

# January 30, Week 3

Today: Chapter 2, Constant Acceleration

Homework Assignment #3 - Due February 1

**Mastering Physics:** 6 problems from chapter 2.

**Written Question:** 2.88

Box numbers can be found on webpage

Today office hours will be 1:00-1:50, 4:00-5:00

For now on, Mastering Physics will take off points for missed homework questions.

## Example II

$$x = x_0 + (v_{0x})t + \frac{1}{2}a_x t^2$$

$$v_x = v_{0x} + a_x t$$

$$v_x^2 = v_{0x}^2 + 2a_x (x - x_0)$$

Example: Phyllis is traveling on a straight highway with a speed of  $30.0 \text{ m/s}$  and wishes to pass Stanley who is in car in front of her. Phyllis hits the gas causing a constant acceleration of  $1.25 \text{ m/s}^2$ . After going  $150 \text{ m}$ , phyllis is a safe distance in front of Stanley, so she decelerates back down to  $30.0 \text{ m/s}$  in  $5.0 \text{ s}$ . How long did it take and what total distance did Phyllis cover while passing Stanley? Assume Phyllis stayed in the same lane the whole time.

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On earth,  $g = 9.8 \text{ m/s}^2$

*Note:*  $g$  is always given as positive. The direction of gravity is down, so negative signs may have to be used in problem solving.

## Example III

$$y = y_0 + (v_{0y})t + \frac{1}{2}a_y t^2$$

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Example: A person at the top of a building  $30\text{ m}$  high, throws an egg upwards at  $15\text{ m/s}$ . If air resistance is ignored:

- How fast will it be going after  $3\text{ s}$ ?

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