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 an 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" sub section
  - ■ The "Home Page" and Syllabus pdf have been updated

Last Time

- ☐ Derivatives of trig functions
- ☐ Impulse: $J = \Sigma F \Delta t = \Delta p$
  - ■ Just Newton's 2nd Law
- ☐ Improved 2nd Law: $\mathbf{F}_{net} = d\mathbf{p}/dt$
- ☐ If $\mathbf{F}_{net} = 0$, $\mathbf{p}$ is conserved
- ☐ Tennis
- ☐ Collision Damage
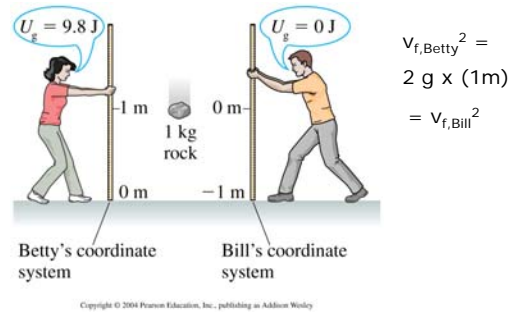- ☐ Angular momentum $L = m\ v\ r$

Today

- ☐ Kinetic Energy
- ☐ Gravitational Potential Energy
- ☐ The Gravitational *Field*
- ☐ Elastic Collisions
- ☐ Energy Diagrams (?)

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- 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."

Figure 10.8

$U_g = 9.8\,J$

$U_g = 0\,J$

-1 m   0 m-

1 kg rock

0 m   -1 m

Betty's coordinate system   Bill's coordinate system

$v_{f,Betty}^2 = 2\,g\,x\,(1m) = v_{f,Bill}^2$

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?

A

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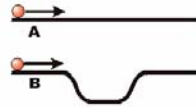
1. A
2. B
3. They reach the end or the track at the same time.