

April 13 - Report Cards Go Home (Wednesday)

April 14 - Parent-Teacher (Thursday - after school)

April 29 - Professional Learning Day (Friday)

May 5 - NBTA Meetings (Thursday)

May 6 - NBTA Council Day (Friday)

May 23 - Victoria Day (Monday)

May 27 - Professional Learning Day (Friday)

Physics 112

Tuesday, April 12/16

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*library books

Explain That Stuff - April 15/16

Midterm - April 21/16 (Thursday)

1. **Assignment: U2-S1 -> Wednesday, April 13/16**
 2. List of topics for A: U2-S1
 3. Unit 2 - Section 2 - Newton's Laws
 4. Galileo and His Inclined Plane Experiment
 5. Inertia
 6. Newton's First Law of Motion - The Law of Inertia
To Be Continued
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7. Worksheet: C4 - Extra Practice - Weight and Friction
Practice Problems (PP) - C4, Page 144: 5-7
PFU: Page 151, #26-28, 30-32, 34

Topics - A: U2 - S1

- > definitions: dynamics, force, net force
- > five specific forces
 - > definitions and symbols (\vec{W} , \vec{F}_a , \vec{N} , \vec{T} , \vec{F}_f)
- > types of forces and examples contact/non-contact
- > draw FBDs (free body diagrams)
 - > objects at rest
 - > objects with uniform motion
 - > objects with uniformly accelerated motion
- > formulas Some dis.

$$\vec{W} = m\vec{g}$$

-> perform calculations

$$F_f = \mu N$$

-> no calculations yet

-> μ has no units

-> static (stationary)

-> kinetic (moving)

-> $\mu_s > \mu_k$

-> $\mu > 1$

Unit 2 - Dynamics

Section 2 Newton's Laws

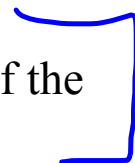
Galileo



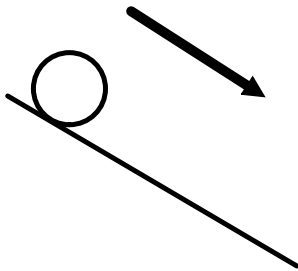
Galileo Galilei (1564 - 1642) brought the scientific method to physics, creating the modern version of the science.

He invented the pendulum clock, investigated the motion of falling bodies and discovered the moons of Jupiter.

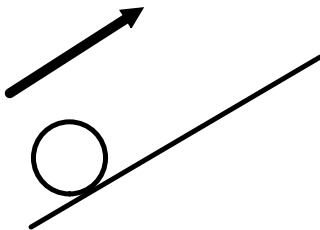
He paved the way for Newton's discovery of the relationship between force and motion.



Galileo: Observations

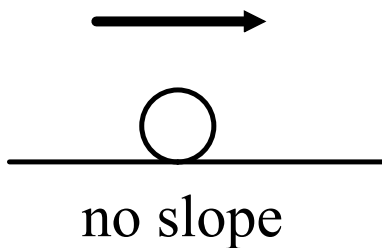


ball: speeds up



ball: slows down

Galileo: Assumption



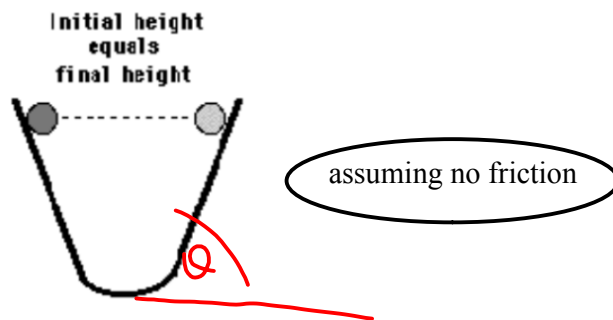
ball: constant velocity

Galileo's Incline Plane Experiments

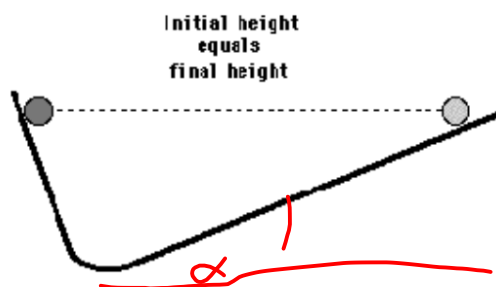
In experiments using a pair of inclined planes, Galileo observed that a ball will roll down one plane and up the opposite plane approximately to the same height.

