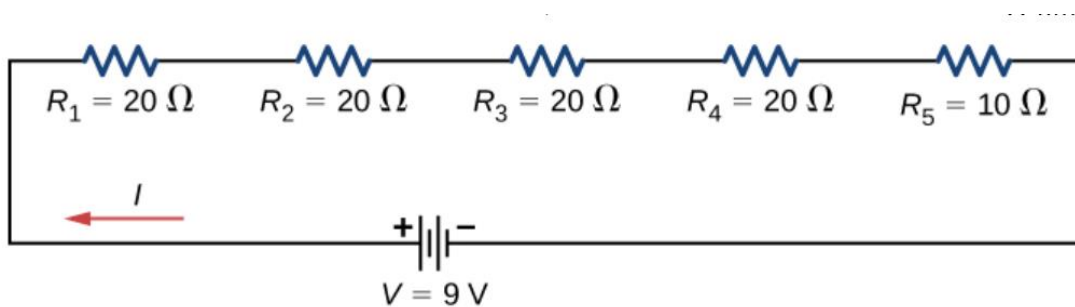


Circuits Rules Comprehension

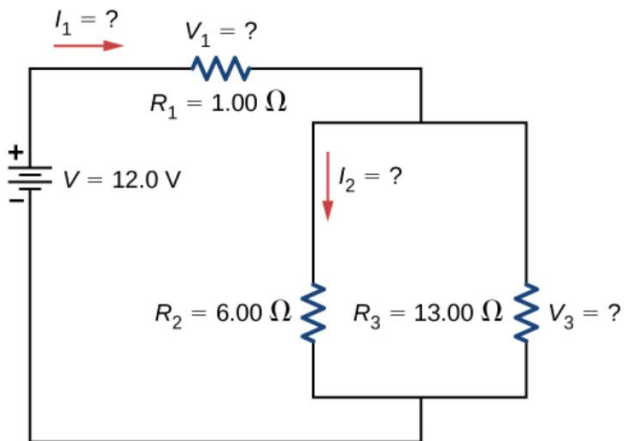
- It is very important that you know and understand your circuit rules well. Print out your circuit rules and/or have them available at all times when answer following.
- You will also need $V=I \times R$ (Ohm's law) too.
- Answers at the end of the exercise.

Use **Rule#1** to and Ohms Law to answer the following:

1. Determine the **total resistance** of the circuit and the **current following through R_3**

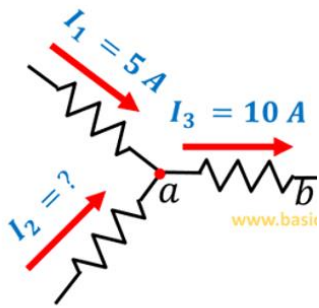


2. Use **Rule 2** and **Rule 1** to find the **equivalent resistance** for this **entire** circuit:

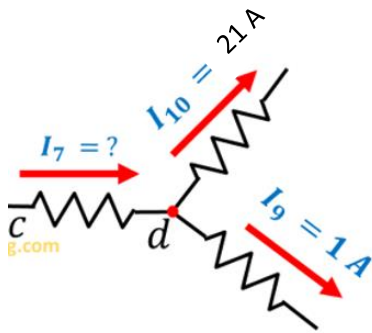


3. Use **Rule 3** to find out the values of unknown currents shown below:

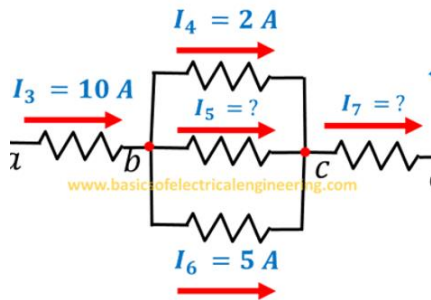
a)



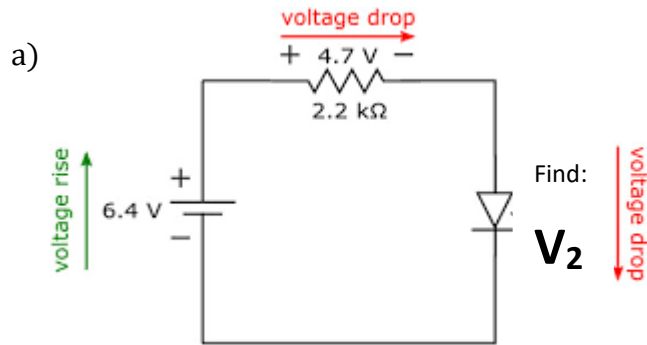
b)



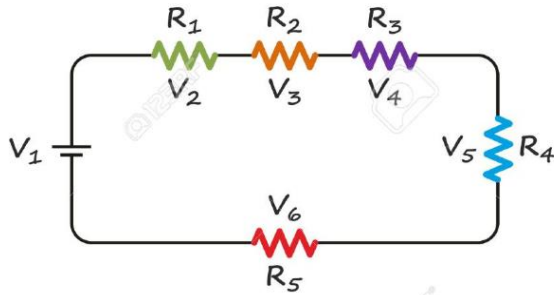
c)



