Welcome to A Level Physics!

Pre-induction Activity

Hello and welcome to the physics department! In order to make sure that we can make lots of progress quickly in September we need you to complete this activity.

Please complete on file paper and bring to your first Physics lesson in September.

Your first things to do:

* Find the Alevelphysicsonline (http://www.alevelphysicsonline.com/) website and bookmark it to your browser. You will be using this website a lot during your time here.

Task One

Watch the following videos using the web addresses underneath.

* https://www.youtube.com/watch?v=iwWfoet4-zc&index=1&list=PLlDtVvefFYT8OpWzDcHEZTCIQaEnQ3QoL

* https://www.youtube.com/watch?v=jLRoseFxm30&list=PLlDtVvefFYT8OpWzDcHEZTCIQaEnQ3QoL&index=2

* https://www.youtube.com/watch?v=Sb8cxC4lOy8&index=3&list=PLlDtVvefFYT8OpWzDcHEZTCIQaEnQ3QoL

* https://www.youtube.com/watch?v=O4tA6Nt_iig&index=4&list=PLlDtVvefFYT8OpWzDcHEZTCIQaEnQ3QoL

* https://www.youtube.com/watch?v=ceneATH5EZ8

Task Two

Complete the following questions over the page and bring them to your first physics lesson in September. **Show your working for any calculations**.

A. Large and small numbers and standard form:

1. Write 100 000 as a power of 10

2. Write 0.001 as a power of 10

3. Write 2530 in standard form

4. Write 0.0091 in standard form

5. Write 8.31×10^6 as a normal number

6. Write 6.002×10^{-2} as a normal number

B. Metric prefixes

1. Convert 326.9 GW into W. Express in standard form.

2. Convert 54 600 mm into m. Express in standard form.

3. Convert 1002 mV into V. Express in standard form.

4. Convert 9212 km into m. Express in standard form

5. Write 2.3×10^2 μm in m. Express in standard form

C. Using your calculator (express your answer in standard form to three significant figures)

1. Calculate 423π
2. Calculate the number of seconds in a week.
3. The charge of an electron is 1.6×10^{-19} C. Calculate the total charge of one mole of electrons. (1 mole of electrons contains 6.02×10^{23} electrons)
4. Calculate $(1 \times 10^{-3})^2 \times 3.14 / 4$
5. Calculate $5.11 \times 10^5 \times [1.6 \times 10^{-19} / (3.0 \times 10^8)^2]$

D. Rearranging equations

1. $E = \frac{1}{2}mv^2$ (make v the subject)
2. $A = \pi r^2$ (make r the subject)
3. $F = ma$ (make a the subject)
4. $E = mc^2$ (make m the subject)
5. $v^2 = u^2 + 2as$ (make a the subject)
6. $F = GMm/r^2$ (make M the subject)

E. Base and Derived Units

1. List the six base **units** that you will be using in A Level physics.

2. Charge is calculated as *charge = current x time*. Determine the **base units** for charge.

3. Kinetic energy is calculated as *kinetic energy = ½ x mass x speed^2*. Determine the **base units** of kinetic energy.

4. Pressure is calculated as *pressure = force/cross sectional area*. Determine the **base units** for pressure.

Section A	/6
Section B	/5
Section C	/5
Section D	/6
Section E	/8
Total	/30

Equipment list

Pen, pencil, ruler, scientific calculator, A4 lever arch file, highlighter

Recommended reading

The physics department will provide printed booklets and question packs for all students which cover the entire course to A* standard, however for additional reference please see below.
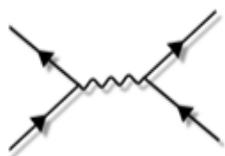
A Level Phusics Online

(Note: For full access student accounts and passwords will be given out upon arrival at the college)

alevelphysicsonline.com. This website has all your course in video format with helpful specification checklists and links to questions on Isaac physics.

isaac Physics. You work it out.

(Note: For full access student accounts and passwords will be given out upon arrival at the

isaacphysics.org Packed with questions, especially for students wishing to achieve a B/A/A*. Considering continuing studying physics after A Level? You should definitely be using this.

PhET INTERACTIVE SIMULATIONS

https://phet.colorado.edu/ has loads of useful simulations if you're struggling to get your head around certain topics.