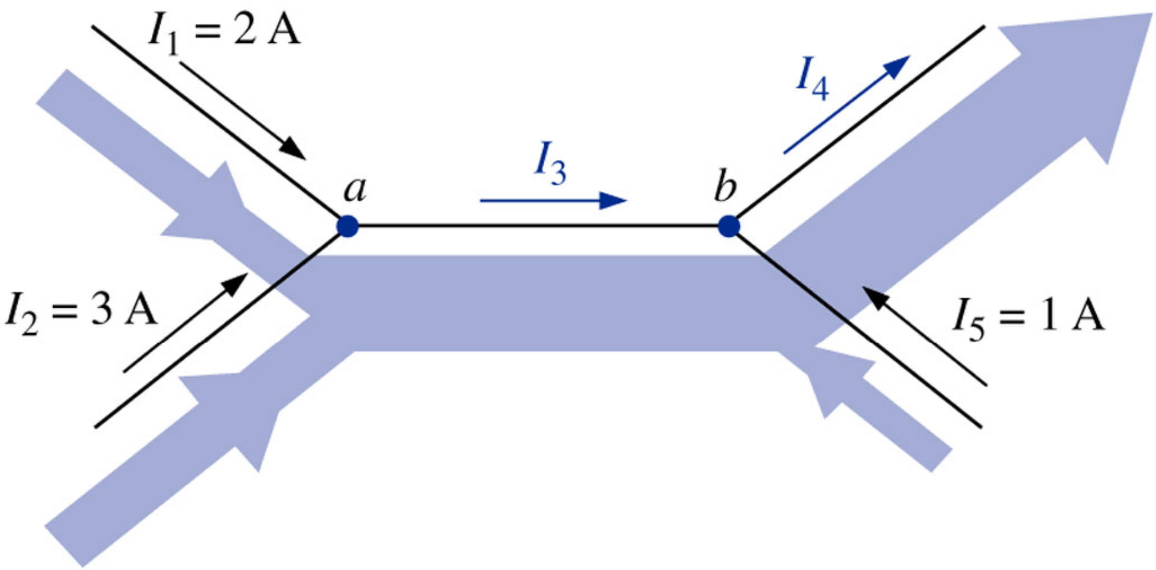
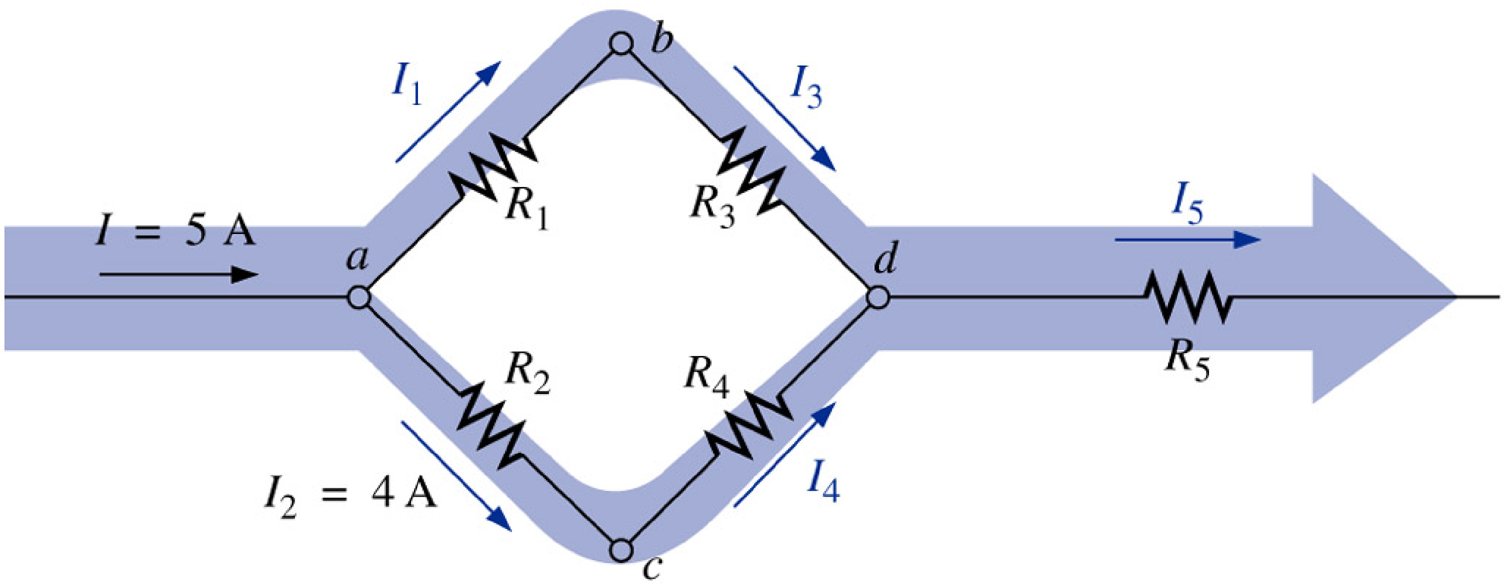
Breakout #1

