Weekly Journal 1

Introduction

In your Weekly Journals, you will reflect on various aspects of the work you are doing, and how things are going overall. The goal of these Weekly Journals is to encourage you to take an active role in your own learning: you'll be prompted to consider what you are doing and how it is and isn't working. The Weekly Journals will be graded based on whether you have put a good-faith effort in. If you do not have time to attempt a portion of the work needed to do a journal, you should just say so: you will not lose credit. Please do not make things up, pretend to have completed work you have not done, or copy work from outside sources: this just wastes everyone's time. This is my first time using the Weekly Journals, so it is likely that they will evolve as I discover what is working and what isn't. It is my hope that these journals will help you develop more effective, efficient, and interesting ways of learning physics!

Completing a Weekly Journal

Each Weekly Journal will be submitted as a pdf file via Gradescope, accessed via the Weekly Journal Canvas assignment. In Gradescope, you will be presented with a pdf file (like this one!) with a series of questions. Some of the questions will be related to tasks you have been doing for class such as reading, lecture viewing, and Mastering Physics homework. You should answer these questions either on paper or in an electronic document.

The pdf file will also contain a sample test question or questions, to be attempted after all the other work is done. You should attempt the sample test question(s) in a test-like environment: do not consult the textbook or other outside resources. However, you should feel free to consult the course equation sheet for needed equations.

After you have completed the sample test question(s), download the solutions so you can evaluate your work, and answer the questions as you are prompted to do so.

Once you have answered all the questions, convert your answers, including a picture of your sample test answer, to pdf files. Finally, combine your pdf files for the Weekly Journal questions and the sample test question(s) (there are many apps that can do this) and submit your work to Gradescope.

Work for this Weekly Journal

In order to complete this Weekly Journal, you must first complete the following assignments.

- Watch the videos "Introduction to Physics", "1D Motion Intro", "1D Velocity", "1D Acceleration", "1D Analytical Problem Example", "1D Constant Acceleration", and "Multiple Time Int. Problems".
- Read sections 1.1-1.4, and 2.1-2.6 in the textbook.
- Do Mastering Physics HW1
- Complete the sample test problems described below, but only after you have completed the above.

Questions

1. Tell me something about you that will help me remember who you are! This could be something you are interested in, an interesting story about you, a book, movie, video game, podcast, or something else you like, or whatever else you think might help me remember you.

2. This week you read the course syllabus and were given a general overview of the course. What questions, if any, do you have about how the course will operate?

3. As you were completing this week's reading and video lecture viewing, what topic or idea did you find the most interesting and why?

4. As you were completing this week's reading and lecture viewing, how did you react when you read/heard something that didn't make sense to you at first? What strategies did you use to help you figure out what was going on and/or what strategies might you use in the future?

5. Identify a time when you got stuck (even if it was just for a bit) on the Mastering Physics homework. If you figured out how to get "unstuck", explain what idea you initially missed. If you didn't figure it out, explain your plan for getting help to figure it out. If you really, truly, found the whole assignment easy, then name a way in which the problems in a related topic might be more difficult.

Sample Test Problems

Once you have completed the other work for the week, in a test-like setting, attempt to answer the questions below. This is intended as practice for the actual test- so prepare for it as you might for the actual test! You may use the course equation sheet as you complete the problem. Unlike a real test though, there will be no time pressure: take your time to create complete solutions with diagrams, neatly organized work, and explanations: your goal should be something like you see in the book example problems. Do NOT look at the solution ahead of time: remember, you will be graded on the quality of your reflection, not on the correctness of your work.

Problems:

P1. A racecar accelerates from rest with acceleration given by

$$a(t) = A - Bt$$

Where $A = 15.0\ m/s^2$ and $B = 3.0\ m/s^3$.

a) What will the car's speed be at $t = 8.0\ s$?
b) What is the car's average acceleration over the interval from $t = 0.0\ s$ to $t = 8.0\ s$?
c) How far does the car move over the interval from $t = 0.0\ s$ to $t = 8.0\ s$?

P2. A lead ball is dropped into a lake from a diving board 5.0 m above the water. After entering the water, it sinks to the bottom with a constant velocity equal to the velocity with which it hit the water. The ball reaches the bottom 3.40 s after it is released. How deep is the lake?

A clear diagram with moments in time clearly labeled and coordinate axis established is required. Also required is a list of known variables.

Sample Test Problem Review

Once you have completed the problems, download the solutions and answer the questions below. If you are unable to answer one of the questions below, indicate on your work that you were unable to answer the question- you will not lose credit for doing as long as you answer the reflection-type questions!

6. Indicate the location of your solution to part a of P1 on Gradescope using this question.
7. Indicate the location of your solution to part b of P1 on Gradescope using this question.
8. Indicate the location of your solution to part c of P1 on Gradescope using this question.
9. As you completed P1, did you make any errors or get stuck (even for a little while) anywhere? If so, identify what caused the error/ getting stuck, and describe how you will avoid that issue in the future. If you got stuck on the problem and don't know how to proceed, describe your plan for how to figure out how to get "unstuck".
10. As you compared your answer to P1 to the solution, there will almost certainly be differences in notation between your work and my work. Identify at least one notation difference, and explain why the two notations lead to the same conclusion.
11. Indicate the location of your P2 diagram on Gradescope using this question.
12. Does your diagram for P2 include (just answer yes or no)
    a. a coordinate axis with a clearly labeled origin- in particular, does it clearly define the direction that is considered to be positive?
    b. Three clearly labeled moments in time for the start, when the ball hits the water, and when the ball hits the bottom.
13. Have you listed all of the known variables at the start of the problem, with clearly labeled subscripts? Check your work against the list in the solution, and see if you missed any known variables, or omitted any subscripts- pay attention to details here please! List any differences between your list of known variables and the solution's list.
14. Indicate where you found Δt_{AB}, time before the ball hit the water, on Gradescope using this question.
15. Indicate where you found v_B, the velocity when the ball hit the water, on Gradescope using this question.
16. Indicate where you found the depth of the lake on Gradescope using this question.
17. As you completed P2, did you make any errors or get stuck (even for a little while) anywhere? If so, identify what caused the error/ getting stuck, and describe how you will avoid that issue in the future. If you got stuck on the problem and don't know how to proceed, describe your plan for how to figure out how to get "unstuck".

18. As you did the algebra work, did you use occasional words to explain what you were doing with the equations? This is a good habit to get into as it helps organize your thoughts.

Time Management

19. Approximately how long did you spend working on physics outside of the live class this week, and how did you spend that time? Please be honest- you will not be penalized if it wasn't "enough" time.

20. If your schedule allows it, name several specific blocks of time that you can reserve for studying physics in the coming week.