PHY 232 Fall 2017 Supplementary Work (will not be collected)

Class 3. Torque and angular motion

Units review

In the following table, write down the appropriate units of the given physical quantity in the second column, and then express its equivalency in Kg, m, and s in the third column.

	Common units	Equivalency in kg, m, and s
Length	m	m
Time	s	s
Mass	kg	kg
Velocity	ms^{-1}	ms^{-1}
Acceleration	ms^{-2}	ms^{-2}
Force	N	$Kgms^{-2}$ (F=ma)
Coefficient of friction	No units ($F_{fr}=\mu N$)	No units
Momentum	$Kgms^{-1}$ or Ns (p=mv)	$Kgms^{-1}$
Impulse	Ns ($\Delta p = I$)	$Kgms^{-1}$
Energy	J	Kgm^2s^{-2} ($KE=mv^2/2$)
Work	J	Kgm^2s^{-2} ($\Delta KE+\Delta U=W$)
Spring constant	Nm^{-1} (F=-kx)	Kgs^{-2}
Power	W	Kgm^2s^{-3} (P=dU/dt)
Angular velocity	s^{-1}	s^{-1}
Frequency	Hz	s^{-1}
Angular acceleration	s^{-2}	s^{-2}
Moment of Inertia	Kgm^2 ($I = \Sigma mr^2$)	Kgm^2
Torque	Nm ($\vec{\tau} = \vec{r} \times \vec{F}$)	Kgm^2s^{-2}