Friday, December 14/2
Physics 122/121

Due: Dec. 14/12 { Grad Write-Ups, Grad Surveys

1. Experiment 7.2 - Range of a Projectile (Lab Manual - Page 45)
   Due - Monday, Dec. 17/12

2. Text: Page 536, PP #1-8 (Projectiles Launched Horizontally)

3. Text: Page 549, PP #13
   Page 570, Prob. #17, 19, 20 (omit graph)

4. Handout - Projectiles

5. Quiz: Projectiles - Wednesday, Dec. 19/21

Review Topics: Torque w Angle
Incline Plane
Circular Mot.
2D- Collision
SHM.

Circular Motion

Handout: Problems - Circular Motion

LEVEL 1 -> Packet (Banked and Unbanked Curves, Vertical Circular Motion)

Universal Gravitation

Experiment 8.1 - Kepler's Laws - Page 49

Chapter 12 - Page 580, PP#1-7

Investigation 12-A, Page 581

Handouts (3) - Kepler's Laws, Value of "g", Speed and Period of a Satellite

Simple Harmonic Motion

Text: Page 608, #1-4
Page 623, #23-27, 30 } Mass on Spring

Text: Page 614, #5-8
Page 623, #28, 29 } Pendulum

Answer to #5 is listed as #7's. Scan answers for others.

SHM - Pendulum Lab

Handout: SHM Problems

Projectiles

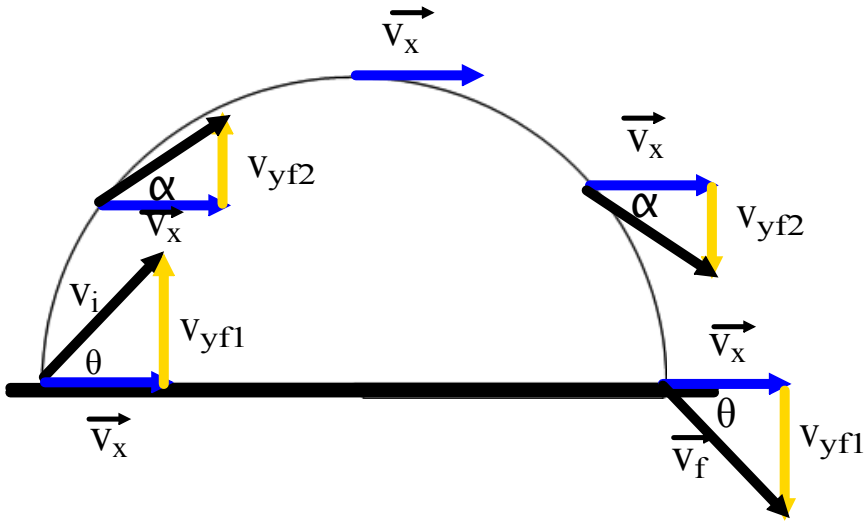
Text: Page 536, PP #1-8

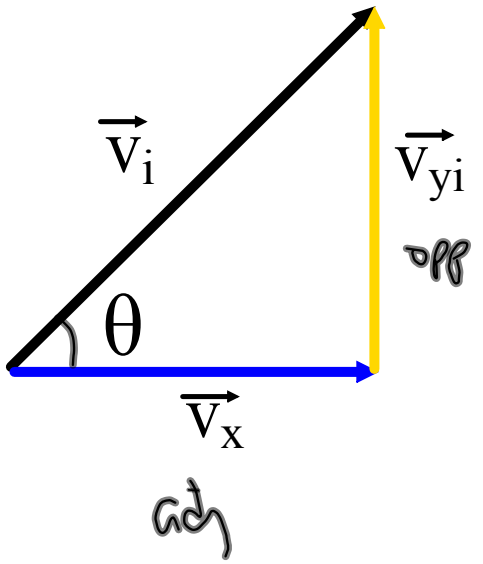
Text: Page 549, PP #13
Page 570, Prob. #17, 19, 20 (omit graph)

