voltago	V
current = voltage	$I = \frac{V}{R}$ $R = R_1 + R_2$
resistance	R
total resistance in a series circuit	$R = R_1 + R_2$
energy transferred = power × time	E = Pt
power = voltage × current	P = VI
% efficiency = $\frac{\text{energy [or power] usefully transferred}}{\times 100}$	
total energy [or power] supplied	
density – mass	a = m
$density = \frac{mass}{volume}$	$ \rho = \frac{m}{V} $
units used (kWh) = power (kW) \times time (h)	
$cost = units used \times cost per unit$	
wave speed = wavelength × frequency	$v = \lambda f$
speed = distance	
speed = ——— time	
pressure – force	F
pressure = area	$p = \frac{F}{A}$
change in thermal energy = mass × specific heat capacity	$\Delta Q = mc\Delta\theta$
× change in temperature	
thermal energy for a change of state = mass ×	Q = mL
specific latent heat	
V_1 = voltage across the primary coil	$\frac{V_1}{V_2} = \frac{N_1}{N_2}$
V_2 = voltage across the secondary coil	$\frac{\overline{V}_2}{V_2} - \frac{\overline{N}_2}{N_2}$
N_1 = number of turns on the primary coil	2 2
N_2 = number of turns on the secondary coil	

Prefix	Multiplier
m	1×10^{-3}
k	1×10^{3}
M	1 × 10 ⁶

		T
	voltage	I = V
$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$ energy transferred = power × time $E = Pt$ $power = voltage × current P = VI power = current^2 × resistance P = I^2R % efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100 \frac{density = \frac{mass}{volume}}{volume} \times p = \frac{m}{V} units used (kWh) = power (kW) × time (h) cost = units used × cost per unit wave speed = wavelength × frequency v = \lambda f \frac{speed}{time} = \frac{force}{time} p = pressure = \frac{force}{area} \qquad p = \frac{F}{A} p = pressure = \frac{force}{area} \qquad p = \frac{F}{A} r = kelvin temperature r = kelvin tem$	resistance	$I = \frac{1}{R}$
$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$ energy transferred = power × time $E = Pt$ $power = voltage × current P = VI power = current^2 × resistance P = I^2R % efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100 \frac{density = \frac{mass}{volume}}{volume} \times p = \frac{m}{V} units used (kWh) = power (kW) × time (h) cost = units used × cost per unit wave speed = wavelength × frequency v = \lambda f \frac{speed}{time} = \frac{force}{time} p = pressure = \frac{force}{area} \qquad p = \frac{F}{A} p = pressure = \frac{force}{area} \qquad p = \frac{F}{A} r = kelvin temperature r = kelvin tem$		R - R + R
energy transferred = power × time $E = Pt$ $power = \text{voltage} \times \text{current}$ $P = VI$ $power = \text{current}^2 \times \text{resistance}$ $P = I^2R$ % efficiency = $\frac{\text{energy [or power] usefully transferred}}{\text{total energy [or power] supplied}} \times 100$ $\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{volume}} \times 100$ $\frac{\text{units used (kWh) = power (kW) × time (h)}}{\text{cost = units used × cost per unit}}$ $\text{wave speed = wavelength × frequency}$ $\frac{\text{p = pressure}}{\text{time}}$ $\frac{p}{P} = \text{pressure}$ $V = \text{volume}$ $T = \text{kelvin temperature}$ $\frac{pV}{T} = \text{constant}$ $\frac{pV}{T} = \text{constant}$ $\frac{DV}{T} = constan$	total resistance in a series circuit	$\mathbf{K} - \mathbf{K}_1 + \mathbf{K}_2$
