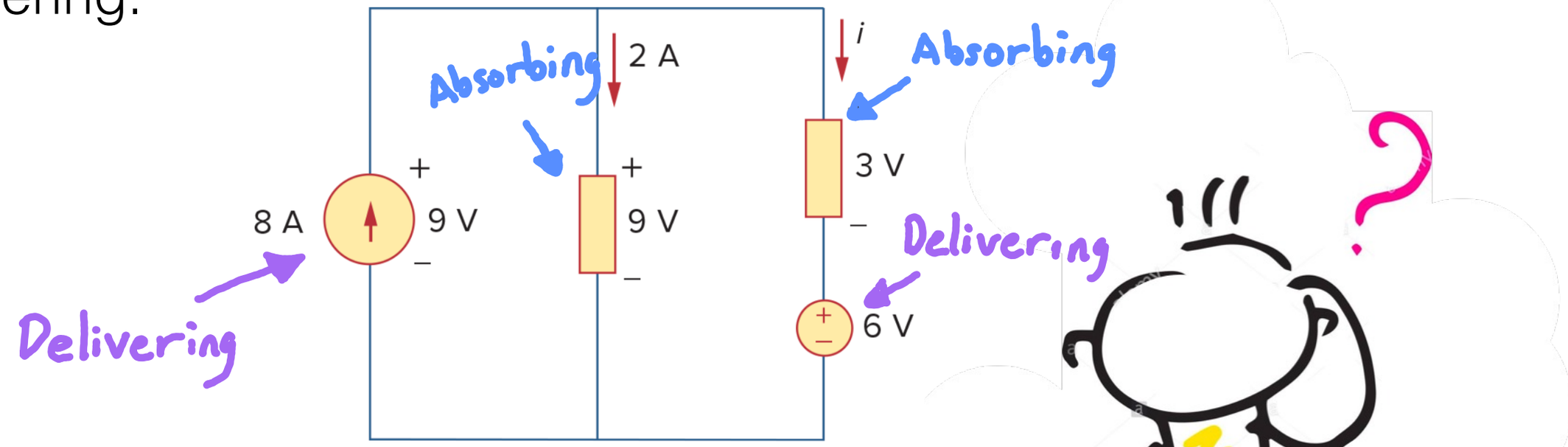
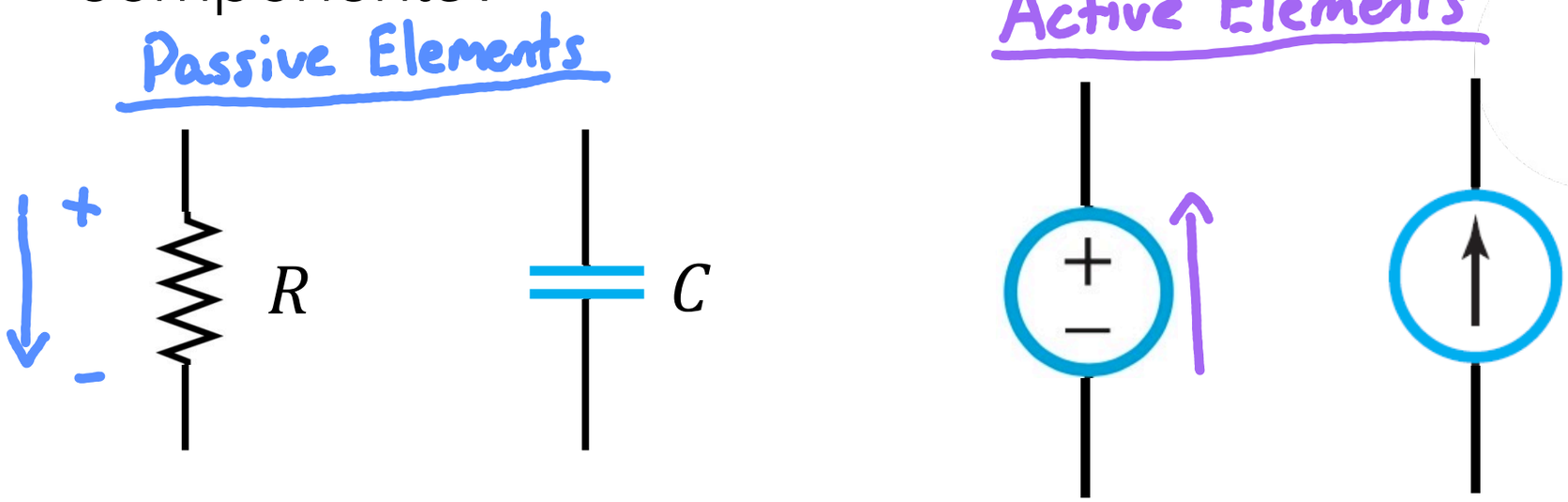
# Last Class…

