



# Sir John Cass Sixth Form Transition Guide

*We will achieve excellence and inspire generations the Cass Way*

**WE LEARN TOGETHER**    **WE PRAY TOGETHER**    **WE ACHIEVE TOGETHER**

“Do unto others as you would have them do unto you.”

Luke 6:31



Dear Year 11 student

We are delighted that you are intending on studying at Sir John Cass Sixth Form.

This booklet is designed to make the transition from Year 11 to 12 easier. We hope it will be very useful to you and help you prepare for life in the Sixth Form.

You will have received a separate letter informing you about the arrangements for enrolment. We look forward to seeing you then.

In the meantime, if you have any questions at all, please do not hesitate to call or email us, or to drop in to the Sixth Form reception.



**Ms Rowley-Conwy**

Assistant Headteacher - Year 12

**Mrs Hussain**

Deputy Headteacher

**Ms Miller**

Acting Assistant Headteacher - Year 13

# Contents

---

## Key information about life in Sir John Cass Sixth Form

Cass Futures.....	6
Work Experience .....	7
Key dates .....	8
Your timetable .....	8
Preparing for Year 12: Checklist .....	9

## Transition Tasks

A Level Art.....	11
A-Level Biology .....	13
A Level Business.....	16
A Level Chemistry .....	19
A Level Computing.....	23
A Level Economics .....	26
A Level English Literature .....	29
A Level English Literature and Language .....	31
A Level French .....	33
A Level Geography.....	37
A Level History .....	39
A Level Law .....	42
A Level Mathematics and Further Mathematics .....	45
A Level Further Mathematics .....	54
A Level Media Studies.....	56
A Level Religious Studies .....	58
A Level Sociology .....	60
A Level Spanish .....	65
A-Level Physics.....	68
A Level Politics .....	71
A Level Psychology.....	74
BTEC Health and Social Care.....	77
BTEC Business .....	80
Certificate in Financial Studies (Level 3).....	82
BTEC Computing .....	84



# Cass Futures

---



## Imperial College London

At Sir John Cass we pride ourselves on ensuring that every student has access to high quality enrichment. In the Academic Year 2017-18, we have hosted speakers from a wide range of universities, including Oxford and Cambridge University, Kings College London, UCL, Queen Mary's, Southampton University, Goldsmiths University and Imperial.

We have a weekly enrichment session that all Year 12 students take part in. This is a programme of academic and careers lectures, workshops led by inspiring professionals, trips to universities and places of interest, and independent enrichment, where students are able to visit and organise their own enrichment programme.

There are also a large number of weekly societies that run in addition to this, including:

- Medicine Society, where students have the opportunity to meet
- Debate Club
- Equalities group
- Fitness Club

As well as this, we run specific programmes for students who are interested in applying to Oxbridge, Medicine and Russell Group Universities. We also have a popular 'Career Ready' programme, where we work together with Barclays Bank to provide skills workshops, practice interviews, and visits to places of employment.



Our students took part in judging young fiction at the world famous Hay on Wye Literary festival

# Work Experience

---

All students in Year 12 will be able to take part in at least one work experience placement; some students often access more than one. We organise placements at the UK Civil Service, in NHS hospitals and surgeries where students shadow doctors, in large banks and firms in the City such as Lloyds TSB and Barclays, and in a wide range of businesses and organisations across London.

We also host regular workplace visits, and networking events which take place in school and are open to all students. We have hosted visits from a wide range of professionals, including NHS surgeons, CEOs of large organisations, lawyers and entrepreneurs.

Sixth Form students attend a variety of workshops from Careers professionals in workplaces- this is one at Lloyds Bank in Canary Wharf



Students having a small group discussion with a professional as part of our 'Speed Networking' events

# Key dates

---

These are some key dates for the Autumn Term. Further dates will be given to students at enrolment.

**Wednesday 5<sup>th</sup> September:** Year 12 Induction begins at 8.40am

**Thursday 6<sup>th</sup> September:** Year 12 lessons begin, starting at 8.40am

**Tuesday 11<sup>th</sup> September:** 'Cass Futures' programme begins

More detailed dates will be issued at the start of term.

All term dates are on the school website.

# Your timetable

---

In Year 12, you will have a mixture of taught lessons and study periods. This will be different to Year 11, where you will have had

For each A Level lesson, you will have 10 hour long lessons over a two week period.

For each BTEC Level 3 course, you will have 30 hour long lessons over a two week periods.

Every Tuesday afternoon, students take part in the Cass Futures programme from 2pm-3.30pm

Study periods will be spent on site.

# Preparing for Year 12: Checklist

---



- **Dress Code-** make sure you have suitable clothing that meets the requirements for the dress code
- **Bag and equipment-** you will need a schoolbag that can fit A4 papers in it. Make sure you have a pencil case, and appropriate equipment, for example, if you are taking Mathematics, you will need a scientific calculator
- **Books** – textbooks for all your subjects will be provided. There is no need to buy these in advance
- **Email** –it is important that you have an appropriate email address. Make sure you have an email address that is [yourname@\\*\\*\\*.com](mailto:yourname@***.com)

# Transition Materials

---

Over the next pages, our teachers have prepared some transition activities.

This is to help you prepare for life in the Sixth Form.

The work will be collected in by your subject teachers over the first week of term. Please ensure you have your work with you for your first lesson.

# A Level Art

---

This course is designed to build upon the skills, knowledge and understanding acquired by students taking GCSE Art and Design. It is not a pre-requisite to have undertaken GCSE to at least level 5, however we would expect candidates to have developed sufficient understanding and skill for this programme of study to be enjoyable and rewarding in its own right. (If you have not completed GCSE to Level 5+ please see me with your work)

## **What will I study?**

The Art and Design Art course at A Level provides students with the opportunity to learn and develop a range of skills in relation to drawing, painting, sculpture and mixed media. The Art programme provides students with the opportunity to express them-selves imaginatively and creatively using a range of media. It is a demanding course but very enjoyable and rewarding. In timetabled sessions activities include practical work, research, presentations and critiques. Work may be undertaken independently and in small groups. Homework is usually set once a week, and may include research and preparation for classes as well as starting and continuing practical work.

Students produce a body of work covering all units; following the art process from initial research and starting points, through development and experimentation towards a final response in the form of a finished piece.

Students should explore the use of drawing for different purposes, using a variety of methods and media on a variety of scales. Students may use sketchbooks/workbooks/journals to underpin their work where appropriate.

Alongside their development work, students research a range of relevant artists to gain inspiration for their own creative ideas and themes. Students' studio-based practice is contextualised with visits to exhibitions.

Students should explore relevant images, artefacts and resources relating to a range of art, craft and design, from the past and from recent times, including European and non-European examples. This should be integral to the investigating and making processes.

Assessment is by coursework and a controlled test. We follow the Edexcel A-level Art and Design specification. You may choose to study for one year to AS-level (50% of the full A-level) or for two years to A2-level (100% of the full A-level).

### **Year 1 (AS-level):**

- Unit 1: Coursework (60% of AS-level; 30% of full A-level) Skills building in experimental approaches to drawing, painting and mixed media tasks followed by an internally-set art project.
- Unit 2: Externally Set Assignment (40% of AS-level; 20% of full A-level) Externally-set project with theme provided by Edexcel. Timed final outcome under exam conditions.

### **Second year (A2)**

- Unit 3: Coursework – Personal Study (60% of AS-level; 30% of full A level) You select a topic/theme to investigate. Extensive research, together with a written essay of between 1000 and 3000 words is required, plus a significant body of practical art work as a creative response to the theme.
- Unit 4: Externally Set Assignment (40% of AS level; 20% of full A level) Externally-set project with

theme provided by Edexcel. Timed final outcome under exam conditions.

#### A Level Art - Useful Tasks;

1. Join Pinterest, search for A level Art, find projects you like and have a go at emulating (doing your own version) of some of the work.
2. Search the Tate galleries websites for artworks that fit a theme. Choose either The body, Self-Expression, Vanitas painting or Symbolism. Collect images of the artwork, copy 3 and create your own versions in paint or photography
3. Start a personal sketchbook, drawing yourself, feet, toes, hands, eyes, portraits and writing about yourself.
4. Begin taking photographs of textures, close-ups of beautiful patterns in wood, flowers, walls, pavements etc.
5. Familiarise yourself with the following Galleries and institutions; undertake searches based on themes you have discovered in the previous tasks. Create moodboards by Artists you have discovered (New to you!)

Tate Britain. <http://www.tate.org.uk/visit/tate-britain>

Tate Modern. <http://www.tate.org.uk/visit/tate-modern>

The National Gallery <https://www.nationalgallery.org.uk/>

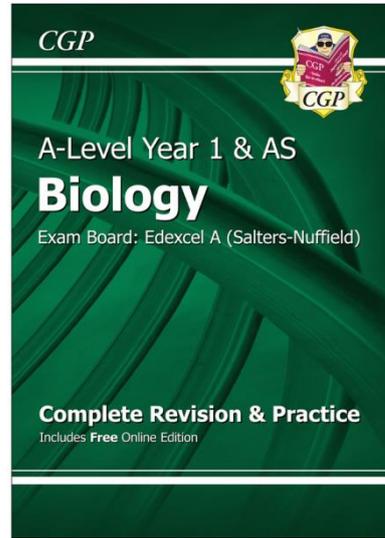
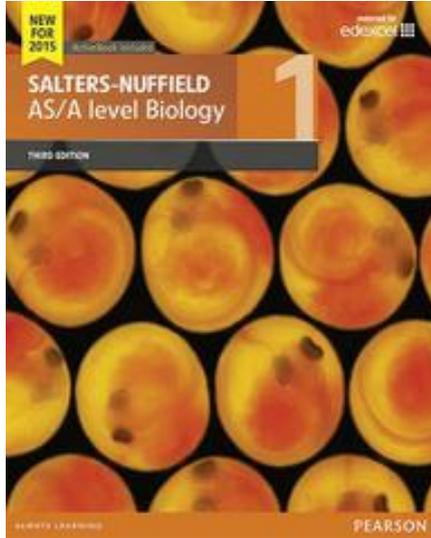
The National Portrait Gallery

The Saatchi Gallery <https://www.saatchigallery.com/>

# A-Level Biology

---

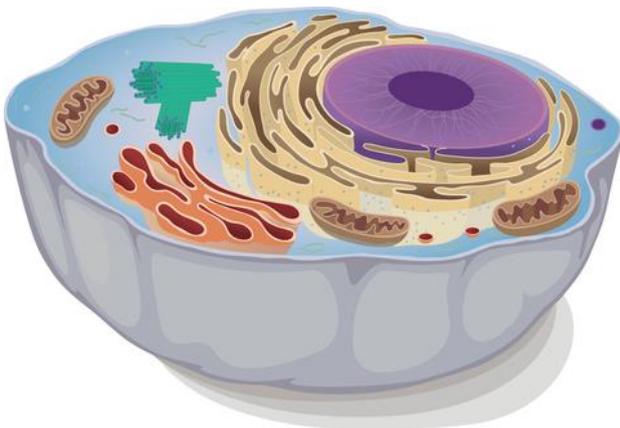
A guide to help you get ready for A-level Biology, including everything from topic guides to online learning resources.



