


## PHY138: Introduction

"If I have seen farther than others it is by standing on the shoulders of giants."


-- Newton

**Hey, PHY138 Students!** 

Like to work with CHILDREN? Want to make a DIFFERENCE?

Join with other UofT students and become a **Volunteer Tutor** with **Jump!**

It's all about helping kids in high-need areas through positive encouragement.



We will train you!  
A commitment of 2-3 hours per week!  
All elementary schools are close to UofT!

To apply / get more info:  
**www.jumpmath.org**

## **The U of T Pre-Med Society:**

[www.utoronto.ca/premed/](http://www.utoronto.ca/premed/)

### This Thursday:

U of T Medical School Information Seminar: 4:00 pm MS3171

Premed Society Meeting & Elections: 5:00 pm MS3171

## Course Materials

If you did not buy the textbook package (or bought the PHY140 one by mistake):

- MasteringPhysics access kits and the Student Workbook are both available in the textbook store.
- Colored cards are available in MP129.

## This Friday's Office Hour

- Cancelled again.
- Hopefully this will be the last cancellation of the quarter.

## Current Assignments

- Problem Set Chpts 2 – 4
  - Due by 5PM Friday, September 23
- Pre-Class Quiz Chpts 5 – 6
  - Due by 10AM Monday, September 26

## MasteringPhysics Marks

- MP designed to deliver problem sets.
- Doesn't know how to deal with a quiz in which you get full marks for just answering the question.
  - We will adjust for the Pre-Course Assessment Quiz at the end of year.
- Doesn't know how to deal with 2 different types of assignments (Pre-Class Quizzes and MP Problem Sets):
  - We will adjust this too at the end of the year.

## STORM (Student Online Record Management)

- Access to group assignments and marks
- Require a login and password:
  - Login: your student number
  - Password: your surname, exactly as it appears on your student card
- Links are available from:
  - The PHY138 main home page
  - The PHY138 Mechanics page

## Tutorials

- Begin this week
- Locations available now
- You can determine your tutorial group and location:
  - The PHY138 home page: General Course Information => Tutorial Sections and Groups
  - STORM
- Bring the "Student Workbook" to tutorial

## What is examinable

- All sections of the textbook that are listed in the Syllabus
- Supplemental Topics that are listed in the Syllabus
- In-class questions, perhaps slightly modified.
- Problems from MasteringPhysics, perhaps slightly modified

## Last Time 1/4

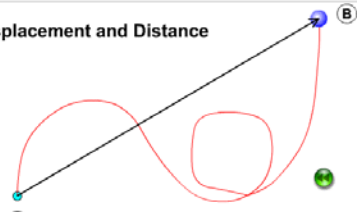
- Classical Physics: the world is a mechanistic clockwork, describable by mathematical laws.
- Physics describes the world using the language of mathematics and everyday words with precise definitions.
- Operational Definitions: operations that define words and concepts.

## Last Time 2/4

- Motion Diagrams
- Models
- Position and Time
  - Coordinate systems
  - Choosing time  $t = 0$
- Position vector
- Displacement Vector

## Last Time 3/4

### Displacement and Distance



**distance = the length of the curved line**  
**displacement = the length and direction of the straight line**

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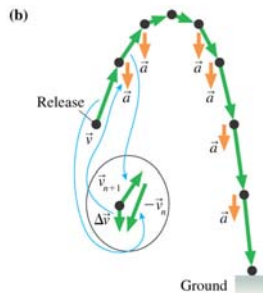
## Last Time 4/4

□ speed = distance / time

□ velocity:

$$\vec{v} = \frac{\Delta \vec{r}}{\Delta t}$$

## Figure 1.22 (b)



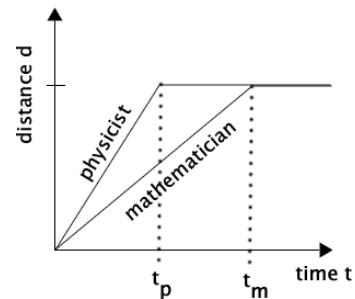
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## Problem Solving (cf. pg. 24)

- Model
- Visualise
  - Pictorial, physical & graphical
- Guess the answer
- Solve
  - If numeric, put in numbers last
- Assess

## Example

- Toronto – Barrie: 90 km
- Mathematician: north from Toronto to Barrie at 100 km/hr
- Physicist: north from Toronto to Barrie at 125 km/hr
- Leave at same time
- How long is the physicist in Barrie when the mathematician shows up?



## Assumptions of Classical Physics

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- The world is mechanistic, a “clockwork”
  - It is describable by *Laws*
  - The Laws are mathematical
  - The world is continuous
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