1. Determine whether each components is absorbing or delivering.




2. Draw current and Voltage across each of these components?

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THE OHIO STATE UNIVERSITY

COLLEGE OF ENGINEERING

# Circuit Attributes

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# Today…

- Learning Objectives:
  - Identify branches, nodes, loops, and meshes in a circuit.

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# Circuit Attributes

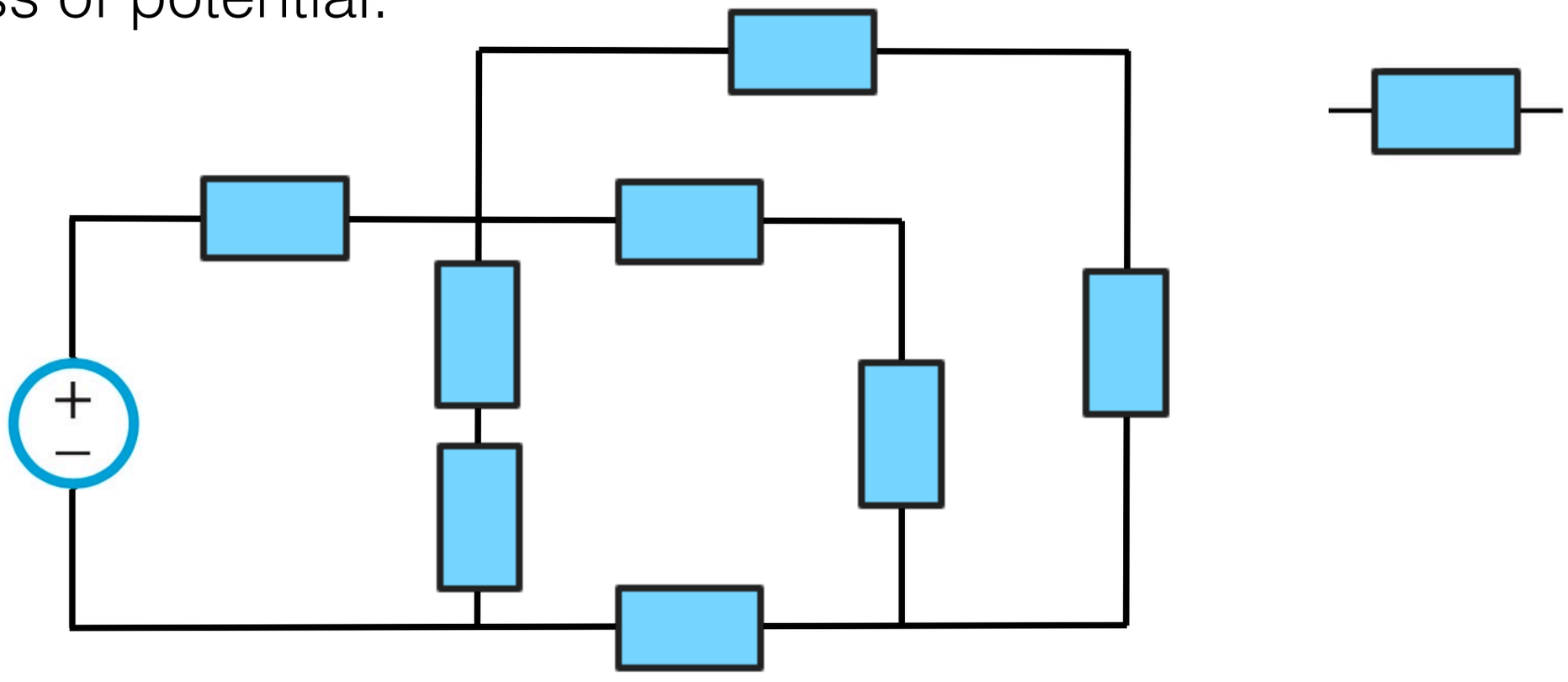
- Circuit: Electric network.

