

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.

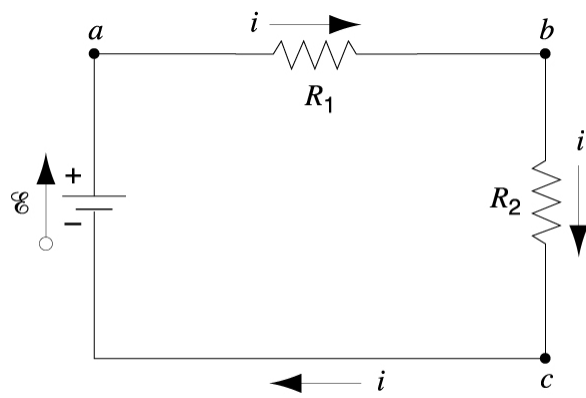
Conservation of charge

The loop rule (Kirchhoff's second law)

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

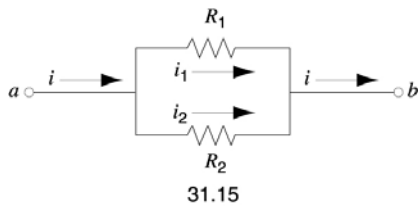
Conservation of energy

### Circuit analysis

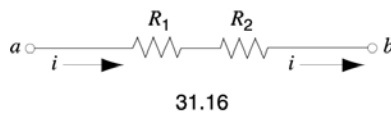


31.06

### Resistors in series and parallel

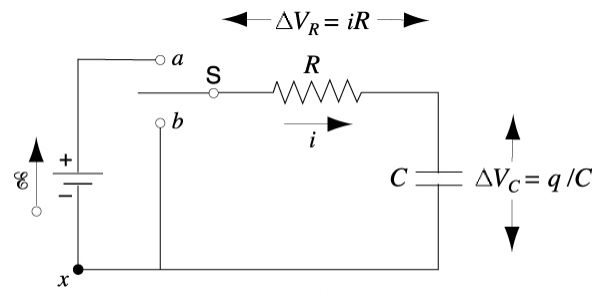


31.15



31.16

## Charging and discharging a capacitor



31.20