

Oberlin College Physics 110, Fall 2011

Assignment 5

Wednesday, 5 October

Reading: From the “Notes on Mechanics and Relativity,” read sections 2.8 (“The Horse and the Sled”), 2.9 (“Newton’s Third Law”), and 2.10 (“The Meaning of the Word ‘Force’”).

Also read HRW sections 15-1 through 15-3 (Simple Harmonic Motion), and sections 9-1 through 9-7 (Linear Momentum). Deemphasize section 9-2 (center of mass).

Workshops: The Wednesday–Thursday workshop for this week is “Terminal Velocity”.

Informal Friday: The optional Friday class meeting this week, on 7 October at 9:00 AM, will be by Prof. Yumi Ijiri, concerning “Beyond the Refrigerator Magnet: Applications of Advanced Magnetic Materials”.

Problems: There are *no* assigned problems this week. Instead, there will be an exam on Wednesday, 12 October. Be sure to look at the sample exam below.

Exam: On Wednesday, 12 October. You may use a calculator, your textbook (HRW), and one $8\frac{1}{2}$ by 11 inch page of notes, but not your lab notebook, lab instructions, printed course notes, or any other material. No collaboration is permitted. Exam topics are:

- Measurement and operational definitions
- Dimensional analysis
- Significant figures
- Strategies for solving problems: e.g., making estimates, checking results for reasonableness, investing an equation with meaning
- Scaling arguments: e.g., the range depends on initial velocity v_0 as v_0^2 , not as v_0 nor as v_0^3
- Vectors
- Motion in one, two, and three dimensions: definition of velocity and acceleration; equations for the special cases of constant velocity and constant acceleration; uniform circular motion

There will be no questions concerning force.

Sample Exam: These are problems I’ve used in exams in the past.

- Additional problem 11: *Watersheds*
- Additional problem 23: *Bouncing ball*
- Additional problem 29: *Jetliner takeoff*
- Additional problem 30: *Rain speed*

Other reasonable practice problems are additional problems 36 and 45.