Prefixes

z=10^{-21},	a=10^{-18},	f=10^{-15},	p=10^{-12},	n=10^{-9},	$\mu = 10^{-6}$,	m=10^{-3},	c=10^{-2},	k=10^{3},	M=10^{6},	G=10^{9},	T=10^{12},	P=10^{15},	E=10^{18},	Z=10^{21}
zepto,	atto,	femto,	pico,	nano,	micro,	milli,	centi,	kilo,	mega,	giga,	tera,	peta,	exa,	zeta.

Physical Constants

$g = 9.80$ m/s^2 (gravitational acceleration) $G = 6.67 \times 10^{-11}$ N·m^2/kg^2 (gravitational constant)
$M_E = 5.98 \times 10^{24}$ kg (mass of Earth) $R_E = 6380$ km (mean radius of Earth)
$m_e = 9.11 \times 10^{-31}$ kg (electron mass) $m_p = 1.67 \times 10^{-27}$ kg (proton mass)
$c = 299,792,458$ m/s (speed of light) 1 amu = 1 u = $1.6605402 \times 10^{-27}$ kg (atomic mass unit)

Units & Conversions (all exact)

1 inch = 1 in = 2.54 cm 1 foot = 1 ft = 12 in = 0.3048 m
1 mile = 5280 ft =1760 yards 1 mile = 1609.344 m = 1.609344 km
1 m/s = 3.6 km/hour 88 ft/s = 60 mile/hour
1 acre = (1 mile)^2/640 = 43,560 ft^2 1 hectare = (100 m)^2 = 10^4 m^2

Geometry

Triangles: $A = \frac{1}{2}bh$, Circles; $C = 2\pi r$, $A = \pi r^2$, arc $= s = r\theta$. Spheres: $A = 4\pi r^2$, $V = \frac{4\pi}{3}r^3$

Trigonometry

$\sin\theta = \frac{(\text{opp})}{(\text{hyp})}$, $\cos\theta = \frac{(\text{adj})}{(\text{hyp})}$, $\tan\theta = \frac{(\text{opp})}{(\text{adj})}$, $(\text{opp})^2 + (\text{adj})^2 = (\text{hyp})^2$.
$\sin^2\theta + \cos^2\theta = 1$, $a^2 + b^2 - 2ab\cos\gamma = c^2$, $\frac{\sin\alpha}{a} = \frac{\sin\beta}{b} = \frac{\sin\gamma}{c}$, $\alpha + \beta + \gamma = 180^\circ = \pi$ rad.

Chapter 1 - Units, measurements, errors or uncertainties

Unit conversions:	value = # (old units),	(old units) $\times$ $\left(\frac{\text{new units}}{\text{old units}}\right)$ = (new units).
Significant figures:	$\div$ or $\times$, use the least no. of sig. figs.,	$+$ or $-$, drop the insignificant *digits*.
Sig. figs. "1" rule:	if 1st digit=1, keep 1 extra digit,	$\longleftarrow$ for division or multiplication only.
Measurements:	measurement = $x \pm \delta x$,	x = observed value, δx = error or uncertainty.
Percent error:	measurement = value $\pm$ error,	percent error = (error / value)$\times$100%.
Combining errors:	$\div$ or $\times$, add the % errors,	$+$ or $-$, $\delta x = \sqrt{(\delta x_1)^2 + (\delta x_2)^2 + \ldots}$.

Chapter 3 - 1D Kinematics - Straight-line motion

Velocity:	$v_{\text{avg}} = \frac{\Delta x}{\Delta t}$,	$\Delta x = x - x_0$,	$v(t) = \frac{dx}{dt}$= slope of $x(t)$.
Acceleration:	$a_{\text{avg}} = \frac{\Delta v}{\Delta t}$,	$\Delta v = v - v_0$,	$a(t) = \frac{dv}{dt}$= slope of $v(t)$.
Integrals = areas:	$x(t) = x_0 + \int_0^t v(t')dt'$,	$v(t) = v_0 + \int_0^t a(t')dt'$.	
Constant acceleration:	$v = v_0 + at$,	$v_{\text{avg}} = \frac{1}{2}(v_0 + v)$,	$\Delta x = v_{\text{avg}}\Delta t$.
	$x = x_0 + v_0 t + \frac{1}{2}at^2$,	$x = x_0 + v_{\text{avg}}t$,	$v^2 = v_0^2 + 2a\Delta x$.
	(position from acceleration)	(using average velocity)	(timeless equation)
Free fall ($+y$-axis is up):	$y = y_0 + v_{0y}t - \frac{1}{2}gt^2$,	$v_y = v_{0y} - gt$,	$v_y^2 = v_{0y}^2 - 2g\Delta y$.