Part II: Math Review (≈3 hours.)

In AP physics, we will be using Algebra, Geometry, and a little bit of PreCalc on a daily basis. In order to refresh your memory in these subjects, I will be asking you to do a bit of math review over the summer.

Although you *could* do all of this in one sitting, my suggestion is that you do one or two of these problems a day. (Each problem should take between 30 s and 2 minutes. Hidden question, What was the most interesting part of Greg's Preface: How to Approach Your Physics Course?) That way, you will keep the mathematical part of your brain **awake** throughout the summer.

We will have a quiz the **first** week back to check. Answers will be posted on Google Classroom

$T = \frac{2\pi}{\omega}$, solve for $\omega =$ _____

$k = \frac{1}{2}mv^2$, solve for $m =$ _____

$\omega = \omega_o + \alpha t$, solve for $t =$ _____

$PV = nRT$, solve for $R =$ _____

$F_g = G\frac{m_1 m_2}{r^2}$, solve for $m_1 =$ _____

$x = x_o + v_o t + \frac{1}{2}at^2$, solve for $a =$ _____

$\tau = r\,F\,sin\theta$, solve for $sin\theta =$ _____

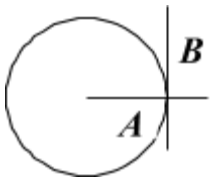
$B = \frac{\mu_o I}{2\pi r}$, solve for $I =$ _____

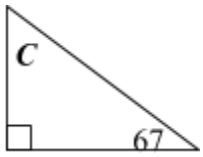
$F_E = k\frac{q_1 q_2}{r^2}$, solve for $r =$ _____

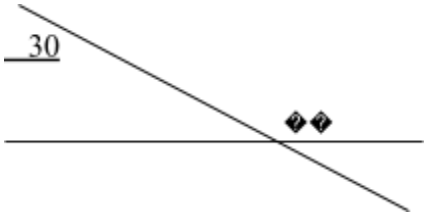
$x = Acos(2\pi ft)$, solve for $A =$ _____

Watch Algebra/Geometry

The geometry skills necessary in Physics involve being able to calculate angles, find the lengths of lines, and understand basic geometric terms. Solve the following geometric problems using the figures







provided**.**

Figure 1 Figure 2 Figure 3

In figure 1, line ***B*** touches the circle at a single point. Line ***A*** extends through the center of the circle.

What term can be used to describe line ***B*** in reference to the circle?

How large is the angle between lines ***A*** and ***B***?

If the radius of the circle is 5.5 m, what is the circumference in meters?

If the radius of the circle is 5.5 m, what is the area in square meters?

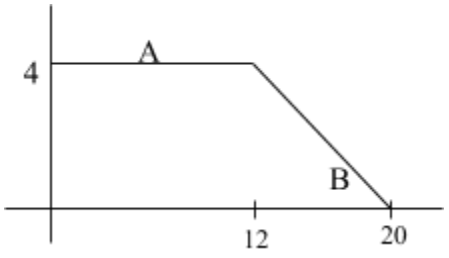
In figure 2, what is the measure of angle ***C***?

In figure 3, what is the measure of angle **θ** ?

Watch Video on Slope and Area

One of the first concepts we will be dealing with involves using graphs to describe the motion of objects. One aspect of these graphs that you will become accustomed to hearing is referred to as "the area under the curve." This refers to the area of the geometric shape created by the graph. Using this graph, calculate the following:

What is the area under the curve?



What is the slope of section A?

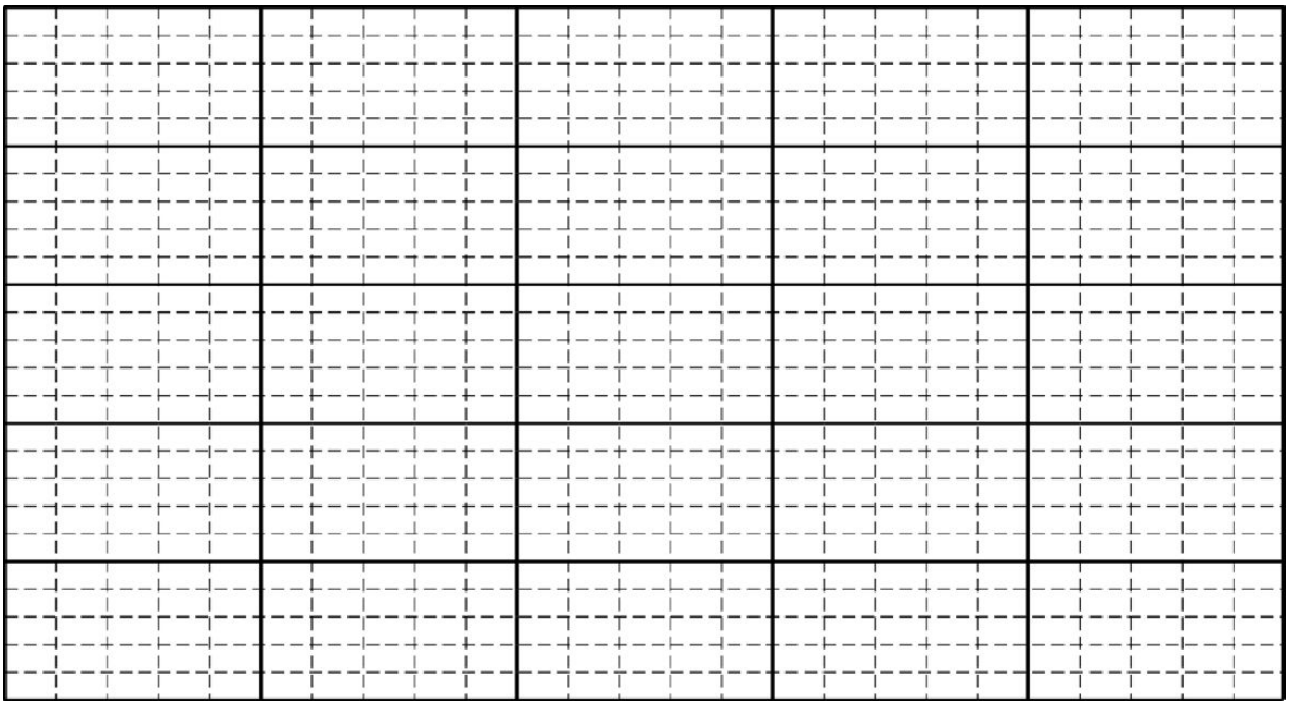
What is the slope of section B?

