You can draw here

Physics 111 - Class XY
Logistics & Diagnostics

Do not draw in/on this box!

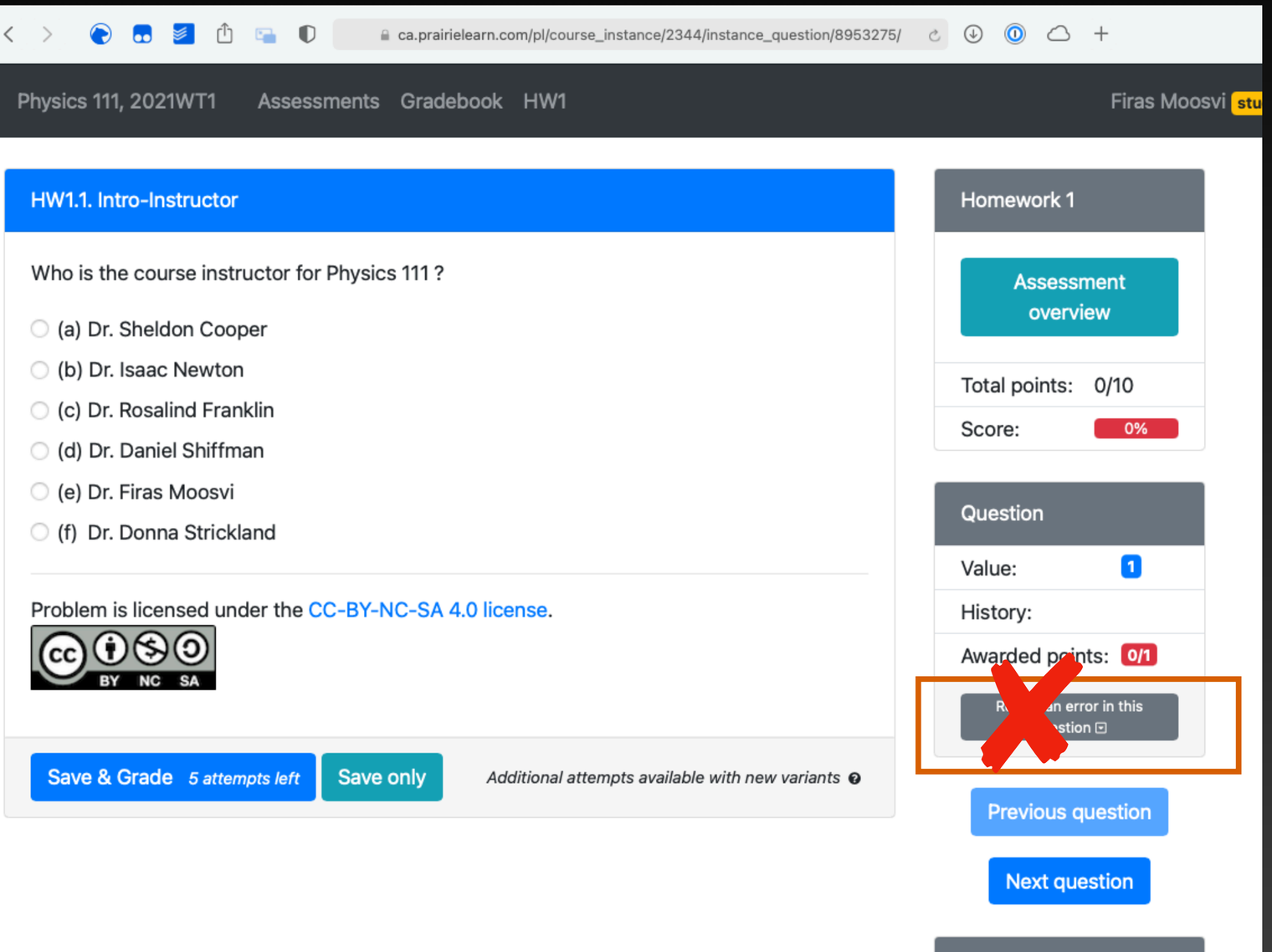
September 10, 2021

You can draw here

You can draw here

Logistics/Announcements

- Lab this week:
- HW due this week on Thursday at 6 PM
- Test/Bonus Test: Window is Friday 6PM - Sunday 6PM
- Learning Log due on Saturday at 6 PM
- HW and LL deadlines have a 48 hour grace period



- “Report an issue” only works one-way, we cannot respond to students 😔
- Many of you are asking questions about the concepts, which is better done on ED Discussion…
- So we will turning off this feature until it is improved.
- Thanks for your patience and your engagement/ feedback!

Class Outline

- Introduction to Chapters 1 and 2
- Clicker Questions
- Problem Solving Template
- Activity
- Debrief

Introduction

Physics 111

Search this book...

Contents

Required Videos

Videos

Below are the assigned videos for this week. The videos are collapsible so once you're done with one, you can move to the next one. In the sidebar on the right, you can use the checklists to keep track of what's done.

