Linear Circuits

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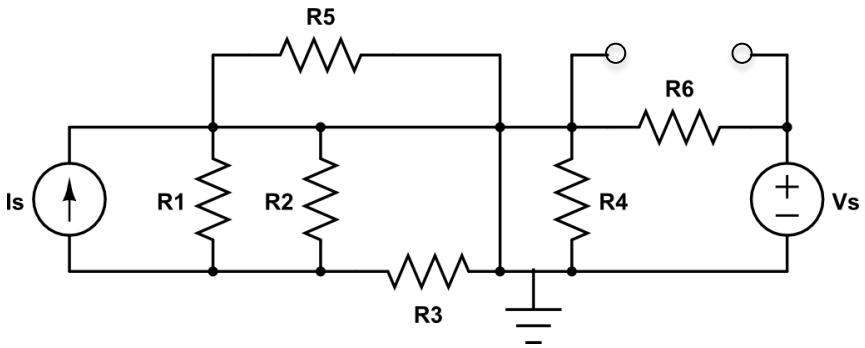
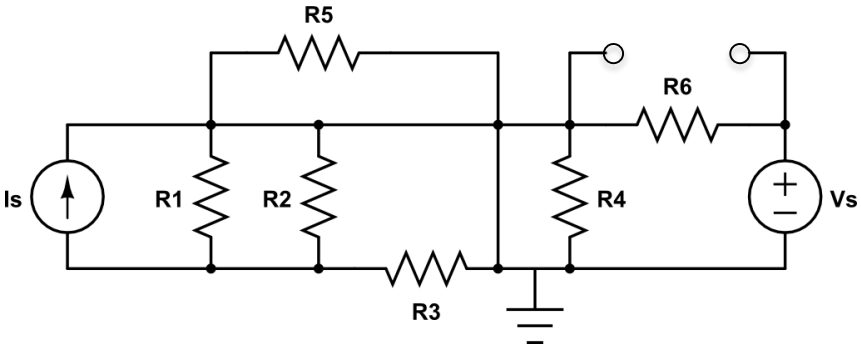
Introduction to Circuit Diagrams

Objectives: By the end of this lesson, you should understand how to analyze a basic electronic circuit.

