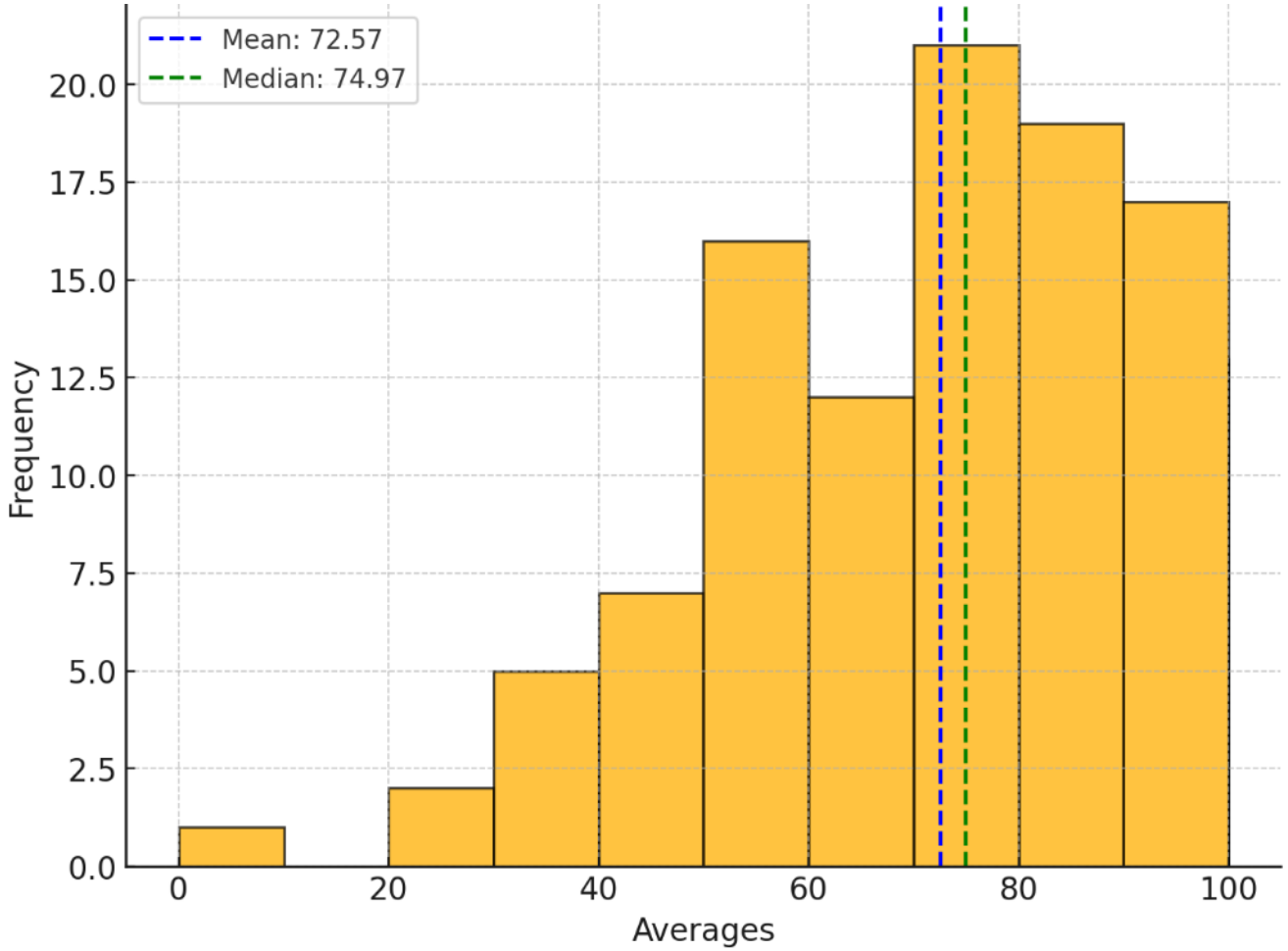
Thoughts on the exam?