Checklist of items

- [ ] Video 1
- [ ] Video 2
- [ ] Video 3
- [ ] Video 3
- [ ] Video 3

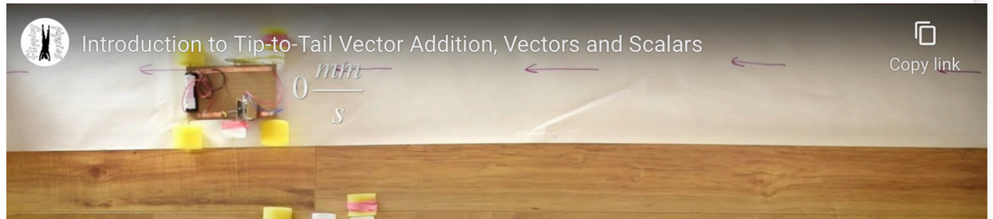
Required Videos

1. Introduction to Significant Figures

- Notes
- Direct link to Mr. P's page

2. Working with Significant Figures

3. Introduction to Tip-to-Tail Vector Addition



Clicker Questions

CQ.2.1

Q: How many of the following items are **VECTORS(✅) and Scalars (❌) ?**

- Distance travelled
- Density
- The position in 3 dimensions
- The average velocity
- Drag
- The position in a 1 dimensional system

Problem Solving Template

PHYSICAL REVIEW PHYSICS EDUCATION RESEARCH **16,** 010123 (2020)

Template for teaching and assessment of problem solving in introductory physics

E. W. Burkholder,[1,*] J. K. Miles,[2] T. J. Layden,[2] K. D. Wang,[3]
A. V. Fritz,[4] and C. E. Wieman[1,3]

Reference: Template for teaching and assessment of problem solving in introductory physics

1. Framing

Visual Representation

Relevant Concepts

Similar Problems

Assumptions and Simplifications

Information Needed

Reference: Template for teaching and assessment of problem solving in introductory physics

1. Framing

Visual Representation

Assumptions and Simplifications

Relevant Concepts

Information Needed

Similar Problems

2. Planning

Solution Plan

Rough Estimate

Reference: Template for teaching and assessment of problem solving in introductory physics

1. Framing

Visual Representation

Assumptions and Simplifications

Relevant Concepts

Information Needed

Similar Problems

2. Planning

Solution Plan

Rough Estimate

3. Execution

Carry-out Plan for solving
- Work in algebra/symbols until the BITTER end
- Plug in numbers at the LAST step

Reference: Template for teaching and assessment of problem solving in introductory physics

1. Framing

Visual Representation

Assumptions and Simplifications

Relevant Concepts

Information Needed

Similar Problems

2. Planning

Solution Plan

Rough Estimate

3. Execution

Carry-out Plan for solving
- Work in algebra/symbols until the BITTER end
- Plug in numbers at the LAST step

4. Answer Checking

Compare to Estimate

Units Check

Limits Test

Getting (UnStuck)

Reference: Template for teaching and assessment of problem solving in introductory physics

1. Framing

Visual Representation

Assumptions and Simplifications

Relevant Concepts

Information Needed

Similar Problems

2. Planning

Solution Plan

Rough Estimate

3. Execution

Carry-out Plan for solving
- Work in algebra/symbols until the BITTER end
- Plug in numbers at the LAST step

4. Answer Checking

Compare to Estimate

Units Check

Limits Test

Getting (UnStuck)

Reference: Template for teaching and assessment of problem solving in introductory physics

Activity

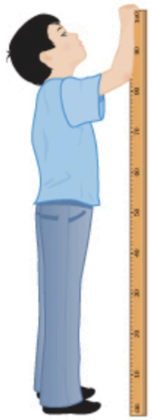
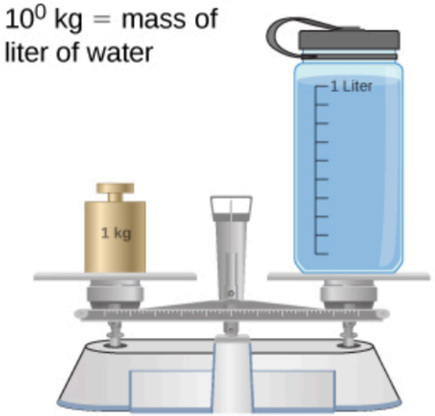
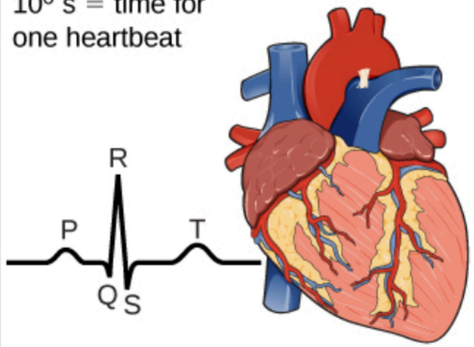
Length in Meters (m)	Masses in Kilograms (kg)	Time in Seconds (s)
10^{-15} m = diameter of proton	10^{-30} kg = mass of electron	10^{-22} s = mean lifetime of very unstable nucleus
10^{-14} m = diameter of large nucleus	10^{-27} kg = mass of proton	10^{-17} s = time for single floating-point operation in a supercomputer
10^{-10} m = diameter of hydrogen atom	10^{-15} kg = mass of bacterium	10^{-15} s = time for one oscillation of visible light
10^{-7} m = diameter of typical virus	10^{-5} kg = mass of mosquito	10^{-13} s = time for one vibration of an atom in a solid
10^{-2} m = pinky fingernail width	10^{-2} kg = mass of hummingbird	10^{-3} s = duration of a nerve impulse
10^{0} m = height of 4 year old child 	10^{0} kg = mass of liter of water 	10^{0} s = time for one heartbeat 
10^{2} m = length of football field	10^{2} kg = mass of person	10^{5} s = one day
10^{7} m = diameter of Earth	10^{19} kg = mass of atmosphere	10^{7} s = one year
10^{13} m = diameter of solar system	10^{22} kg = mass of Moon	10^{9} s = human lifetime
10^{16} m = distance light travels in a year (one light-year)	10^{25} kg = mass of Earth	10^{11} s = recorded human history
10^{21} m = Milky Way diameter	10^{30} kg = mass of Sun	10^{17} s = age of Earth
10^{26} m = distance to edge of observable universe	10^{53} kg = upper limit on mass of known universe	10^{18} s = age of the universe

Figure 1.4 This table shows the orders of magnitude of length, mass, and time.

Debrief

See you next class!