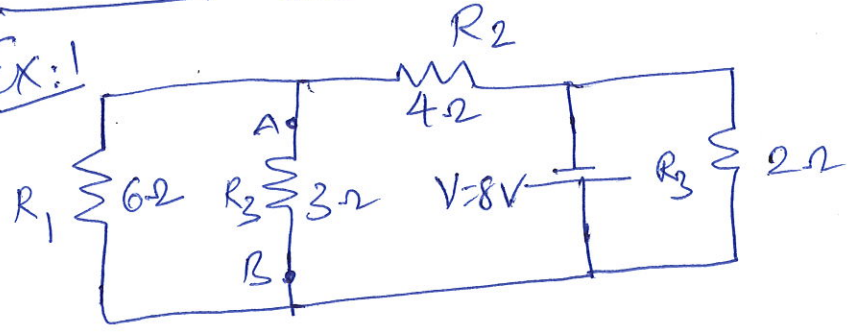
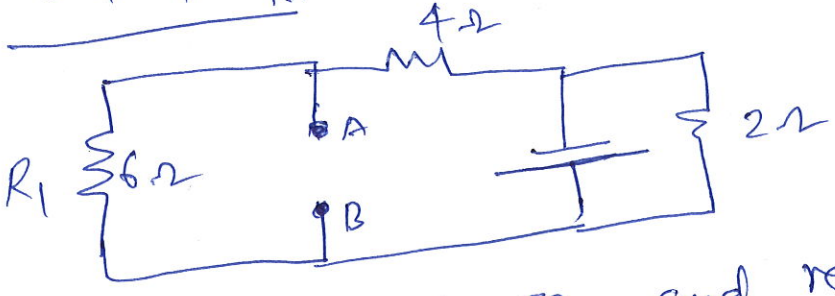
# THEVININ'S THEOREM