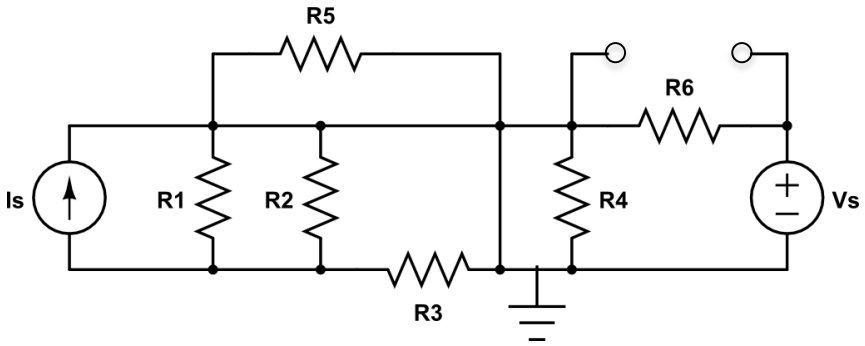


Builds Upon

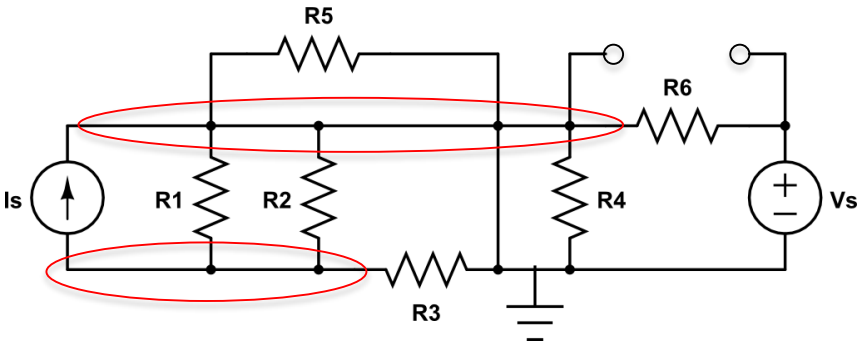
- Current
- Voltage
- Resistance



Circuit Diagram

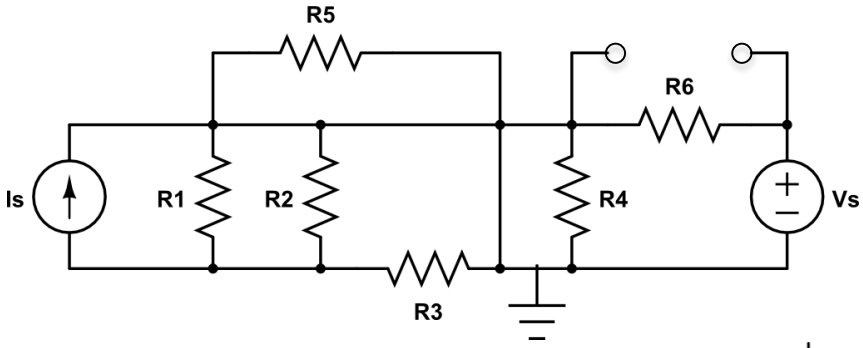


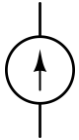
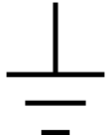
Wires



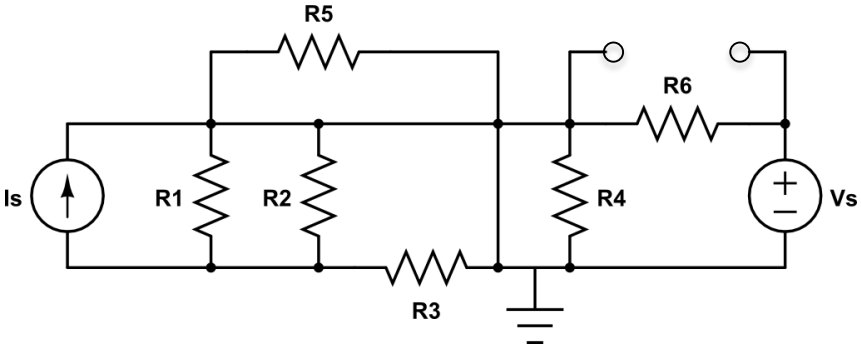
- Lines that connect circuit elements
- Have zero resistance
- Have zero voltage drop
- Form nodes and junctions

Circuit elements



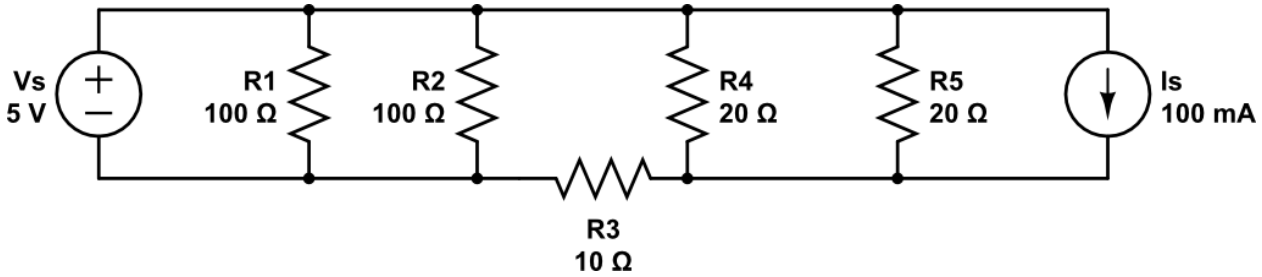
- Independent voltage source 
- Independent current source 
- Resistor 
- Ground 

