Year 11 Physics
Formula Sheet
Electromagnetism

$k = 9.00 \times 10^{9}\ \mathrm{Nm^2C^{-2}}$ — k = electrostatic constant

$F = k\dfrac{q_1 q_2}{r^2}$ — F = force

$E = k\dfrac{q}{r^2}$ — E = electric field strength

q = magnitude of charge

$E = \dfrac{F}{q}$ — r = distance between charges

$E = \dfrac{\Delta V}{d}$ — ΔV = potential difference

d = distance between plates

$P = I\Delta V$ — P = power

$\Delta V = IR$ — I = current

R = resistance

Standard prefixes:

(k) kilo	$\times 10^{3}$
(c) centi	$\times 10^{-2}$
(m) milli	$\times 10^{-3}$
(μ) micro	$\times 10^{-6}$
(n) nano	$\times 10^{-9}$

In series

$R_T = R_1 + R_2$

In parallel

$R_T = \dfrac{1}{\dfrac{1}{R_1} + \dfrac{1}{R_2}}$

$F = I\Delta l B \sin\theta$ — B = magnetic field strength

Δl = length of wire in the magnetic field

θ = angle between current and magnetic field