Midterm I Results

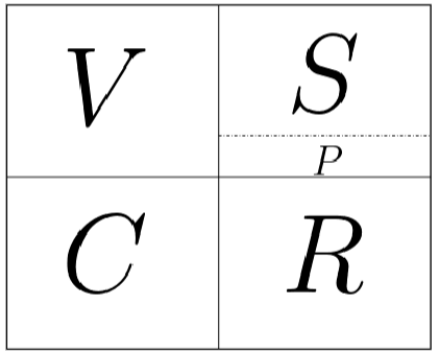


- Median Score: 75%
- With redos this can become 87.5%.
- Redos will be due next Midterm
- Additional motivation: zombie problem!

Midterm Redos

How to Solve a Physics Problem

(An example of *Structured Problem Solving*)



1. Visualize: Draw/imagine a picture or diagram, label it
2. Collect Info: Relevant concepts, relations, equations
3. Solve: Work out *symbolically*, then plug in at the end
4. Review/check the answer: Units, size, relationships

- For each missed problem, redo the whole problem using the structured problem solving approach.
- Upload a file of your work to Canvas (we'll open a submission)

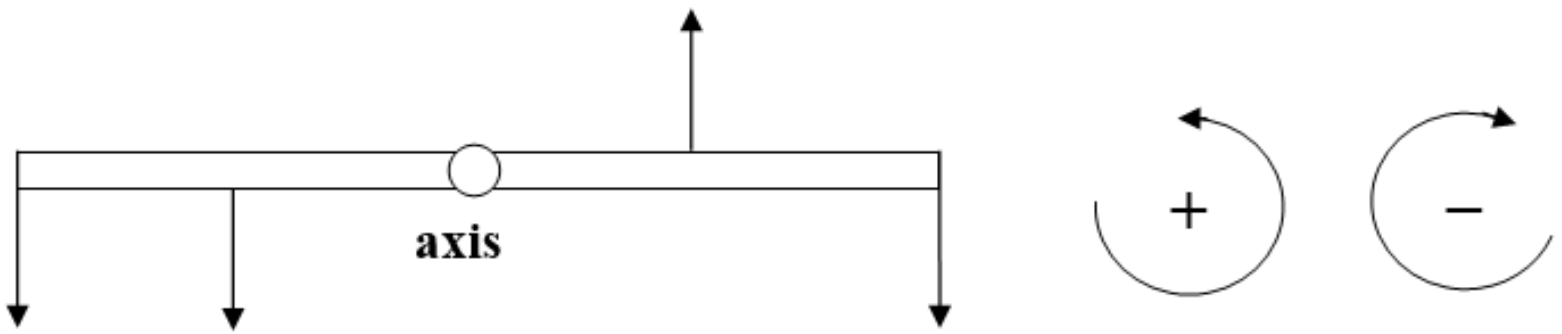
Meetings with Instructor, TA, and LAs

- Story Time: Dr. Loveridge's first college exam
- Please feel encouraged to set up individual meetings, or come to drop in hours, to discuss how best to prepare for the course going forward. We can do your redos together (so you'll get that done) and use that as an opportunity to discuss study strategies.

Homework 4 moved to next Friday

Concept Check:

A bar has four forces, all of the same magnitude, exerted on it, as shown. What is the sign of the torque about the axis of rotation? Use the sign convention shown.



A) torque is zero B) positive (+) C) negative (–)

