Weekly Journal 5

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 assigned prior to class this week (and last week).
- Do the reading assigned prior to class this week (and last wee).
- Do Mastering Physics HW6
- Complete the sample test problem described below, but only after you have completed the above.

Preliminary Questions

1. List at least one question you had about this week's lectures. This could be a point of confusion, or something you are curious about.

2. List at least one question you had about this week's reading. This could be a point of confusion, or something you are curious about.
3. Which Mastering Physics problem (or problems) was hardest for you? What step, specifically, gave you trouble?
4. Reflect on how you did the Mastering Homework this week. As you did the homework, did you do the following?
    a. Use the problem solving guides and organize your work clearly on paper.
    b. Draw complete FBDs
    c. Write out Newton's Second Law for each problem in each direction.
    d. Take a moment to note down placed where you had difficulty, and how you resolved that difficulty.

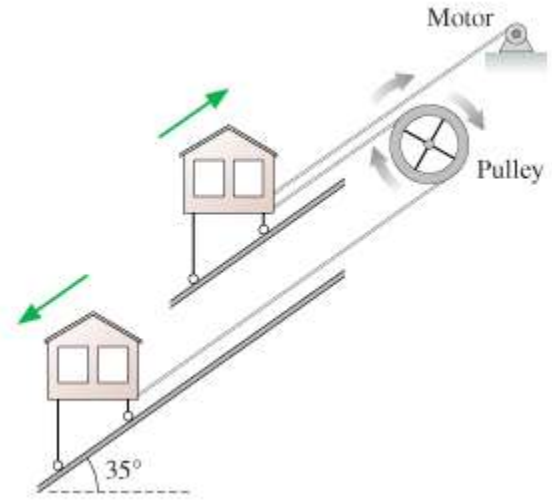
Sample Test Problem

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.

Problem:

I highly suggest learning the steps in the Newton's Second Law Problem Solving Guide before doing this problem.

The century-old *ascensores* in Valparaiso, Chile, are small cable cars that go up and down the steep hillsides. As the figure shows, one car ascends as the other descends. The cars use a two-cable arrangement to compensate for friction; one cable passing around a large pulley connects the cars, the second is pulled by a small motor. Suppose the mass of each car (with passengers) is 1600 kg, the coefficient of rolling friction is 3.0×10^{-2}, and the cars move at constant speed. What is the tension in a) The connecting cable and b) The cable to the motor?



Sample Test Problem Review

Once you have completed the sample test problem, download the solution from Files/Weekly Journal, and answer the questions below. If you didn't get far enough in your solution to answer one of the questions below, just say so.

5. When you upload your work to GradeScope, indicate the page(s) in your document where you completed this problem.

For each question below, if the answer is "no", explain briefly why you might have made a mistake/missed this step. If you make a mistake in an early stage in the problem, for the later parts, assess whether your method was correct, rather than whether you got the correct answer.

6. Compare the FBDs in the solution to the FBDs you drew. Explain any differences.
7. What about this problem indicates the need for tilted coordinate axes?
8. Did you write out Newton's Second Law (replacing Fnet) with the actual forces in your FBDs, for both objects in both x and y directions?
9. Did you recognize the acceleration was zero? If not- what should have tipped you off to this fact?
10. Did you recognize that the two tension forces from the rope over the pulley are the same, but that the tension from the other rope was different?
11. What method did you use (or should you have used) to solve the system of equations. (That is, how did you deal with the fact that at the end there were two unknown tensions and two equations).