Time	Length	Length		Mass	Enrgy/Power	Speed
1min =60 s 1 hr =3600s	1 km = 1000 m 1 m = 3.281 ft 1 mi = 1.609 km	1 ft = 12 in 1 yard = 3 ft 1 in = 2.54 cm	1m = 100cm 1m =1000mm 1μm = 10^{-6} m 1nm = 10^{-9} m	1 kg = 1000g 1 slug = 14.58 kg 1 kg = 2.205lb weight	1Cal = 4.184J 1 HP = 735.49 Watt 1 BTU = 0.293 Watt g = 9.8 m/s^2	1mph =0.44704m/s 1mph =1.609 km/hr

Motion	Equation	Physical
Object at Rest	$d = Constant$	Dist is constant
	$v = 0$	Velocity zero
	$a = 0$	Acceleration zero
Uniform Motion	$d = v\,t$	Dist is ~ to time
	$v = Constant$	Velocity is constant
	$a = 0$	Acceleration zero
Uniform Acceleration (from rest)	$d = 0.5\,a\,t^2$	Dist ~ time squared
	$v = a\,t$	Velocity ~ to time
	$a = Constant$	Acceleration is constant
Distance is always measure from object initial location.		

Note	Formula	Note	Formula
Per to freq	$T = 1/f$	Dist frm start / vel is cst	$d = v\,t$
Vel m/s	$v = \Delta d/\Delta t$	Dist frm rest & a is cst	$d = 0.5\,a\,t^2$
Acc m/s^2	$a = \Delta v/\Delta t$	Vel frm rest & a is cst	$v = a\,t$
New 2 Law	$F = m\,a$	Centripetal acc	$a = v^2/r$
Linr Mom	$L.M = m\,v$	Kinetic Enrg	$KE = 0.5\,mv^2$
Work	$W = F\,d \rightarrow$	Pot Enrg	$PE = m\,g\,h$
Power	$P = \Delta W/\Delta t$	Pot Enrg Spring	$PE = 0.5\,k\,d^2$
		Hook Law	$F = -k\,d$

Pressure	$P = F_\perp/A$	Thermal Expansion	$\Delta L = \alpha\,L_i\,\Delta T$
Density Mass	D = m/V	Heat	$Q = C\,m\,\Delta T$
Density Weight	$D_w = W/V$	1st Law of Thermo	$\Delta U = Work + Q$
Pressure Mass Density	$P = D\,g\,h$	Internal Energy	$\Delta U = KE + PE$
Pressure Weight Density	$P = D_w$ h	C to F	$°F = 1.8°C + 32$
Bernoulli	$V_i\,A_i = V_f\,A_f$	F to C	$°C = (°F - 32)/1.8$
Archimede's	$F_b = W_{displaced\ fluid}$	C to K	$K = °C + 273.15$
Hydraulics	$\frac{F_i}{A_i} = \frac{F_o}{A_o}$	Ideal Gas Law	$\frac{P_i\,V_i}{T_i} = \frac{P_f\,V_f}{T_f}$

$v = f\,\lambda$
$v = 20.1\,\sqrt{T}$ (air)
$v = 58.5\,\sqrt{T}$ (He)
$v = 15.7\,\sqrt{T}$ (CO_2)

$A = \pi\,R^2$	Surf Area of a circle
$V = L * W * H$	Vol Box
$V = \pi\,R^2 * H$	Vol Cylinder
$V = 4/3\,\pi\,R^3$	Vol Sphere

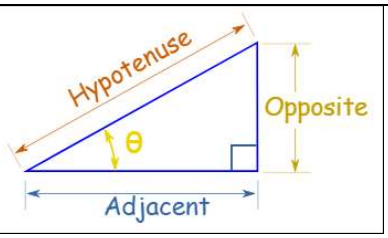
Conservation Laws (Mass, Linear Momentum, Energy)

1st order Polynomial Straight Line $y = a\,x + b$ a = slope (rise / run) b = Y-Intercept

2nd order Polynomial $y = a\,x^2 + bx + c$ Solutions: $x_1 = \frac{-b+\sqrt{b^2-4ac}}{2a}$ $x_2 = \frac{-b-\sqrt{b^2-4ac}}{2a}$

Pythagoras: $hyp^2 = opp^2 + adj^2$

Trigonometry:
sin (θ) = Opposite / Hypothenuse
cos (θ) = Adjacent / Hypothenuse
tan (θ) = Opposite / Adjacent



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Common Substances Densities

Substance	Density (Kg/m^3)	Substance	Density (Kg/m^3)	Substance	Density (Kg/m^3)
Wood	560	Copper	8930	Mercury	13600
Ebony	1200	Silver	10500	Hydrogen	0.09
Concrete	2500	Lead	11340	Helium	0.18
Aluminum	2700	Gold	19300	Nitrogen	1.25
Diamond	3400	Gasoline	680	Air	1.29
Iron	7860	Alcohol	791	Oxygen	1.43
Brass	8500	Water	1000	Radon	10

C: Specific Heat Capacity

Substance	J/(kgC)	Substance	J/(kgC)
Aluminum	890	Gasoline	2100
Concrete	670	Mercury	140
Copper	390	Seawater	3900
Ice	2000	Water	4180
Iron/Steel	460		
Lead	130		
Silver	230		

α: Thermal Expansion Coefficient

Substance	α (10^{-6}/C)	Substance	α ($10-^{6}$/C)
Aluminum	25	Ice	51
Brass/Bronze	19	Iron/Steel	12
Brick	9	Lead	29
Copper	17	Quartz	0.4
Glass	9	Silver	19

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