## Wires

- Ideal Wires.
- Conduct charge without loss of potential.

## Components

- Such as resistors, transistors, capacitors, inductors and diodes.



Objective of circuit analysis: Determine unknown currents and voltages.

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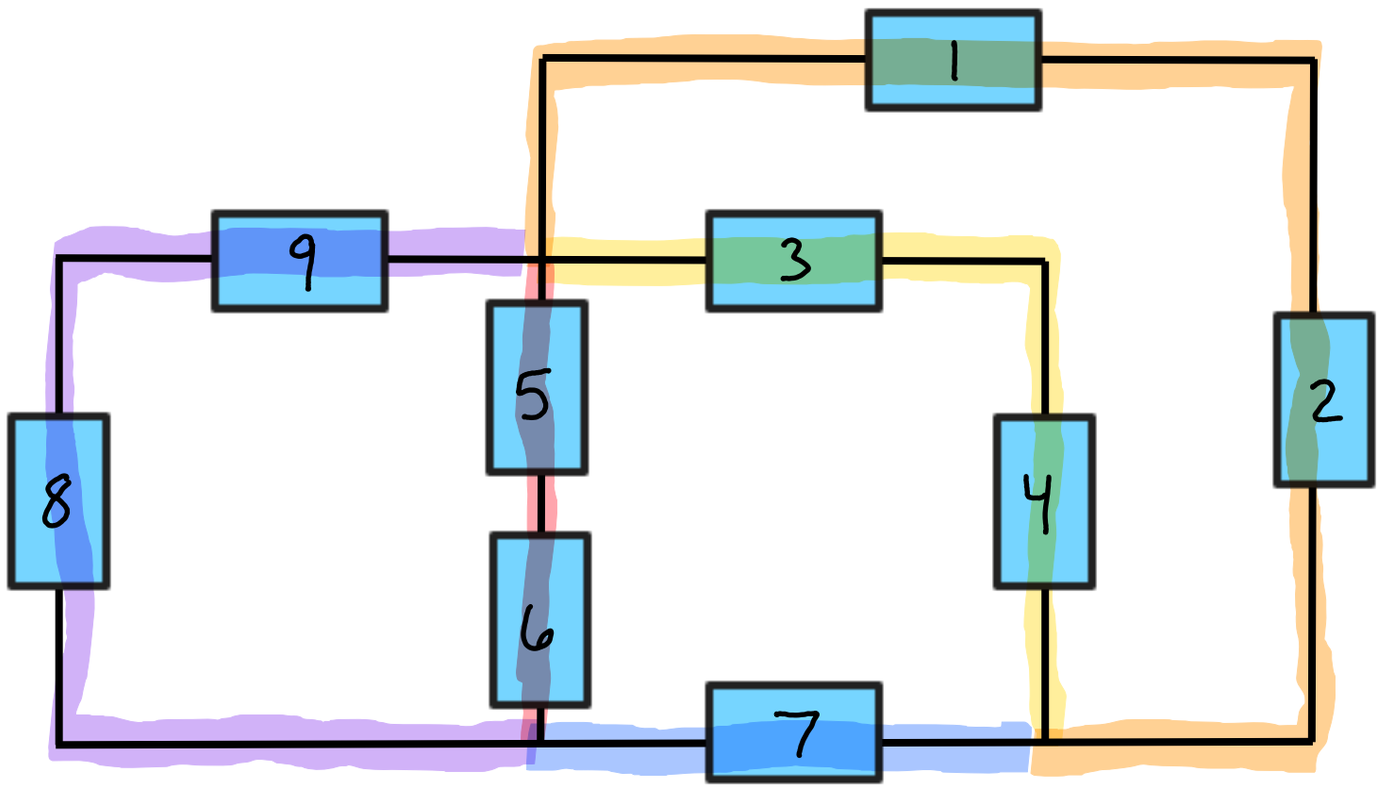
# Branch

Branch:

- Single electrical pathway, consisting of wires and components.
- May contain one or more components.




Components in the same branch share the same current and are said to be in series.