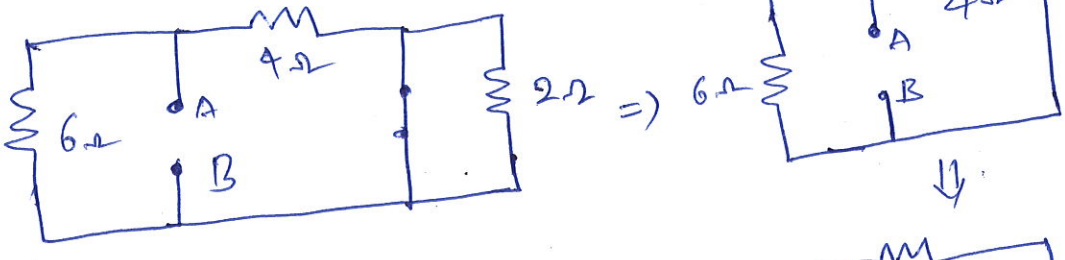
**Ex:1**

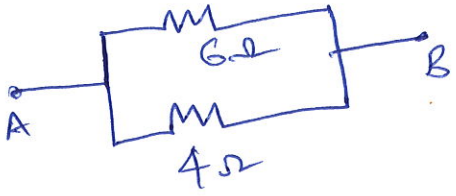



## To find $R_{TH}$



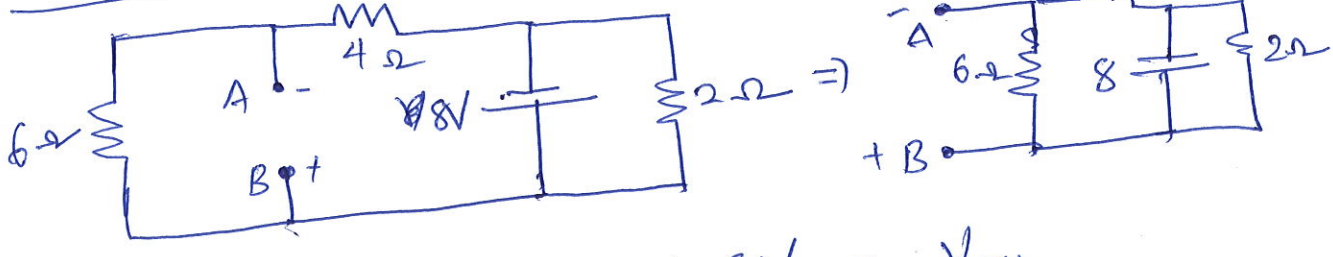

Short Voltage source and re-draw the circuit



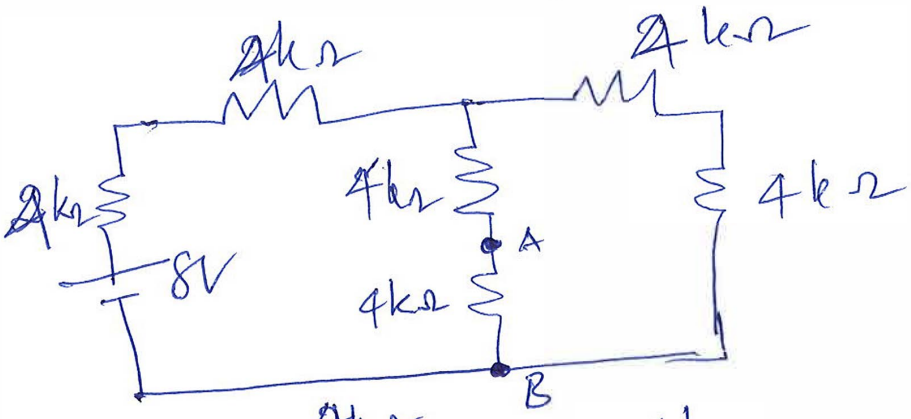



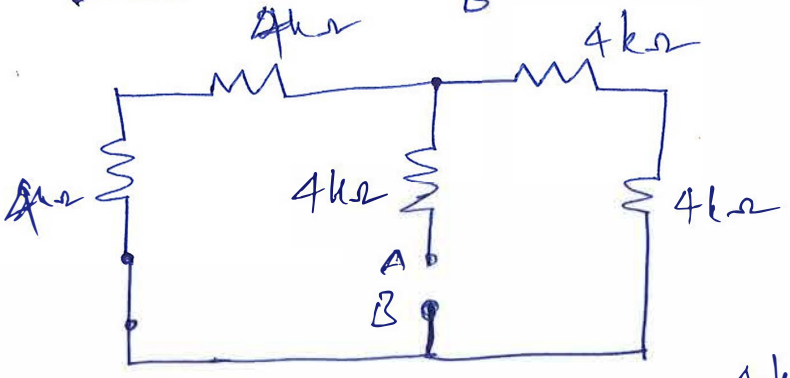

$$R_{TH} = (4 \| 6) = 2.4\Omega$$

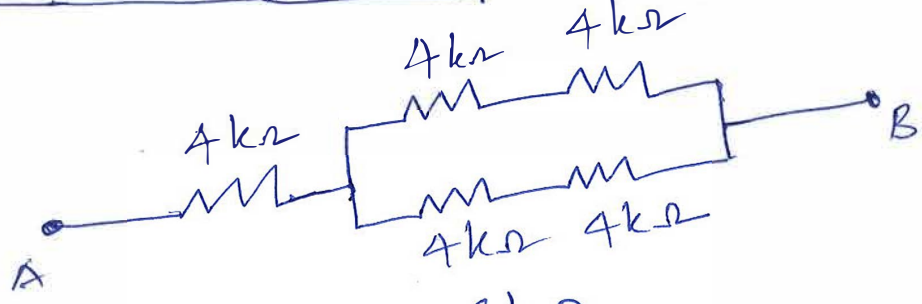
## To find $V_{TH}$



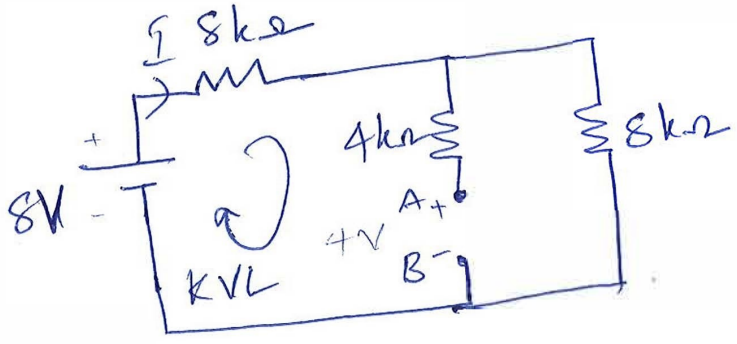

$$V_{BA} = \frac{8 \times 6}{6+4} = 4.8V = V_{TH}$$



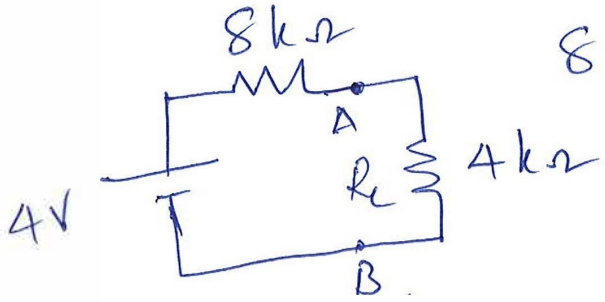

$\Rightarrow R_{TH} = 8k\Omega$



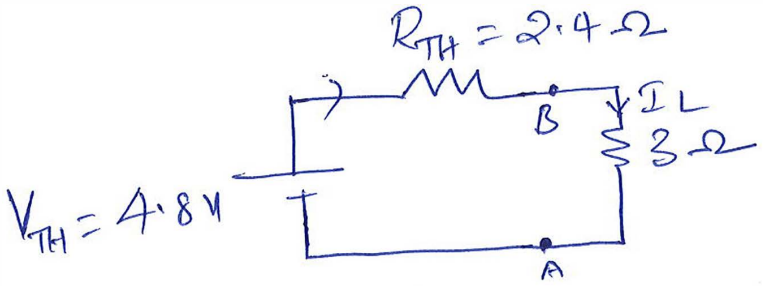

$I = \frac{8V}{16k\Omega} = 0.5mA$

$8 - 0.5m \cdot 8k = V_{AB}$

$V_{AB} = 4V = V_{TH}$




$I_L = \frac{4}{12M} = \frac{1}{3}mA$ $\quad V_L = \frac{1}{3} \cdot 4 = \frac{4}{3}V$




$$I_L = \frac{V_{TH}}{2.4+3} = \frac{4.8}{5.4} = \frac{8}{9}\ A$$

$$V_L = I_L \cdot R_L = \frac{8}{9} \cdot 3 = \frac{8}{3}\ V$$