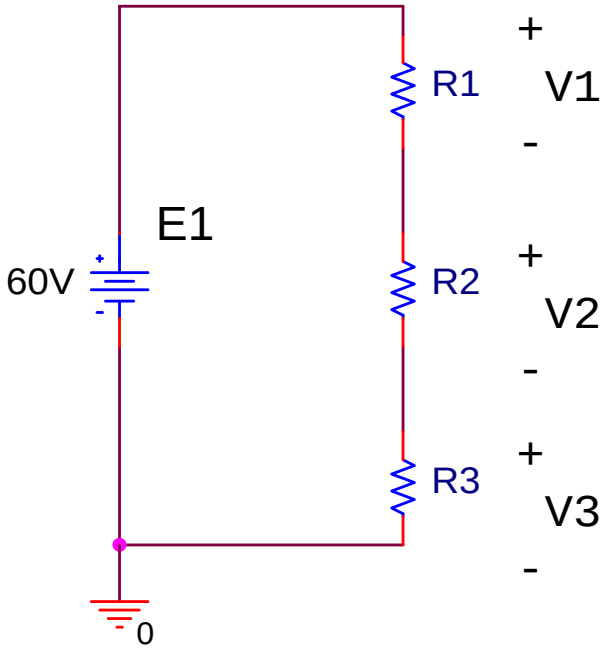
Breakout #1

- Find V_1, V_2, and V_3 given:



$$R_1 = 2 \cdot R_3$$

$$R_2 = 7 \cdot R_3$$

$$V_3 = \frac{R_3}{R_T} \cdot E_1 = \frac{R_3}{2 \cdot R_3 + 7 \cdot R_3 + R_3} \cdot 60V$$

$$= \frac{1}{10} \cdot 60V = 6V$$

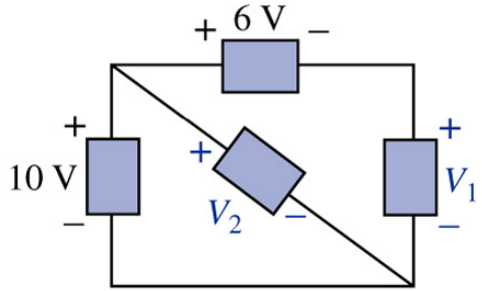
$$V_2 = \frac{R_2}{R_T} \cdot E_1 = \frac{7}{10} \cdot 60V = 42V$$

$$V_1 = \frac{R_1}{R_T} \cdot E_1 = \frac{2}{10} \cdot 60V = 12V$$

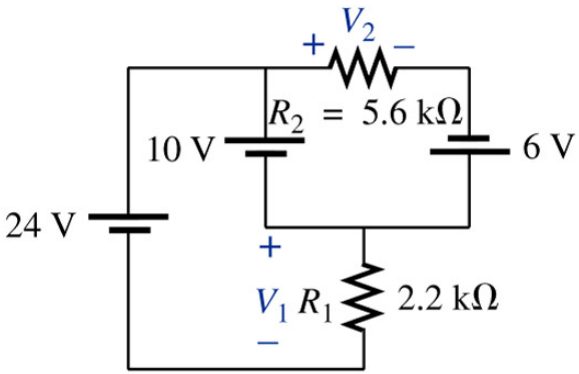
NP

Breakout #2 - KVL

- Find V1 and V2 in the circuits shown below



(a)



(b)

$$V_2 = 10\,V$$

$$+V_2 - 6\,V - V_1 = 0$$

$$\therefore V_1 = 4\,V$$

$$+24\,V - 10\,V - V_1 = 0$$

$$\therefore V_1 = 14\,V$$

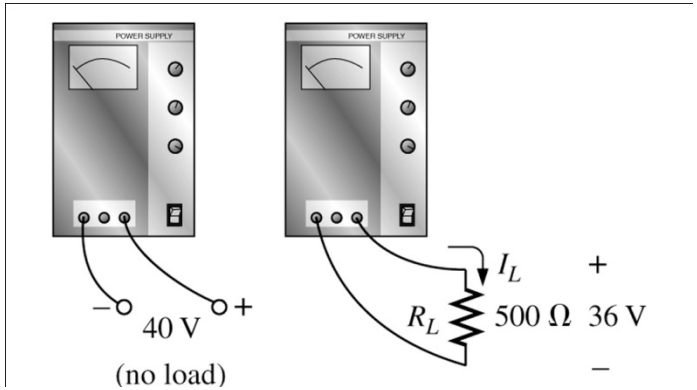
$$+10\,V - V_2 + 6\,V = 0$$

$$\therefore V_2 = 16\,V$$

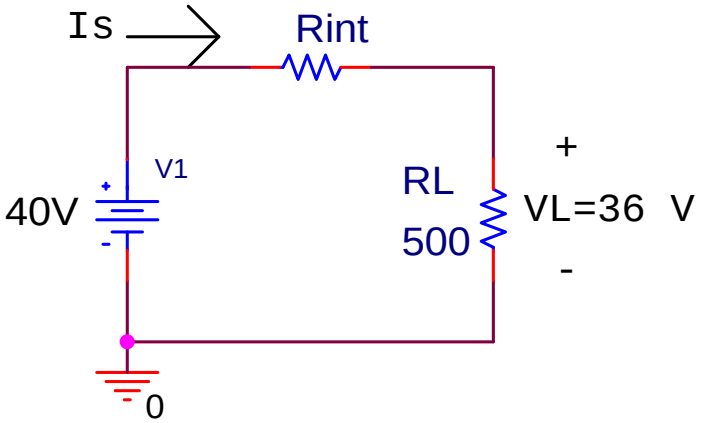
NP

Breakout #3 – Rint

- Find the internal resistance of the source, Rint



Step 1 – Draw the schematic w/the given information



Step 2 – Use standard circuit analysis techniques including generalized expressions

$$R_{int} = \frac{V_{NL}}{I_L} - R_L$$

$$\text{But } I_L = \frac{V_L}{R_L} = \frac{36\ \text{V}}{500\ \Omega} = 72\ \text{mA}$$

$$\therefore R_{int} = \frac{40\ \text{V}}{72\ \text{mA}} - 500\ \Omega = 55.6\ \Omega$$

NP