energy transferred = power × time $E = Pt$ $power = \text{voltage} \times \text{current}$ $P = VI$ $power = \text{current}^2 \times \text{resistance}$ $P = I^2R$ % efficiency = $\frac{\text{energy [or power] usefully transferred}}{\text{total energy [or power] supplied}} \times 100$ $\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{volume}} \times 100$ $\frac{\text{units used (kWh) = power (kW) × time (h)}}{\text{cost = units used × cost per unit}}$ $\text{wave speed = wavelength × frequency}$ $\frac{\text{p = pressure}}{\text{time}}$ $\frac{p}{P} = \text{pressure}$ $V = \text{volume}$ $T = \text{kelvin temperature}$ $\frac{pV}{T} = \text{constant}$ $\frac{pV}{T} = \text{constant}$ $\frac{DV}{T} = constan$	total resistance in a parallel circuit	1 1 1
$E = Pt$ $power = voltage \times current$ $power = voltage \times current$ $power = current^{2} \times resistance$ $p = I^{2}R$ $\# efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100$ $\# density = \frac{mass}{volume} \times p = \frac{m}{V}$ $\# units used (kWh) = power (kW) \times time (h)$ $\# cost = units used \times cost per unit$ $\# wave speed = wavelength \times frequency$ $\# v = \lambda f$ $\# speed = \frac{distance}{time}$ $\# pressure = \frac{force}{area} \qquad p = \frac{F}{A}$ $\# p = pressure$ $V = volume \qquad pV = volume$ $T = kelvin temperature$ $\# T / K = \theta / {}^{\circ}C + 273$ $\# change in thermal energy = mass \times specific heat capacity \times change in temperature \# thermal energy for a change of state = mass \times specific latent heat force on a conductor (at right angles to a magnetic field)$		$\frac{1}{R} = \frac{1}{R} + \frac{1}{R}$
$E = Pt$ $power = voltage \times current$ $power = voltage \times current$ $power = current^{2} \times resistance$ $p = I^{2}R$ $\# efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100$ $\# density = \frac{mass}{volume} \times p = \frac{m}{V}$ $\# units used (kWh) = power (kW) \times time (h)$ $\# cost = units used \times cost per unit$ $\# wave speed = wavelength \times frequency$ $\# v = \lambda f$ $\# speed = \frac{distance}{time}$ $\# pressure = \frac{force}{area} \qquad p = \frac{F}{A}$ $\# p = pressure$ $V = volume \qquad pV = volume$ $T = kelvin temperature$ $\# T / K = \theta / {}^{\circ}C + 273$ $\# change in thermal energy = mass \times specific heat capacity \times change in temperature \# thermal energy for a change of state = mass \times specific latent heat force on a conductor (at right angles to a magnetic field)$		$R R_1 R_2$
$power = current^2 \times resistance \qquad \qquad P = I^2R$ $\% \ efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100$ $\frac{density = \frac{mass}{volume}}{density = \frac{mass}{volume}} \qquad \qquad \rho = \frac{m}{V}$ $units \ used \ (kWh) = power \ (kW) \times time \ (h)$ $cost = units \ used \times cost \ per \ unit$ $wave \ speed = \frac{distance}{time}$ $pressure = \frac{force}{area} \qquad \qquad p = \frac{F}{A}$ $p = pressure$ $V = volume$ $T = kelvin \ temperature$ $T / K = \theta / {}^{\circ}C + 273$ $change \ in \ thermal \ energy = mass \times specific \ heat \ capacity$ $\times change \ in \ temperature$ $thermal \ energy \ for \ a \ change \ of \ state = mass \times specific \ latent \ heat$ $force \ on \ a \ conductor \ (at \ right \ angles \ to \ a \ magnetic \ field)$ $F = BII$	energy transferred = power × time	E = Pt
