Conceptual Physics Reference

Version 1.2

Kinematics

$v = d/t$

$v = (v_f+v_i)/2$

$v_f = v_i + at$

$a = (v_f-v_i)/t$

$d = v_i t + .5at^2$

Dynamics

$\Sigma F=ma$

$wt = mg$

Momentum

$p=mv$

If net external force =0 then $p_i = p_f$

Impulse = $f\Delta t = \Delta p$

Work and Energy

$W = f*d$

$P=W/t$

$PE_g = mgh$

$KE = .5mv^2$

Conservation of Energy: $\Delta PE = -\Delta KE$

Centripetal Force $F_c = mv^2/r$

Universal Gravitation $F=Gm_1m_2/d^2$

Conversion factors

1.00 inch = 0.0254 meters

1.00 Newton = .225 pounds

550. ft lb/s = 1.00 horsepower

1.00 horsepower = 746 Watts

Constants

g=acceleration due to gravity = 9.81 m/s2

G=Universal Gravitational Constant = 6.67×10^{-11} N m^2/kg^2

Symbols

Σ = The sum of

Δ = The change in

v = velocity or speed

d = distance or displacement

a = acceleration

t= time

f = force

m = mass

g = acceleration of gravity

p = momentum

P=Power

wt = weight

W = work

h = height

r = radius of circle