

## 2021 Summer IB Physics Challenge:

*Students, it is my hope that you enjoy your summer from this incredibly long school year that has just passed. I know I will! But, while you are out working, tanning, traveling, going to the beach and sleeping in, we will need you to complete something important to get 2021 off to a streamlined start. This year is going to be an incredible year in IB Physics, and we plan for you to perform well in EVERY facet! Let's get the details:*

- Over the Summer of 2021, you will need to establish 5 ideas that can be explored, evaluated and decided on for your IB Physics IA. This is an important part of your Physics journey, but don't overthink it. You can be original, but you don't have to be. As a matter of fact, it's very difficult to have an original idea with over 25,000 IB Physics Students around the world. So, with a little help from Sally Weatherly (CEO @ Physics Geek) we can narrow it down and make this process not too stressful for you.
- Choose areas of general interest
  - Sparked interest in physics lessons, hobbies or passions, TV programs that have sparked interest, anything that may be of interest to you. Write it down!
- One of the most important aspects of this IA process is choosing an independent variable that is easily changeable. The focus of the IA is important – the more focused your research question is, the better off you are to establish a cause/effect relationship. (How does X affect Y?). Think of variables that are values like:

Mass	Distance	Angle
Pressure	Radius	Volume
Temperature	Height	Power
Extension	Time	Frequency
Intensity	Cross-sectional area	Current
Voltage	Wavelength	Density

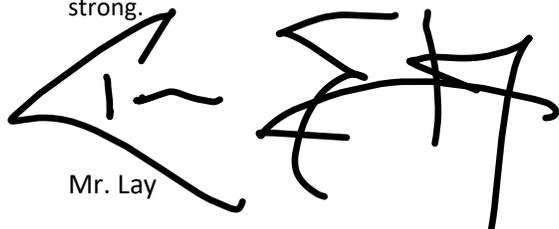
- Variable X needs to be something that can be measured on a scale (e.g. time, mass, length, pressure, temperature). Don't choose discrete properties (e.g. type of material, type of fruit, etc)
- And now, make sure your "Y" value is easily MEASURABLE.
- Variable Y is the dependent variable that changes AS A RESULT of variable X being changed. Your Variable Y (dependent variable) should be easily measurable. Think of values like this:

Terminal velocity	Range of projectile	Rebound height
Velocity	Temperature	Power
Initial acceleration	Time Period	Time
Current	Resistance	Frequency

- It has to be easily measurable! (e.g. frequency, resistance, rebound height, etc). The internal energy of a gas is impossible, the time period of a fly's wings is impossible too!
- And now, write your research question. "How does X Affect Y. Yes, it is that simple. But just make sure that it MAKES SENSE!
- Make sure you can predict roughly what might happen and try to have a pretty good idea that this will work.

And let's stop there. This is an important step in your success for Physics IB this coming year. I will be here to help you, but waiting until the summer is over to start on this is simply not a good move. The best IB programs have great students like you, that are thinking and growing over the summer. This part is crucial, because spending time in class to do this can lead to a lot of inefficient time. **With your FIVE ideas and statements**, we will help you narrow the focus and create a research question that is not only applicable, but one that will dominate!

If you have any questions, please feel free to contact me! Have a great summer and let's start this coming year strong.



Mr. Lay

Nease High School Physics

This summer assignment created with much help from Sally Weatherly, CEO of Physics Geek