FORCE & NEWTON'S LAWS

Force Equations:

Newton's 2nd Law: $F_{Net} = m \cdot a$ or $W = m \cdot g$

Force of Friction: $F_f = \mu_K \cdot F_N$ or $F_f = \mu_S \cdot F_N$ ($F_N = m \cdot g$)

Pressure from Force: $P = \dfrac{F}{A}$

Conversions: Force (Weight)

$1 \text{ lb} = 4.45 \text{ N}$
$1 \text{ N} = .22 \text{ lbs}$

Name	**Symbol**	**Unit**	**Notes**
Force	F	N	
Force (Net)	F_{Net}	N	
Force (Weight)	W	N or lbs	
Force (Normal)	F_N	N	
Force (Friction)	F_f	N	
Force (Applied)	F_A	N	
Force (Tension)	T	N	
Mass	m	kg	
Acceleration	a	m/s^2	
Acceleration (gravity)	g	m/s^2	- 9.8 m/s^2
Coefficient of Friction (Static)	μ_S	- - -	
Coefficient of Friction (Kinetic)	μ_K	- - -	
Pressure	P	Pascals (N/m^2)	
Area of contact	A	m^2	

*** NOTE: $1 \text{ Newton} = 1 \text{ kg} \cdot \text{m/s}^2$ ***

Helpful Kinematics Equations:

$a = \dfrac{v_f - v_i}{t}$ or $v_f = v_i + a \cdot t$ $d = \dfrac{1}{2} \cdot a \cdot t^2$