Chapter 1

1.609 km=1 mile

3.281 ft=1 m

2.54 cm=1 in

5280 ft=1 mi

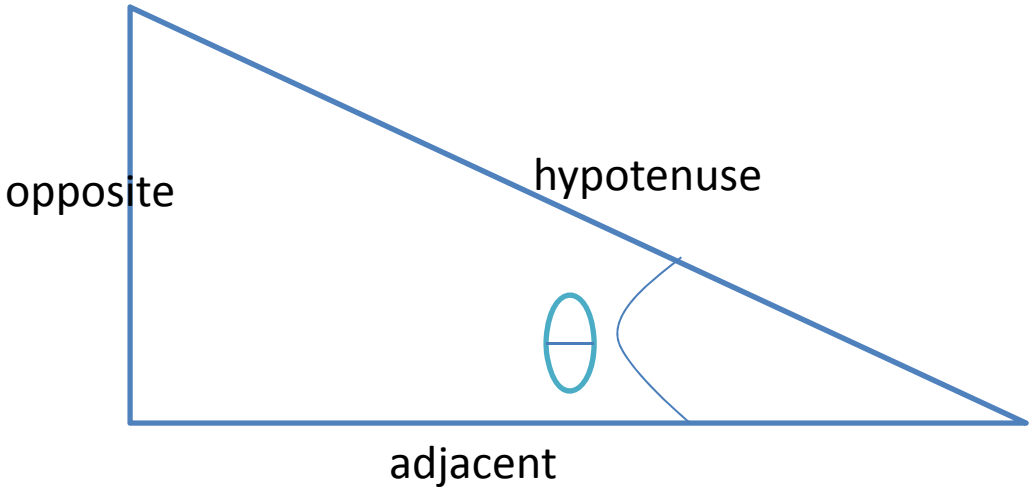
milli (m) 1/1000 or 0.001 or 10^{-3}

centi (c) 1/100 or 0.01 or 10^{-2}

kilo (k) 1,000 or 10^{3}

Mega (M) 1,000,000 or 10^{6}

- Right Triangles
- Pythagorean theorem $c^2=a^2+b^2$
- Cos θ = adjacent/hypotenuse
- Sin θ = opposite/hypotenuse
- Tan θ = opposite/adjacent



Chapter 2

- $\triangle d = d_f - d_i$ (m)
- $v = d/t$ (m/s) $d = vt$ $t = d/v$
- $a = v/t$ (m/s^2)

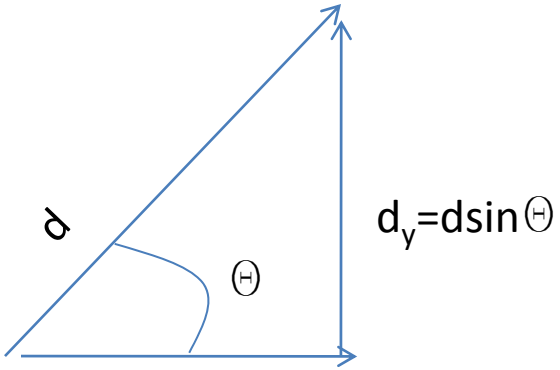
- $v_f = v_i + at$
- $d = 0.5(v_i + v_f)t$
- $d = v_i t + 0.5at^2$
- $v_f^2 = v_i^2 + 2ad$

Chapter 3

- $v_{fx}=v_{ix}$ since $a_x=0$
- $d_x=0.5t\,(v_{ix}+v_{fx})$
- $d_x=v_{ix}t$
- $v_{fy}=v_{iy}+a_yt$
- $d_y=0.5t\,(v_{iy}+v_{fy})$
- $d_y=v_{iy}t+0.5a_yt^2$
- $v_{fy}^{\,2}=v_{iy}^{\,2}+2a_yd_y$

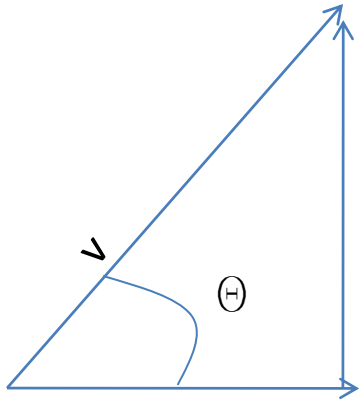
$a_y=-9.8\ m/s^2$

$v_y=0$ at top



$d_y = d\sin\Theta$

$d_x = d\cos\Theta$



$v_y = v\sin\Theta$

$v_x = v\cos\Theta$

Chapter 4

$\sum F=ma$

$F_f=\mu F_n$

Weight=m*g

a=0, constant velocity

Chapter 5

$W=F\cos\theta(d)$

$KE=0.5mv^2$ $PE_g=mgh$ $PE_s=0.5kx^2$

$0.5mv_i^2 + mgh_i + 0.5kx_i^2 = 0.5mv_f^2 + mgh_f + 0.5kx_f^2$

$P=W/t$ $=F*v$

Chapter 6

$p=mv$

$F*t=\triangle p=m(v_f-v_i)$

$m_1v_{1i} + m_2v_{2i} = m_1v_{1f} + m_2v_{2f}$ elastic

$m_1v_{1i} + m_2v_{2i} =(m_1 + m_2)v_f$ inelastic

Chapter 7

$\theta = s/r$

$\omega_f = \omega_i + \alpha t$

$\theta = \omega_i t + 0.5 \alpha t^2$

$\omega_f^2 = \omega_i^2 + 2 \alpha \theta$

$v_t = r \omega$

$a_t = r \alpha$

$a_c = v_t^2/r = r \omega^2$ $F_c = m a_c$

$F_g = G m_1 m_2 / r^2$ $G = 6.67 \times 10^{-11}\ Nm^2/kg^2$