Combinations of Resistors

1. Series Connection (single path)

$$R_{\text{eq}} = \sum_{k=1}^{N} R_k$$

$$I = I_1 = I_2 = I_3$$

$$\varepsilon = V_{\text{tot}} = \sum_{k=1}^{N} V_k$$

2. Parallel Connection (multiple paths)

$$\frac{1}{R_{\text{eq}}} = \sum_{k=1}^{N} \frac{1}{R_k}$$

$$\varepsilon = V_1 = V_2 = V_3$$

$$I_{\text{tot}} = \sum_{k=1}^{N} I_k$$