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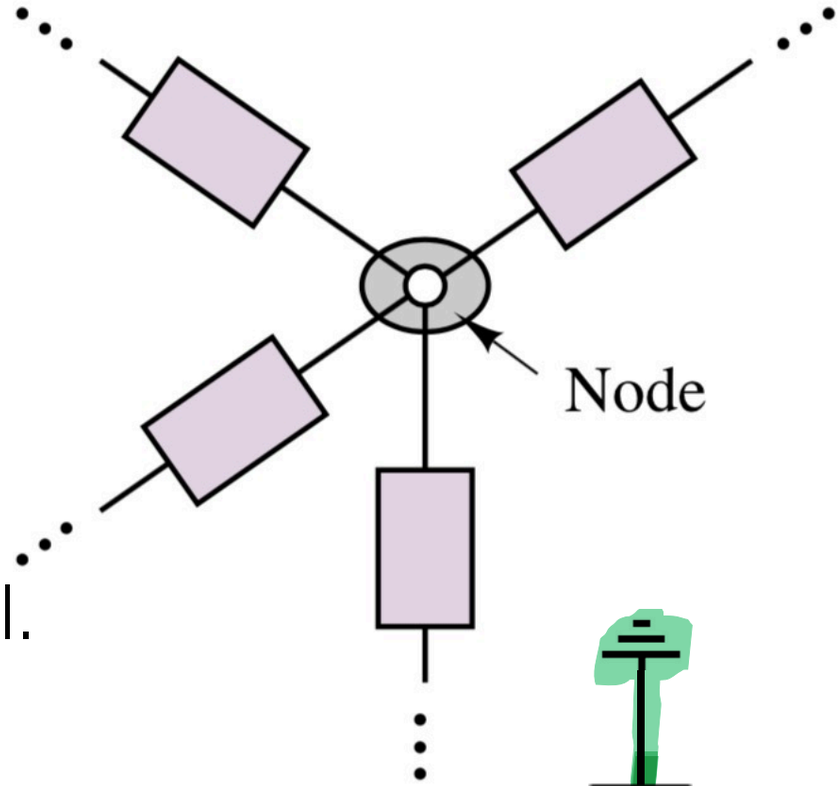
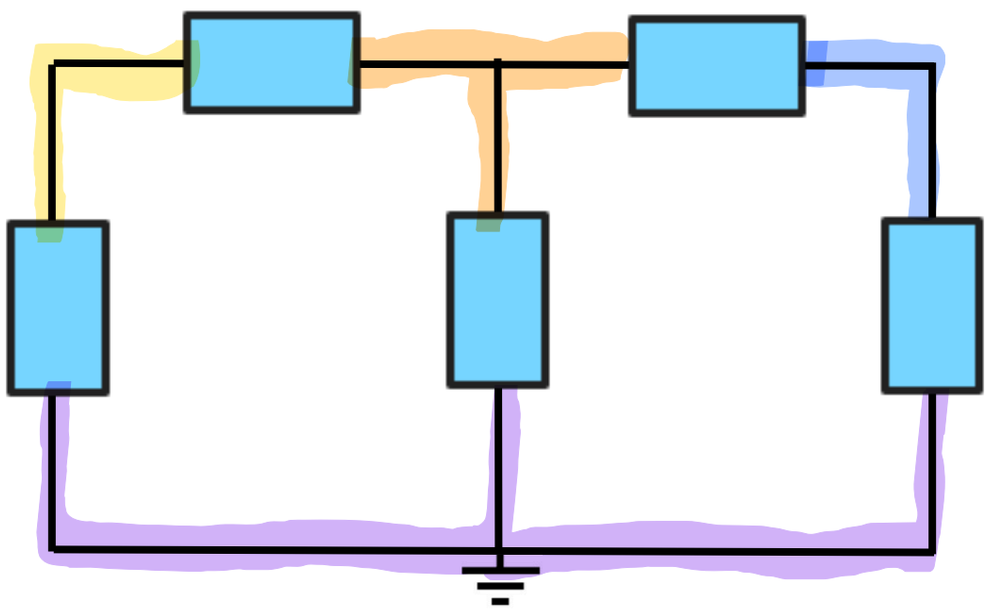
# Node

