



PHYSICS: BRIDGING ACTIVITY

Development Tasks

These tasks are to be completed so that you are ready for the challenge of A Level Physics. These tasks will not be needed to be handed in, however at the start of the course they will be checked to see what you have done. Therefore, you will need a folder/organiser for your work.

There are several options below to choose from

1. Some level transition maths skills, complete questions then mark. (answers at end) http://fdslive.oup.com/www.oup.com/oxed/secondary/science/Science_A_Level_Transition_Pack_Physics.pdf
2. Search on amazon.co.uk “New Head Start to A-level Physics” this is a free Kindle book to practise maths skills.
3. Look at the free courses here and select at least one that interests you and complete. <https://www.open.edu/openlearn/free-courses/full-catalogue>

Materials Research Task – Hand in at the start of the course.

Introduction This piece of work is intended to introduce the skills of researching and referencing information from books, journals and the internet. The topic links the study of materials and their properties with practical applications of the material.

Aim To produce a written (typed) report illustrated with diagrams of approximately three A4 pages(1500 to 2000 words) detailing how:

- the internal structure of a material gives rise to a specific (useful) property of the material, and other uses for the material
- this property then makes the material suitable for its particular application.
- Other objects that can be made from this material and why.
- Use scientific key words – with definitions explaining ideas and concepts
- Key words that could be included Deformation, elastic, plastic, Hooke’s law, stress, strain, young’s modulus, tensile, ductile, elastic limit,

Choose from at least one of the topics below:

- Carbon fibre in fishing poles
- Kevlar in bullet proof vests
- Reinforced concrete as a composite material for large structures
- Bone as a composite material
- Wood in World-War II planes (e.g. de Havilland Mosquito)
- Lycra in sportswear
- Lightweight alloys in aircraft
- ABS plastic in hard hats.

Structure of the task Follow the structure below on how to present your work.

- **Introduction** – describe and explain why materials are important in the use of materials, you could include history of materials, when the wrong materials were used, how technology has changed the material we use today,
- **Main section** – this will be several paragraphs long including diagrams/pictures
 - What material you have chosen, how it was made/developed/discovered etc.
 - How it is useful for the specific object – advantages.
 - Are there any weaknesses/disadvantages/environmental problems?
 - Any other interesting features or how it links to other materials or objects
 - Future applications, designs or further applications
 - Comparisons to other materials used for the same sort of objects
- **Conclusion** what are your overall conclusions about the material and its uses, give your own opinion and suggestions here.
- **References** – record references of where you found your research you should have at least 5 or 6 different references

You should be ready to present your work to the class and hand in a copy of your research at the start of the course. We look forward to reading your essays!