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)

Announcements & Advice 1/2

- No class on Monday, October 10 – Thanksgiving
- Pre-Class Quiz on Chapter 9 released
  - Due by 10 AM **Wednesday, October 12**
- MasteringPhysics
  - Last year 75% of PHY138 students rated MP as "useful" or "very useful" for their learning
  - Do the "Introduction to Mastering Physics" assignment

Announcements 2/2

- Rosh Hashanah begins
  - I will make the class summaries for the next two classes somewhat more complete than usual.
- Textbook typo:
  - Page 158 – Example 6.3 – 2nd Column
    - "The x-motion is one of constant velocity at v_{0y} = 2.0 m/s."
    - The x-motion is one of constant velocity at v_{0x} = 2.0 m/s.

First Written Homework

- Now released via today's class summary
- To be solved by the teams from your tutorial working together
  - Each team will choose a coordinator who will assemble the final copy and turn it in.
- Due by 5 PM Friday October 14
  - "Drop Boxes" in the basement of McLennan

Representative Assembly

- To discuss issues of communication and organisation of PHY138
  - We will not discuss Physics
- Each tutorial group will choose a representative this week
- Friday October 14, 3 – 4 PM, MP222

Labs

- Begin Tuesday October 11 with P0202 at 2PM in MP125/126
- P0102 first lab Tuesday October 11 6PM in MP125/126
  - Next P0102 lab Monday October 24 at 2PM
- Check the lab web page to determine your section, group and 1st experiment

Labs continued

- Effective immediately, do **not** use ROSI to change your lab section
- Instead, see Dr. Deyirmenjian in MP124

About Einstein's Equivalence Principle

- There *is* a subtlety about whether an experiment can distinguish between accelerations and gravity.
- A link from the summary for Class 6 discusses it.

Last Time

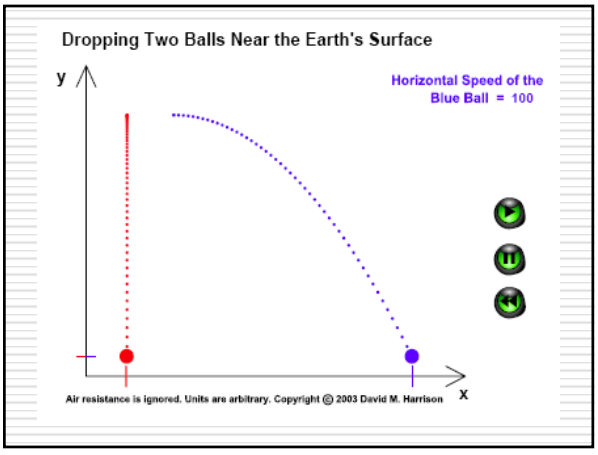
- Finished Chapter 5: Mass and Weight
- A non-examinable diversion: Einstein's Equivalence Principle
- Analysed the projectile:
  - Time in the air
  - Maximum height
  - Range
  - Monkey-hunter

Today

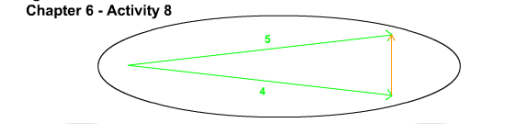
- Finish Chapter 6
  - Bullfrogs jumping
  - Galilean Relativity
- Tarzan swinging from a vine
- Chapter 7: Motion in a Circle
  - Uniform circular Motion
  - Fictitious forces
  - Non-uniform circular motion

Galilean Principle of Relativity (textbook pg. 169)

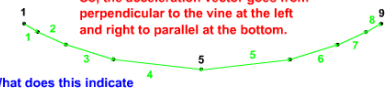
- "Newton's laws of motion are valid in all inertial reference frames."
- What he really said: "Any two observers moving at constant speed and direction with respect to one another will obtain the same results for all mechanical experiments ."



Knight Student Workbook
Chapter 6 - Activity 8

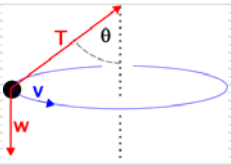


So, the acceleration vector goes from perpendicular to the vine at the left and right to parallel at the bottom.



What does this indicate about the tension in the vine?

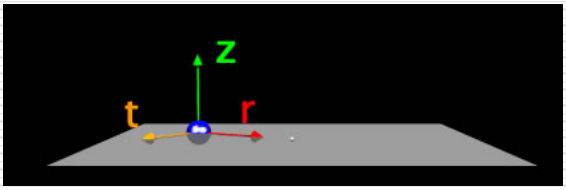
Rock on a String (no air resistance)



- $T \cos(\theta) = w$
  - Ignore
- $T \sin(\theta) = F_{net} = m\ a$

From the text

- Chapter 2, page 39: "An object's motion is uniform if and only if its position-versus-time graph is a straight line."
- Chapter 7, page 180: "A particle moves with uniform circular motion if and only if its angular velocity ω is constant and unchanging."



Jules Verne, "From the Earth to the Moon" (1866)