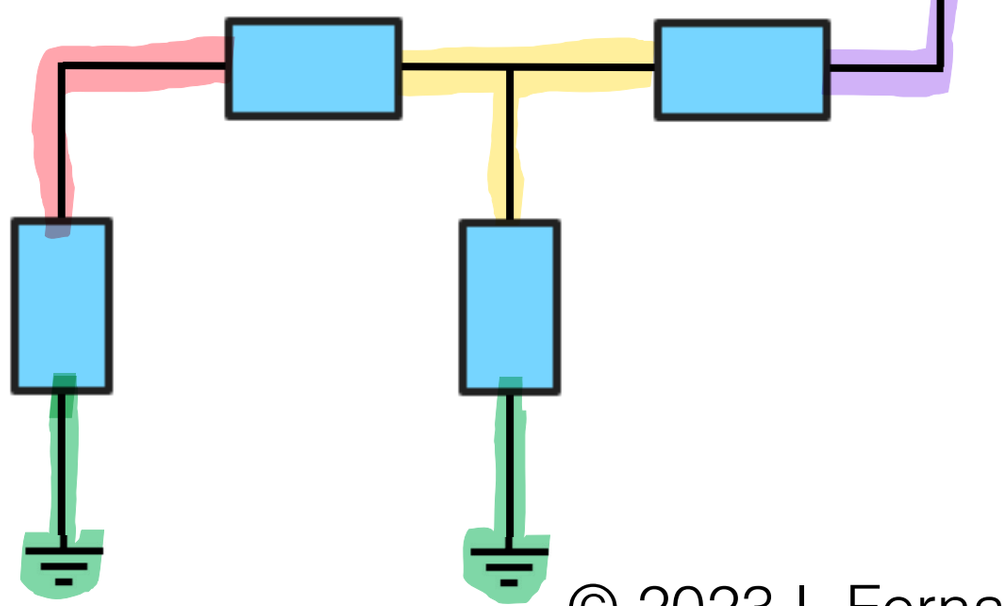
Node:

- Junction of two or more components.
- A point at which charge can flow without crossing a component.
- All points at a node have the same potential.




- Select a reference node
  - Node voltage is relative to the reference node





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# Node

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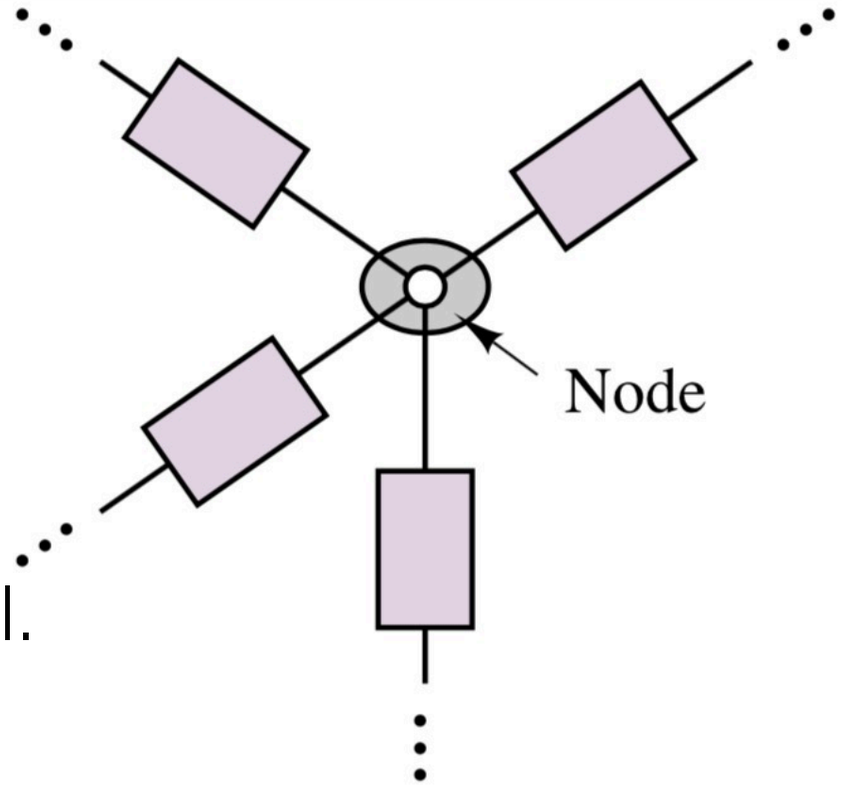
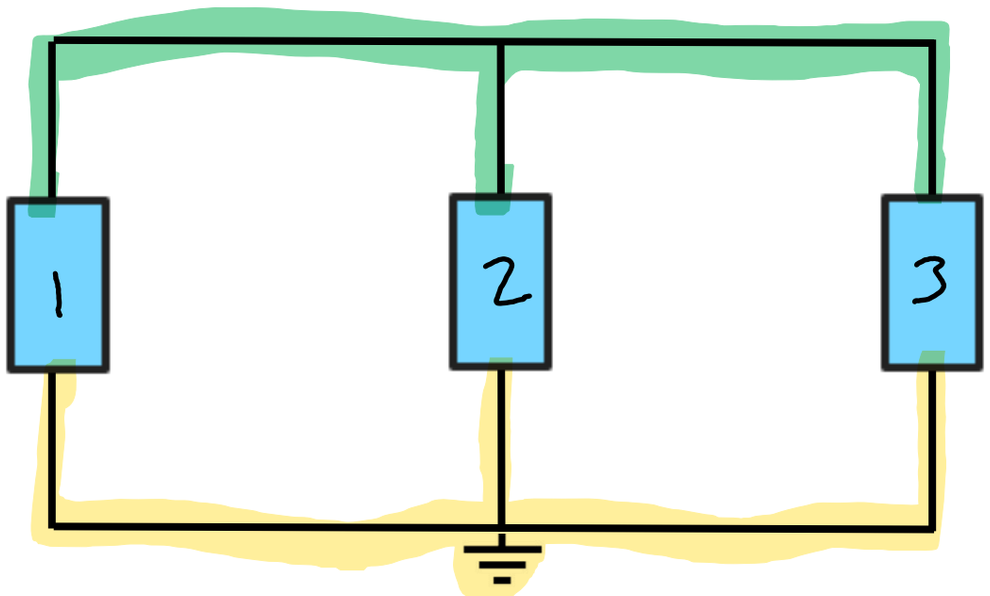



