SPH3U - Grade 11 Physics (IB)

Welcome!

Mr. Childs

Please have a seat anywhere you chose.

My website: www.mrchilds.com

I am cool with reusable bottled water, not so cool with anything else.

IF cell phones or seating choices aren't working in your favour, I will invite YOU to make the necessary changes to improve (but if you don't improve, I will handle it my way, mu ha ha).

Classroom Concerns (rules if you like)

1. **Safety** is the first priority, especially during investigations and hands on activities

2. **No food** at all please; the tables and tools in this room come into contact with chemicals and other things that would be best not to ingest. (a sealed water bottle that can't break is acceptable during regular classroom activities - no coffee, pop, etc.)

3. I am a fan of **technology** until it becomes a distraction. I will start off open minded about all forms of technology and I will become more restrictive if you demonstrate you are unable to adhere to ***intelligent, respectful use in the classroom***.

4. I will do my best to post all information pertaining to this course on the class calendar that can be found on the *Superior CVI website*. **You will be responsible for checking that calendar** periodically to see when tests and tasks are due. If you are away or ill it is your responsibility to notify me (email) and check the calendar for missed work. I will do my best to post the class notes in a pdf format ahead of the class for your use.

5. Lastly, but not leastly, I want my classroom to be described with the following words:

interesting, fun, safe, inviting, respectful, educational, challenging, insightful, welcoming

What words would you like to add?

Sep 2-1:55 PM

Welcome to Grade 11 Physics

Rule #1 - ANYONE can learn physics.

Rule #2 - Physics is NOT math, but math is used as a tool to describe, compare and study.

Rule #3 - Physics is a WAY OF THINKING and seeing the natural world around you.

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Science in High School
(but there is so much more out there)

Biology	The scientific study of life and of living organisms. Botany, zoology, and ecology are all branches of biology.
Chemistry	The scientific study of the structure, properties, and reactions of the chemical elements and the compounds they form.
Physics	The scientific study of matter, energy, space, and time, and of the relations between them.

Sep 2-1:07 PM

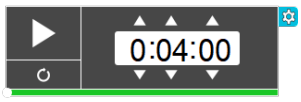
I am going to put a few questions on the board, you may get them all, you may not get any, that's life. We get back up, try some more, until we it starts to improve.

I don't do a lot of cheerleading, but I will go to great lengths for people who are willing to TRY.

Let's get our brains warmed up and meet our peers.

Perform the following WITHOUT a calculator please.

(a) 75 x 24 = (b) $6496 \div 32 =$



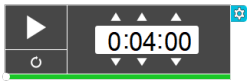
When you are done, introduce yourself to your neighbour (shake their hand, and say *"Hello, my name is ..."* - if you don't manage a good, firm handshake, do it again), and compare your solution strategies (even if you are wrong or lost).

Let's get our brains warmed up and meet our peers.

Perform the following WITHOUT a calculator please.

(a) 4.6 x 1.05 =

(b) $28.6 \div 2.2 =$



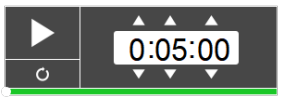
When you are done, introduce yourself to a NEW neighbour (shake their hand, and say *"Hello, my name is ..."* - if you don't manage a good, firm handshake, do it again), and compare your solution strategies (even if you are wrong or lost).

Let's get our brains warmed up and meet our peers.

Perform the following WITHOUT a calculator please.

(a) 36,000,000 x 1,500,000 =

(b) $40.3 \div 1.55 =$



When you are done, introduce yourself to a NEW neighbour (shake their hand, and say *"Hello, my name is ..."* - if you don't manage a good, firm handshake, do it again), and compare your solution strategies (even if you are wrong or lost).

Is anyone brave, and honest enough to admit where they got lost?

There WILL be times when you are lost, confused, or wrong; they are part of the learning process. How you deal with those situations will be what determines your long term success.

Make groups of four, preferably with people you haven't met, or don't know that well. Introduce yourself, shake hands, have a seat and await the next question.