At A Level, we study Edexcel A.

The course includes three exam papers (each weighing 33.3%) on the following topics:

- **Topic 1: Lifestyle, Health and Risk**
- **Topic 2: Genes and Health**
- **Topic 3: Voice of the Genome**
- **Topic 4: Biodiversity and Natural Resources**
- **Topic 5: On the Wild Side**
- **Topic 6: Immunity, Infection and Forensics.**
- **Topic 7: Run for your Life**
- **Topic 8: Grey Matter.**



## Pre-Knowledge Topics

A level Biology will use your knowledge from GCSE and build on this to help you understand new and more demanding ideas. Complete the following tasks to make sure your knowledge is up to date and you are ready to start studying:

### Cells

The cell is a unifying concept in biology, you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure. In complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles>

<http://www.bbc.co.uk/education/guides/zvjycdm/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=gcTuQpuJyD8>

<https://www.youtube.com/watch?v=L0k-enzoeOM>

<https://www.youtube.com/watch?v=qCLmR9-YY7o>

### **Task:**

**Produce a one page revision guide to share with your class in September summarising one of the following topics: Cells and Cell Ultrastructure, Prokaryotes and Eukaryotes, or Mitosis and Meiosis.**

Whichever topic you choose, your revision guide should include:

Key words and definitions

Clearly labelled diagrams

Short explanations of key ideas or processes.

### Biological Molecules

Biological molecules are often polymers and are based on a small number of chemical elements. In living organisms carbohydrates, proteins, lipids, inorganic ions and water all have important roles and functions related to their properties. DNA determines the structure of proteins, including enzymes. Enzymes catalyse the reactions that determine structures and functions from cellular to whole-organism level. Enzymes are proteins with a mechanism of action and other properties determined by their tertiary structure. ATP provides the immediate source of energy for biological processes.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/biological-molecules-and-enzymes>

<http://www.bbc.co.uk/education/guides/zb739j6/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=H8WJ2KENIKO>

<http://ed.ted.com/lessons/activation-energy-kickstarting-chemical-reactions-vance-kite>

### **Task:**

**Krabbe disease occurs when a person doesn't have a certain enzyme in their body. The disease effects the nervous system. Write a letter to a GP or a sufferer to explain what an enzyme is.**

Your poster should:

Describe the structure of an enzyme

Explain what enzymes do inside the body

## **DNA and the Genetic Code**

In living organisms nucleic acids (DNA and RNA) have important roles and functions related to their properties. The sequence of bases in the DNA molecule determines the structure of proteins, including enzymes.

The double helix and its four bases store the information that is passed from generation to generation. The sequence of the base pairs adenine, thymine, cytosine and guanine tell ribosomes in the cytoplasm how to construct amino acids into polypeptides and produce every characteristic we see. DNA can mutate leading to diseases including cancer and sometimes anomalies in the genetic code are passed from parents to babies in disease such as cystic fibrosis, or can be developed in unborn foetuses such as Down's Syndrome.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.bbc.co.uk/education/guides/z36mmp3/revision>

<http://www.s-cool.co.uk/a-level/biology/dna-and-genetic-code>

And take a look at these videos:

<http://ed.ted.com/lessons/the-twisting-tale-of-dna-judith-hauck>

<http://ed.ted.com/lessons/where-do-genes-come-from-carl-zimmer>

### **Task:**

**Produce a wall display to put up in your classroom in September. You might make a poster or do this using PowerPoint or similar. Your display should use images, keywords and simple explanations to:**

Define gene, chromosome, DNA and base pair

Describe the structure and function of DNA and RNA

Explain how DNA is copied in the body

Outline some of the problems that occur with DNA replication and what the consequences of this might be.

## **Evolution**

Transfer of genetic information from one generation to the next can ensure continuity of species or lead to variation within a species and possible formation of new species. Reproductive isolation can lead to accumulation of different genetic information in populations potentially leading to formation of new species (speciation). Sequencing projects have read the genomes of organisms ranging from microbes and plants to humans. This allows the sequences of the proteins that derive from the genetic code to be predicted. Gene technologies allow study and alteration of gene function in order to better understand organism function and to design new industrial and medical processes.

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.bbc.co.uk/education/guides/z237hyc/revision/4>

<http://www.s-cool.co.uk/a-level/biology/evolution>

And take a look at these videos:

<http://ed.ted.com/lessons/how-to-sequence-the-human-genome-mark-j-kiel>

<http://ed.ted.com/lessons/the-race-to-sequence-the-human-genome-tien-nguyen>

### **Task:**

**Produce a one page revision guide for an AS Biology student that recaps the key words and concepts in this topic. Your revision guide should:**

Describe speciation

Explain what a genome is

Give examples of how this information has already been used to develop new treatments and technologies.

# A Level Business

---

## **At A Level, we study AQA**

The AQA Business Studies specification requires students to develop their ability to acquire a range of important and transferable skills including data skills, presenting arguments, making judgments and conducting research.

Students will develop the knowledge and skills needed to analyse data, think critically about issues and make informed decisions – all skills that are needed for further study and employment. You will study business in a variety of contexts (e.g. large/small. UK focused/global, service/manufacturing) and consider:-

- The importance of the context of business in relation to decision making
- The interrelated nature of business activities and how they affect competitiveness
- The competitive environment and the markets in which businesses operate
- The influences on functional decisions and plans including ethical and environmental issues
- The factors that might determine whether a decision is successful e.g. the quality of data and the degree of uncertainty
- How technology is changing the way decisions are made and how businesses operate and compete
- The impact on stakeholders of functional decisions and their response to such decisions
- Use of non-quantitative and quantitative data in decision making (including interpretation of index numbers and calculations such as ratios and percentages)

## 2.3 A-level

### Assessments

Paper 1: Business 1	+	Paper 2: Business 2	+	Paper 3: Business 3
<b>What's assessed</b> All content above		<b>What's assessed</b> All content above		<b>What's assessed</b> All content above
<b>Assessed</b> <ul style="list-style-type: none"> <li>written exam: 2 hours</li> <li>100 marks in total</li> <li>33.3% of A-level</li> </ul>		<b>Assessed</b> <ul style="list-style-type: none"> <li>written exam: 2 hours</li> <li>100 marks in total</li> <li>33.3% of A-level</li> </ul>		<b>Assessed</b> <ul style="list-style-type: none"> <li>written exam: 2 hours</li> <li>100 marks in total</li> <li>33.3% of A-level</li> </ul>
<b>Questions</b> Three compulsory sections: <ul style="list-style-type: none"> <li>Section A has 15 multiple choice questions (MCQs) worth 15 marks.</li> <li>Section B has short answer questions worth 35 marks.</li> <li>Sections C and D have two essay questions (choice of one from two and one from two) worth 25 marks each.</li> </ul>		<b>Questions</b> Three data response compulsory questions worth approximately 33 marks each and made up of three or four part questions.		<b>Questions</b> One compulsory case study followed by approximately six questions.

Before the qualification can be awarded, students must undertake **all** the assessments.

Paper 1: Business 1	+	Paper 2: Business 2
<b>What's assessed</b> 1 – 6 above		<b>What's assessed</b> 1 – 6 above
<b>Assessed</b> <ul style="list-style-type: none"> <li>written exam: 1 hour 30 minutes</li> <li>80 marks in total</li> <li>50% of AS</li> </ul>		<b>Assessed</b> <ul style="list-style-type: none"> <li>written exam: 1 hour 30 minutes</li> <li>80 marks in total</li> <li>50% of AS</li> </ul>
<b>Questions</b> Three compulsory sections: <ul style="list-style-type: none"> <li>Section A has 10 multiple choice questions (MCQs) worth 10 marks</li> <li>Section B has short answer questions worth approximately 20 marks</li> <li>Section C has two data response stimuli with questions worth approximately 25 marks.</li> </ul>		<b>Questions</b> One compulsory case study consisting of approximately seven questions.

Before the qualification can be awarded, students must undertake **both** the assessments.

**Transition Activities:**

1. Research and categorise the widest variety of businesses that you can think of. You can decide ways of categorising them. Produce your work in a spider diagram format.
2. Produce a one page work document on “The role and value of digital marketing to organisations in 2018”. Write a good conclusion for this too (aim for a conclusion that equates to one paragraph)

# A Level Chemistry

## OCR A: Unit Overview & Course Structure

The course content is divided into six teaching modules and each module is further divided into key topics.

### A Level summary

Below is a breakdown of the 4 modules taught during Year 1 and the 2 modules taught in Year 2 (module one is integrated over the two years of the A Level course).