- Select a reference node
  - Node voltage is relative to the reference node




Components sharing the same nodes on both sides have the same voltage and are said to be in parallel.

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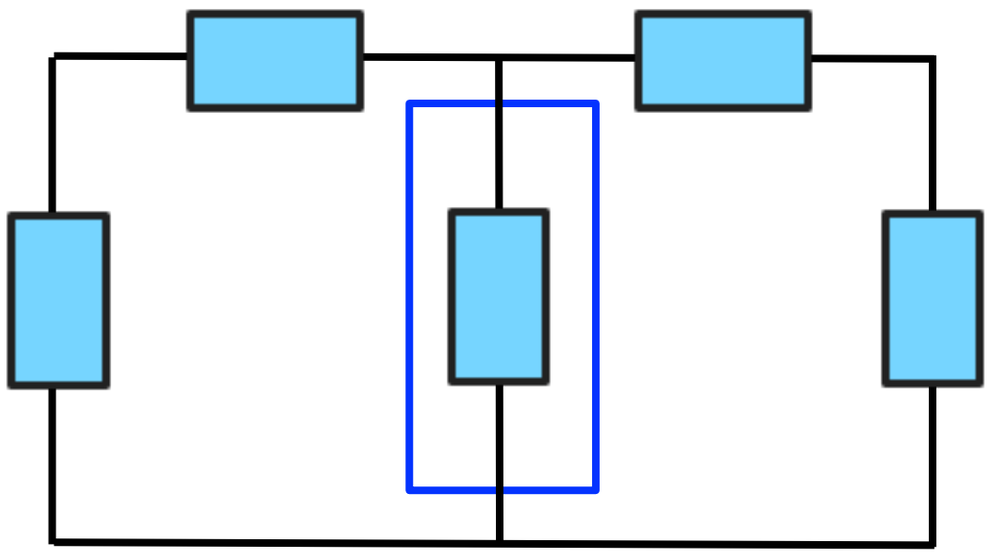
# Loop/Mesh

