

- DEF:** A circuit node is any point to which three or more circuit elements are attached.
- NOTE:** The goal of writing current summation and voltage loop equations is to obtain n equations in n unknowns that we can solve to find all the currents and voltages in a circuit.
- TOOL:** Nodes connected by wires are considered to be a single node.
- TOOL:** We set the sum of currents measured as flowing out of a node to zero. If the current measurement arrow points toward a node, that current appears with a minus sign in the current-sum equation.
- TOOL:** We skip current sums for nodes where we would be forced to define a current for a voltage source. Writing an equation for such a node adds a new variable and a new equation. Thus, we merely create more equations in more unknowns rather than moving closer to the goal of writing n equations in n unknowns.
- TOOL:** There is always at least one node we may skip when writing current-sum equations. The equation for that node would be redundant.
- TOOL:** When necessary, we supplement current sum equations with equations that equate currents flowing in circuit elements that are in series.
- NOTE:** Summing the currents flowing into a node yields an equation that is equivalent to the equation for summing the currents flowing out of that node. Multiplying one equation by -1 on both sides yields the other equation.
- NOTE:** Summing currents measured as flowing into a node and setting that sum equal to currents measured as flowing out of that node yields an equation equivalent to setting the sum of all currents measured as flowing out of the node to zero.