He thought that if friction could be eliminated entirely, the ball would stop at exactly the same height on the opposite plane.

With a steep angle a ball will roll a small distance to attain the original height.



As the angle of the opposing incline is reduced, the ball must roll farther in order to attain the original height.



What happens if the opposing incline is not inclined?



If a ball stops when it attains its original height, then this ball would never stop. It would roll forever if friction were absent.

Inertia

inertia -> resistance of an object to change its state of motion



Stationary objects can be difficult to move.



Moving objects can be difficult to stop.

mass

More Matter → More Mass → More Inertia



When accelerating, the coffee tends to spill on you.



When stopping, the coffee tends to spill forward.



- It depends on mass.

Less Inertia



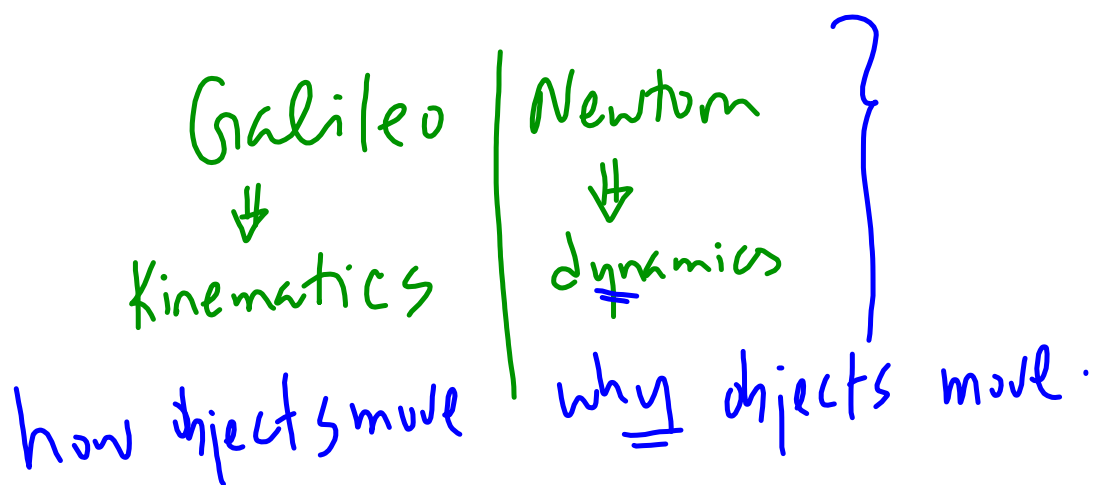
Child on a swing - less inertia

More Inertia



Adult on a swing - more inertia

- It is easier to push and stop a child on a swing compared to an adult.



Chapter 5 - Newton's Laws

(Page 152)



Isaac Newton

(1642-1727)

(4

Newton's First Law of Motion The Law of Inertia

An object at rest tends to stay at rest and an object in motion tends to stay in motion with the same speed and in the same direction unless acted upon by a net force (unbalanced force).

Newton's First Law

** Balanced Forces
Acceleration Equals Zero*

state of equilibrium

Object at Rest	Object in Motion
$\vec{v} = 0 \text{ m/s}$	$\vec{v} \neq 0 \text{ m/s}$
Object Remains at Rest	Object Remains in Motion - a straight line at constant speed.