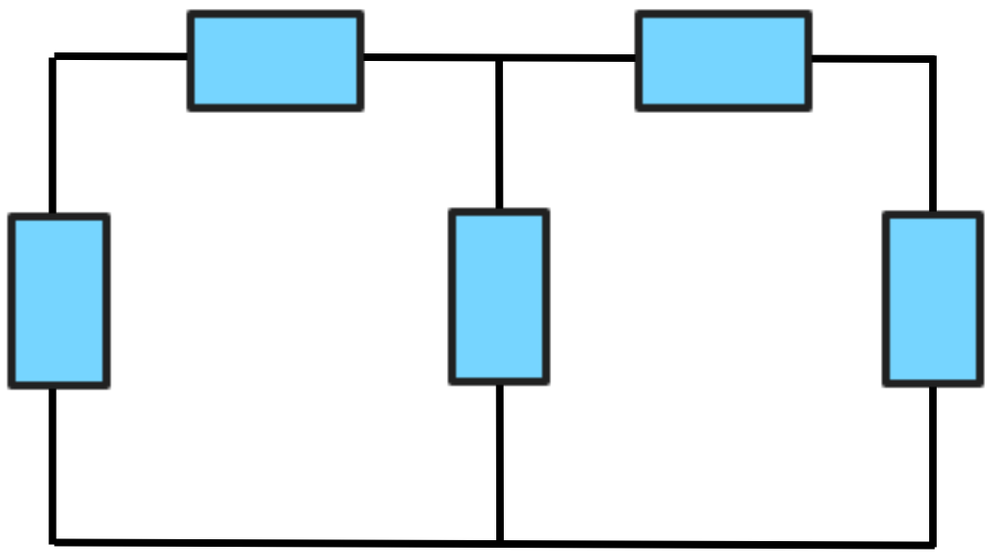
Loop:

- Any closed pathway.
- Required for current to flow.
- Different loops in the same circuit can share a branch.



Mesh:

- A mesh is a loop that does not contain other loops.



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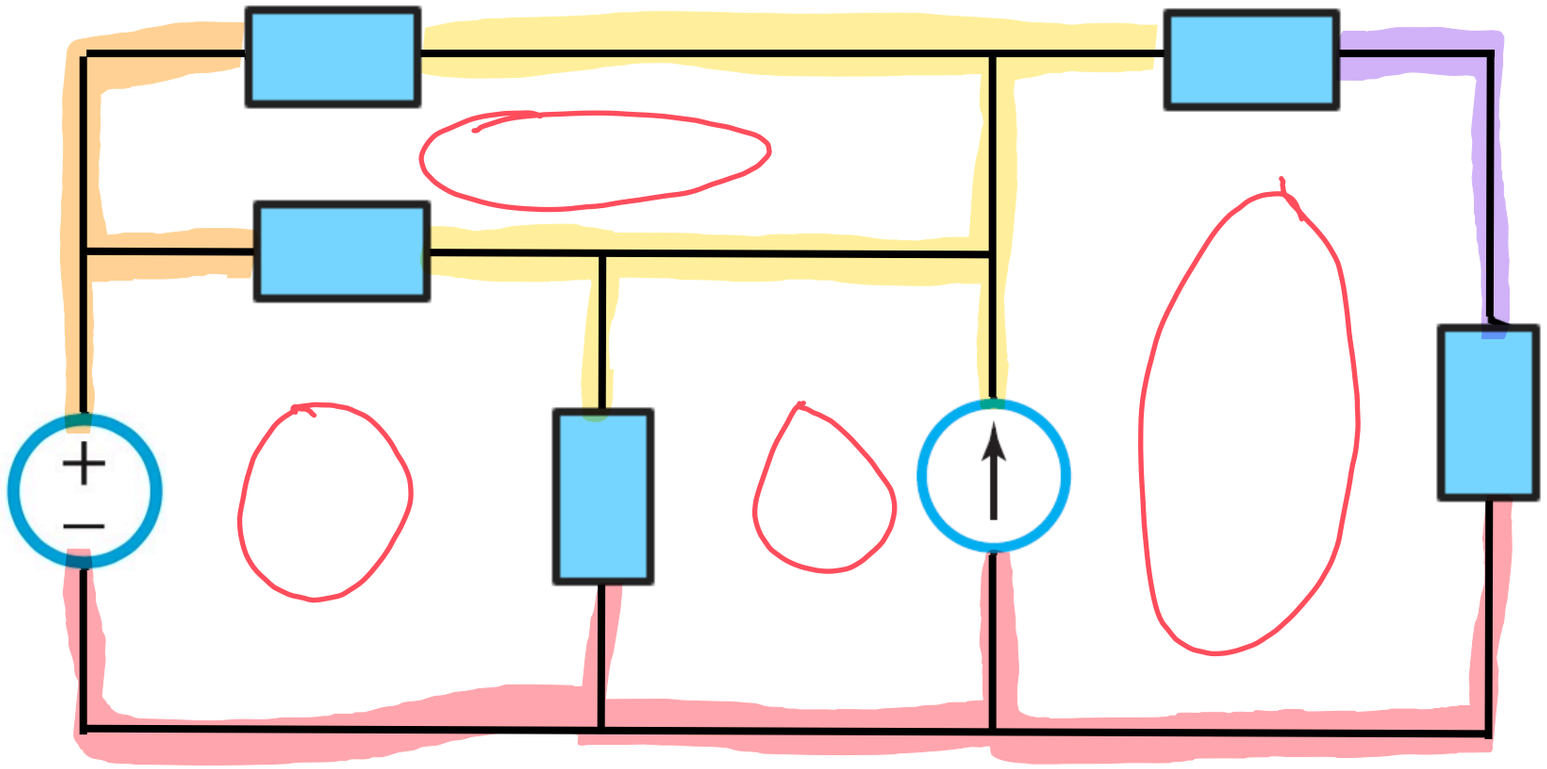
# Test Your Knowledge

