

IB Physics SL – Year 1 (Y1)

Necessary Math Skills for 1st Year Physics (Rising Juniors)

The Summer Math Review document found below describes the mathematics skills you will need to be successful in the 1st year physics program. Physics attempts to understand, explain, justify, and quantify the behavior of objects that you can observe (and some objects that you can't observe). Physics speaks in the language of mathematics: symbols, numbers, units, and angles. As a result, it is necessary for you to be able to do algebra, rudimentary trigonometry, unit conversions, dimensional analysis, simplification of expressions of numbers and units, scientific notation, and graphing.

It must be understood that these skills will be tested for specifically on the Friday of the 2nd week of school. HOWEVER, THESE SKILLS WILL THEN BE *TAKEN FOR GRANTED* FROM THAT POINT FORWARD. These skills are absolutely required. If you are not comfortable doing this mathematics, you have two choices: get comfortable, or fight it for the rest of the year.

If you want to get a good start, then, it helps to start building up your conceptual understanding muscles.

For conceptual understanding, I'd recommend you start with some you-tube videos by Veritasium. All of his videos are good, but his ones on [physics misconceptions](#) are really great (Link: <https://www.youtube.com/playlist?list=PL772556F1EFC4D01C>).

For this class I'd recommend you at least watch these:

Can you perceive acceleration?

When is a bungee jumper's acceleration max?

Three incorrect laws of motion

Khan academy and the effectiveness of science videos (just so you can think about your own learning process and what your preconceived ideas are)

What is gravity?

What forces are acting on you?

Is there gravity in space?

Which hits the ground first?

Misconceptions about falling objects

Best film on Newton's third law, ever.

After that, I'd recommend getting a head start on solving some physics problems. I'd actually just recommend you use the site [The Physics Classroom](#).

You have to be comfortable with:

1. **Solving for a single variable in a first degree equation.**
2. **Scientific Notation (Exponential Notation)**
3. **Measurement and the Metric System including Prefixes and Conversions**
4. **Dimensional Analysis (Factor labeling)**
5. **Right angle triangle Trigonometry functions of Sine, Cosine, and Tangent**

