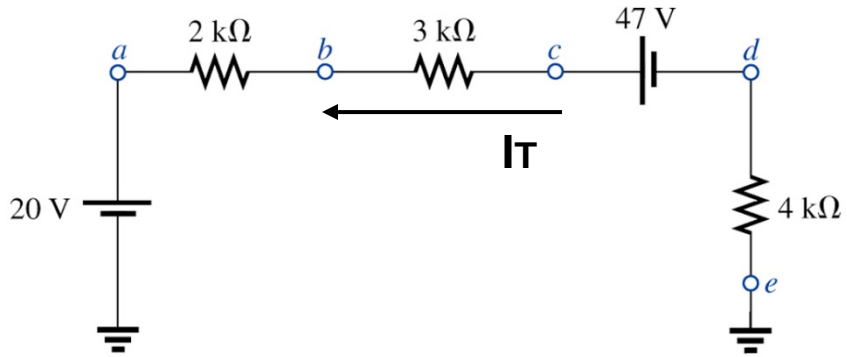
Breakout #1

- Find
  - The magnitude and direction of current flow
  - Vb, Vc, Vd
  - Vab, Vcd, Vde



$$I_T = \frac{E_T}{R_T} = \frac{27\,V}{9\,K\Omega} = 3\,mA, CCW$$

$$V_b = 20\,V + V_{ba}$$

$$= 20\,V + I_T \cdot 2\,K\Omega = 26\,V$$

$$V_c = V_b + V_{cb}$$

$$= 26\,V + I_T \cdot 3\,K\Omega = 35\,V$$

$$V_{ab} = V_a - V_b = 20V - 26V = -6V$$

$$V_{cd} = 47\,V$$

$$V_{de} = V_d - V_e = -12V - 0V = -12V$$

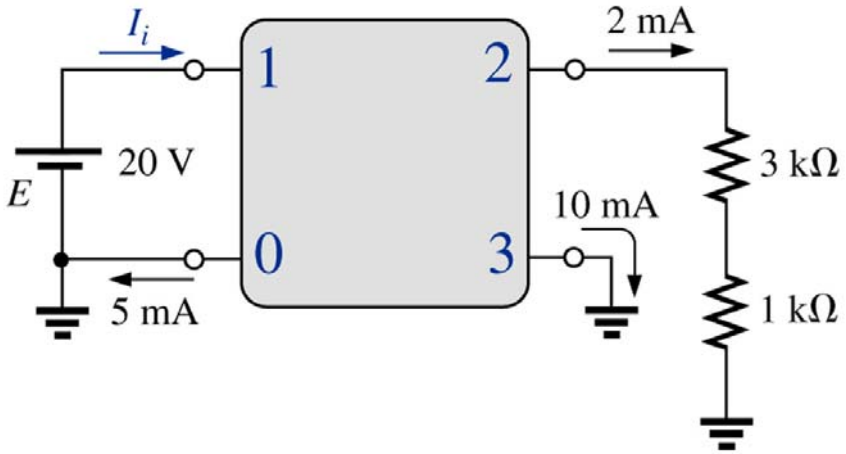
$$V_d = V_{de}$$

$$= -I_T \cdot 4\,K\Omega = -12\,V$$

NP

Breakout #2

- Find
  - V0, V2, V12, Ii



For I_i, use KCL :

$$I_i = 5\,\text{mA} + 2\,\text{mA} + 10\,\text{mA}$$
$$= 17\,\text{mA}$$

$$V_0 = 0\,\text{V}$$

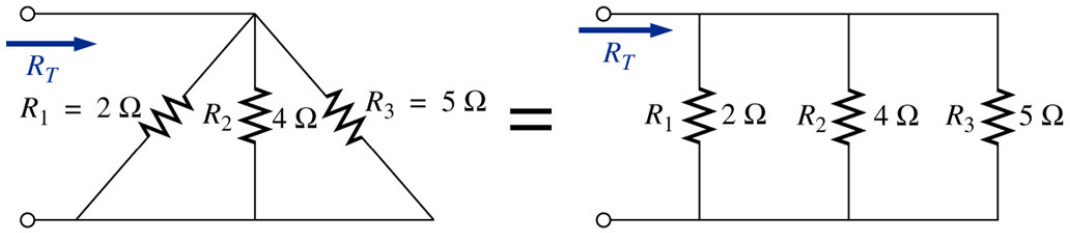
$$V_2 = 2\,\text{mA} \cdot 4\,\text{K}\Omega = 8\,\text{V}$$

$$V_{12} = V_1 - V_2 = 20\,\text{V} - 8\,\text{V} = 12\,\text{V}$$

NP

Breakout #3

- Find
  - RT and GT for each circuit

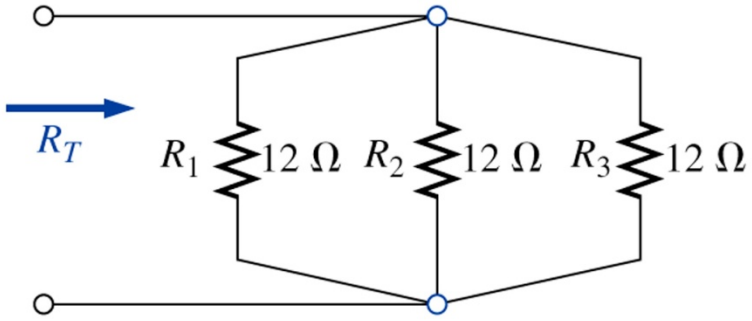


(A)

$$R_T = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}}$$

$$= 1.053\,\Omega$$

$$G_T = \frac{1}{R_T} = 0.950\,S$$



(B)

$$R_T = \frac{12\,\Omega}{3} = 4\,\Omega$$

$$G_T = \frac{1}{R_T} = 0.25\,S$$

NP