CONTENT OVERVIEW	ASSESSMENT METHOD & WEIGHTING
<ul style="list-style-type: none"> <li><b>Module 1</b> – Development of practical skills in chemistry (<b>Year 1&amp;2</b>)</li> <li><b>Module 2</b> – Foundations in chemistry (<b>Year 1</b>)</li> </ul>	<p><b><i>Periodic table, elements and physical chemistry (01)</i></b>            100 marks            2 hours 15 minutes            WRITTEN PAPER</p> <p><b>A level = 37%</b></p>
<ul style="list-style-type: none"> <li><b>Module 3</b> – Periodic table and energy (<b>Year 1</b>)</li> <li><b>Module 4</b> – Core organic chemistry (<b>Year 1</b>)</li> <li><b>Module 5</b> – Physical chemistry and transition elements (<b>Year 2</b>)</li> </ul>	<p><b><i>Synthesis and analytical techniques (02)</i></b>            100 marks            2 hours 15 minutes            WRITTEN PAPER</p> <p><b>A level = 37%</b></p>
<ul style="list-style-type: none"> <li><b>Module 6</b> – Organic chemistry and analysis (<b>Year 2</b>)</li> </ul>	<p><b><i>Unified chemistry (03)</i></b>            70 marks            1 hour 30 minutes            WRITTEN PAPER</p> <p><b>A level = 26%</b></p>
<p>Component <b>01</b> assesses content from modules 1, 2, 3 and 5.</p> <p>Component <b>02</b> assesses content from modules 1, 2, 4 and 6.</p> <p>Component <b>03</b> assesses content from all modules (1 to 6).</p>	<p><b><i>Practical endorsement in chemistry (04)</i></b>            (non-exam assessment)</p>

## A Level summary

Below is a breakdown of the modules by key topics.

MODULE	KEY TOPICS
<b>Module 1 – Development of practical skills in Chemistry</b>	<ul style="list-style-type: none"><li>• Practical skills assessed in a written examination</li><li>• Practical skills assessed in the practical endorsement</li></ul>
<b>Module 2 – Foundations in chemistry</b>	<ul style="list-style-type: none"><li>• Atoms, compounds, molecules and equations</li><li>• Amount of substance</li><li>• Acid–base and redox reactions</li><li>• Electrons, bonding and structure</li></ul>
<b>Module 3 – Periodic table and energy</b>	<ul style="list-style-type: none"><li>• The periodic table and periodicity</li><li>• Group 2 and the halogens</li><li>• Qualitative analysis</li><li>• Enthalpy changes</li><li>• Reaction rates and equilibrium (qualitative)</li></ul>
<b>Module 4 – Core organic chemistry</b>	<ul style="list-style-type: none"><li>• Basic concepts</li><li>• Hydrocarbons</li><li>• Alcohols and haloalkanes</li><li>• Organic synthesis</li><li>• Analytical techniques (IR and MS)</li></ul>
<b>Module 5 – Physical chemistry and transition elements -YEAR 2</b>	<ul style="list-style-type: none"><li>• Reaction rates and equilibrium (quantitative)</li><li>• pH and buffers</li><li>• Enthalpy, entropy and free energy</li><li>• Redox and electrode potentials</li><li>• Transition elements</li></ul>
<b>Module 6 – Organic chemistry and analysis -YEAR 2</b>	<ul style="list-style-type: none"><li>• Aromatic compounds</li><li>• Carbonyl compounds</li><li>• Carboxylic acids and esters</li><li>• Nitrogen compounds</li><li>• Polymers</li><li>• Organic synthesis</li><li>• Chromatography and spectroscopy (NMR)</li></ul>

## Exams

End of Year 12: H032/01 (Paper 1), H032/02 (Paper 2)

End of Year 13: H432/01 (Paper 1), H432/02 (Paper 2), H432/03 (Paper 3)

## 1.2 Practical skills assessed in the practical endorsement

A range of practical experiences is a vital part of a learner's development as part of this course. Learners should develop and practise a wide range of practical skills throughout the course as preparation for the Practical Endorsement, as well as for the written examinations. The experiments and skills required for the Practical Endorsement will allow learners to develop and practise their practical skills, preparing learners for the written examinations.

Candidates are assessed on the following five skill areas:

- **Independent thinking** – apply investigative approaches and methods to practical work;
- **Use and application of scientific methods and practices** – safely and correctly use a range of practical equipment and materials; follow written instructions; make and record observations/measurements; keep appropriate records of experimental activities; present information and data in a scientific way; use appropriate software and tools to process data, carry out research and report findings;
- **Research and referencing** – use online and offline research skills including websites, textbooks and other printed scientific sources of information; correctly cite sources of information;
- **Instruments and equipment** – use a wide range of experimental and practical instruments, equipment and techniques appropriate to the knowledge and understanding included in the specification;
- **Use of apparatus and techniques** – use of appropriate apparatus to record a range of measurements (to include mass, time, volume of liquids and gases, temperature); use of a water bath or electric heater or sand bath for heating; measurement of pH using pH charts, or pH meter, or pH probe on a data logger; use of laboratory apparatus for a variety of experimental techniques including: (i) titration, using burette and pipette (ii) distillation and heating under reflux, including setting up glassware using retort stand and clamps (iii) qualitative tests for ions and organic functional groups (iv) filtration, including use of fluted filter paper, or filtration under reduced pressure; use of a volumetric flask, including accurate technique for making up a standard solution; use of acid–base indicators in titrations of weak/strong acids with weak/strong alkalis; purification of: (i) a solid product by recrystallization (ii) a liquid product, including use of a separating funnel; use of melting point apparatus; use of thin layer or paper chromatography; setting up of electrochemical cells and measuring voltages; safely and carefully handling solids and liquids, including corrosive, irritant, flammable and toxic substances; measurement of rates of reaction by at least two different methods, for example: (i) an initial rate method such as a clock reaction (ii) a continuous monitoring method.

### Books:

You can borrow the essential course books from the Sixth form library on a long term loan. The books you will need to bring to all your lessons are:

- A Level Chemistry for OCR A (Rob Ritchie, Dave Gent)

- A-Level Year 1 & AS Chemistry: OCR A Revision guide (CGP)

### **Specimen papers:**

Follow the link below:

<http://www.ocr.org.uk/qualifications/as-a-level-gce-chemistry-a-h032-h432-from-2015/>

Find 'Assessment materials', and choose the unit specimen paper you wish to view.

### **Support**

Use the following resources for extra support:

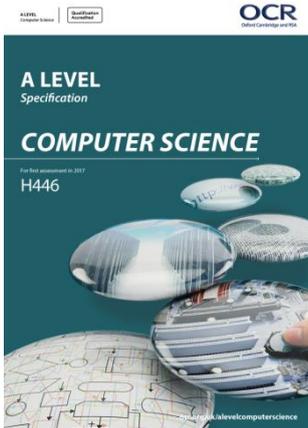
- <http://www.creative-chemistry.org.uk/>
- <http://www.chembook.co.uk/>
- <http://www.franklychemistry.co.uk/>
- <http://www.franklychemistry.co.uk/20to9/gcse.html>
- <http://2012books.lardbucket.org/books/principles-of-general-chemistry-v1.0/index.html>
- [http://www.docbrown.info/page19/OCR\\_GCE\\_chem\\_A\\_Level\\_2015.html](http://www.docbrown.info/page19/OCR_GCE_chem_A_Level_2015.html)
- <http://www.chemguide.co.uk/tp://crescentok.com/staff/jaskew/isr/tigerchem/index.html>

# A Level Computing

---

**"Everyone should learn how to code, it teaches you how to think!"**  
Steve Jobs

## Computer Science: Transition Guide



### A Level Computer Science

Examination Board: OCR

Within the course there are 3 components:

## **ASSESSMENT**

Component	Assessment	Weighting	Marks and duration
01 Computer systems	Externally marked question paper	40%	140 marks / 2 hr 30 mins
02 Algorithms and programming	Externally marked question paper	40%	140 marks / 2 hr 30 mins
03 Programming project	Internally assessed, externally moderated	20%	70 marks

## Year 12:

Here's a brief look at the course units and the content for our AS and A Level Computer Science qualifications.

# AS COMPUTER SCIENCE

## 01 COMPUTING PRINCIPLES

This component will be a traditionally marked and structured question paper with a mix of question types: short-answer, longer-answer, and levels of response mark-scheme-type questions. It will cover the characteristics of contemporary systems architecture and other areas including the following:

- The characteristics of contemporary processors, input, output and storage devices
- Software and software development
- Programming
- Exchanging data
- Data types, data structures and algorithms
- Legal, moral, ethical and cultural issues.

## 02 ALGORITHMS AND PROBLEM SOLVING

This component will be a traditionally marked and structured question paper and will include a mix of question types: short-answer, longer-answer, and levels of response mark-scheme-type questions.

There'll be a short scenario/task contained in the paper, which could be an algorithm or a text page-based task, which will involve problem solving.

Other areas covered include the following:

- Elements of computational thinking
- Problem solving and programming
- Algorithms.

## Year 13:

## A LEVEL COMPUTER SCIENCE ASSESSMENT OVERVIEW – FIRST EXAM JUNE 2017

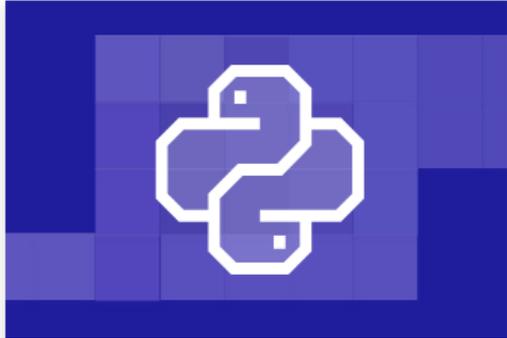
Component		
<b>01 Computer systems</b>	Mix of question types: including short-answer, longer-answer, and banded mark-scheme-type questions.	<p><b>The characteristics of contemporary processors, input, output and storage devices</b> Components of a computer and their uses</p> <p><b>Software and software development:</b> Types of software and the methodologies used to develop them</p> <p><b>Exchanging data:</b> How data is exchanged between different systems</p> <p><b>Data types, data structures and algorithms</b> How data is represented and stored in different structures and the use of different algorithms</p> <p><b>Legal, moral, cultural and ethical issues</b> Laws surrounding the use and ethical issues that can arise from the use of computers</p>
<b>02 Algorithms and Programming</b>	<p>Two sections:</p> <p><b>A</b> – Traditional questions concerning computational thinking.</p> <p>Mix of question types: including short-answer, longer-answer, and levels of response mark-scheme-type questions.</p> <p><b>B</b> – Scenario/task contained in the paper, which could be an algorithm but will involve problem solving.</p> <p>Short-answer, longer-answer questions, and levels of response mark-scheme-type questions.</p>	<p><b>Sections A and B</b></p> <p><b>Elements of computational thinking</b> What is meant by computational thinking</p> <p><b>Problem solving and programming</b> How computers are used to solve problems and programs can be written to solve them</p> <p><b>Algorithms</b> The use of algorithms to describe problems and standard algorithms</p>
<b>03 Programming project</b>	Candidates and/or centres select their own user-driven problem of an appropriate size and complexity to solve. This will enable them to demonstrate the skills and knowledge necessary to meet the Assessment Objectives.	<p>Analysis of the problem</p> <p>Design of the solution</p> <p>Implementation of the solution</p> <p>Evaluation</p>

### Transition Activities: How can you prepare for A Level Computer Science?

#### Task 1: Programming

#### Programming Activity:

Register with [www.codecademy.com](http://www.codecademy.com) and work through “Programming with Python” tutorial.



