

Physics 101: How the “world” works Fall 2008

Homework 2

Due in your studio, Tues. Sept. 23, Wed. Sept. 24, or Thurs. Sept. 25

Chapter 4 Exercises

- (1) 17
- (2) 18
- (3) 25
- (4) 42
- (5) 48

Chapter 4 Problems

- (6) 2
- (7) 10
- (8) 11
- (9) 15

Extra Credit Problem; The terminal speed of a ping-pong ball is 9 m/s. By neglecting air resistance, estimate how long it takes for a ping-pong ball falling from rest to reach half of this speed. Estimate how far the ball falls during this time. Now use dimensional analysis (making use of units) to come up with a formula to determine how far *any* object will fall for its speed to get close to its terminal speed v_t . Using your formula, estimate how far the ping-pong ball will travel to get close to its terminal speed. How does this result compare with a skydiver falling with a typical terminal velocity of 100 m/s?