Physics Reference Sheet

Useful Equations

$v_{av} = \frac{d}{t}$	v _{av} = d = t =	average velocity displacement time
$a_{av} = \frac{v_f - v_i}{t}$	a _{av} = v _f = v _i = t =	average acceleration final velocity initial velocity time
F = ma	F = m = a =	net force mass acceleration
W = mg	W = m = g =	weight mass acceleration due to gravity
$F = G \frac{m_1 m_2}{d^2}$	$F = G = m_1 = m_2 = d = m_1$	force gravitational constant mass of first object mass of second object distance between the objects
$F = k \frac{q_1 q_2}{d^2}$	$\begin{array}{rrr} F & = \\ k & = \\ q_1 & = \\ q_2 & = \\ d & = \end{array}$	force Coulomb's constant charge on first object charge on second object distance between the objects
$KE = \frac{1}{2}mv^2$	KE = m = v =	kinetic energy mass speed
PE = mgh	PE = m = g = h =	potential energy mass acceleration due to gravity height
$T = \frac{1}{f}$	T = f =	period frequency

Useful Equations (continued)

 $v = \lambda f$ v = speed $\lambda = wavelength$ f = frequency $E = hf = h\left(\frac{c}{\lambda}\right)$ E = energy h = Planck's constant f = frequency c = speed of light $\lambda = wavelength$ $a^{2} + b^{2} = c^{2}$ u = b a Values of Physical Constants $g = 9.8 \text{ m/s}^{2}$

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G	=	$6.67 \times 10^{-11} \mathrm{Nm^{2}/kg^{2}}$
k	=	9.0 × 10 ⁹ Nm ² /C ²
h	=	6.63 × 10 ⁻³⁴ Js
С	=	3.00 × 10 ⁸ m/s

Physical Quantities and Units

Quantity	Unit (abbreviation)
electric charge	coulomb (C)
energy	joule (J)
force	newton (N)
frequency	hertz (Hz)
length	meter (m)
mass	kilogram (kg)
temperature	degrees Celsius (°C)
time	second (s)