- Find
  - I3 and I4



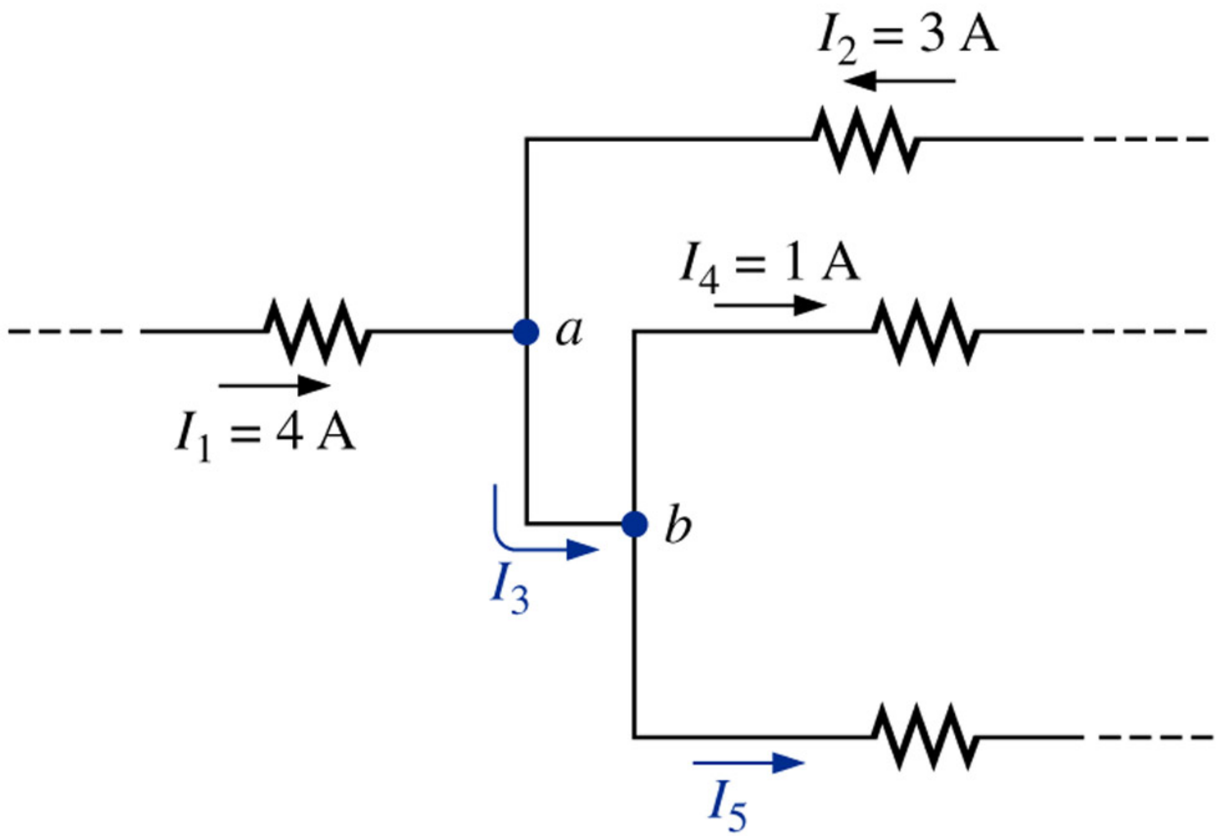
Breakout #2

- Find
  - I1, I3, I4, I5



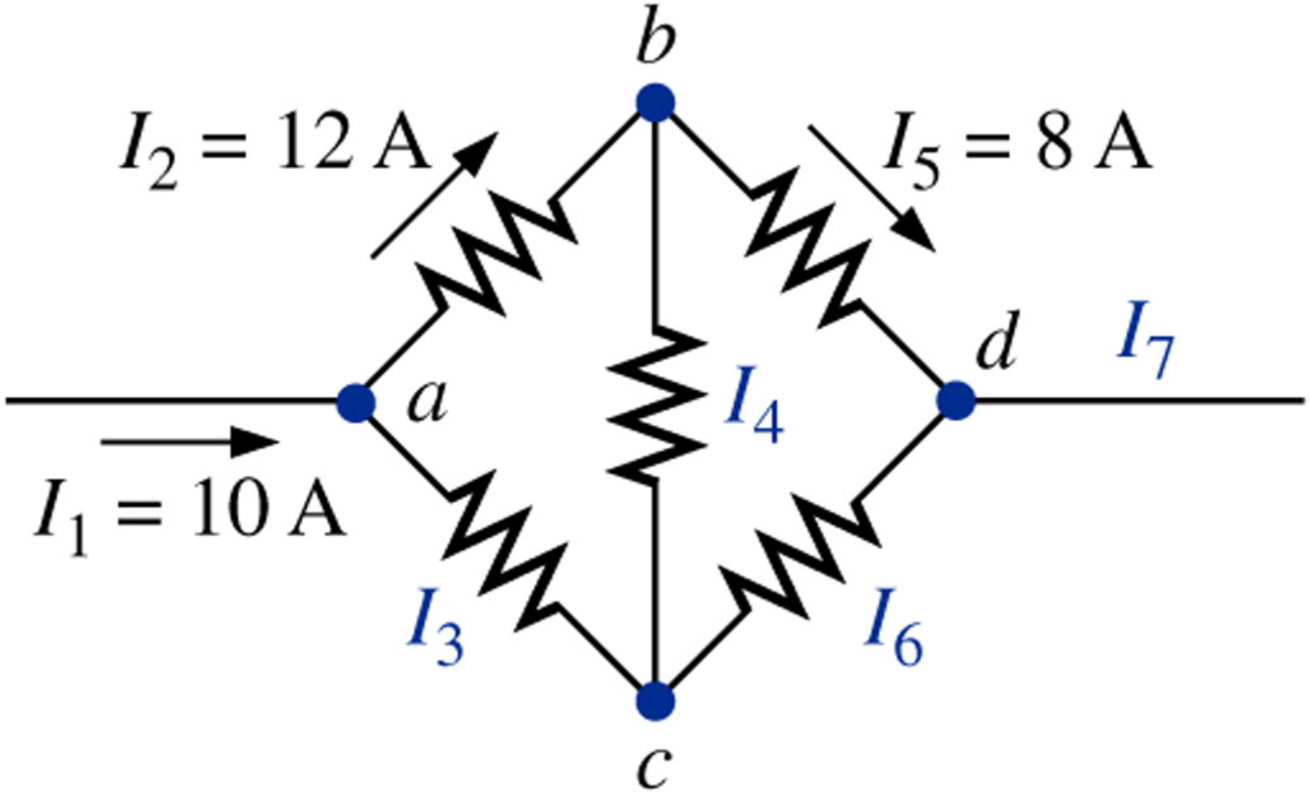