Worksheet - C4

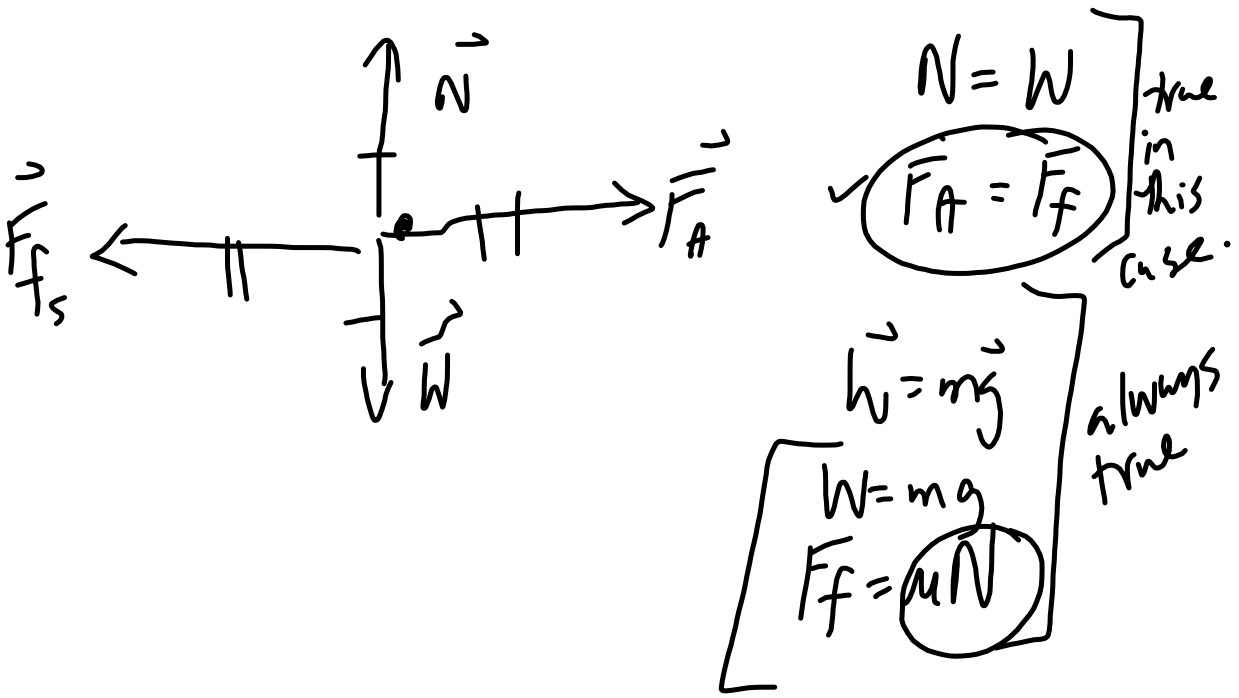
#3. $m = 95 \text{ kg}$

* Find the force applied $\rightarrow \vec{F}_A$ *size.*

a) $\vec{F}_A = ?$

* Find the magnitude of the force applied $\rightarrow \vec{F}_A$

FBD : $\vec{W}, \vec{F}_A, \vec{N}, \vec{T}, \vec{F}_f$



$F_A = F_f$
 $F_A = \mu N$ / Continue.

Science 122

Tuesday, April 12/16

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Midterm - April 28/16 (Thursday)

1. Check -> Red Text
 - > C18 - Page 381 - PP #14-16
 - Page 383 - PP #17-19
 - Page 387 - Review #1, 6, 9, 10, 12, 13
 - Applying Concepts #3-8
 - Problems #2, 4, 5, 7, 8, 9, 10, 13, 14
2. Experiment 37 - Image Formation by a Converging Lens
 - Due - Tuesday, April 12/16
3. Lenses in Combination - Continue
4. Review - Optics
5. Test: Optics -> Friday, April 15/16

Science 10

Tuesday, April 12/16

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<https://www.youtube.com/watch?v=Gsz3yP4AXCY>

1. Experiment: Measurement and Significant Digits
 - Each person submits a lab sheet for marking.
 - **5 Days Late**
 2. Activity - Tumble Buggies
 3. Interpreting Distance vs Time Graphs
 4. Activity - Graph Matching
 5. [Worksheet - Distance vs Time Graphs - HW](#)
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Physics 122

Tuesday, April 12/16

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Explain That Stuff - April 15/16

1. Experiment 10.2 - Torques (Page 67)
Experiment 9.1 - Conservation of Momentum (Page 55)
April 28/16
 2. Projectiles Fired Horizontally - Continue
 3. [Worksheet -> Text: Page 536, PP #1-8 -> HW](#)
 4. Projectiles Fired at An Fired
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