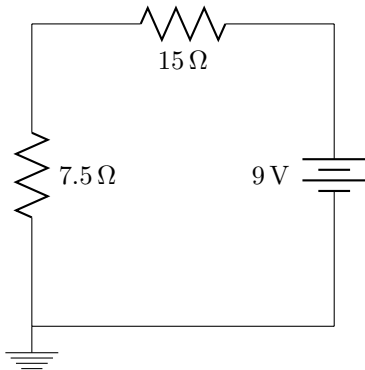


$$R_{EQ} = R_2 || R_3 = 15\Omega || 10\Omega = 6\Omega$$

$$V_{EQ} = V_A \frac{R_{EQ}}{R_{EQ} + R_1} = (12V) \frac{6\Omega}{36\Omega} = 2V$$

$$V_{2A} = V_{3A} = 2V$$

$$V_1 = V_A - V_{EQ} = 12V - 2V = 10V$$



$$R_{EQ} = R_1 || R_3 = 30\Omega || 10\Omega = 7.5\Omega$$

$$V_{EQ} = V_B \frac{R_{EQ}}{R_{EQ} + R_1} = (9V) \frac{7.5\Omega}{22.5\Omega} = 3V$$

$$V_{1B} = V_{3B} = 3V$$

$$V_2 = V_B - V_{EQ} = 9V - 2V = 6V$$

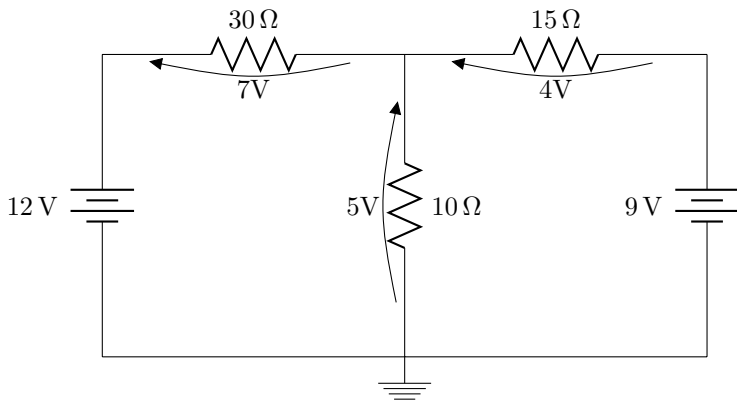
To determine the component voltages, we need to combine the above results:

$$V_1 = V_{1A} - V_{1B} = 10V - 3V = 7V$$

$$V_2 = V_{2B} - V_{2A} = 6V - 2V = 4V$$

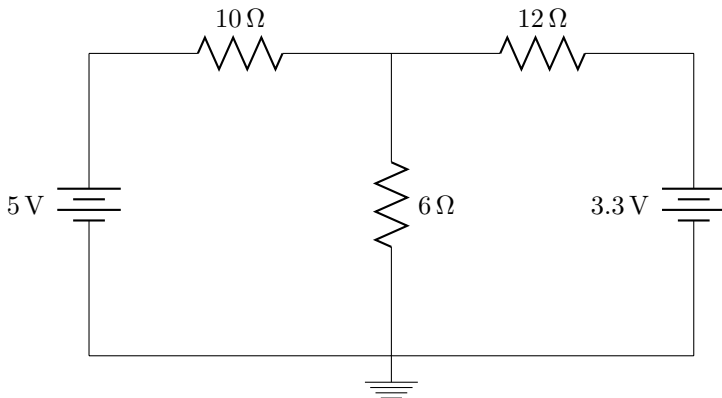
$$V_3 = V_{3A} + V_{3B} = 2V + 3V = 5V$$

The final circuit with voltages:



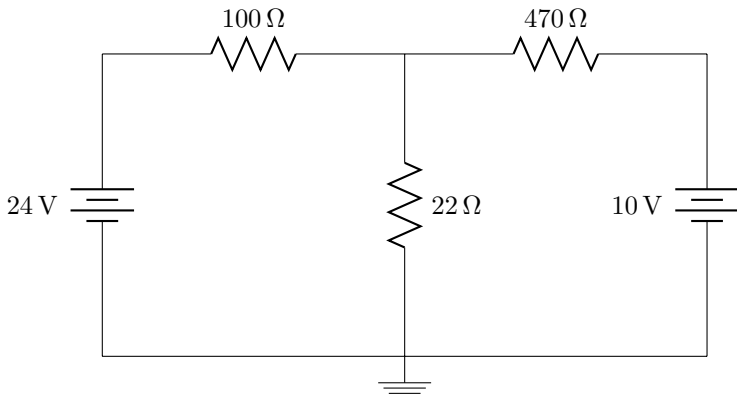
2 Problems

Determine the values of V_1 , V_2 , and V_3 :



What are the circuit currents and their values?

Determine the values of V_1 , V_2 , and V_3 :



What are the circuit currents and their values?