

# Electricity stuff

- Formulas

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## Current (I) (amps)

Parallel	$I_T = I_1 + I_2 + I_3$
Ohms law	$I = V/\Omega$
Individual current of resistor (Series)	$I_T = I_1 = I_2 = I_3$
Individual current of resistor (Parallel)	(Total resistance / individual resistance) x total circuit current

## Voltage (V) (Volts)

Voltage drop across each resistor	$V = I \times R$
Voltage across resistors in a circuit (Parallel)	$V_T = V_1 = V_2$

## Power (W) (Watts)

Power dissipated by a resistor	$P = I \times V$
Power dissipated by a resistor	$P = I^2 \times \Omega$
Power dissipated by a resistor	$P = V^2 / \Omega$

## Resistance ( $\Omega$ ) (Ohms)

Resistance with multiple resistors (Parallel)	$\Omega = (R_1^{-1} + R_2^{-1} + R_3^{-1})^{-1}$
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Resistance with multiple resistors (Series)	$\Omega = R_1 + R_2 + R_3$
Ohms law	$\Omega = V / I$
Resistivity	resistivity x length (m) / cross sectional area
Resistance at certain temperature	Resistor 1 resistance x (1 + resistance at temperature x (temp 1 - temp 2))

## Time constant ( $\tau$ ) (Tou)

1 time constant	$\tau = \text{Capacitance} \times \text{Resistance}$