Watch Graphing Video

Graphing – For each of the sets of data below,
Graph the data points on the grid below. (Make sure you include a title, scale, and units!)
Draw a line of best fit for those data points.
Calculate the slope, area under the curve, and intercept of the line of best fit.

Data Set 1: (Graph Weight vs. Length)

Weight (N)	0	10	15	20	25
Length (m)	0.60	0.97	1.24	1.37	1.64



Slope:

Area:

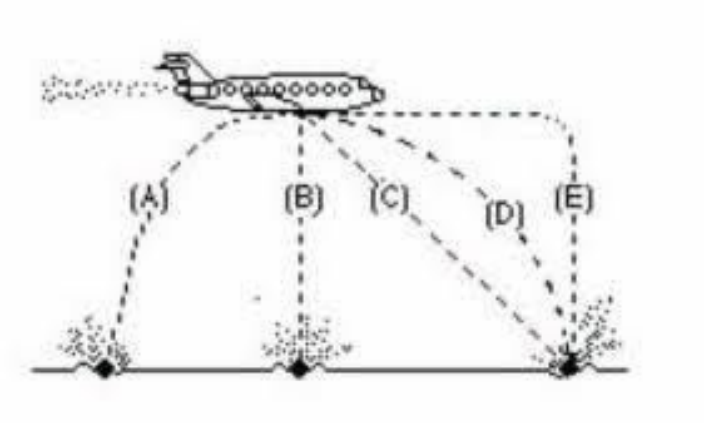
Intercept:

question to the first person.
The first person will respond to the question or challenge and pose a counter question.
Repeat step 3 until **each person** has commented on the post **3 times each**.

If there is no open post, *start a new one!* **But remember to scroll down and check.**
Be respectful, anyone who is not, will be muted pending parent contact. And receive no points for this section.

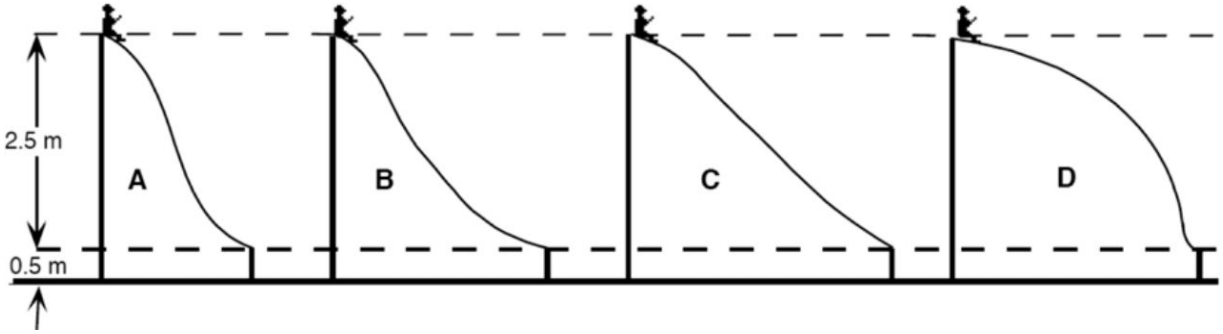
Do **Each** Prompt with your partner

Prompt 1: Dropping a Cow from an Airplane
An airplane is flying along at high speed. At some point in time the airplane drops a cow out of the doors. The picture on the right shows several possible trajectories of the cow.
Explain which path the cow will take as it falls to the ground and why you think this is the case.



Prompt 2: The Slide

Your little cousin is playing on the playground. He wants to pick the slide that will allow him to have the greatest speed by the time he gets to the bottom. Assuming that there is no friction between your cousin and the slide, which of the slides shown below should he pick?



Feel free to email me if you have any questions about the homework or the course. Have a great summer!
- Ms. Jocoy

PS. Send me an email answering the question hidden in the Summer Homework Packet before July 17th for extra credit to start the year off right :p