



## RIVERS TRANSITION CHALLENGE 2024

### SUBJECT: Physics

Course details: Pearson Edexcel

Qualification: A Level

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Minimum entry requirements are:

- Grade 6 in Physics or 6/6 in Combined Science
- Grade 4 in English
- Grade 6 in Mathematics

Teachers to contact:

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A-Level physics is a demanding course that requires a great deal of mathematical competency, it is therefore important to approach it fully prepared. The aim of these tasks is to re-enforce and consolidate the key knowledge and understanding from GCSE's that forms a basis to build upon at A-level.

## Your Tasks

### 1. SI Base Units, Precision, Accuracy, Reliable, Reproducible and Resolution

Research what the SI base units are (*hint: there are seven of them*) and what SI stands for.

Research, and then explain the difference between precision and accuracy.

Define the terms: Reliable, Reproducible and Resolution

**Time guide: approx. 1 hour**

**How this links to the specification:**

Topic 1: Working as a Physicist.

#### **SUPPORT:**

<https://www.physicsandmathstutor.com/physics-revision/a-level-edexcel/working-as-physicist>

<https://www.alevelphysicsonline.com/quantities-and-units>

There are some images on the internet which explain the difference between precision and accuracy well. You may use these.

### 2. Prefixes and Conversions, Equations and Calculations

Research and produce flashcards or another revision resource for the standard Physics prefixes

Fully complete the worksheet: Prefixes and Conversions, Equations and Calculations

**Time guide: approx. 2 hours**

**How this links to the specification:**

Mathematical Skills - Essential throughout course

**SUPPORT:** Follow the instructions on the worksheet. Use the Edexcel formula booklet for assistance with the equations. Show your workings clearly when doing the calculations and follow the examples on the worksheets.

Formula Booklet:

<https://qualifications.pearson.com/content/dam/pdf/A%20Level/Physics/2015/Specification%20and%20sample%20assessments/a-level-physics-data-formulae-relationships.pdf>

### 3. GCSE to A Level Transition Test

Complete the transition test. We will be reviewing this in class when you start in September.

It is important we accurately assess your starting point on this course; therefore, refrain from using resources to help you.

**Time guide: 2 hours**

**How this links to the specification:**

Exam Practice, Working Scientifically, Practical skills and Mathematical Skills.

### 4. Research Skills and Wider Reading

To get the best grades in A-level physics, you will have to develop your independent research and note-taking skills.

Choose one of the below links and make 1 A4 page of notes on the topics covered using the Cornell note-taking system.

How to do Cornell notes: <http://coe.jmu.edu/learningtoolbox/cornellnotes.html>

Interesting Physics articles:

- <http://home.cern/about>  
CERN encompasses the Large Hadron Collider (LHC) and is the largest collaborative science experiment ever undertaken.
- [http://joshworth.com/dev/pixelspace/pixelspace\\_solarsystem.html#](http://joshworth.com/dev/pixelspace/pixelspace_solarsystem.html#)  
The solar system is massive, and its scale is hard to comprehend.
- <https://phet.colorado.edu/en/simulations/category/html> PhET  
You can complete some simple experiments online. Open up the resistance of a wire simulation. Conduct a simple experiment and write your 1-page summary on this.
- <http://climate.nasa.gov/>  
NASA's Jet Propulsion Laboratory has lots of information on Climate Change and Engineering Solutions to combat it.
- <http://www.livescience.com/46558-laws-of-motion.html>  
Newton's Laws of Motion are fundamental laws for all of the objects that we can see around us.

**Time guide: Approx. 2 hours**

**How this links to the specification:**

Working Scientifically.

## Key Information

### How do I hand in my work?

Your work for all four tasks must be handed in during our first lesson in September.

### How am I marked?

You are graded using A to E grades using standard grade boundaries. The tasks may be difficult because there is a big jump from GCSE to Sixth Form study.

We would expect new students to any course to be sitting at the bottom of the grading structure, but there are certain activities that you will be more familiar with and will do better with.

### What if I get stuck?

Email us! Our emails are on the front sheet, we know some things are tricky and are here to help!

### What if I miss a deadline?

You need to let us know in advance so we can support you. If you miss the deadline, you are risking your course offer.

## Wider Reading/Activities to keep you busy in the summer...

### Books:

- Edexcel A-Level Physics Student Book 1
- The Feynman Lectures on Physics – Richard Feynman
- The Strange Case of Mrs. Hudson's Cat – Colin Bruce
- A Brief History of Time – Stephen Hawking
- The New Quantum Universe - Hey and Walters

### Magazines/Journals:

- New Scientist
- Physics Today
- Physics World

### Websites:

- Various YouTube channels: Veritasium, Physics Girl, Minute Physics, 60 Symbols.
  - <https://phet.colorado.edu/en/simulations/category/html> PhET
  - <https://www.alevelphysicsonline.com>
  - [Physics Revision - PMT \(physicsandmathstutor.com\)](https://www.physicsandmathstutor.com)
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