

Unit 3 Plan: **Describing Motion: Acceleration**
 Physics1 @ PalmHarborUniversityHigh



Day	Date	Topic	Assignments Due / Schedule
1		Section 3.1 What is Acceleration CW#1 : Practice Problems 1-11	Read Section 3.1 Finish practice problems 1-11
2		Velocity-time graphs with motion detector CW#2 : V-t worksheets	Finish lab worksheets
3		Velocity during uniform acceleration	Read Section 3.2 HW#1 : Practice Problems (p.65): 18-21
4		Displacement during uniform acceleration CW#3 : 26,28,29,34,35,39	Finish problems
5		Free-fall worksheet CW#4 : 42,44,45 p.74	Read Section 3.3
6		Free-fall Lab	TBA
7		Finish Lab Law of Falling Bodies Video	HW#2 : problems # 88, 92
8		Finish Video Reaction time mini-lab	HW#3 : MC & AC (p.80-81): 55,57,59,60,61,63,64,66,68,69,74,75,76,78
9		Review Review X-word	
10		Unit Test	

Note: Homework is due on the day following the assignment, unless otherwise noted.

Objectives / Essential Learnings: (key terms in **bold**)

1. Draw **motion diagrams** and **particle models** to represent moving objects.
2. Be able to plot and interpret a **velocity-time graph**.
3. Use a **velocity-time graph** to calculate acceleration.
2. Define **acceleration** and give examples of units for acceleration.
3. Be able to calculate **average acceleration**, given two velocities and the time interval between them.
4. Be able to calculate average and **instantaneous acceleration** from a velocity-time graph.
5. Be able to calculate final velocity in the case of **uniform acceleration**.
6. Be able to calculate the displacement of an object undergoing uniform acceleration when you know two out of the three quantities: acceleration, time, velocity.
7. Describe the motion of an object in **free fall** from rest.
8. Describe the motion of an object thrown straight up until it hits the ground, given that **air resistance** is negligible.
9. Determine the speed and the distance fallen at any time after an object is dropped from rest, given that air resistance is negligible.
10. Describe how **air resistance** affects the motion of falling objects.
11. Explain why acceleration is a **rate of a rate**.
12. Be able to solve problems of the motion of objects uniformly accelerated by **gravity**.

$$\bar{v} = \frac{\Delta d}{\Delta t}$$

$$\bar{a} = \frac{\Delta v}{\Delta t}$$

$$v_f = v_i + at$$

$$v_f^2 = v_i^2 + 2ad$$

$$d = \bar{v}t$$

$$\bar{v} = \frac{v_f + v_i}{2}$$

$$d = \frac{v_f + v_i}{2} t$$

$$d = v_i t + \frac{1}{2} at^2$$