**Programming with Python**

Learn Python fundamentals that set you up to work in web development and

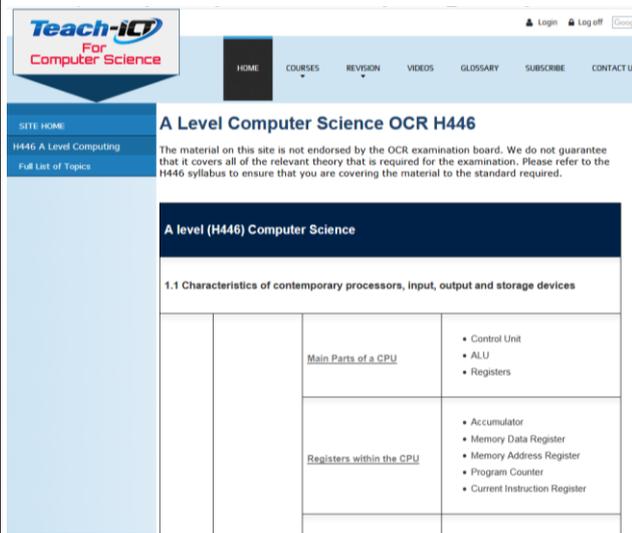
## Task 2: Understand Computer Architecture

### Read

Teach ICT Theory

Read through topics on “1.1.1 Architecture”, starting with the CPU

[http://www.teach-ict.com/2016/A\\_Level\\_Computing/OCR\\_H446/OCR\\_H446\\_home.html](http://www.teach-ict.com/2016/A_Level_Computing/OCR_H446/OCR_H446_home.html)



**Teach-ICT For Computer Science**

HOME COURSES REVISION VIDEOS GLOSSARY SUBSCRIBE CONTACT US

**A Level Computer Science OCR H446**

The material on this site is not endorsed by the OCR examination board. We do not guarantee that it covers all of the relevant theory that is required for the examination. Please refer to the H446 syllabus to ensure that you are covering the material to the standard required.

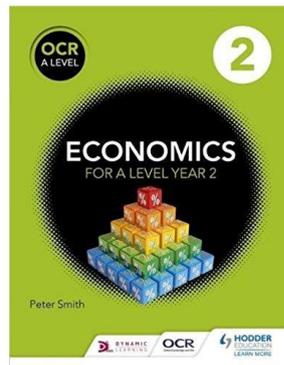
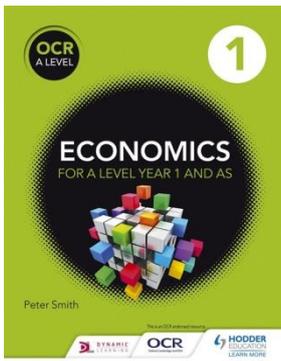
**A level (H446) Computer Science**

1.1 Characteristics of contemporary processors, input, output and storage devices

<a href="#">Main Parts of a CPU</a>	<ul style="list-style-type: none"> <li>Control Unit</li> <li>ALU</li> <li>Registers</li> </ul>
<a href="#">Registers within the CPU</a>	<ul style="list-style-type: none"> <li>Accumulator</li> <li>Memory Data Register</li> <li>Memory Address Register</li> <li>Program Counter</li> <li>Current Instruction Register</li> </ul>

## A Level Economics

*"It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own interest"*  
 Adam Smith: "Founding Father of Modern Economics"



## **A Level Economics**

At A Level, we study OCR.

Within this course, we pick the following units:

### **Year 12:**

Microeconomics: How competitive markets work (50%)

Macroeconomics: Economic aims of the government (50%)

### **Year 13:**

Microeconomics: How competitive markets work (33.33%)

Macroeconomics: Economic aims of the government (33.33%)

Themes in Economics: Looking at both micro and macroeconomics (33.33%)

## **Transition Activities: How can you prepare for A Level Economics?**

### **Task 1**

**“Write down five headlines you think are related to economics”**

**Task 2:**

1. Make a list of your daily needs
2. How do these differ from your yearly needs?
3. How do your needs differ from those in the poorest parts of the world?
4. How would you allocate 24 hours of your day?

**Task 3:**

In front of you there is a specific selection of resources available to you.

You have three minutes to make item/items that you can then sell on.

**Transition preparation exercise**

Can you justify if education should remain free, or should it only be provided by those who can afford it?

**Think and write down the likely impact of either approach was adopted.**

**Key terms:**

Opportunity Cost, Externalities, Taxation, Subsidies, Productivity, Scarcity, Government intervention, Employment, Skills, Poverty.

# A Level English Literature

---

An ideal course for those who:

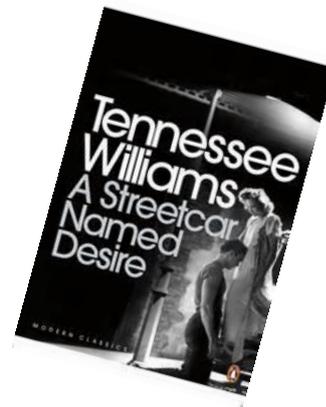
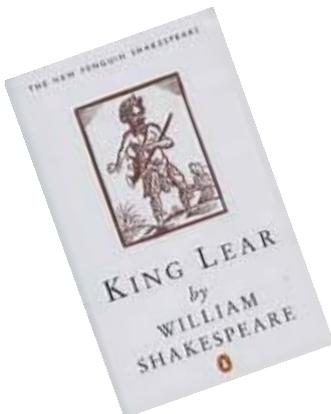
- ✓ **love reading** a wide range of **thought provoking** and **challenging** texts
- ✓ relish **exploring big ideas** on some of life's most **important issues**: from the role of science in society to relationships, romantic passion and individual identity
- ✓ enjoy **lively intellectual discussion**, **evaluating different interpretations** and forming new ideas, based on the **opinions of others**

There is a significant focus on **independent further reading**, so be prepared to take charge of your own research!

Assessment is comprised of **three examinations** (taken at the end of Year 13) and a **piece of coursework** (started at the end of Year 12).

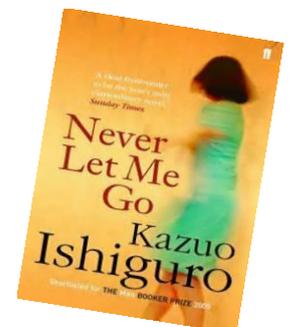
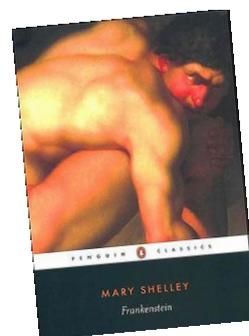
## Component 1- Drama: Tragedy (30% of the total qualification)

For this **examination unit** you will study the Shakespearean tragedy *King Lear* and the play *A Streetcar Named Desire* by Tennessee Williams. You will explore tragedy as a genre, and evaluate the elements of a Shakespearean tragedy as well as the features of a modern tragedy.



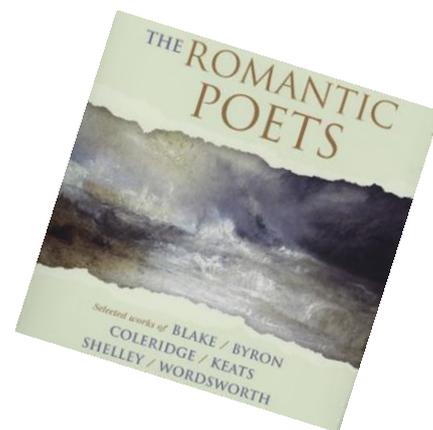
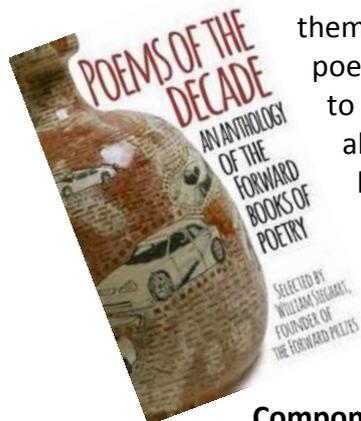
## Component 2- Prose: Science and Society (20% of the total qualification)

For this **examination unit** you will read **two texts** related to the theme of Science and Society: *Frankenstein* by Mary Shelly and *Never Let Me Go* by Kazuo Ishiguro. You will compare and contrast the methods the writers use to shape meaning in each text, and evaluate themes such as social responsibility, morality and Man vs Nature.



### Component 3- Poetry (30% of the total qualification)

For this **examination unit** you will study two anthologies of poetry: a selection of contemporary poetry exploring a range of themes from family relationships to mortality, and poetry from The Romantic Period. You will be required to analyse a wide variety of poetic techniques and also consider the connections between a text and its historical and cultural context.



### Component 4- Coursework (20% of the total qualification)

In this **coursework unit** (started at the end of Year 12), the choice is yours! You will **decide on texts** and issues which **you** are particularly interested in. You will write **one comparative essay** (2500-3000 words) exploring how an idea or theme is presented in two different texts, drawing on critical interpretations to inform your argument. We will give you a wide range of suggestions for suitable texts, but the final choice for what you study on this unit is up to you!

