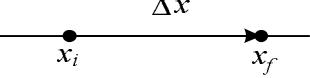


## Formula Sheet (2<sup>nd</sup> Midterm)

Formulas	Variables	Variables continued & Constants	Picture (Visualization)
*example* $\Delta x \equiv x_f - x_i$	$\Delta x$ : displacement $x_f$ : final position	$x_i$ : initial position	
$\sum \vec{F} = m\vec{a}$			
$F_g = G \frac{m_1 m_2}{r^2}$			
$w = mg$			
$\vec{F}_{12} = -\vec{F}_{21}$			
$f_s \leq \mu_s n$			
$f_k = \mu_k n$			
$W = (F \cos \theta) \Delta x$			
$KE = \frac{1}{2} mv^2$			
$PE = mgy$			
$(KE_f + PE_f) - (KE_i + PE_i) = W$			
$\frac{1}{2} mv_i^2 + mgy_i = \frac{1}{2} mv_f^2 + mgy_f$			
$F = -kx$			
$PE_s = \frac{1}{2} kx^2$			
$\bar{P} = \frac{W}{\Delta t} = \frac{F \Delta x}{\Delta t} = F \bar{v}$			
$\vec{p} = m\vec{v}$			

$\vec{F}_{net} = \frac{\Delta \vec{p}}{\Delta t}$			
$\vec{I} = \vec{F}\Delta t$			
$\vec{F}\Delta t = \Delta \vec{p} = m\vec{v}_f - m\vec{v}_i$			
$m_1\vec{v}_{1i} + m_2\vec{v}_{2i} = m_1\vec{v}_{1f} + m_2\vec{v}_{2f}$			

## Appendix

$$\text{Surface area of sphere} = 4\pi r^2 ; \quad \text{Area of circle} = \pi r^2$$

M (mega)	$\times 10^6$
k (kilo)	$\times 10^3$
m (milli)	$\times 10^{-3}$
$\mu$ (micro)	$\times 10^{-6}$