Introduction

"Science is facts. Just as houses are made of stones, so is science made of facts. But a pile of stones is not a house and a collection of facts is not science."

-- Poincaré

Test 1

- Tuesday - November 1 - 6 PM to 7:30 PM
  - If you have a conflict with this time contact Dr. Savaria by Monday October 24
  - Will cover all the material of this quarter
  - You may bring a single 8 ½ by 11 inch sheet of paper on which you have written anything that you wish
  - Concepts are more important than the ability to take a formula and “plug and chug” to an answer

What is examinable

- All sections of the textbook that are listed in the syllabus
- Supplemental Topics that are listed in the syllabus
- Questions can be based on:
  - In-class questions, perhaps slightly modified
  - Problems from MasteringPhysics, perhaps slightly modified
  - Written homework, perhaps slightly modified
  - Some we have just made up

About Marks

- An “average” student will receive a mark of 70% in PHY138
  - ~15% of students will receive marks of 80% or better
- This “average” student will probably get:
  - 13 marks out of 15 on the various assignments
  - 14 marks out of 20 (70%) in the lab
- To end up with a 70% final course mark:
  - 43 out of 65 on the tests and Final Exam

Test Marks

- 43 out of 65 = 66%
  - Our “average” student got much higher marks than this on tests in High School
- Best 3 out of 4 tests count
  - Each individual test average should be somewhat less than 66%
  - Test Theory: the best test has an average of 50% with a wide distribution
  - We will try for a higher average than 50%

What if the test average is too high or too low?

- If it is too high:
  - Congratulations to the class!
  - We will live with it
- If it is too low:
  - We will adjust the marks

The moral of the story: if you feel you are not getting as many questions correct as you think you should, relax and be confident!
Representative Assembly 1/3

Many thanks to the Representatives!
Here is a “short form” of our discussion:

- PowerPoint handouts before class
  - We’re not that organised
  - 60% of slides so far announcements or text figures
- Student Workbook in Tutorials
  - Useful? The tutors say yes.
  - “Students ask exactly the questions that they SHOULD ask before they make grievous mistakes on the test.”

Representative Assembly 2/3

- Student Questions in Con Hall
  - I will deal with them between discussion of textbook sections
  - The class will vote on whether or not to answer in class or after
- MasteringPhysics
  - After the deadline, make all “hints” visible.
  - We have contacted the vendor with this suggestion

Representative Assembly 3/3

- We have an excellent group of tutors in PHY138
  - Some are less experienced and are perhaps less excellent than others
  - If there is a problem we want to know about it. **We need to know who the tutor is.**

Announcements

- MP Problem Set Chapts 10 – 11 released
  - Due Friday October 21 by 5 PM
- §10.6 – Elastic Collisions
  - Skip “Using Reference Frames” subsection
  - The “Home Page” and Syllabus pdf have been updated

Last Time

- Derivatives of trig functions
- Impulse: $$J = \sum F \Delta t = \Delta p$$
  - Just Newton’s 2nd Law
- Improved 2nd Law: $$F_{net} = dp/dt$$
- If $$F_{net} = 0$$, $$p$$ is conserved
- Tennis
- Collision Damage
- Angular momentum $$L = m v r$$

Today

- Kinetic Energy
- Gravitational Potential Energy
- The Gravitational Field
- Elastic Collisions
- Energy Diagrams (?)
A bunch o’ integral calculus to get from Eqn 10.2 to Eqn 10.10
- Eqn 10.2 is just Eqn 2.22 – basic kinematics for constant a
- We won’t actually use integrals until MAT135 gets to them in January

"You should recognize Equation 10.10 ... is the same as Equation 10.2."

Two balls are launched along a pair of tracks with equal velocities, as shown. Both balls reach the end of the track. Which ball reaches the end of the track first?

1. A
2. B
3. They reach the end of the track at the same time.

Figure 10.8

\[ v_{f,\text{Betty}}^2 = 2 \cdot g \times (1\text{m}) = v_{f,\text{Bill}}^2 \]