### Transition Activities – to be completed before September

**Read:** *Brave New World*, Aldous Huxley; 1984,

*George Orwell*; *Hamlet*, William Shakespeare;

*The Kite Runner*, Khaled Hosseini;

*Beloved*, Toni Morrison.

**Watch:** *The Handmaid's Tale*,

Any version of *Frankenstein*,

Black Mirror

**Visit:** The British Library, Shakespeare's Globe Theatre

# A Level English Literature and Language

---

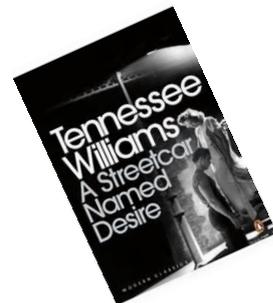
An ideal course for those who:

- ✓ **love reading** a diverse range of materials, **both fiction and non-fiction**
- ✓ delight in **thoroughly analysing** the **technical intricacies** of language
- ✓ have the **creative writing skills** to respond imaginatively to prompting material and recast it in an **accurate and engaging style**
- ✓ enjoy **lively intellectual discussion**, **evaluating different interpretations** and forming new ideas, based on the **opinions of others**

Assessment is comprised of **three examinations** (taken at the end of Year 13) and a **piece of coursework** (started at the end of Year 12).

## **Component 1: Voices in Speech and Writing (40% of overall qualification)**

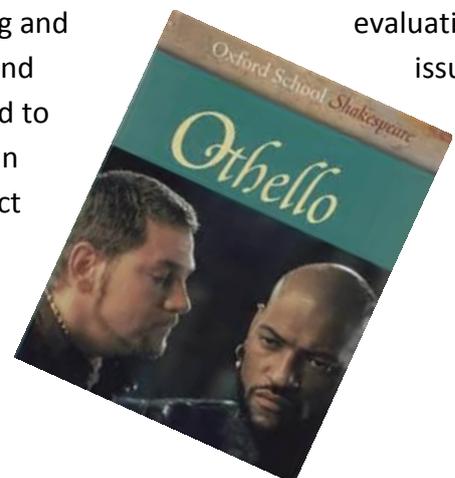
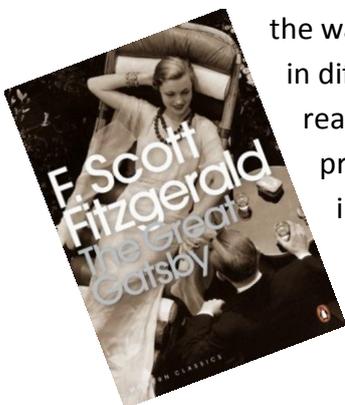
For this unit you will study Voices in Speech and Writing: An Anthology which includes examples of non-literary and digital texts from the 20th- and 21st century. You will develop your understanding of how writers and speakers shape and craft language to present an identity or persona, and will look at connections between texts as well as the significance and influence of context. In addition, you will study the play *A Streetcar Named Desire* by Tennessee Williams to explore how writers create different voices within a literary genre.



## **Component 2: Varieties in Language and Literature (40% of overall qualification)**

For this unit you will study a range of texts relating to the theme Society and the Individual. You will study the novel *The Great Gatsby* and the play *Othello*, exploring and

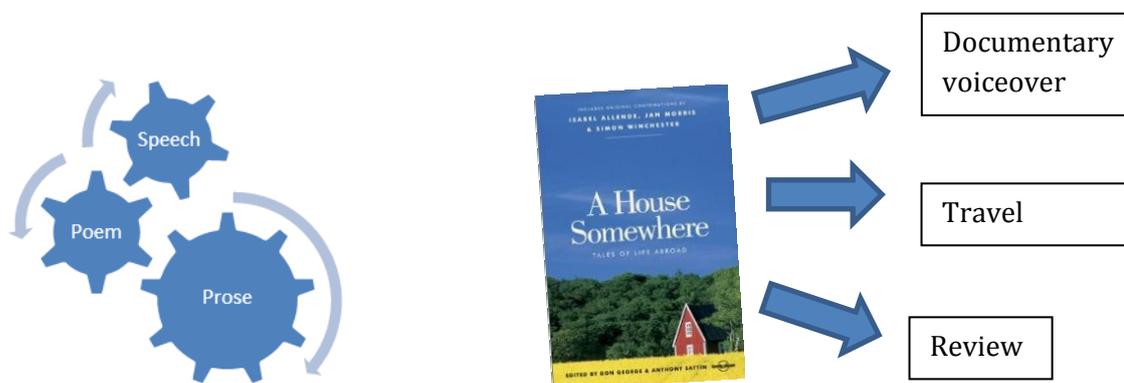
the ways different writers convey similar themes and in different texts. In addition, you will be expected to read widely across a range of non-fiction genre in preparation for responding to an unseen extract in the exam.



evaluating  
issues

## Coursework (20% of overall qualification)

For your coursework you have the opportunity to choose a topic that reflects your personal interests, studying two texts that relate to your chosen topic: one fiction, one non-fiction. Drawing on these texts, you will create your own original pieces of writing: one piece of fiction writing (for example, a short story or monologue), and one piece of creative non-fiction writing (such as an article or travel writing). In addition, you will produce one analytical commentary reflecting on the studied texts and pieces of writing you have produced.



## Transition Activities – to be completed before September

### **Read:**

Invisible Man, *Ralph Ellison*;

The Psychopath Test, 'Them: My Adventures With Extremists', *Ron Jonson*;

Enemy Combatant, *Moazzam Begg*.

### **Watch:**

Black Mirror,

Narcos

The Wire

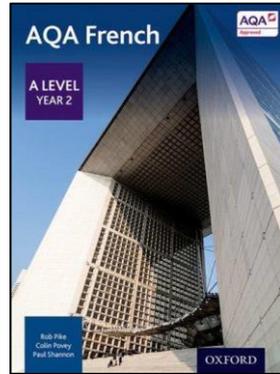
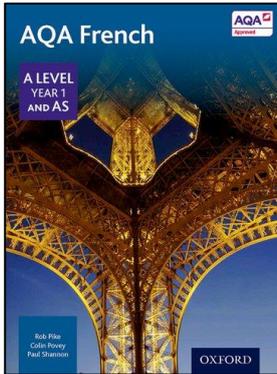
### **Visit:**

The British Library

Shakespeare's Globe Theatre

# A Level French

**“If you talk to a man in a language he understands, that goes to his head. If you talk to him in his own language, that goes to his heart.”**  
–Nelson Mandela



## A Level French

At A Level, we follow the AQA course.

### Course structure

The AQA A level in French comprises three units:

Exam	Skills	Length	Percentage of A-Level
Paper 1	Listening, reading and writing	2 hours 30 mins	50%
Paper 2	Writing on film and literary texts	2 hours	20%
Paper 3	Speaking	16-18 mins (plus 5 mins prep time)	30%

Within this course, we study the following topics:

Year 12	Year 13
<p><b>Aspects of French-speaking society – current trends</b></p> <ul style="list-style-type: none"> <li>• Changes to family life</li> <li>• Cyber society</li> <li>• Voluntary work</li> </ul> <p><b>Artistic culture in the French-speaking world</b></p> <ul style="list-style-type: none"> <li>• Cultural heritage</li> <li>• Contemporary French music</li> <li>• Cinema</li> </ul> <p><b>La Haine (Matthieu Kassovitz)</b></p> <ul style="list-style-type: none"> <li>• In depth study of a French film</li> </ul>	<p><b>Aspects of French-speaking society – current issues</b></p> <ul style="list-style-type: none"> <li>• Diverse society</li> <li>• Marginalisation</li> <li>• Criminality and sanctions</li> </ul> <p><b>Aspects of political life in the French-speaking world</b></p> <ul style="list-style-type: none"> <li>• Political engagement for young people</li> <li>• Demonstrations and strikes</li> <li>• Politics and immigration</li> </ul> <p><b>Boule de Suif et autres contes de la guerre (Guy de Maupassant)</b></p> <ul style="list-style-type: none"> <li>• Detailed study of a literary text</li> </ul>

## Transition Activities: How can you prepare for A Level French?

### Task 1: Writing

Prepare a short presentation in French on a francophone music artist of your choosing.

Use the vocabulary below to help you.

Some artists that you could consider are: **MC Solaar, Stromae, Cœur de pirate, Zazie, Nolwenn Leroy, Zaz, Sniper, Shy'm, Manu Chao, Diams, La fouine** and many more...

#### **Vocabulaire utile:**

J'ai choisi de parler de... - **I have chosen to speak about...** I

Il /Elle est un chanteur/chanteuse ... - **He/She is a singer**

...de musique rock/pop/rap/classique – **of ....music**

Auteur-compositeur-interprète – **singer-songwriter**

Il/Elle est né(e)... - **He/She was born...**

Il/Elle a grandi... - **He/She grew up...**

À huit ans... - **at the age of 8...**

Il/Elle s'est fait connaître avec la chanson... - **He/She made themselves known with the song...**

Qui est sortie en .... – **which came out in...**

Son style de musique est influencé par... - **His/Her style of music is influenced by...**

Dans ses chansons ... - **In his/her songs...**

Il/Elle fait référence à... - **He/She refers to...**

Il/Elle parle de... - **He she talks about...**

Dans son album il/elle aborde des thèmes tels que... - **In his/her album he/she tackles themes like...**

Il/Elle a réalisé deux tournées – **He/She has completed two tours.**

## Task 2: Grammar

Complete the verb table for the regular –er verb jouer (to play)

Present tense	Past tense	Imperfect
Je joue	Je	Je
Tu	Tu	Tu jouais
Il/Elle/On	Il/Elle/On	Il/Elle/On
Nous	Nous avons joué	Nous
Vous	Vous	Vous
Ils/Elles	Ils/Elles	Ils/Elles
Future tense with aller	Simple future tense	Conditional
Je	Je	Je
Tu	Tu	Tu
Il/Elle/On va jouer	Il/Elle/On	Il/Elle/On
Nous	Nous	Nous
Vous	Vous	Vous joueriez
Ils/Elles	Ils/Elles joueront	Ils/Elles

Now complete the verb table for the irregular verb aller (to go)

Je	Je suis allé(e)	Je
Tu	Tu	Tu allais
Il/Elle/On va	Il/Elle/On	Il/Elle/On
Nous	Nous	Nous
Vous	Vous	Vous
Ils/Elles	Ils/Elles	Ils/Elles
Future tense with aller	Simple future tense	Conditional
Je	Je	Je
Tu	Tu	Tu
Il/Elle/On	Il/Elle/On	Il/Elle/On
Nous	Nous	Nous irions
Vous allez aller	Vous	Vous
Ils/Elles	Ils/Elles iront	Ils/Elles

### Task 3: Reading skills

Read this article about the Belgian singer Stromae and select the four true statements.