Nodes and Junctions

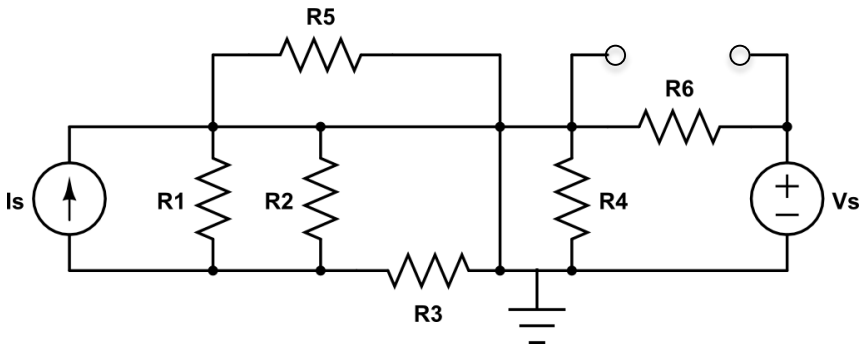


- Node – any point on a circuit wither two or more circuit elements meet
- Nodes are different if they have different voltage
- Junction – the point where wires meet

Quiz: How many nodes?



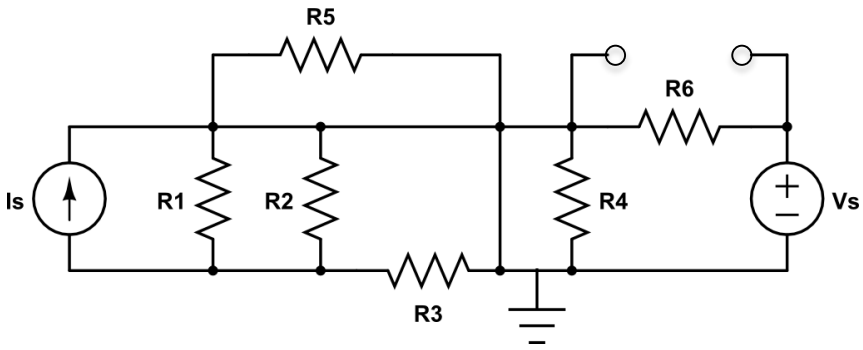
Short Circuit



- A wire that has the same start and end node as another circuit element *shorts* that element.

- Current will travel through the short instead of the circuit element.

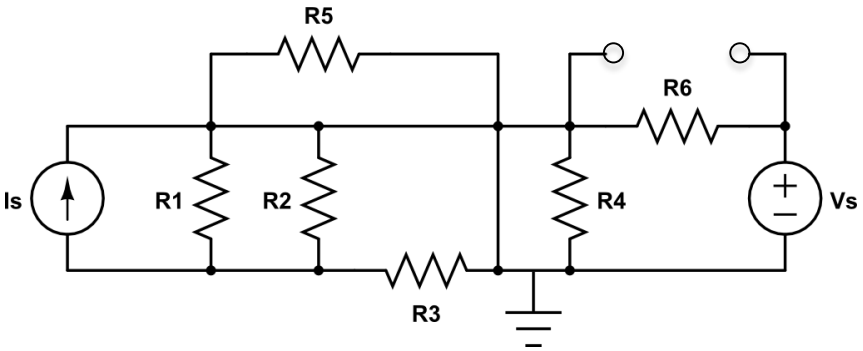
Open Circuit



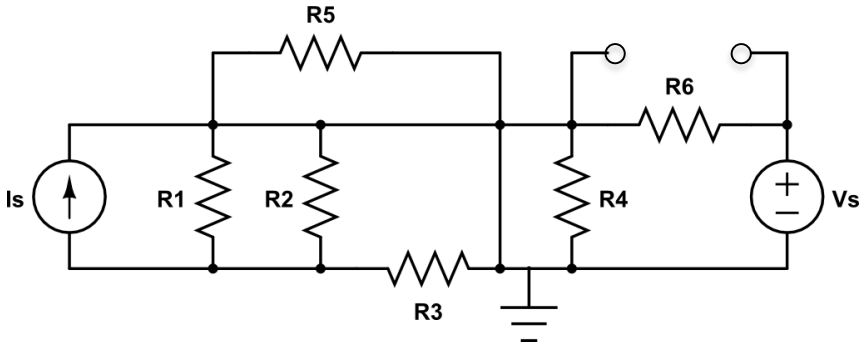
- An open circuit has terminals that are not connected to other circuit elements.

- No current will flow through an open circuit.

Quiz: Identify the short and open circuit.



Key Concepts



- Wires are lines that connect circuit elements.
- Wires meet at junctions.
- Circuit elements meet at nodes.
- Current always flows through short circuits.
- Current never flows through open circuits.