As a group, come up with a consensus (all agree) answer to the following. Be prepared to share your answers with the rest of the class.

What is "Physics"?

For clarity, the grades 11 and 12 Ontario curriculum and the IB physics course have a great deal in common from a topics standpoint.

Fundamental Concepts Covered in This Course (see also page 5)

Fundamental Concepts	Kinematics	Forces	Energy and Society	Waves and Sound	Electricity and Magnetism
Matter		✓	✓	✓	✓
Energy	✓	✓	✓	✓	✓
Systems and Interactions	✓	✓	✓	✓	✓
Structure and Function	✓	✓		✓	✓
Sustainability and Stewardship			✓	✓	✓
Change and Continuity			✓		

Grade 11

Fundamental Concepts Covered in This Course (see also page 5)

Fundamental Concepts	Dynamics	Energy and Momentum	Gravitational, Electric, and Magnetic Fields	The Wave Nature of Light	Revolutions in Modern Physics: Quantum Mechanics and Special Relativity
Matter	✓	✓	✓	✓	✓
Energy	✓	✓	✓	✓	✓
Systems and Interactions	✓	✓	✓		
Structure and Function	✓	✓	✓	✓	
Sustainability and Stewardship		✓		✓	
Change and Continuity		✓			✓

Grade 12

IB

II. Curriculum model overview

Component	
Core	*Additional higher level*
1. Measurements and uncertainties	9. Wave phenomena
2. Mechanics	10. Fields
3. Thermal physics	11. Electromagnetic induction
4. Waves	12. Quantum and nuclear physics
5. Electricity and magnetism	*Option (Choice of one out of four)*
6. Circular motion and gravitation	A. Relativity
7. Atomic, nuclear and particle physics	B. Engineering physics
8. Energy production	C. Imaging
	D. Astrophysics

Homework: If you have a home computer, you need to have Microsoft Excel set up on it.

If you login to www.office365.com using your school email and password.

You can "install" Office on your home computer for "free".

Thinking about relationships instead of just finding answers.

Example:

For the equation, **a = b** , determine the following:

(i) What is the value of "a" when "b" is 20?

(ii) What is the value of "b" when "a" is -12?

(iii) Describe the value of "a" when "b" is a large, positive number.

(iv) Describe the value of "b" when "a" is a very small, negative number.

This is referred to as "directly proportional" - an increase in one value results in an increase in the other (same for decrease).

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Thinking about relationships instead of just finding answers.

Example:

For the equation, $a = \frac{1}{b}$, determine the following:

(i) What is the value of "a" when "b" is -2?

(ii) What is the value of "b" when "a" is 0.1?

(iii) Describe the value of "a" when "b" is a large, positive number.

(iv) Describe the value of "a" when "b" is a very small, negative number.

This is referred to as "inversely proportional" - an increase in one value results in an decrease in the other.

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Thinking about relationships instead of just finding answers.

Example:

For the equation, $a = bc$, determine the following:

(i) What is the value of "a" when "b" is 4 and "c" is 5?

(ii) What is the value of "b" when "a" is 1000 and "c" is 100?

(iii) Describe the value of "a" when both "b" and "c" are large, positive numbers.

(iv) Describe the value of "a" when "b" is large, positive numbers and "c" is a large negative number.

(v) Describe the magnitude of "a" when "b" is constant value and "c" is decreasing toward the value of zero.

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A few math concepts for review...

(1) A line passes through the points A(4,6) and B(-2,-6):

(i) what is the slope (rate of change) of the line?

(ii) what is the y-intercept of the line?

(iii) what is the equation of the line?

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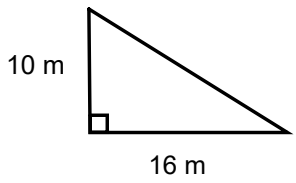
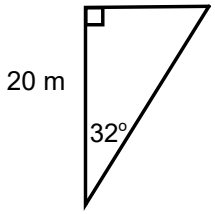
2. For the following Triangles, use SOHCAHTOA and Pythogorean Theorem to find all of the missing sides angles:





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