#### Le chanteur belge, Stromae

Lisez cet extrait d'un article sur le chanteur belge, Stromae, qui vient d'un site web sur la musique francophone contemporaine.

Stromae s'est imposé comme l'un des artistes les plus créatifs de sa génération dans l'industrie musicale francophone et il est considéré actuellement comme un des musiciens les plus innovateurs et les plus intelligents. Mais en quoi consiste son innovation ? Stromae n'est pas un musicien conventionnel : il ne se contente pas de proposer des disques et peut-être une tournée de concerts. Il a compris qu'aujourd'hui un artiste doit offrir davantage. Il a diffusé sur le net des leçons de « beatmaking », c'est-à-dire de la musique assistée par ordinateur, qui sont visionnées par des millions d'internautes sur YouTube. Grâce à ces leçons il était déjà bien connu même avant la sortie commerciale de son premier album en 2010. Mais son style de musique offre, lui aussi, de l'innovation. Il traite des sujets de fond sur des rythmes dansants comme l'électro ou le hip-hop. Il mélange son identité vocale plutôt unique avec des lignes mélodiques composées dans la grande tradition de la chanson française. Stromae se définit par une identité plurielle : il peut être à la fois rwandais, belge, chanteur, rappeur, musicien mélancolique et festif. Sa musique est tirée des influences de tous les styles d'une culture mondialisée.

Écrivez les lettres des quatre phrases vraies dans les cases

A	Le succès de Stromae est dû largement à sa créativité conventionnelle.
B	Stromae s'est servi du net pour mener une campagne de marketing.
C	Des millions d'internautes téléchargent sa musique.
D	Il a eu de la peine à promouvoir son premier album.
E	Son style de musique est plein de diversité et d'originalité.
F	Ses chansons respectent une tradition très connue dans la musique francophone.
G	Ses compositions sont toujours tristes.
H	La musique de Stromae ne reflète que son identité belge.
I	Stromae se laisse influencer par la musique de tous genres.

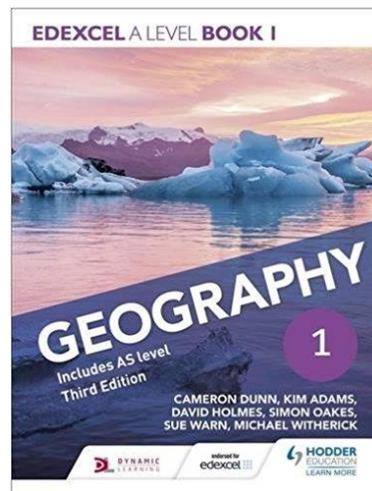
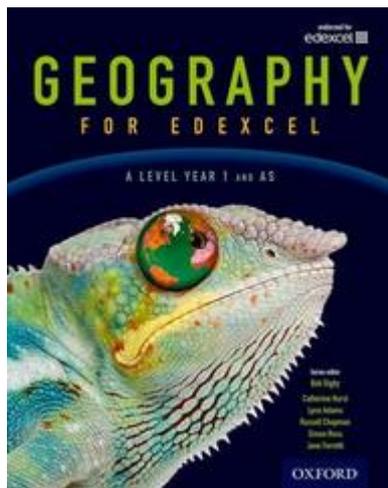
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
--------------------------	--------------------------	--------------------------	--------------------------

.. . .

# A Level Geography

“The study of geography is about more than just memorizing places on a map. It’s about understanding the complexity of our world, appreciating the diversity of cultures that exists across continents. And in the end, it’s about using all that knowledge to help bridge divides and bring people together.”

–Former US President Barack Obama



## A Level Geography

At A Level, we study Edexcel.

Within this course, we pick the following units:

### **Year 12:**

Tectonic Hazards and their management      Coasts

Regeneration      Globalisation

### **Year 13:**

Superpowers,      Health, Human Rights and Intervention

The Carbon Cycle      The Hydrological Cycle

**Transition Activities: How can you prepare for A Level Geography?**

**Task 1**

Choose at least one of the following.

Write a book review / film review, one page long.

**Watch:**

Before the Flood (2016)

**Read**

*Novels:*

*Prisoners of Geography: Ten Maps That Tell You Everything You Need To Know About Global Politics*  
by Tim Marshal, *The Glass Palace*

*The Carbon Diaries 2015* by Saci Lloyd

*The Bone Clocks* by David Mitchell

**Task 2: Visit one of the following places**

Write a one page summary of what you learnt from your visit.

**Visit:**

London Maritime Museum, Greenwich

Natural History Museum

London Transport Museum

**Task 3:**

Read the article provided in your taster lesson and complete the activities to go with it.

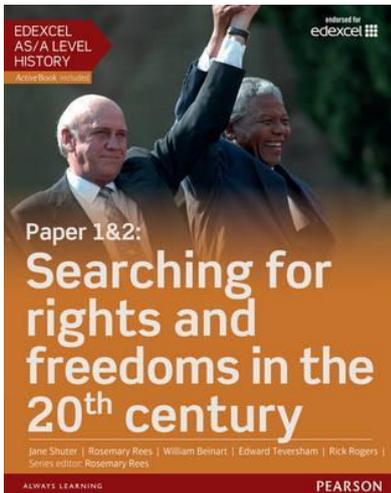
# A Level History

---

"History is who we are and why we are the way we are"

David McCullough, Historian

## History: Transition Guide



## A Level History

At A Level, we study Edexcel.

Within this course, we pick the following units:

### **Year 12:**

Depth Study: The British Empire in India (20%)

Breadth Study: The USA in the 20<sup>th</sup> Century (30%)

### **Year 13:**

Breadth and Depth Study: The rise and fall of the British Empire 1763-1914 (30%)

Coursework: The Cold War (20%)

**Transition Activities: How can you prepare for A Level History?**

**Task 1**

**Choose at least one of the following films or novels.**

**Write a book review / film review, one page long.**

**Watch:**

Indian Summer (Channel 4, 2015) BBC

The Great Gatsby

Hyde Park on Hudson

I love Lucy (TV show)

The 60s (NBC)

The Post (2018)

**Read**

*Novels:*

*White Tiger* by Aravind Adiga

*The Glass Palace* by Amitav Ghosh

*A Passage to India* by E M Forster

*Heart of Darkness* by Conrad

*To Kill a Mockingbird* by Harper Lee

*The Feminine Mystique* by Betty Friedan

*The Grapes of Wrath* by John Steinbeck

**Task 2: Visit one of the following places**

**Write a one page summary of what you learnt from your visit.**

**Visit:**

London Maritime Museum, Greenwich

Francis Drake's Golden Hind, London Bridge

HMS Belfast, Tower Bridge

Science Museum (space race), Kensington

American Museum, Bath

**Task 3:**

Read the article provided in your taster lesson and complete the activities to go with it.

# A Level Law

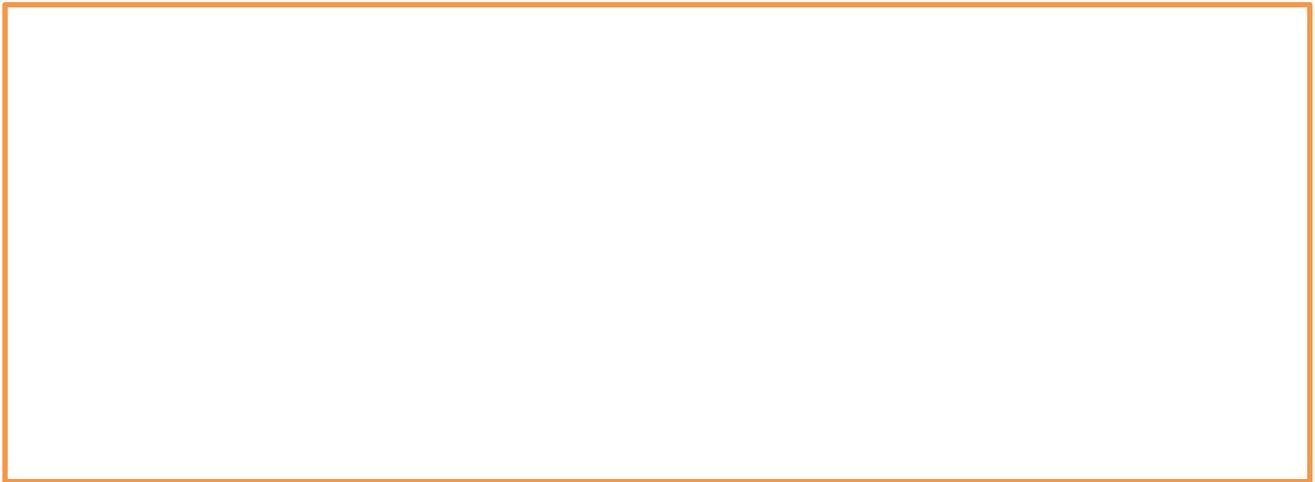
---

At A Level Law we study Eduqas.

To help you prepare for your A-level in Law you are required to complete the following activities:

## Task 1:

Research the process that takes place when a new law is introduced in the UK



Visit Snaresbrook Crown Court (or any other court local to you) and sit in on public gallery. Observe the roles played by different members of the court.

Record your findings



Task 3: Carry out research on how effective prisons are in tackling crime. Consider strengths and weaknesses.



Task 4:

Research the penalties for the following offences

1. GBH
2. Murder
3. Assault
4. Theft
5. Robbery
6. Arson



Are the penalties the same for young offenders?



