PHYS 1211 *University Physics I*

Winter Quarter, 2007

Problem Set 5

Due: Thurs, Feb. 8, 2007

Instructor

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(or by appointment)

Halliday, Resnick, and Walker (HRW)

Re-read Chapter 5?

Complete the following **PROBLEMS** from HRW Chapter 5: 21, 32, 51, 55, 73, 74, (each is worth 10 points)

ALSO

Read Chapter 6.

Complete the following **PROBLEMS** from HRW Chapter 6: 2, 12, (each is worth 10 points)

Penny-Pedestrian Redux

In an earlier Quiz, we calculated the velocity of a penny dropped from the 1250 foot tall Empire State Building when it hits the sidewalk below. Now we consider the more realistic case by considering air resistance, or drag, on the penny. Assume you have a 2.50 gram penny, that tumbles as it falls. Assume a Coefficient of Drag, $C = 0.75$ (20 points total).

1. Estimate the effective cross-sectional area of the tumbling penny using a simple average of minimum and maximum cross-sections.
2. What is the terminal velocity of the penny?
3. How far does the penny fall before reaching terminal velocity?
4. Are you afraid of the penny-wielding tourists atop the ESB?