# Node Voltage Method

**The node voltage method uses KCL, but writes all the currents in terms of voltages.**

**1.**     Redraw the circuit in a more logical fashion to better identify the node voltages.

**2.**     Choose a node to be the reference node or **ground** (V = 0) and label all the remaining node voltages (V$_1$, V$_2$, …).

➔ *The best choice for reference node is the essential node with the most branches connected*

**3.**     Apply **KCL** at each node for which V ≠ 0.

➔ *All unknown currents are assumed to be positive and leaving the node*

**4.**     Rewrite each unknown current in terms of voltage using Ohm's law (**ΔV=IR**).

**5.**     Solve the system of equations to get the node voltages.

**6.**     Use the node voltages to find the appropriate unknown(s).

**NOTE**:   **Steps 3** & **4** can be done simultaneously once you become familiar with the node-voltage method.