4. Use **Rule#4** to find the missing voltage drops and any other values asked for:

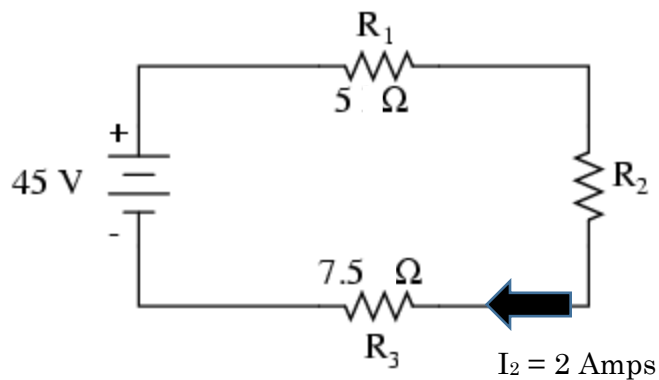


b) if $V_1 = 24V$, $V_3 = 9V$, $V_4 = 2V$, $V_5 = 3V$, and $V_6 = 1V$, Determine V_2



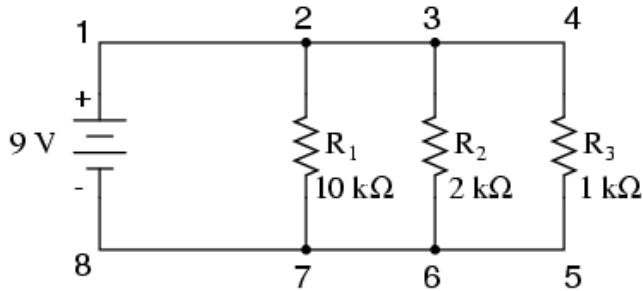
c) Determine the **current leaving the battery** shown and **voltage drop across each resistor**.

Don't forget Ohm's Law.

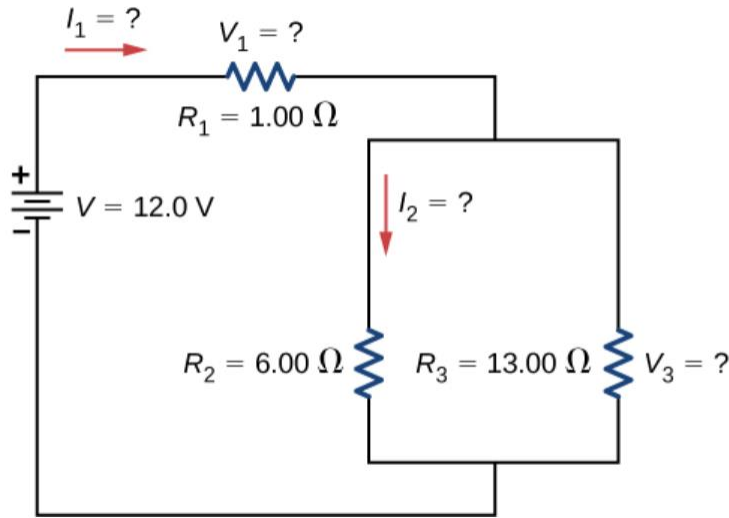


5. Use **Rule#5** to answer the following questions:

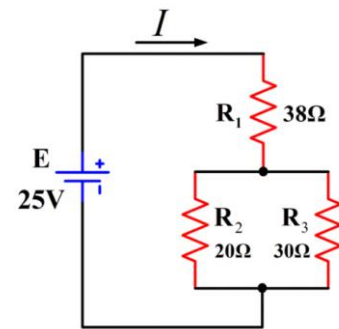
a) Find the voltage drop across each resistor:



b) Find **total resistance** of the circuit then find I_1 then find V_1 and V_3

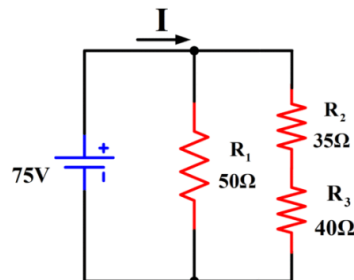


c) If the Voltage Drop across R_1 is 10V, find the voltage drop in the other two resistors.



d) Find the Voltage Drop across each resistor.

Bonus find total current leaving the Battery



Answers:

1. a) 90Ω
b) 0.1 A
2. 5.1Ω
3. a) 5 A
b) 22 A
c) $3 \text{ Amps}, 10 \text{ Amps}$
4. a) 1.7 V
b) 9 V
c) $2 \text{ Amps}, V_1=10 \text{ V}, V_2=20 \text{ V}, V_3=15 \text{ V}$
5. a) $9 \text{ V}, 9 \text{ V}, 9 \text{ V}$
b) $5.1 \Omega, 2.353 \text{ A}, V_1 = 2.353 \text{ V}, V_2=V_3=9.647 \text{ V}$
c) $V_2 = V_3 = 15 \text{ V}$
d) $V_1 = 75 \text{ V}, V_2=35 \text{ V}, V_3=40 \text{ V}$
Bonus: 2.5 A