

# Nodes, Loops, and Branches

## Node

A node is an uninterrupted segment of wire of any shape. Unless otherwise stated, the wire is considered to be perfect and have no resistance. Therefore, all points on the node have the same voltage. Physically speaking, a node may connect components inches away. However, electrically speaking all the components are connected to a single point.

In a schematic representation, node1 extends from the top terminal of the 12 volt source to the left terminal of the 33 ohm resistor. Node2 includes all the wire segments between R1, R2 and R4. No matter how long the lines extend between components, no potential difference exists between them as long as they are on the same node.

A branch is any element connected between two nodes. R4 and R3 are examples of a branch. A loop is any sequence of elements connected between nodes that starts and ends at the same node. You only include a node once in a loop. There may be loops within loops as loop1 and loop2 are within loop3.

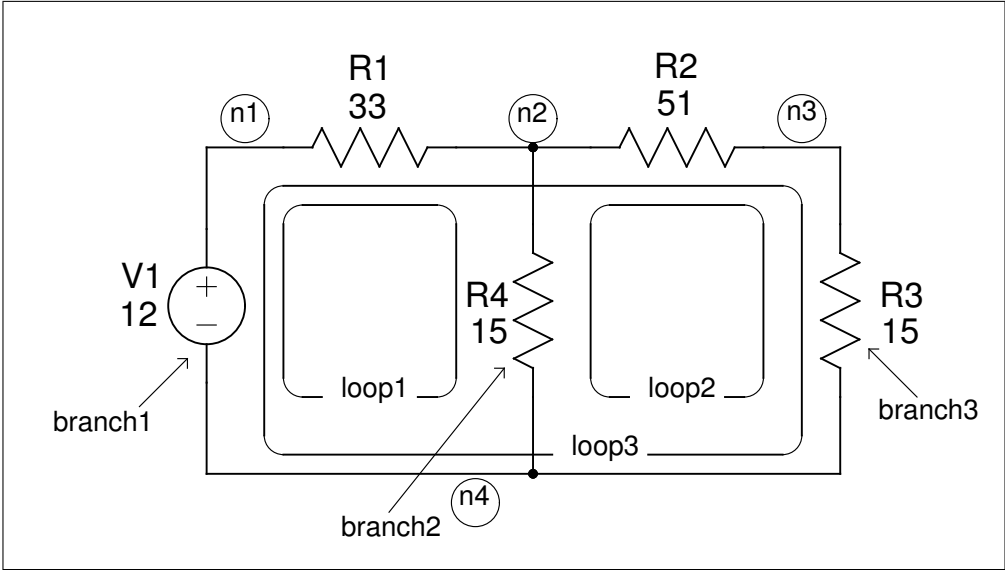


Figure 1: Nodes, loops and branches