GCSE Physics equations Cheat Sheet

by caitlin.eliz via cheatography.com/173374/cs/36428/

P1 - energy

K.E = 1/2 mv^2	Kinetic energy = 1/2 x mass x $(velocity)^2$
EPE = 1/2 ke^2	Elastic potential energy = 1/2 x spring constant x $(extension)^2$
GPE = mgh	Gravitational potential energy = mass x gravity x height
TE = mCΔT	Thermal energy = mass x specific heat capacity x change in temp.
C = E/mΔT	Specific heat capacity = energy / mass x change in temp.
Efficiency = (useful energy output/ total energy input) x100	
WD = Fs	Work done = Force x distance

P2 - electricity

P = E/t	Power = energy transferred/ time
P = WD/t	Power = work done/ time
P = V^2/ R	Power = (potential difference)^2/ resistance
P = IV	Power = current x potential difference
P = I^2R	Power = $(current)^2$ x resistance
Q = It	Charge flow = current x time
V = IR	Potential difference = current x resistance
E = ItV	Energy = current x time x potential difference

P2 - electricity (cont)

E = QV	Energy = charge flow x potential difference
E = Pt	Energy transferred = power x time
RT = R1+R2+R3...	Series circuit total resistance
1/RT= 1/R2+ 1/R2+ 1/R3...	Parallel circuit total resistance

P3 - particle model of matter

ρ=m/V	Density = mass/ Volume
E=mL	Energy for a change of state = mass x specific latent heat of fusion OR vaporisation
PV = constant	For gases: pressure x volume = constant
P=F/A	Pressure = force / area

P5 - forces and motion

v=s/t	Speed = distance/ time
v=(v+u)/2 x t	Average speed = (final speed + initial speed)/2 x time
a=Δv/ t	Acceleration = change in velocity/ time
v=u+at	Velocity = initial velocity + (acceleration x time)
$v^2=u^2+2as$	(Final velocity)^2 = (initial velocity)^2+ (2 x acceleration x distance)

P5 - forces and motion (cont)

s=ut+1/2 at^2	Distance = (initial velocity x time) + (1/2 x acceleration x $time^2$)
W=mg	Weight = mass x gravitational field strength
F=ma	Newton's 2nd: Force = mass x acceleration
F=ke	Force = spring constant x extension
EPE=1/2 Fe	Elastic potential energy = 1/2 x Force x extension
Momentum=mv	Momentum = mass x velocity
F=(Δmomentum)/ t	Force = change in momentum/ time
Momentum before = momentum after	
Stopping distance = thinking distance + braking distance	
s=1/2 mv^2/F	Braking distance = kinetic energy/ Force
Moment=Fs	Moment = Force x distance from pivot
P = F/A	Pressure = Force/ Area
P = hρg	Pressure in a fluid = height x density x gravity

P6 - waves

v=fλ	Velocity = frequency x wavelength
T=1/f	Period = 1/frequency
Speed of light = $3x10^8$m/s	

P7 - magnetism and electromagnetism

F=BIl	Force on a conductor (at right angles to a magnetic field) carrying a current = magnetic flux density x current x length
Vp/Vs= np/ns	PD across primary coil/ PD across secondary coil = n^o of turns in primary coil/ n^o of coils in secondary coil
VpIp=VsIs	PD across primary coil x current across primary coil = PD across secondary coil x current across secondary coil

SI units and symbols

Acceleration	m/s^2	a
Area	m^2	A
Magnetic flux density	Tesla (Vs/m^2)	B
Specific heat capacity	J/kg^{o}C	C
Extension	Metres (m)	e
Energy	Joules (J)	E
Frequency	Hertz (Hz)	f
Force	Newtons (N)	F
Gravitational field strength	N/kg	g
Height	Metres (m)	h
Current	Amps (A)	I

SI units and symbols (cont)

Spring constant	Newtons per metre (N/m OR Nm^{-1})	k
Length	m	l
Specific latent heat	J/kg	L
Mass	Kilograms (kg)	m
Moment	Nm	Moment
Momentum	kgm/s	Momentum OR mv
Pressure	N/m^2	P
Power	Watts (W)	P
Charge	Coulombs (C)	Q
Resistance	Ohms (Ω)	R
Displacement/ distance	Metres (m)	s
Time	Seconds (s)	t
Half-life		t1/2
Period	s	T
Temperature	Degrees celcius (^oC)	T
Velocity/ speed	Metres per second (m/s OR ms^{-1})	v
Volume	m^3	V
Potential difference	Volts (V)	V
Work done	Nm OR J	WD
Weight	Newtons (N)	W OR mg
Change in...		Δ
Wavelength	m	λ
Density	kg/m^3	ρ

SI units and symbols (cont)

Activity	Becquerels (Bq)