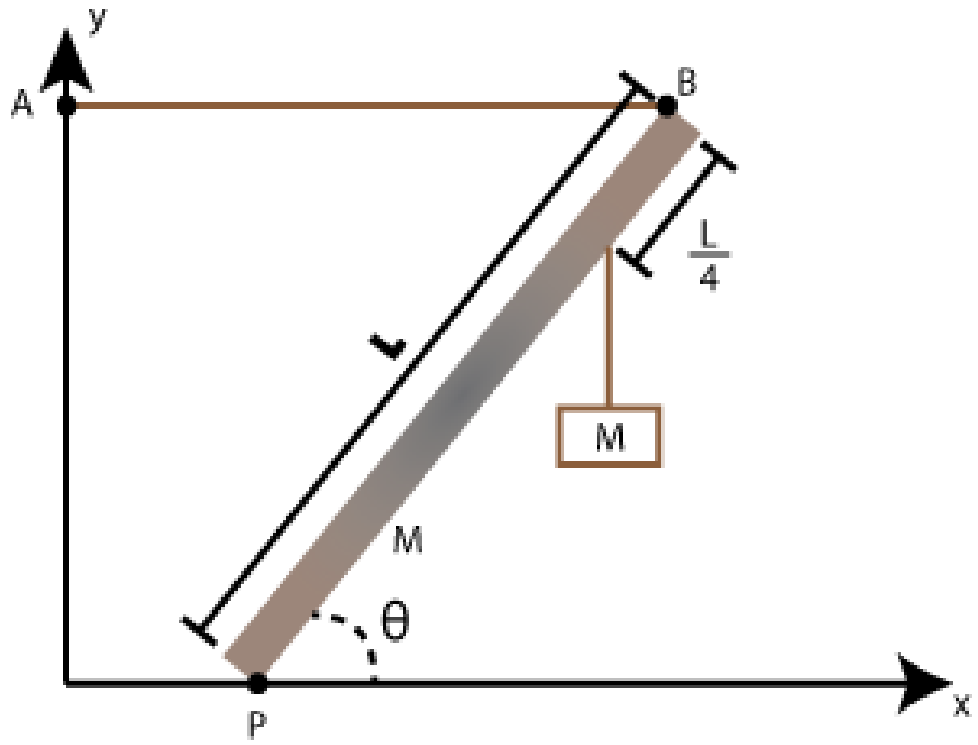
Recap Example: Homework Problem

Problem 11 - 12.3.1 :

A uniform beam of length L and mass M has its lower end pivoted at P on the floor, making an angle θ with the floor. A horizontal cable is attached at its upper end B to a point A on a wall. A box of mass M is suspended from a rope that is attached to the beam one-fourth L from its upper end.

Part (a) **Write an expression for the *y*-component P_y of the force exerted by the pivot on the beam.**

Part (b) **Write an expression for the tension *T* in the horizontal cable AB**



Prelecture Review: Galileo's Ship and Dynamics

Galileo's ship

4 languages

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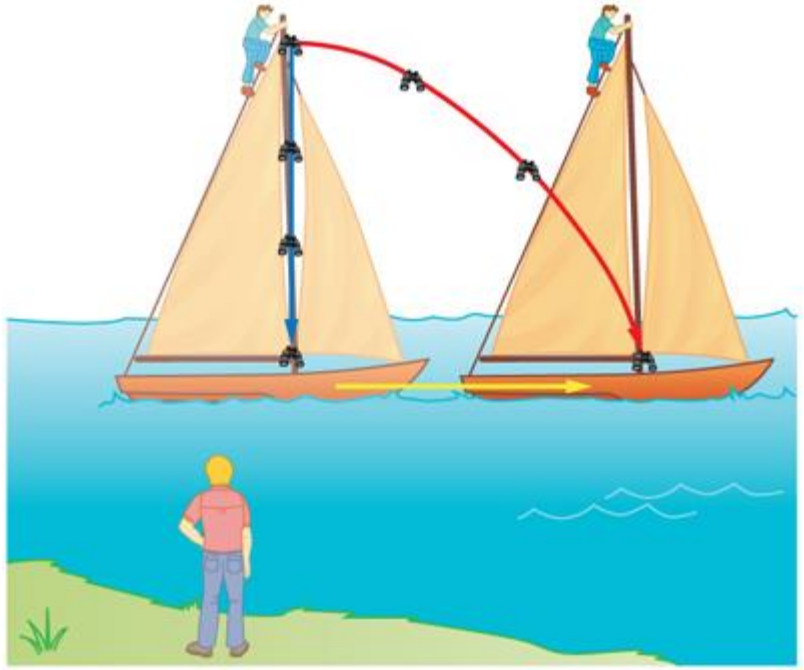
From Wikipedia, the free encyclopedia

Galileo's ship refers to two physics experiments, a thought experiment and an actual experiment, by Galileo Galilei, the 16th- and 17th-century physicist and astronomer. The experiments were created to argue the idea of a rotating Earth as opposed to a stationary Earth around which rotated the Sun, planets, and stars.

An argument that was used at the time was that if Earth were rotating, there would be detectable effects on the trajectories of projectiles or falling bodies.



What are our questions and/or comments?

