Overall objective:

In the next few months, physics club will have comprehensive and detailed lectures & discussion sessions on the five areas of knowledge: Mechanics, Electricity and Magnetism, Waves and Optics, Thermal and Fluid physics and contemporary physics.

Throughout the lessons, there will be problem sets and tests to assist the members. Our aim is to prepare you for this year’s physics contests (MAC,AAPT,CAP,OAPT,SIN) and university physics.

Sept 17

Today's club went well. For those of you who missed the date, physics club takes place every Wed and Thurs after school from 3:15 to 4:30. Today, we went over this year's plan and did a quick recap on kinematics and forces. Next Wednesday we will talk about momentum and circular motion.

Sept 23

Hi physics club! Today we talked about:

Energy

Newton's Law of gravitation

Power

Linear Momentum

Circular motion

Kepler's laws

All of our problems up until today is shared on this doc:

<https://docs.google.com/document/d/1R1Y9LAIOWzG2Xwb3AqTcXL_LGzVxEzl0gv8gNcUlc_s/edit?usp=sharing>

Tomorrow afternoon, we will not have a teaching session, but instead a guest from Cambridge will talk to us about his experiences on physics. We will later have a question session.

Next Wednesday, we will continue our discussion on physics and we will touch upon the center of mass, mechanical advantage, relative velocity, elaborate more on momentum(elasticity), generate a more precise version of Kepler's 3rd law(barycenter) and start the concept of rotational motion. Don't miss out!

Sept.24

Hi everyone! Today we had a guest from Cambridge telling us what he does right now (quantum mechanics) and his application process. His email is: jbw33@cam.ac.uk if you guys have any additional questions for him.

Today's integration chart+wkst:

https://docs.google.com/document/d/1JbOUKQTptG1p0DxXcaHWXdxQn45U3hE7XwuEhqqOox4/edit?usp=sharing

This chart is a bit of an overkill, and you shouldn't worry about it too much. Next Wednesday I will talk about this topic a little bit in depth.

\*\*There will be a short 15min quiz next Wednesday just to access whether you are on track. Topics tested: (kinematics,force, basic momentum and circular motion, Kepler's laws) A formula sheet will be given.

Have a good weekend(+Friday)!

September 30

Hi Physics Club! Today we talked about mechanical advantage and relative velocity! In addition, we talked about the ideas behind integration and differentiation to prepare you for the electricity unit later on. We also reviewed Kepler's laws and circular motion with interesting examples! Today's problem set:

https://docs.google.com/document/d/1R1Y9LAIOWzG2Xwb3AqTcXL\_LGzVxEzl0gv8gNcUlc\_s/edit?usp=sharing

Tomorrow, we will wrap up momentum and do centre of mass.

Next Wednesday, Physics club will officially start the rotational dynamics, which is a major part of the engineering physics option in grade 12 IB SL physics. Next Thursday, there will be no physics club since many of us are going on the science olympics trip. However, physics club will resume the following Wed!

Also, our daily log:

https://docs.google.com/document/d/10B4WFFR5k0gG\_n4Kabh5m-jbtI5jfV7MI8qOfJo5pnY/edit?usp=sharing

October 1st

Hi physics club! Today we elaborated on the different types of collisions and generated formulas on specific situations by solving momentum and kinetic energy. We also discussed the centre of mass in 1 dimension and 2 dimensions along with their applications in the barycentre system of Kepler's third law.

Next Wednesday, we will officially start rotational motion, here's a list of topics that we've discussed so far:

Kinematics, Forces, Circular Motion, Momentum, Mechanical advantage, relative velocity, Newton's law of universal gravitation, centre of mass and fundamental calculus formulas/concepts.

In the next few weeks, we will be doing rotational dynamics and sinusoidal motion. Soon, we will start the electricity section.

Today's problem set is in the same doc as before.

Regarding the quiz: Although some people were nervous and others did not show enough work, it was well done over all! For those of you who found the quiz difficult, you can practice by going over our past problem

sets, since a good understanding of mechanics is necessary for the units later on.

Question number 4 (circular motion multiple choice) was a mistake because there were no correct answers in the choices, this means everyone gets 2 free bonus marks and they are included in the statistics.

Quiz statistics:

Mean:13.4

Mean (excluding leaders): 10.7

Median:13.25

Announcement:

No physics club next Thursday!

October 7

Hi Physics Club! Today we talked about

-angular velocity

-angular acceleration

-rotational kinetic energy

-torque and rotational inertia

-rotational inertia for rigid bodies, parallel axis theorem

-direction of torque,omega and alpha

-conservation of angular momentum

-solving static problems

Remember there will be no meeting tomorrow! You can check out our problem set and answers via the same link.

Next Wednesday, we will talk about rolling motion and simple harmonic motion, then we will wrap mechanics up on Thursday. Electricity unit starts the week afterwards.

Exciting News! Since we finished the mechanics unit, we will be delivering a 8-question SIN problem set every week starting next Wednesday! The SIN questions will be mostly mechanics so everyone should have enough background to do them.

So, each Wed, we will be introduced to a problem set and each Thurs we will talk about last week's problem set. This means we will not talk about it next Thurs since we will only deliver our first problem set by next Wed.

October 14

Hi Physics CLUB!

Today we reviewed what we did last session (statics).

We also had 2 interesting examples to apply the knowledge and by picking different pivots, there could be many interesting perspectives in looking at the questions.

In addition, we talked about the behaviour of an object(sphere,cylinder,ring) rolling down an inclined plane and solved for its respective acceleration.

Also, we extended on Hook's law and elaborated on the fact that objects have a plastic region and a breaking point. A more comprehensive version of Hook's law that involved Young's modulus was developed. We also talked about its relationship to the shear modulus and bulk modulus in different situations.

Lastly, we had a SIN problem set ( ATTACHED) , and this problem set will be taken up next Thursday.

Tomorrow, we will do Simple Harmonic Motion and wrap up mechanics. Next Wednesday, we will officially start the electricity section!

October 15

Hi physics club!

Today, we had our last session on mechanics. A review package will be posted in this group next Wednesday and it includes all sorts of mechanics questions. Today, we looked at 3 types of simple harmonic motion and the mathematics inside SHM. There is no problem set today as we will be posting the big review package for mechanics next week.

Since we are officially done the mechanics unit, we will start to talk about electricity next week, following (waves&optics,thermal&fluids, contemporary physics). Hopefully you guys understand the mechanics section as it will provide a foundation for the next topics.

Fortunately, I am still the leader for the electricity&magnetism unit. And my role will be passed on to Thomas Liu​ & Harry Lpy​ as we move on to later units. Good job guys, it's a lot that we did for around the first month of school!

October 21

HI physics Club! Today we started our first session on electricity and we talked about elementary charges, their behaviour, fields and forces that they exert on each other. In addition, we talked about Gauss's law and did some examples on solving for field strength and electric flux.

Today's discussion is very basic and there will be no problemset.

This week's: SIN problem set is attached!

In addition, Mechanics-Review was uploaded previously for those who are looking for additional practices.

Tomorrow we will first discuss last week's SIN problems, and then continue on electric fields/potential.

October 22

Physics Club!

Today we did examples and proofs regarding Gauss's Law, including proving the field strength around a square plate, conducting sphere, non-conducting sphere and a long wire.

In addition, we started discussing the concept of electrical potential energy and electric potential and calculated the electric potential inside and outside a conducting sphere

Next week, we will continue with our discussion in electric potential. Then, we will move on to DC circuits and capacitors.

No, problem set today, do the SIN problems!