$power = current^2 \times resistance \qquad \qquad P = I^2R$ $\% \ efficiency = \frac{energy [or power] usefully transferred}{total energy [or power] supplied} \times 100$ $\frac{density = \frac{mass}{volume}}{density = \frac{mass}{volume}} \qquad \qquad \rho = \frac{m}{V}$ $units \ used \ (kWh) = power \ (kW) \times time \ (h)$ $cost = units \ used \times cost \ per \ unit$ $wave \ speed = \frac{distance}{time}$ $pressure = \frac{force}{area} \qquad \qquad p = \frac{F}{A}$ $p = pressure$ $V = volume$ $T = kelvin \ temperature$ $T / K = \theta / {}^{\circ}C + 273$ $change \ in \ thermal \ energy = mass \times specific \ heat \ capacity$ $\times change \ in \ temperature$ $thermal \ energy \ for \ a \ change \ of \ state = mass \times specific \ latent \ heat$ $force \ on \ a \ conductor \ (at \ right \ angles \ to \ a \ magnetic \ field)$ $F = BII$		
$\% \text{efficiency} = \frac{\text{energy} [\text{or power}] \text{usefully transferred}}{\text{total energy} [\text{or power}] \text{supplied}} \times 100$ $\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{volume}} \times 100$ $\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{units used (kWh) = power (kW) \times time (h)}}{\text{units used x cost per unit}}$ $\frac{\text{volume}}{\text{vost} = \text{units used} \times \text{cost per unit}} \times 100$ $\frac{\text{speed} = \frac{\text{distance}}{\text{time}}}{\text{time}} \times 100$ $\frac{\text{pressure}}{\text{pressure}} \times 100$ $\frac{\text{pressure}}{\text{time}} \times 100$ $\frac{\text{pressure}}{\text{pressure}} \times 100$ $\frac{\text{pressure}}{\text{ressure}} \times 100$ $\text{pre$	power = voltage × current	P = VI
$\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{density} = \frac{\text{mass}}{\text{volume}}} \qquad \rho = \frac{m}{V}}$ $\frac{\text{units used (kWh) = power (kW) \times time (h)}}{\text{cost = units used} \times \text{cost per unit}}$ $\text{wave speed = wavelength} \times \text{frequency} \qquad v = \lambda f}$ $\frac{\text{speed} = \frac{\text{distance}}{\text{time}}}{\text{time}}}{\text{pressure} = \frac{\text{force}}{\text{area}}} \qquad p = \frac{F}{A}}$ $\frac{p = \text{pressure}}{V = \text{volume}} \qquad \frac{pV}{T} = \text{constant}}$ $\frac{T/K = \theta/ \text{°C} + 273}{\text{change in thermal energy = mass} \times \text{specific heat capacity}} \times \text{change in temperature}}$ $\frac{\Delta Q = mc\Delta \theta}{\text{thermal energy for a change of state = mass} \times Q = mL}$ $\text{force on a conductor (at right angles to a magnetic field)}$ $F = BII$	power = $current^2 \times resistance$	$P = I^2 R$
$\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{density} = \frac{\text{mass}}{\text{volume}}} \qquad \rho = \frac{m}{V}}$ $\frac{\text{units used (kWh) = power (kW) \times time (h)}}{\text{cost = units used} \times \text{cost per unit}}$ $\text{wave speed = wavelength} \times \text{frequency} \qquad v = \lambda f}$ $\frac{\text{speed} = \frac{\text{distance}}{\text{time}}}{\text{time}}}{\text{pressure} = \frac{\text{force}}{\text{area}}} \qquad p = \frac{F}{A}}$ $\frac{p = \text{pressure}}{V = \text{volume}} \qquad \frac{pV}{T} = \text{constant}}$ $\frac{T/K = \theta/ \text{°C} + 273}{\text{change in thermal energy = mass} \times \text{specific heat capacity}} \times \text{change in temperature}}$ $\frac{\Delta Q = mc\Delta \theta}{\text{thermal energy for a change of state = mass} \times Q = mL}$ $\frac{\text{force on a conductor (at right angles to a magnetic field)}}{\text{force on a conductor (at right angles to a magnetic field)}}$	energy [or power] usefully transferred	