Comments and Questions

- The thought experiement makes plenty of sense to support his idea of a rotating Earth, and in a simple way, too. If everything is moving at the same rate, then everything looks like it's still to each other.
- I understand that you need to be in constant motion in order to not feel a difference on the ship, but does it still apply when you run around and accelerate your speed?
- I understand Galileo's experiment, and I thought it was a nice touch to mention the findings below deck to account for the air. However, I'm confused how the findings of this experiment conclude anything about Earth's planatary motion. These phenomena would still occur how they did if the Earth was static or moving.

My Comments and Questions

- Comment: This means that *velocity* is like *displacement* in the sense that only relative values make any sense.

Just as we set up a coordinate system for position by e.g. choosing an origin, we must set up a reference frame for velocity by choosing a constant velocity observer.

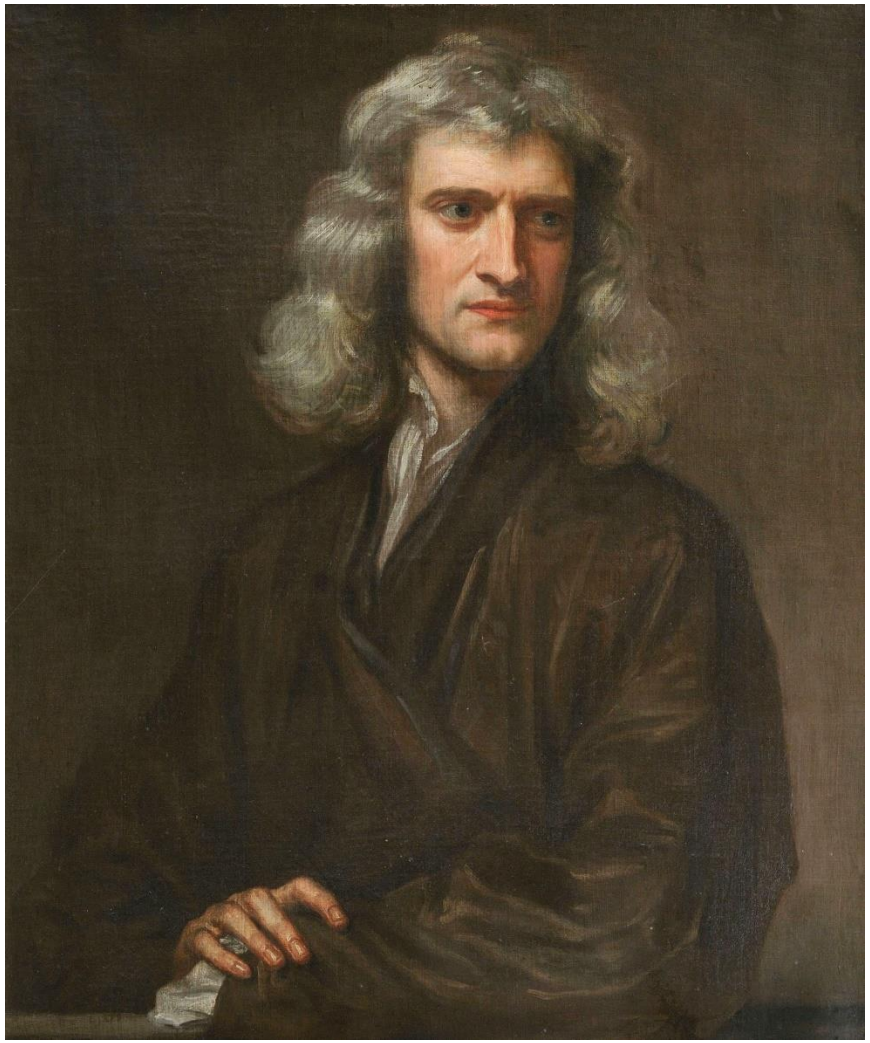
How do we know which observers are constant velocity? We'd feel it otherswise.

New Idea: The First Law of Motion

Translated from Latin, Newton's first law reads:

Every object perseveres in its state of rest, or of uniform motion in a right line, except insofar as it is compelled to change that state by forces impressed thereon.

(Compare with what we had said before about Static Conditions)



The Bucket Thought Experiment