# A Level Mathematics and Further Mathematics

---

Students study a variety of topics across the two years of A Level Mathematics and A Level Further Mathematics.

The Pearson Edexcel Level 3 Advanced GCE in Mathematics consists of three externally examined papers and four papers for Further Mathematics.

Students must complete all assessment in May/June in any single year.

## Paper 1: Pure Mathematics 1

Written examination: 2 hours (calculator)

33.33% of the qualification - 100 marks

### **Content:**

Proof; algebra and functions; coordinate geometry in the (x, y) plane; sequences and series; trigonometry; exponentials and logarithms; differentiation; integration and vectors.

## Paper 2: Pure Mathematics 2

Written examination: 2 hours (calculator)

33.33% of the qualification- 100 marks

### **Content:**

Proof; algebra and functions; coordinate geometry in the (x, y) plane; sequences and series; trigonometry; differentiation; integration and numerical methods.

## Paper 3: Statistics and Mechanics

Written examination: 2 hours (calculator)

33.33% of the qualification- 100 marks

The paper comprises of two sections: section A (statistics) and section B (mechanics).

### **Content:**

Section A - Statistical sampling; data presentation and interpretation; probability; statistical distributions and statistical hypothesis testing.

Section B – Quantities and units in mechanics, kinematics, forces and newton's laws and moments.

Paper 1: Further Pure Mathematics 1

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification - 75 marks

Content:

Proof; complex numbers; matrices; further algebra and functions; further calculus and further vectors.

Paper 2: Further Pure Mathematics 2

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification - 75 marks

Content:

Complex numbers; further algebra and functions; further calculus, polar coordinates, hyperbolic functions and differential equations.

Paper 3: Further Mathematics Option 1

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification- 75 marks

Students take **one** of the following options:

**3A: Further Pure Mathematics 3, 3B: Further Statistics 1, 3C: Further Mechanics 1, 3D: Decision Mathematics 1**

Paper 4: Further Mathematics Option 2

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification- 75 marks

Students take **one** of the following options:

**4A: Further Pure Mathematics 4, 4B: Further Statistics 1, 4C: Further Statistics 2, 4D: Further Mechanics 1**

**4E: Further Mechanics 2, 4F: Decision Mathematics 1, 4G: Decision Mathematics 2**

## Mathematics and Further Mathematics : Transition Activities

### Quadratic inequalities

#### A LEVEL LINKS

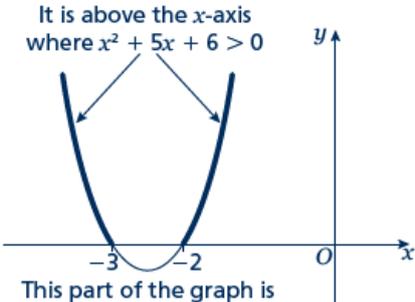
**Scheme of work:** 1d. Inequalities – linear and quadratic (including graphical solutions)

#### Key points

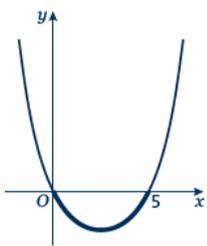
- First replace the inequality sign by = and solve the quadratic equation.
- Sketch the graph of the quadratic function.
- Use the graph to find the values which satisfy the quadratic inequality.

#### Examples

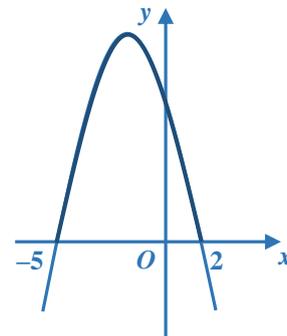
**Example 1** Find the set of values of  $x$  which satisfy  $x^2 + 5x + 6 > 0$

$x^2 + 5x + 6 = 0$ $(x + 3)(x + 2) = 0$ $x = -3 \text{ or } x = -2$  <p><math>x &lt; -3 \text{ or } x &gt; -2</math></p>	<ol style="list-style-type: none"><li>1 Solve the quadratic equation by factorising.</li><li>2 Sketch the graph of <math>y = (x + 3)(x + 2)</math></li><li>3 Identify on the graph where <math>x^2 + 5x + 6 &gt; 0</math>, i.e. where <math>y &gt; 0</math></li><li>4 Write down the values which satisfy the inequality <math>x^2 + 5x + 6 &gt; 0</math></li></ol>
---	---

**Example 2** Find the set of values of  $x$  which satisfy  $x^2 - 5x \leq 0$

$x^2 - 5x = 0$ $x(x - 5) = 0$ $x = 0 \text{ or } x = 5$  $0 \leq x \leq 5$	<ol style="list-style-type: none"> <li>1 Solve the quadratic equation by factorising.</li> <li>2 Sketch the graph of <math>y = x(x - 5)</math></li> <li>3 Identify on the graph where <math>x^2 - 5x \leq 0</math>, i.e. where <math>y \leq 0</math></li> <li>4 Write down the values which satisfy the inequality <math>x^2 - 5x \leq 0</math></li> </ol>
---	--

**Example 3** Find the set of values of  $x$  which satisfy  $-x^2 - 3x + 10 \geq 0$

$-x^2 - 3x + 10 = 0$ $(-x + 2)(x + 5) = 0$ $x = 2 \text{ or } x = -5$  $-5 \leq x \leq 2$	<ol style="list-style-type: none"> <li>1 Solve the quadratic equation by factorising.</li> <li>2 Sketch the graph of <math>y = (-x + 2)(x + 5) = 0</math></li> <li>3 Identify on the graph where <math>-x^2 - 3x + 10 \geq 0</math>, i.e. where <math>y \geq 0</math></li> <li>3 Write down the values which satisfy the inequality <math>-x^2 - 3x + 10 \geq 0</math></li> </ol>
--	---

### Practice

- 1 Find the set of values of  $x$  for which  $(x + 7)(x - 4) \leq 0$
- 2 Find the set of values of  $x$  for which  $x^2 - 4x - 12 \geq 0$

- 3 Find the set of values of  $x$  for which  $2x^2 - 7x + 3 < 0$
- 4 Find the set of values of  $x$  for which  $4x^2 + 4x - 3 > 0$
- 5 Find the set of values of  $x$  for which  $12 + x - x^2 \geq 0$

**Extend**

Find the set of values which satisfy the following inequalities.

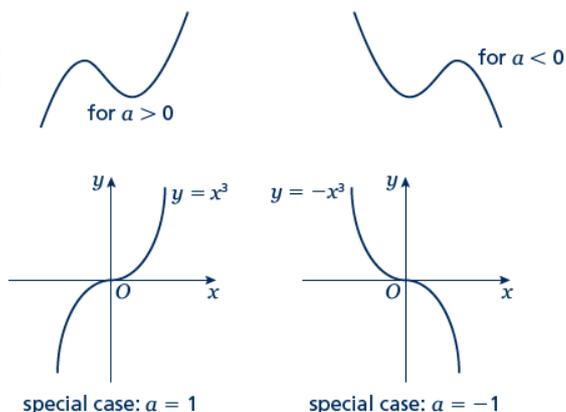
- 6  $x^2 + x \leq 6$
- 7  $x(2x - 9) < -10$
- 8  $6x^2 \geq 15 + x$

**A LEVEL LINKS**

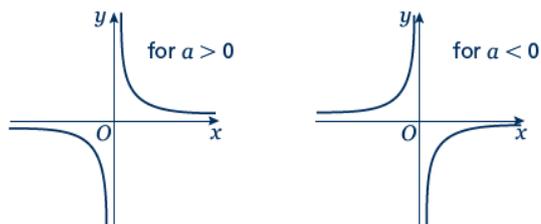
**Scheme of work:** 1e. Graphs – cubic, quartic and reciprocal

**Key points**

- The graph of a cubic function, which can be written in the form  $y = ax^3 + bx^2 + cx + d$ , where  $a \neq 0$ , has one of the shapes shown here.



- The graph of a reciprocal function of the form  $y = \frac{a}{x}$  has one of the shapes shown here.



- To sketch the graph of a function, find the points where the graph intersects the axes.
- To find where the curve intersects the  $y$ -axis substitute  $x = 0$  into the function.
- To find where the curve intersects the  $x$ -axis substitute  $y = 0$  into the function.
- Where appropriate, mark and label the asymptotes on the graph.
- Asymptotes are lines (usually horizontal or vertical) which the curve gets closer to but never touches or crosses. Asymptotes usually occur with reciprocal functions. For example, the asymptotes for the graph of  $y = \frac{a}{x}$  are the two axes (the lines  $y = 0$  and  $x = 0$ ).
- At the turning points of a graph the gradient of the curve is 0 and any tangents to the curve at these points are horizontal.
- A double root is when two of the solutions are equal. For example  $(x - 3)^2(x + 2)$  has a double root at  $x = 3$ .
- When there is a double root, this is one of the turning points of a cubic function.

## Examples

### Example 1 Sketch the graph of $y = (x - 3)(x - 1)(x + 2)$

To sketch a cubic curve find intersects with both axes and use the key points above for the correct shape.

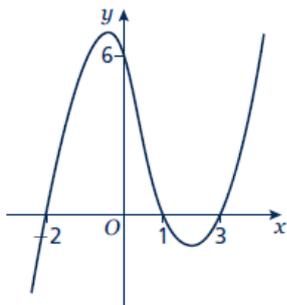
$$\text{When } x = 0, y = (0 - 3)(0 - 1)(0 + 2) \\ = (-3) \times (-1) \times 2 = 6$$

The graph intersects the  $y$ -axis at  $(0, 6)$

$$\text{When } y = 0, (x - 3)(x - 1)(x + 2) = 0$$

So  $x = 3, x = 1$  or  $x = -2$

The graph intersects the  $x$ -axis at  $(-2, 0), (1, 0)$  and  $(3, 0)$

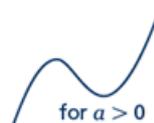


**1** Find where the graph intersects the axes by substituting  $x = 0$  and  $y = 0$ .

Make sure you get the coordinates the right way around,  $(x, y)$ .

