

The junction rule (Kirchhoff's first law)

At any junction in an electrical circuit, the total current entering a junction must be equal to the total current leaving the junction.

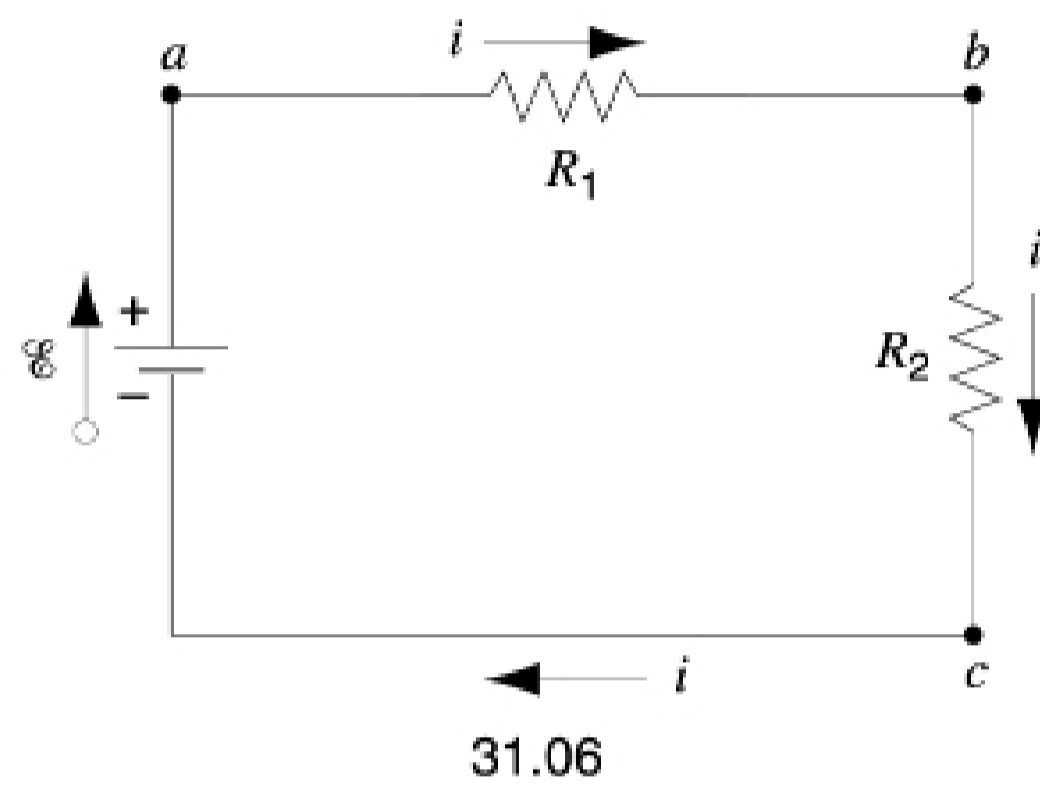
Conservation of charge

The loop rule (Kirchhoff's second law)

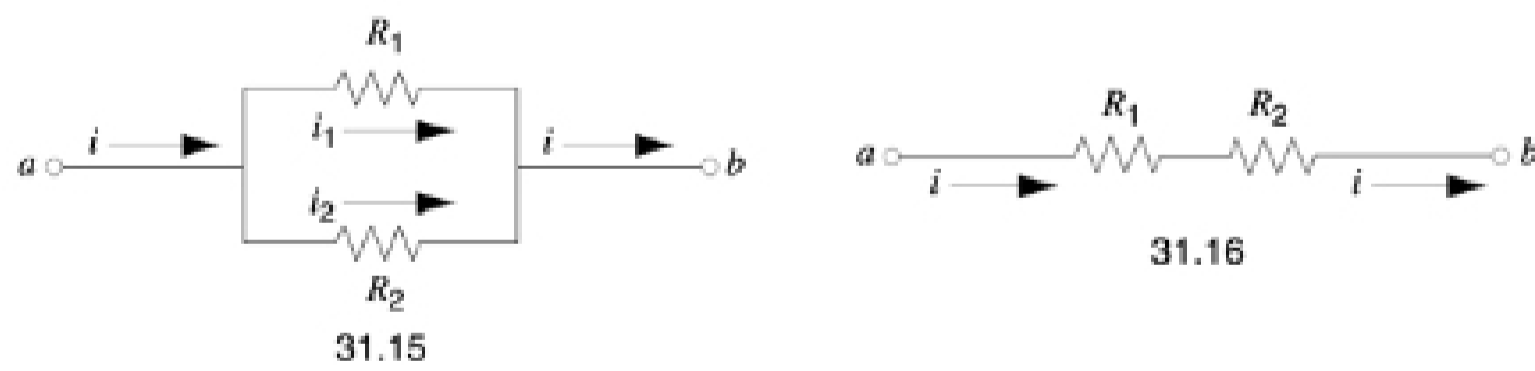
The algebraic sum of all differences in potential around a complete circuit loop must be zero.

Conservation of energy

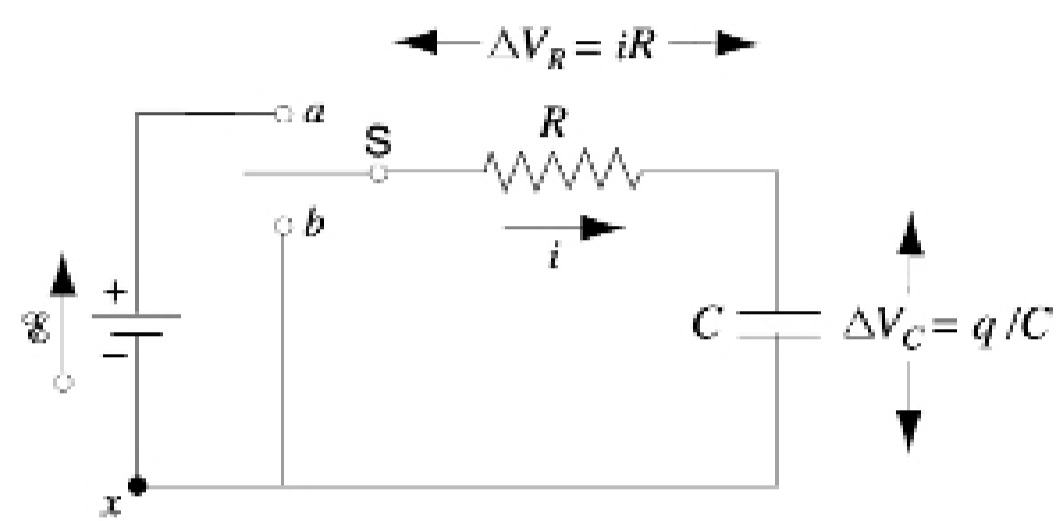
Circuit analysis



Resistors in series and parallel



Charging and discharging a capacitor



31.20