Unit 3 Plan: ***Describing Motion: Acceleration***
Physics1 Honors @ 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**: 26,28,29,34,35,36,39	Finish problems
5		Free-fall worksheet **CW#4**: 42-46 p.74	Read Section 3.3
6		Free-fall Lab	TBA
7		Finish Lab Law of Falling Bodies Video	**HW#2**: problems # 88, 92, 98, 111
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**.

$$\bar{v} = \frac{\Delta d}{\Delta t} \qquad \bar{a} = \frac{\Delta v}{\Delta t} \qquad v_f = v_i + at \qquad v_f^2 = v_i^2 + 2ad$$

$$d = \bar{v}t \qquad \bar{v} = \frac{v_f + v_i}{2} \qquad d = \frac{v_f + v_i}{2}t \qquad d = v_i t + \frac{1}{2}at^2$$