Summary of Unit Systems in Mechanics

Quantity	Defining equation	Dimension	SI unit	cgs unit	relationship	Other units
mass		M	kg	g	1 kg = 10^3 g	slug
length		L	m	cm	1 m = 10^2 cm	ft, mi, pc, LY
time		T	s	s		h, d, y
velocity	$\vec{v} = \frac{d\vec{r}}{dt}$	LT^{-1}	m/s	cm/s		mi/h
acceleration	$\vec{a} = \frac{d^2\vec{r}}{dt^2}$	LT^{-2}	m/s^2	cm/s^2		(mi/h)/ s
force	$\vec{F} = m\vec{a}$	MLT^{-2}	N = kg m/s^2	dyne = g cm/s^2	1 N = 10^5 dyne	lb
momentum	$\vec{p} = m\vec{v}$	MLT^{-1}	kg m/s	g cm/s		
work, energy	$W = \int \vec{F} \cdot d\vec{r}$	ML^2T^{-2}	J = N m	erg = dyne cm	1 J = 10^7 erg	ft lb, calorie, kwh, eV
power	$P = \frac{dW}{dt}$	ML^2T^{-3}	W = J/s	erg/s		hp = 550 ft lb/s
angular momentum	$\vec{L} = \vec{r} \times \vec{p}$	ML^2T^{-1}	J s	erg s		lb ft, ev s
torque	$\vec{\tau} = \vec{r} \times \vec{F}$	ML^2T^{-2}	N m	dyne cm		
pressure	$p = \frac{F}{A}$	$ML^{-1}T^{-2}$	Pa = N/m^2	$dyne/cm^2$	1 Pa =10 $dyne/cm^2$	torr = mm Hg lb/in^2, atm, bar