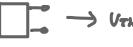
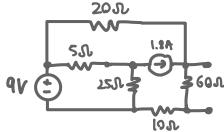


Thevenin & Norton 힌트 : 일의의 회로로 전압원과 저항의 직렬 연결 또는 전압원과 저항의 병렬 연결으로 나타낸 회로.

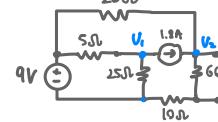
Thevenin :  , Norton :  . 이때, $R_{Th} = R_{N0}$ 이고 $V_{Th} = I_{Th} R_{Th}$ 가 성립.

- Thevenin 문제



$\langle V_{Th} \rangle$

Node Voltage Method

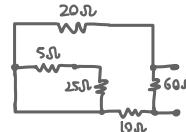


$$\frac{U_2 - 9}{20} + \frac{U_2}{10} - 1.8 = 0$$

$$\Rightarrow U_2 = 35V$$

$$V_{Th} = V_{60\Omega} = U_2 \times \frac{60}{10+60} = 30V$$

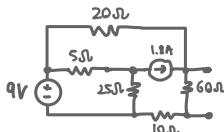
$\langle R_{Th} \rangle$



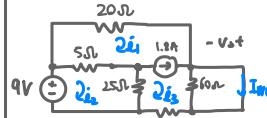
$$R_{Th} = 20 + ((5+25) \parallel 10) \parallel 60$$

$$= 20 + 0 \parallel 10 \parallel 60 = 30 \parallel 60 = 20 \Omega$$

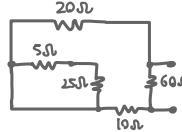
- Norton 문제



$\langle I_{N0} \rangle$



$\langle R_{N0} \rangle$



$$R_{N0} = 20 + ((5+25) \parallel 10) \parallel 60$$

$$= 20 + 0 \parallel 10 \parallel 60 = 30 \parallel 60 = 20 \Omega$$

$$\left. \begin{aligned} 25i_1 + 9i_2 + 5i_3 + 25i_4 + 60I_{N0} \\ i_3 - i_1 = 1.8 \\ 30i_4 = 5i_1 + 25i_3 + 9 \\ I_{N0} = i_3 \end{aligned} \right\}$$

$$\Rightarrow I_{N0} = 1.5A$$