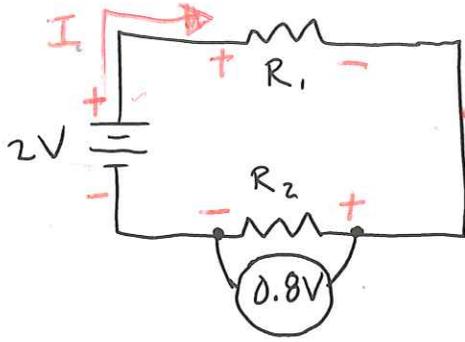


Circuit Examples!

- Draw Current
- Label all Resistors with +, -

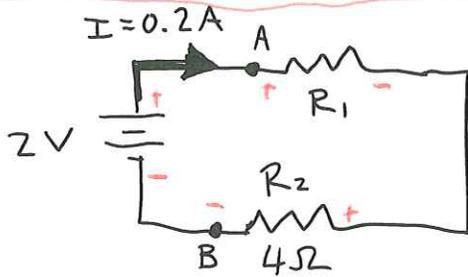


Find ΔV_1

$$\Delta V_{\text{gain}} = \Delta V_{\text{loss}}$$

$$2V = \Delta V_1 + 0.8V$$

$$\Delta V_1 = 1.2V$$



Find $\Delta V_2 = I_2 R_2 = 0.8V$

Find $\Delta V_1 = 1.2V$ (see above)

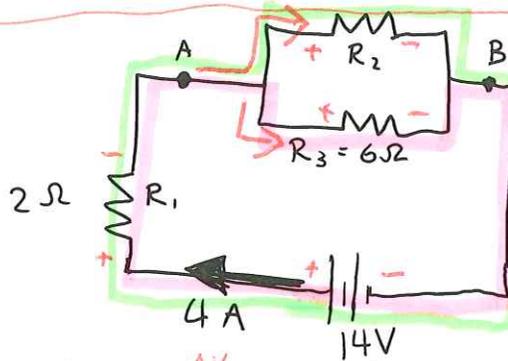
Find $R_1 = \frac{\Delta V_1}{I_1} = 6\Omega$

Find $R_{AB} = \frac{\Delta V_{AB}}{I_{AB}}$

$$= \frac{2V}{0.2A}$$

$$= 10\Omega$$

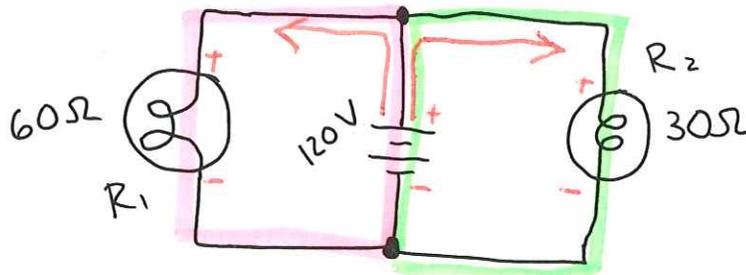
1. Find $\Delta V_1 = I_1 R_1 = 8V$
2. Find ΔV_2
3. Find ΔV_3
4. Find I_3
5. Find I_2
6. Find R_2
7. Find R_{AB}



7. $R_{AB} = \frac{\Delta V_{AB}}{I_{AB}} = \frac{6V}{4A} = 1.5\Omega$

2. $\Delta V_2 = \Delta V_T - \Delta V_1 = 6V$
3. $\Delta V_3 = \Delta V_T - \Delta V_1 = 6V$
4. $I_3 = \frac{\Delta V_3}{R_3} = 1A$
5. $I_1 = I_2 + I_3$
 $I_2 = 3A$
6. $R_2 = \frac{\Delta V_2}{I_2} = 2\Omega$

Find the current leaving the battery.



$\Delta V_1 = 120V$

$$I_1 = \frac{\Delta V_1}{R_1} = 2A$$

$\Delta V_2 = 120V$

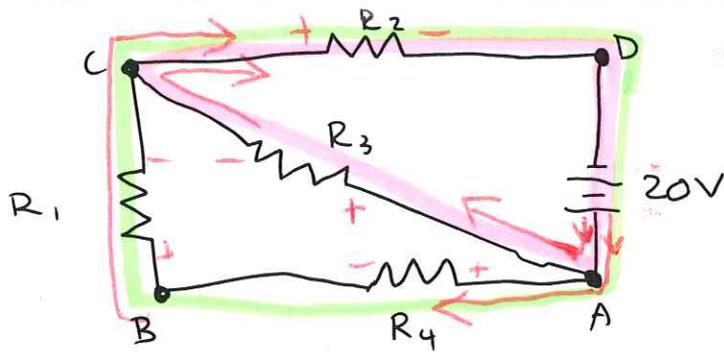
$$I_2 = \frac{\Delta V_2}{R_2} = 4A$$

$$I_T = I_1 + I_2 = 6A$$

$$\Delta V_2 = 12V$$

$$R_1 = 30\Omega$$

$$R_4 = 10\Omega$$



- ① Find ΔV_3
- ② Find ΔV_1
- ③ Find ΔV_4

$$\textcircled{1} \quad \Delta V_T = \Delta V_3 + \Delta V_2 \Rightarrow \Delta V_3 = 8V$$

\Rightarrow ② Tougher one* I am solving without ASSUMING

$R_5 = R_1 + R_2 + R_3 \dots$
we will prove this next time!

$$\Delta V_T = \Delta V_4 + \Delta V_1 + \Delta V_2$$

$\Delta V_4 + \Delta V_1 = 8V$; we know $I_1 = I_4$, lets call it I_{14}

$$I_{14}(R_4) + I_{14}(R_1) = 8V$$

$$I_{14}(30) + I_{14}(10) = 8$$

$$I_{14}(40) = 8$$

$$I_{14} = 0.2A$$

$$\Rightarrow \left. \begin{array}{l} \Delta V_1 = 0.2A(30\Omega) = 6V \\ \Delta V_4 = 0.2A(10\Omega) = 2V \end{array} \right\} \begin{array}{l} \text{Notice these} \\ \text{included add to } 8V! \end{array}$$

Some students may already know this, ~~but I want to solve without~~ but chances are they don't know why.