How many nodes can you identify in the circuit below?

How many meshes?



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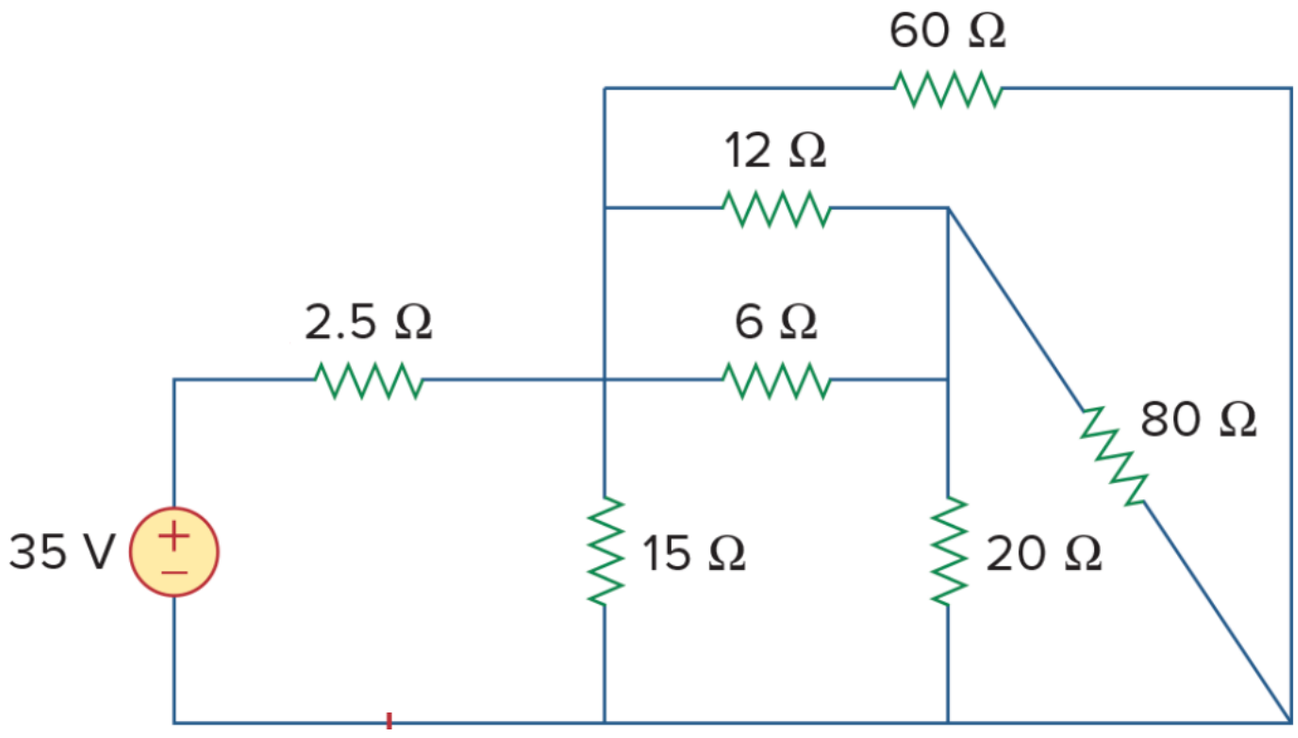
# Example

- Identify the number of nodes and meshes.
- Identify components that are connected in series.
- Identify components that are connected in parallel.

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