$\frac{\text{density} = \frac{\text{mass}}{\text{volume}}}{\text{volume}} \qquad \qquad \rho = \frac{m}{V}$ $\frac{\text{units used (kWh) = power (kW) \times time (h)}}{\text{cost = units used } \times \text{cost per unit}}$ $\text{wave speed = wavelength } \times \text{frequency} \qquad \qquad v = \lambda f}$ $\frac{\text{speed} = \frac{\text{distance}}{\text{time}}}{\text{time}}$ $\frac{\text{pressure}}{\text{pressure}} = \frac{\text{force}}{\text{area}} \qquad \qquad p = \frac{F}{A}$ $\frac{p = \text{pressure}}{V = \text{volume}} \qquad \qquad \frac{pV}{T} = \text{constant}}$ $\frac{pV}{T} = \text{constant}$ $\frac{T/K = \theta / \text{°C} + 273}{\text{change in thermal energy = mass} \times \text{specific heat capacity}}}{\text{x change in temperature}} \qquad \frac{\Delta Q = mc\Delta \theta}{\text{change in temperature}}$ $\frac{Q = mL}{\text{force on a conductor (at right angles to a magnetic field)}}$ $F = BII$	$\% \text{ efficiency} = \frac{3}{\text{total energy [or power] supplied}} \times 100$	
		m
	$density = \frac{mass}{max}$	$\rho = \frac{m}{V}$
		V
$\operatorname{speed} = \frac{\operatorname{distance}}{\operatorname{time}}$ $\operatorname{pressure} = \frac{\operatorname{force}}{\operatorname{area}} \qquad \qquad p = \frac{F}{A}$ $p = \operatorname{pressure}$ $V = \operatorname{volume}$ $T = \operatorname{kelvin} \operatorname{temperature} \qquad \qquad \frac{pV}{T} = \operatorname{constant}$ $T/\operatorname{K} = \theta/\operatorname{°C} + 273$ $\operatorname{change} \operatorname{in} \operatorname{thermal} \operatorname{energy} = \operatorname{mass} \times \operatorname{specific} \operatorname{heat} \operatorname{capacity}$ $\times \operatorname{change} \operatorname{in} \operatorname{temperature} \qquad \qquad \Delta Q = mc\Delta\theta$ $\operatorname{thermal} \operatorname{energy} \operatorname{for} \operatorname{a} \operatorname{change} \operatorname{of} \operatorname{state} = \operatorname{mass} \times \qquad Q = mL$ $\operatorname{specific} \operatorname{latent} \operatorname{heat}$ $\operatorname{force} \operatorname{on} \operatorname{a} \operatorname{conductor} (\operatorname{at} \operatorname{right} \operatorname{angles} \operatorname{to} \operatorname{a} \operatorname{magnetic} \operatorname{field}) \qquad F = BII$	cost = units used × cost per unit	
$pressure = \frac{force}{area} \qquad p = \frac{F}{A}$ $p = pressure$ $V = volume$ $T = kelvin temperature$ $\frac{pV}{T} = constant$ $T/K = \theta/ ^{\circ}C + 273$ $\frac{\Delta Q = mc\Delta \theta}{change in temperature}$ $\frac{\Delta Q = mc\Delta \theta}{change in temperature}$ $\frac{Q = mL}{change in temperature}$	wave speed = wavelength × frequency	$v = \lambda f$
$pressure = \frac{force}{area} \qquad p = \frac{F}{A}$ $p = pressure$ $V = volume$ $T = kelvin temperature$ $\frac{pV}{T} = constant$ $T/K = \theta/ ^{\circ}C + 273$ $\frac{\Delta Q = mc\Delta \theta}{change in temperature}$ $\frac{\Delta Q = mc\Delta \theta}{change in temperature}$ $\frac{Q = mL}{change in temperature}$	distance	
