Sixth Form @MagnaAcademy

Magna Academy Poole

Summer 2020 Preparation
A-Level Physics

Why study Physics at Magna?

Physics gives us an understanding of how things work from first principles, and some say that Physics underpins all other sciences. At Magna we run the AQA A-level Physics course. This is a two year linear course during which you will learn about the tiniest particles the matter around us is made out of, the mechanics of everyday objects and many other areas of physics applicable to our daily lives. Through the required practicals and other class activities you will also acquire the practical skills relating to materials, electricity, waves and more.

The purpose of your task

Students often describe the leap from GCSE to A-level as a big one. Consolidating knowledge from GCSE that A-level will build upon will help you have a strong and confident start on your A-level journey. The tasks will give you a head start on the topics of momentum (part of the mechanics and materials content) and refraction (part of the waves content).

Your task

1. Write a coherent method (including equipment and detailed steps) to show that in the event of a collision in an isolated system momentum is conserved.
2. Calculate the force required to accelerate a pool ball with the mass of 160g from rest to 0.5 m s-1 in 0.2 ms (milliseconds).
3. Research how optical fibres work. Write an overview, including the physics behind how the light travels in optical fibres and what materials are used and why.

Recommended resources

https://www.britannica.com/science/conservation-of-momentum
https://www.youtube.com/watch?v=4PdRLjbqsdI
https://www.youtube.com/watch?v=E13h1E_Pc00
https://www.britannica.com/science/total-internal-reflection
http://hyperphysics.phy-astr.gsu.edu/hbase/geoopt/refr.html
https://searchnetworking.techtarget.com/definition/fiber-optics-optical-fiber
https://www.ciscopress.com/articles/article.asp?p=170740&seqNum=3

Deadline for Task: First lesson in the week commencing 7 September 2020

Recommended reading and activities list

If you have completed GCSE Trilogy (combined), familiarise yourself with the additional separate physics topics:

https://www.aqa.org.uk/subjects/science/gcse/physics-8463

http://www.passmyexams.co.uk/GCSE/physics/index.html

A-level transition resources:

https://www.amazon.co.uk/gp/product/B00VE2NII4/ref=dbs_a_def_rwt_bibl_vppi_i5

https://www.amazon.co.uk/Prepare-Challenge-Level-Physics-Bridging-ebook/dp/B0851MGFWZ/ref=sr_1_1?dchild=1&keywords=Prepare+for+the+Challenge+of+A+Level+Physics%3A+Study+Guide+to+Bridging+the+Gap+Between+GCSE+and+A+Level+Physics&qid=1589202947&s=digital-text&sr=1-1

https://drive.google.com/file/d/1vCFDxdTQ8cnWmJ66g4K23BNXPUlUGYRH/view

Required stationery and equipment

Pens (black and green), scientific calculator, pencils, ruler, protractor, ring binder or folder.

Optional: planner, highlighters, other coloured pens for diagrams and annotations.

Provided: exercise book and lab book.

Essential resources: Textbooks

You will be provided with textbooks and lesson resources.

Recommended: access to the internet through a computer or laptop.

Things to consider

You will suddenly feel like you have a lot of free time. You will need to plan your time well, have high levels of self-motivation and self-discipline. Any free lessons should be spent on practice and revision for your A-level subjects. This is a 2 year linear course which means you will be examined on both year 12 and 13 content in your final exams. To be successful in physics A-level you need to hit the ground running and maintain effort throughout year 12 and 13. Revisiting prior topics and retrieval practice will really help to ensure you have all that knowledge to draw from at the end of year 13.

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