ADVANCED PHYSICS SUMMER WORK

Here is the unit plan for the summer work in Advanced Physics. Many of our units throughout the school year will be structured in a similar manner (except there will be a lab and/or activity thrown into most units).

The Advanced Physics course is all about problem-solving. There are not many equations and concepts; the trick is learning to use them in creative ways to solve problems and explain situations. And it takes practice to get good at this. ***The only way to get good at problem-solving is to solve lots of problems.***

Please complete Lessons 1, 2, and 3 (see Unit Plan below)

- For each lesson there is a "Derek Institute of Higher Learning" (DIHL) video (or videos) to introduce the concepts and/or you can read the online textbook and then some problems to try.

- The solutions are provided in various forms; some have just the answers, while others have the problems worked out. Everyone does these problems slightly differently, so if the solution looks like they are using different equations, they aren't—they are just using our equations rearranged and/or combined with other equations.

- You will find that some select problems have an attached DIHL video within the practice problem documents themselves.

At the end of this summer unit you will be graded on:

- 1D Kinematics Problem Set DUE THE FIRST DAY OF CLASS

- A QUIZ ON THE FIRST DAY OF CLASS

Help Opportunities:

The teacher will offer six different help sessions during the **weeks of August 11 and August 18.** These will be on Zoom. The teacher will reach out to you via email with specific dates and times as it gets closer to August. There will be two sessions in each timeframe: 9:45-11:00 a.m., 1:45-3:00 p.m., and 5:45-7:00 p.m. You may attend as many as you like.

GOOD LUCK! Feel free to reach out to Derek Lieske at dlieske@keyschool.org via email if you get stuck with anything. He will be checking his email frequently over the summer.

UNIT PLAN:

Lesson 1: Horizontal Motion

- DIHL Video (Kinematics 5 equations) (30 minutes) This goes over the basic equations and concepts for Kinematics.
- DIHL Video (Kinematics 5 equations part 2) (3min)

  and/or
- Read 2.1-2.5 in the online textbook

  =================================
- DIHL video (Kinematics probs (intro) (11 min): goes over the derivations of the equations and solving some problems

  and/or
- Read 2.6

  =================================
- Read 2.8 if you want more explanation on Position, velocity, and acceleration graphs. (optional)
- Problems
  - (Practice) 1D Kinematics Horizontal (1)-7Qs
  - (Practice) 1D Kinematics Horizontal (1)-7Qs (soln)

  - (Practice) 1D Kinematics Horizontal (2)-1Q Old AP (with soln)

  - (Practice) 1D Kinematics Horizontal (4)-4Qs (with soln)

Lesson 2: Vertical Motion

- DIHL Video (Kinematics vertical (intro probs)) (23.5 min) This introduces vertical motion and works through a couple of calculations.

  and/or
- Read 2.7
- Problems
  - (Practice) 1D Kinematics Vertical (1)-5Qs
  - (Practice) 1D Kinematics Vertical (1)-5Qs (soln)

  - (Practice) 1D Kinematics Vertical (2)-3Qs (with soln)

  - (Practice) 1D Kinematics Vertical (3)-4Qs (with soln)

Lesson 3: AP Problems

- (Practice) 1D Kinematics AP(1)-8Qs (MC)
- (Practice) 1D Kinematics AP(1)-8Qs (MC soln)
- DIHL Video for AP (1)-8Qs (MC)

- (Practice) 1D Kinematics AP(3)-1Q (FR)
- (Practice) 1D Kinematics AP(3)-1Q (FR soln)

- (Practice) 1D Kinematics AP(2)-3Qs (FR)
- (Practice) 1D Kinematics AP(2)-3Qs (FR soln)