$p = \frac{force}{area} \qquad p = \frac{F}{A}$ $p = pressure$ $V = volume$ $T = kelvin temperature$ $AQ = mc\Delta\theta$ $x = kelvin temperature$ $x = kelvin temperat$	speeu = ——— time	
$p = \text{pressure}$ $V = \text{volume}$ $T = \text{kelvin temperature}$ $\frac{pV}{T} = \text{constant}$ $T/ \text{ K} = \theta / ^{\circ}\text{C} + 273$ $\text{change in thermal energy} = \text{mass} \times \text{specific heat capacity}$ $\times \text{ change in temperature}$ $\text{thermal energy for a change of state} = \text{mass} \times$ $\text{specific latent heat}$ $\text{force on a conductor (at right angles to a magnetic field)}$ $\frac{pV}{T} = \text{constant}$ $\Delta Q = mc\Delta \theta$ $\text{V} = mc\Delta \theta$ $Q = mL$ $\text{specific latent heat}$		F
$p = \text{pressure}$ $V = \text{volume}$ $T = \text{kelvin temperature}$ $\frac{pV}{T} = \text{constant}$ $T/ \text{ K} = \theta / ^{\circ}\text{C} + 273$ $\text{change in thermal energy} = \text{mass} \times \text{specific heat capacity}$ $\times \text{ change in temperature}$ $\text{thermal energy for a change of state} = \text{mass} \times$ $\text{specific latent heat}$ $\text{force on a conductor (at right angles to a magnetic field)}$ $\frac{pV}{T} = \text{constant}$ $\Delta Q = mc\Delta \theta$ $\text{V} = mc\Delta \theta$ $Q = mL$ $\text{specific latent heat}$	pressure = Toroc	$p = \frac{1}{n}$
$V = \text{volume} \\ T = \text{kelvin temperature} \qquad \qquad \frac{pV}{T} = \text{constant}$ $T/K = \theta/^{\circ}\text{C} + 273$ $\text{change in thermal energy = mass} \times \text{specific heat capacity} \\ \times \text{ change in temperature} \qquad \qquad \Delta Q = mc\Delta\theta$ $\text{thermal energy for a change of state = mass} \times \\ \text{specific latent heat} \qquad \qquad Q = mL$ $\text{force on a conductor (at right angles to a magnetic field)} \qquad F = BIl$	area	- A
$T = \text{kelvin temperature}$ $T = \text{constant}$ $T / K = \theta / ^{\circ}C + 273$ $Change in thermal energy = \text{mass} \times \text{specific heat capacity}$ $\times \text{ change in temperature}$ $\Delta Q = mc\Delta\theta$ $\times \text{ change in temperature}$ $\text{thermal energy for a change of state = mass} \times Q = mL$ $\text{specific latent heat}$ $\text{force on a conductor (at right angles to a magnetic field)}$ $F = BIl$		
$T/K = \theta / {}^{\circ}C + 273$ $Change in thermal energy = mass \times specific heat capacity \times change in temperature$ $XQ = mc\Delta\theta$ $X = mc\Delta\theta$	V = volume	pV — constant
	T = kelvin temperature	$\frac{T}{T} = \text{constant}$
		T/V 0/00 : 070
$ \begin{array}{c} \times \text{ change in temperature} \\ \\ \text{thermal energy for a change of state} = \text{mass} \times \\ \text{specific latent heat} \\ \\ \text{force on a conductor (at right angles to a magnetic field)} \end{array} \qquad \begin{array}{c} Q = mL \\ F = BIl \end{array} $		$I/K = \theta/C + 2/3$
$ \begin{array}{c} \times \text{ change in temperature} \\ \\ \text{thermal energy for a change of state} = \text{mass} \times \\ \text{specific latent heat} \\ \\ \text{force on a conductor (at right angles to a magnetic field)} \end{array} \qquad \begin{array}{c} Q = mL \\ F = BIl \end{array} $	change in thermal energy = mass × specific heat capacity	$\Delta Q = mc\Delta\theta$
