

# Multiple Loop Circuits

---

---

---

---

---

---

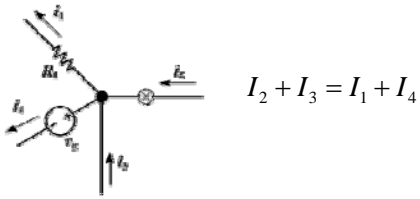
---

---

## Kirchhoff's Laws

- Kirchhoff's Current Law (1<sup>st</sup> Law)

$$\sum I_{in} = \sum I_{out}$$



---

---

---

---

---

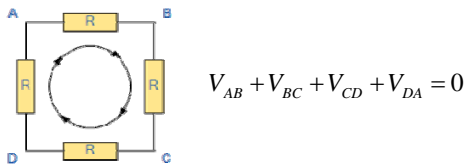
---

---

---

- Kirchhoff's Voltage Law (Loop or 2<sup>nd</sup> Law)

$$\sum V = 0$$



---

---

---

---

---

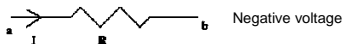
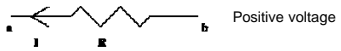
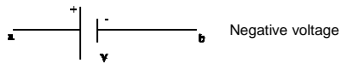
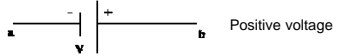
---

---

---

• Sign conventions for Kirchhoff's Laws

(looping from "a" to "b")




---



---



---



---



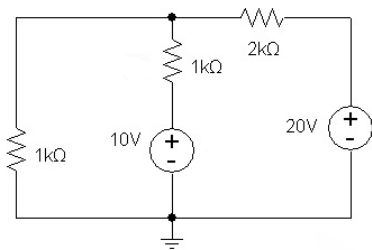
---



---

Example

- Calculate the voltage and current for all resistors in the following circuit.




---



---



---



---



---



---