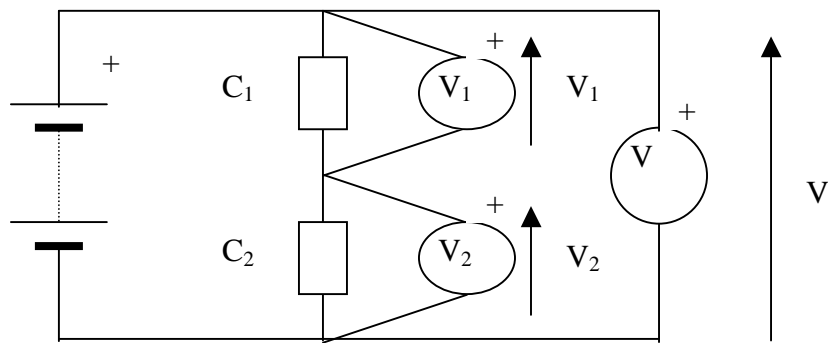


Exercise N°1

Three voltmeters V , V_1 and V_2 are connected as shown :



a) Give the relationship between V , V_1 and V_2 .

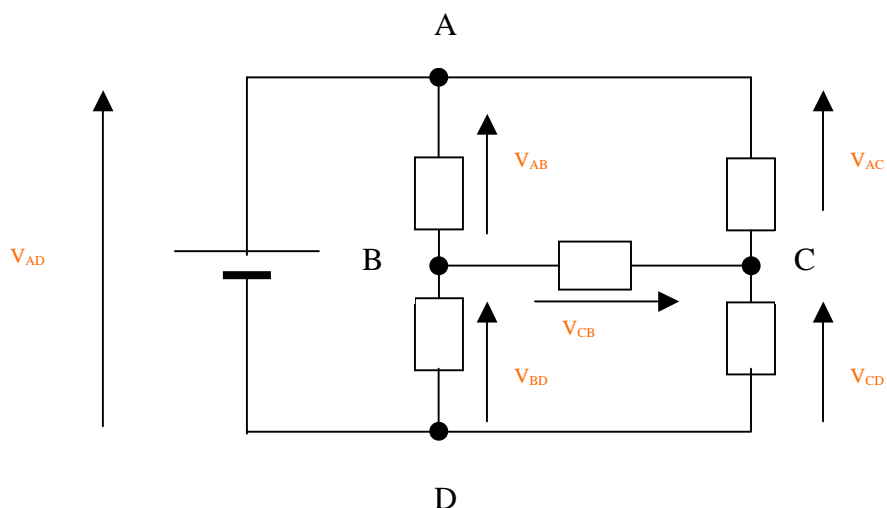
According to KVL $V = V_1 + V_2$.

b) Complete the table of voltmeter (in volts) which were obtained with 3 different batteries.

V (V)	V_1 (V)	V_2 (V)
18	12	6
6	4	2
12	8	4

Exercise N°2

The following circuit is given :



a) Mark all voltage drops on the circuit.

b) $V_{AD} = 10 \text{ V}$ and $V_{BD} = 4 \text{ V}$. Calculate V_{AB} .

We apply KVL to ABDA : $-V_{AB} - V_{BD} + V_{AD} = 0$.
So $V_{AB} = V_{AD} - V_{BD} = 6 \text{ V}$.

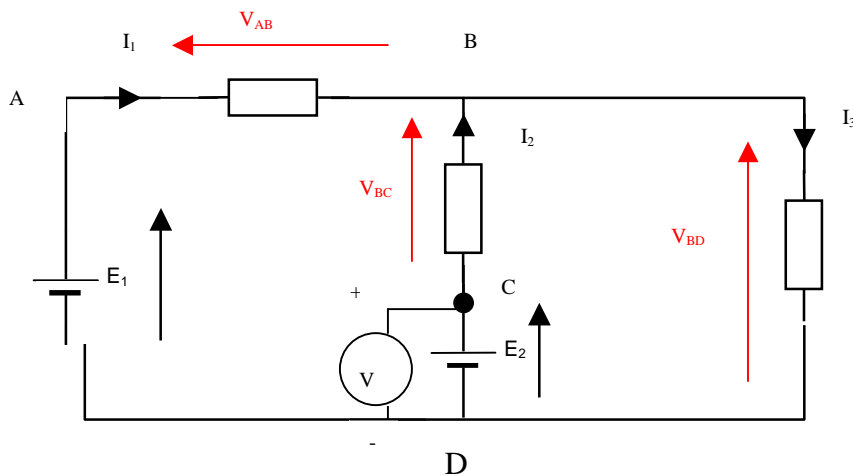
c) Calculate V_{CB} knowing that $V_{CD} = 1 \text{ V}$.

We apply KVL to BCDB : $V_{CB} - V_{CD} + V_{BD} = 0$.
So $V_{CB} = V_{CD} - V_{BD} = -3 \text{ V}$.

d) Calculate V_{AC} .

We apply KVL to ACBA : $-V_{AC} - V_{CB} + V_{AB} = 0$.
So $V_{AC} = 9 \text{ V}$.

Additional exercise on KVL



a) $I_3 = 12,5 \text{ mA}$ and $I_2 = -25 \text{ mA}$. Calculate I_1 .

We apply KCL : $I_1 + I_2 = I_3$
So $I_1 = I_3 - I_2 = 37,5 \text{ mA}$.

b) Mark V_{BC} et V_{AB} and V_{BD} .

See the circuit.

c) $E_1 = 20 \text{ V}$, $E_2 = 12 \text{ V}$ and $V_{BD} = 12,5 \text{ V}$. Calculate V_{BC} and V_{AB} .

We apply KVL to BDCB: $-V_{BD} + E_2 + V_{BC} = 0$
 $V_{BC} = V_{BD} - E_2 = 0,5 \text{ V}$.

We apply KVL to ABDA: $-V_{AB} - V_{BD} + E_1 = 0$
 $V_{AB} = E_1 - V_{BD} = 20 - 12,5 = 7,5 \text{ V}$.

d) Draw a voltmeter to measure E_2 .

See the circuit.