a single, simple loop

- analyse circuits in complete electrical loops
  - voltage (drives the flow)
  - electrical current (rate of flow of charge)
  - resistance (impedes the flow)
- current is always the dependent variable

useful because electrical circuits are good at controlled long range working

a fruitful model

- electrical working
- mechanical working

mechanical loops give tangible experiences

energy and power

- energy in
- energy out
- chemical store
- thermal store
- kinetic store
- gravitational store

using power is often more natural than using energy

- power in
- power out

particularly useful for thinking about light bulbs

resistance and more complex circuits

- resistance depends on circuit element
- resistance depends on number of circuit elements in loop
- series connections: 1 loop
- parallel connections: >1 loop

resistance varies with the arrangement of the loops and what you put in them