thermal energy for a change of state = mass \times $Q = mL$ specific latent heat force on a conductor (at right angles to a magnetic field) $F = BIl$		
specific latent heat force on a conductor (at right angles to a magnetic field) $F = BIl$	3	
force on a conductor (at right angles to a magnetic field) $F = BIl$		Q = mL
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
L carrying a current = magnetic field strength × current × length		F = BIl
	carrying a current = magnetic field strength \times current \times length	
V_1 = voltage across the primary coil $V_1 = V_1$ $V_2 = V_2$		$V_1 V_1$
V_2 = voltage across the secondary con		
N_1 = number of turns on the primary coil	N_1 = number of turns on the primary coil	v ₂ 1v ₂
N_2 = number of turns on the secondary coil	N_2 = number of turns on the secondary coil	

Prefix	Multiplier
р	1×10^{-12}
n	1 × 10 ⁻⁹
μ	1 × 10 ⁻⁶
m	1 × 10 ⁻³

Prefix	Multiplier
k	1×10^3
M	1 × 10 ⁶
G	1 × 10 ⁹
Т	1×10^{12}

speed = distance	
time	
$acceleration [or deceleration] = \frac{change in velocity}{time}$	$a = \frac{\Delta v}{t}$
acceleration = gradient of a velocity-time graph	
resultant force = mass × acceleration	F = ma
weight = mass × gravitational field strength	W = mg
work = force × distance	W = Fd
force = spring constant × extension	F = kx
momentum = mass × velocity	p = mv
force = change in momentum	$F = \frac{\Delta p}{\Delta p}$
time	$\Gamma = \frac{1}{t}$
$u = initial \ velocity$	v = u + at
v = final velocity	u+v
t = time	$x = \frac{u+v}{2}t$
a = acceleration	_
x = displacement	
moment = force × distance	M = F d

Prefix	Multiplier
m	1×10^{-3}
k	1×10^{3}
M	1 × 10 ⁶

п.,	
$speed = \frac{distance}{}$	
time	
acceleration [or deceleration] = $\frac{\text{change in velocity}}{\text{time}}$	Δv
acceleration [or deceleration] =time	$a = \frac{\Delta v}{t}$
acceleration = gradient of a velocity-time graph	ι
acceleration – gradient of a velocity-time graph	
distance travelled = area under a velocity-time graph	
diotarios travelles – area ariaer a velocity time graph	
resultant force = mass × acceleration	F = ma
resultant force = mass × acceleration	$I = m\omega$
weight = mass × gravitational field strength	W = mg
weight = mass × gravitational held strength	$m = m_{\delta}$
work = force × distance	W = Fd
kinetic energy = $\frac{\text{mass x velocity}^2}{2}$	$KE = \frac{1}{2}mv^2$
kinetic energy = 2	_
change in potential energy = mass × gravitational field strength	PE = mgh
× change in height	1L-mgn
force = spring constant × extension	F = kx
Torce = Spring Constant × extension	$\Gamma = \kappa x$
work done in stretching = area under a force-extension graph	W 1 F
work done in stretching – area under a force-extension graph	$W = \frac{1}{2} Fx$
momentum = mass × velocity	p = mv
force = change in momentum	$F = \frac{\Delta p}{\Delta p}$
time	$\Gamma = \frac{1}{t}$
$u = initial \ velocity$	v = u + at
v = final velocity	
t = time	$x = \frac{u+v}{2}t$
a = acceleration	_
x = displacement	$x = ut + \frac{1}{2}at^2$
	$v^2 = u^2 + 2ax$
moment = force × distance	M = F d

Prefix	Multiplier
р	1×10^{-12}
n	1 × 10 ⁻⁹
μ	1 × 10 ⁻⁶
m	1 × 10 ⁻³

Prefix	Multiplier
k	1×10^{3}
M	1 × 10 ⁶
G	1 × 10 ⁹
Т	1×10^{12}