Projectiles Fired At An Angle

horizontal velocity -> **constant**
vertical velocity -> **changes**

Trajectory - Basic

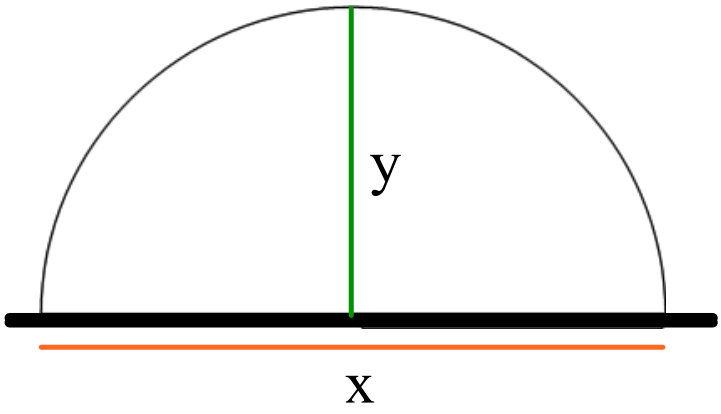




$\vec{v}_x = v_i \cos\theta$

$\vec{v}_{y_i} = v_i \sin\theta$

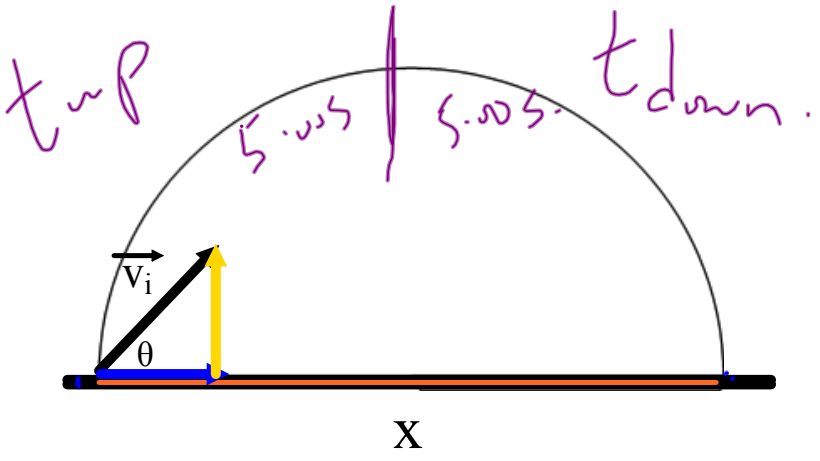
http://galileo.phys.virginia.edu/classes/109N/more_stuff/Applets/ProjectileMotion/jarapplet.html



Special Case

time up = time down

y = 0 m



$$\left[\vec{y} = \vec{v}_{yi}\vec{t} + \frac{1}{2}\vec{a}\vec{t}^{\,2}\right]$$

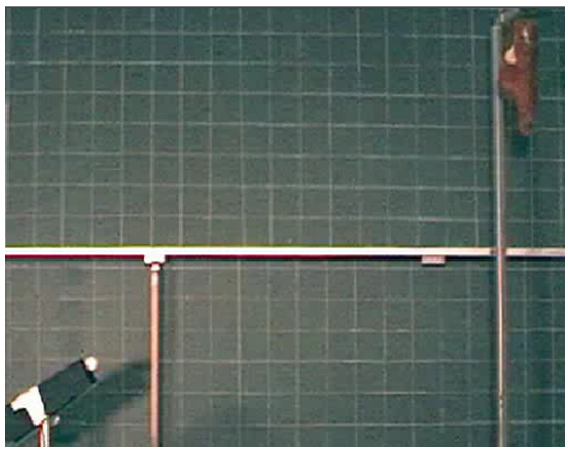
$$0 = \vec{v}_{yi} + \frac{1}{2}\vec{a}\vec{t}$$

Projectile Launched At an Angle

Formulas

Horizontal Motion **CONSTANT**	Vertical Motion **CHANGES**
$\vec{v}_x = \frac{\vec{x}}{t_x}$	$\vec{y} = \vec{v}_{yi}t + \frac{1}{2}\vec{a}t^2$
	$\vec{v}_{yf} = \vec{v}_{yi} + \vec{a}t$
t_x is the time it takes to travel x	$\vec{v}_{yf}^{\,2} = \vec{v}_{yi}^{\,2} + 2\vec{a}\vec{y}$
	$\vec{a} = -9.80\ m/s^2$

The Monkey and the Hunter



Example: An arrow is shot at an angle of 30.0^{o} with the ground. It has a speed of 49 m/s. Assuming the arrow is shot from ground level and it lands on the ground, answer the following questions.

a) How high will the arrow go? (31 m)
b) Assuming the arrow lands on the ground, what is its range? (2.1×10^{2} m)