1) Nodal Analysis: Known Voltages

Which of the following nodal voltages do we already know the values of in a circuit?

all voltages in parallel

19%

ground ✓

93%

open circuit voltages

16%

nodes connected to the "+" side of voltage sources ✓

77%

- In a circuit, we define ground to be at a potential of $V = 0V$, so we always know what the voltage of a node connected to ground is

- When a voltage source is connected between some node and ground, we also know the voltage at that node: it's equal to the voltage that the voltage source supplies.

$V_a = V1$ **a**   **R1**   **R**

V1

V

R2   **R**

$V_b = 0$ **b**
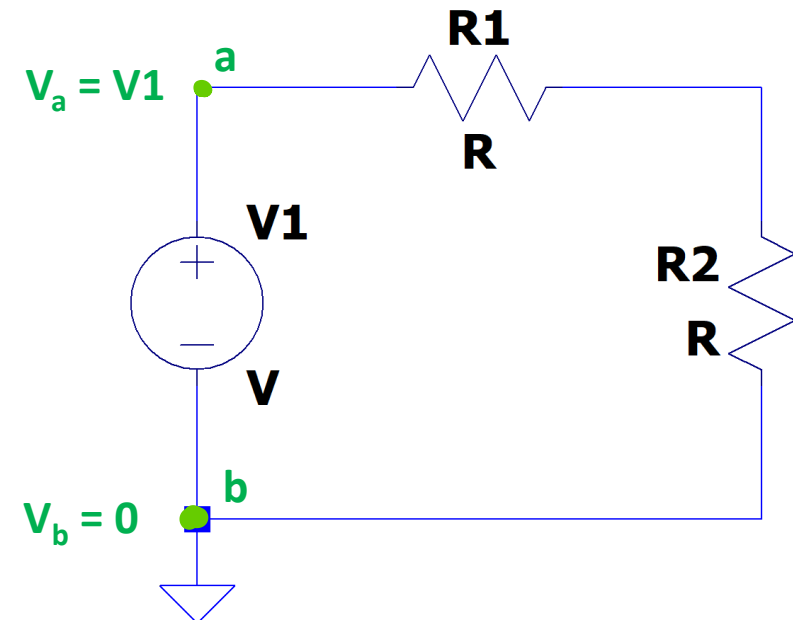
2) Nodal Analysis: Unknown Voltages

When using nodal analysis, what are the unknown variables that we are solving for?

currents at each node

██████ 10%

current through each resistor

████ 5%

voltage at each node ✓

████████████████████████████████ 77%

voltage across each resistor

████ 8%

- When using the circuit analysis method of nodal analysis, we are solving for the voltages at each of the nodes in the circuit. In this case we have 3 total nodes, 2 nodes at which we already know the voltage (V_a = V1, V_b = 0V), and 1 node whose voltage we need to solve for: c.