Introduction

"Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago."

John Meynard Keynes (1963)

Association of Part-Time Undergraduate Students

- Advocacy Group for Part-Time Undergraduates
- "Part-Time" ≡ 3.5 Credits or Less
- Seeking Class Representatives from PHY138
- If you are interested, see me

i>clicker Registration

- To receive the bonus you should have registered your clicker by yesterday
- If you have not already done so, register it **today**
  - This is your last chance to do this

My Office Hours

- My Office Hour on Wednesday October 4 is cancelled
- Reminder: you may always set up an appointment if you wish to see me outside of regular office hours
- Reminder: you are welcome to just drop by my office any time. If I have time I will be pleased to talk with you.

Thanksgiving

- Monday October 9: no classes
- Pre-Class Quiz #4
  - Due by 10 AM on **Wednesday** October 11
  - Two Questions on Chapter 9
- Labs begin on Tuesday October 10 with P0202

Now Available on *MasteringPhysics*

- Problem Set Q1 Chapts 7 – 8
  - Due by 11:59 PM this Friday October 6
- Pre-Class Quiz Q1 Chapt 9
  - Due by 10 AM **Wednesday** October 11

Written Homework #1

- Due by **5PM** on Friday October 13
  - Turn in to the "Drop Box" for your tutor
  - Located in the basement of McLennan
  - At the foot of the stairs that is near a bust of Newton on the 1st floor
- Available via the summary for today's class
- Must be solved in teams:
  - The same teams you have been working with in tutorials
  - Problems Sets from individuals will not be accepted

"Question" From Last Time

Pointed out that in my proof that the trajectory of a projectile is a parabola, I got the algebra somewhat wrong

- I blew it both in the Journal and in the PowerPoint on the Side Screens

Both were corrected at 8 AM on Thursday September 28

Last Class

- Friction and Drag
  - Details are omitted from the syllabus
  - Friction can slow things down and speed things up
- Cartesian components of motion are independent
  - Monkey & Hunter
- Proved:
  If acceleration is constant and down
  Then the trajectory is a parabola
- Maximum height: $v_i^2 \sin^2(\theta) / (2g)$

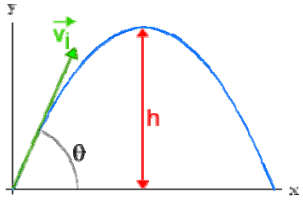
Today

- Finish Chapter 6 – Motion In a Plane
- Chapter 7 – Motion in a Circle

Maximum Height review

Same as a ball thrown straight up with initial speed $v_i \sin(\theta)$

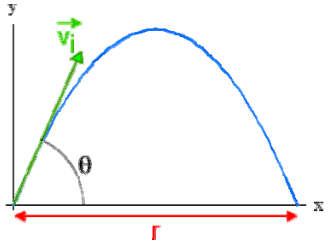
t_1: time from release to maximum height



$\Delta v = a\ t \rightarrow t_1 = v_i \sin(\theta) / g$

$s = \frac{1}{2}\ g\ t^2 \rightarrow h = v_i^2 \sin^2(\theta) / (2g)$

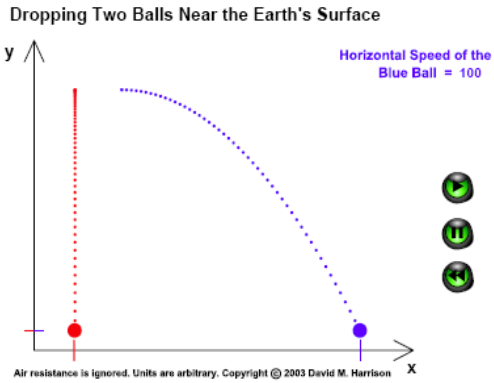
Maximum Range



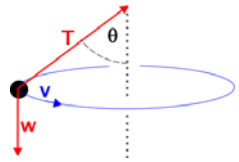
$r = v_i^2 \sin(2\theta) / g$

Galileo on Inertial Reference Frames

"Any two observers moving at constant speed and direction with respect to one another will obtain the same results for all mechanical experiments."



Ball on a String (no air resistance)



- T cos(θ) = w
  - Ignore
- T sin(θ) = F_{net} = m a