Breakout #3

- Find
  - I3 and I5



Breakout #4

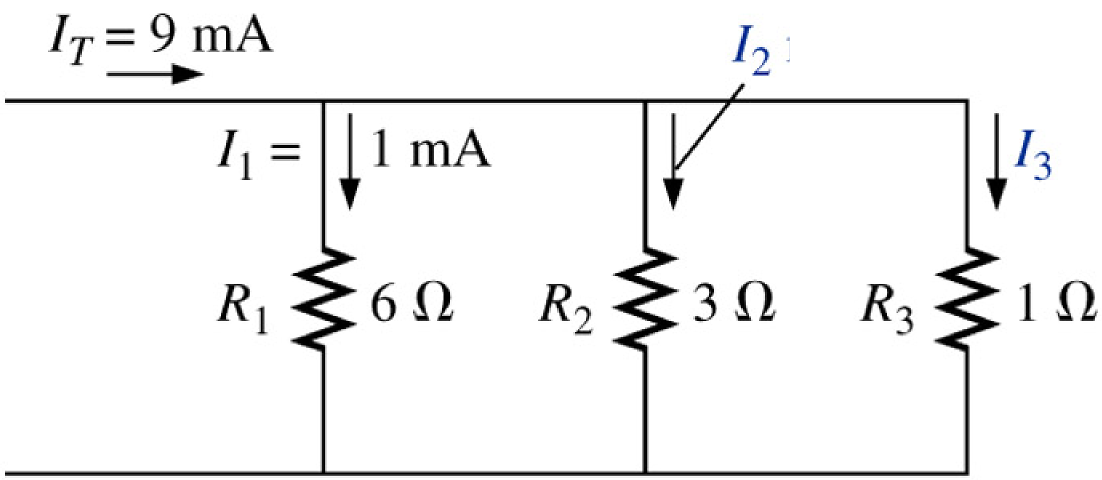
- Find
  - I3, I4, I6, I7 (Direction and magnitude)



Current Divider Rule

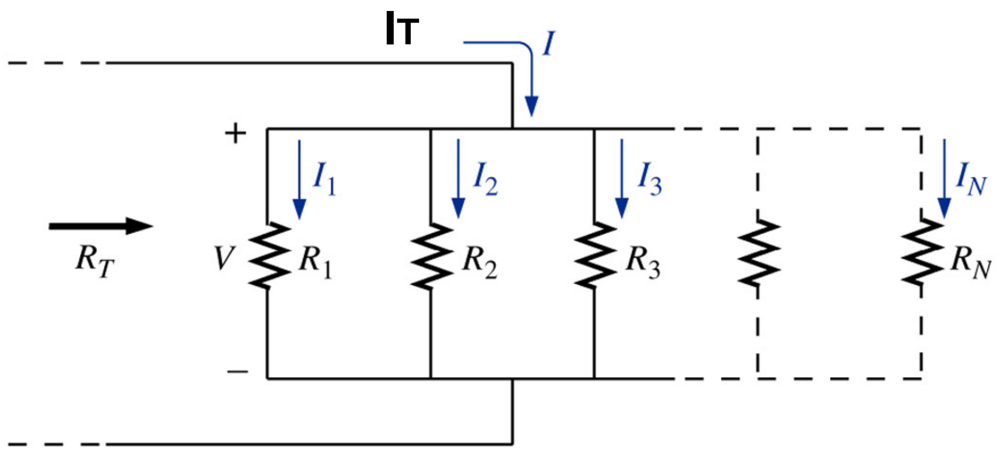
- For ***Parallel*** Elements:
  - of equal value, the current will divide equally
  - with different values, the smaller the resistance, the greater the share of input current
  - with different values, the current will split with a ratio equal to the inverse of their resistor values

Current Division - Example



Current Division – General Form

$$I_T = \frac{V}{R_T}$$



$$\text{But } V = I_1 \cdot R_1 = I_2 \cdot R_2 = I_N \cdot R_N$$

$$\text{Or, } V = I_x \cdot R_x$$

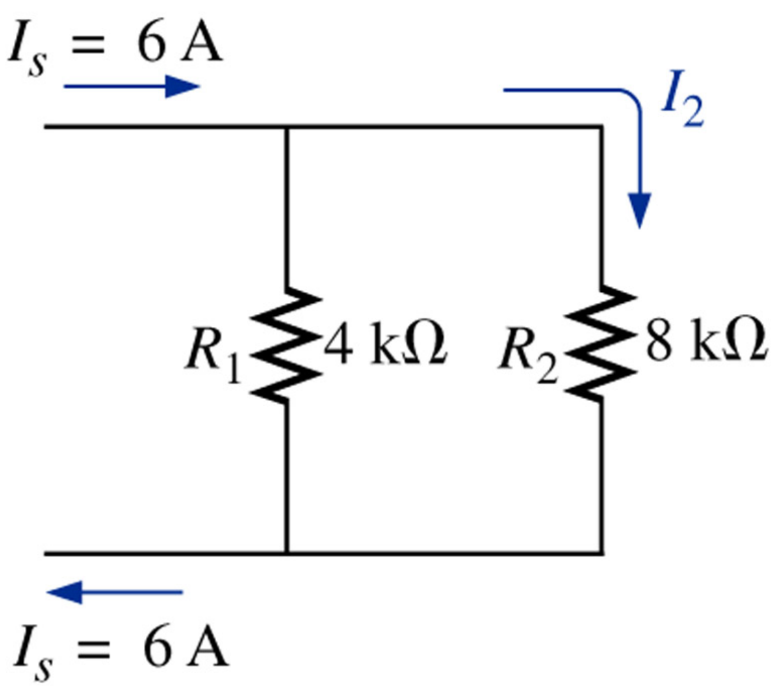
$$\text{Substituting yields: } I_T = \frac{I_X \cdot R_X}{R_T}$$

$$\therefore I_X = I_T \frac{R_T}{R_X}$$

Current divider rule

- I_X = Unknown current
- I_T = Total input current (into the node)
- R_T = Total parallel resistance (Equiv R)
- R_X = Resistor that I_X flows through

Current Division - Example



$$I_2 = I_T \frac{R_T}{R_2}$$

$$I_T = 6\,A$$

$$R_T = \frac{R_1 \cdot R_2}{R_1 + R_2} = 2.66\,K\Omega$$

$$R_X = 8\,K\Omega$$

$$I_2 = 6\,A \cdot \frac{2.66\,K\Omega}{8\,K\Omega} = 2\,A$$