**2** Solve the equation by solving  $x - 3 = 0, x - 1 = 0$  and  $x + 2 = 0$

**3** Sketch the graph.  
 $a = 1 > 0$  so the graph has the shape:



**Example 2** Sketch the graph of  $y = (x + 2)^2(x - 1)$

To sketch a cubic curve find intersects with both axes and use the key points above for the correct shape.

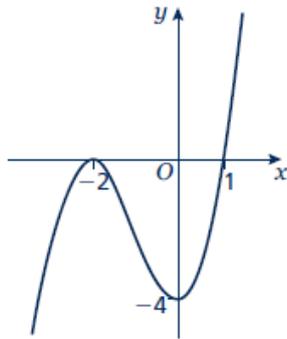
When  $x = 0$ ,  $y = (0 + 2)^2(0 - 1)$   
 $= 2^2 \times (-1) = -4$

The graph intersects the  $y$ -axis at  $(0, -4)$

When  $y = 0$ ,  $(x + 2)^2(x - 1) = 0$   
So  $x = -2$  or  $x = 1$

$(-2, 0)$  is a turning point as  $x = -2$  is a double root.

The graph crosses the  $x$ -axis at  $(1, 0)$



**1** Find where the graph intersects the axes by substituting  $x = 0$  and  $y = 0$ .

**2** Solve the equation by solving  $x + 2 = 0$  and  $x - 1 = 0$



**3**  $a = 1 > 0$  so the graph has the shape:

**Practice**

1 Here are six equations.

**A**  $y = \frac{5}{x}$

**B**  $y = x^2 + 3x - 10$

**C**  $y = x^3 + 3x^2$

**D**  $y = 1 - 3x^2 - x^3$

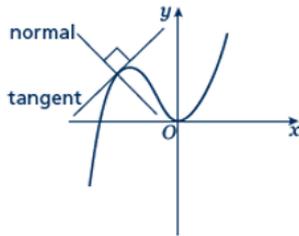
**E**  $y = x^3 - 3x^2 - 1$

**F**  $x + y = 5$

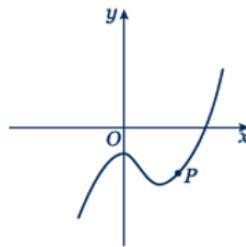
**Hint**  
Find where each of the cubic equations

Here are six graphs.

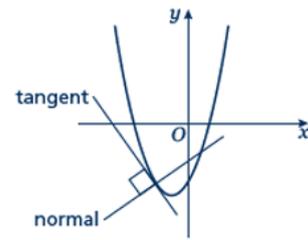
**i**



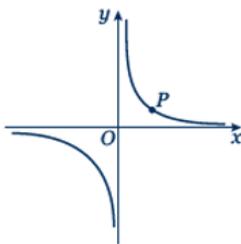
**ii**



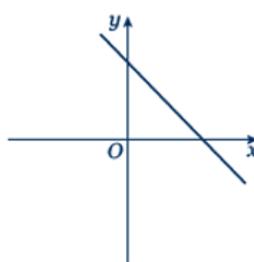
**iii**



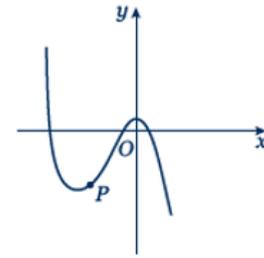
**iv**



**v**



**vi**



- a** Match each graph to its equation.  
**b** Copy the graphs ii, iv and vi and draw the tangent and normal each at point P.

Sketch the following graphs

**2**  $y = 2x^3$

**3**  $y = x(x - 2)(x + 2)$

**4**  $y = (x + 1)(x + 4)(x - 3)$

**5**  $y = (x + 1)(x - 2)(1 - x)$

**6**  $y = (x - 3)^2(x + 1)$

**7**  $y = (x - 1)^2(x - 2)$

**8**  $y = \frac{3}{x}$

**Hint:** Look at the shape of  $y = \frac{a}{x}$  in the second key point.

**9**  $y = -\frac{2}{x}$

**Extend**

**10** Sketch the graph of  $y = \frac{1}{x+2}$

**11** Sketch the graph of  $y = \frac{1}{x-1}$

**Answers to all tasks will be given in the Transition Day classes for Mathematics**

# A Level Further Mathematics

---

Students study a variety of topics across the two years of A Level Further Mathematics.

The Pearson Edexcel Level 3 Advanced GCE in Further Mathematics consists of four externally examined papers.

Students must complete all assessment in May/June in any single year.

## Paper 1: Further Pure Mathematics 1

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification

75 marks

Content:

Proof; complex numbers; matrices; further algebra and functions; further calculus and further vectors.

## Paper 2: Further Pure Mathematics 2

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification

75 marks

Content:

Complex numbers; further algebra and functions; further calculus, polar coordinates, hyperbolic functions and differential equations.

## Paper 3: Further Mathematics Option 1

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification

75 marks

Students take **one** of the following options:

**3A: Further Pure Mathematics 3**

**3B: Further Statistics 1**

**3C: Further Mechanics 1**

**3D: Decision Mathematics 1**

*Paper 4: Further Mathematics Option 2*

Written Examination: 1 hour and 30 minutes (calculator)

25% of the qualification

75 marks

Students take **one** of the following options:

**4A: Further Pure Mathematics 4**

**4B: Further Statistics 1**

**4C: Further Statistics 2**

**4D: Further Mechanics 1**

**4E: Further Mechanics 2**

**4F: Decision Mathematics 1**

**4G: Decision Mathematics 2**

# A Level Media Studies

---

Welcome to the SJCR Media Department, this newsletter outlines our aims for the ALevel. If you have any questions, please don't hesitate to contact us here at school or on Twitter @SJCRMedia.

## **What are we studying?**

### **Eduqas GCE in A Level Media Studies**

The Eduqas Media Studies course is designed to allow media students to draw on their existing experience of the media and to develop their abilities to respond critically to the media. It enables students to explore a wide variety of media (including: newspapers, advertising, music video, radio, video games, film marketing, television, magazines, blogs and websites).

The course also encourages creative work, through a cross-media production, to enable students to gain a greater appreciation of the media through their own production work and to develop their own production skills. Coursework tasks are set by the exam board and completed individually by students.

The course is made up of 30% coursework and 70% exam. The exam is taken in the summer term at the end of the second year of the course

### **The theoretical framework:**

**Representation** – how different social groups are presented by the media

**Media Language** – the way in which meaning of a media text is conveyed to the audience

**Industry** – how and why media products are made

**Audience** – how media products influence and are influenced by consumers; the appeals of a media product

### **Reading/Listening/Watching List**

Straight Outta Compton (Netflix/DVD)

I, Daniel Blake (DVD)

The Bridge (iPlayer/DVD)

Zoella (YouTube)

Assassin's Creed (specifically Liberation)

BBC Five Live Kermode and Mayo Film Review podcast

BBC Unpopped podcast

The Times

The Mirror

[www.mediaknowall.org](http://www.mediaknowall.org)

<http://www.eduqas.co.uk/qualifications/media-studies/as-a-level/>

## Summer Project:

1 - Use the website: [www.mediaknowall.com](http://www.mediaknowall.com) to research and make brief bullet point notes on each area of the theoretical framework.

2 - **Report on the Representation of Gender in Music Videos or Advertising:** Analyse one music video and one print advert of your choice. Write a report explaining how gender (women and men) has been represented in these 2 texts.

As part of this assignment, you must read The Summary of Theories sheet and research some of the theorists mentioned in it (especially Representation, but try to research some others).

*Possible texts, but we recommend you choose your own:*

*Music Video – Katy Perry, Part Of Me (Official)*

*Print Advertising – Levi's Live Unbuttoned print advert*

# A Level Religious Studies

---

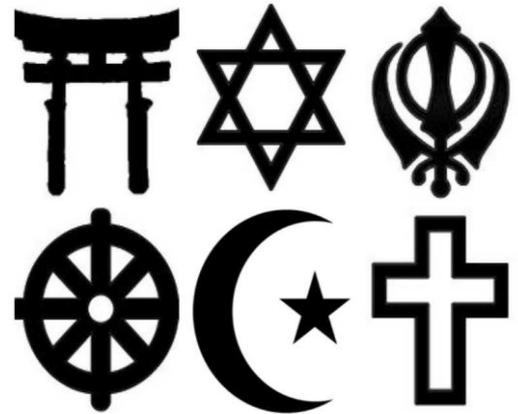
At A Level we study the EDUQAS Exam Board Syllabus

## **Component 1: A Study of Religion**

**Written examination: 2 hours**

**33⅓% of qualification**

For this part of the course, we study:



## **Option B: Islam**

There will be four themes within each option: religious figures and sacred texts; for example, the Life of Muhammad; The Qur'an

Religious concepts and religious life; significant social and historical developments in religious thought; religious practices and religious identity. For example, Islam and science, Islam and Crime and punishment. The importance of Family life in Islam.

Learners will be expected to answer one question from Section A out of a choice of two and one question from Section B out of a choice of three in this component.

Questions can be taken from any area of the specification.

## **Component 2: Philosophy of Religion**

**Written examination: 2 hours**

**33⅓% of qualification**

There will be four themes within this component: arguments for the existence of God; challenges to religious belief; religious experience; religious language.

Learners will be expected to answer one question from Section A out of a choice of two and one question from Section B out of a choice of three in this component.

Questions can be taken from any area of the specification.

### **Component 3: Religion and Ethics**

#### **Written examination: 2 hours**

#### **33⅓% of qualification**

There will be four themes within this component: ethical thought; deontological ethics; teleological ethics; determinism and free will.

Learners will be expected to answer one question from Section A out of a choice of two and one question from Section B out of a choice of three in this component.

Questions can be taken from any area of the specification.

This linear qualification will be available in May/June each year.

#### **TRANSITION ACTIVITIES:**

#### **How can you prepare for A level RE?**

Choose one of the following topics, research it, and answer the question attached to each topic as an extended piece of writing.

1. ISLAM

Topic: Sunni and Shi'a Muslims.

Question: What are the main differences in belief and practice of Sunnis and Shi'as, and do you think both Sunni and Shi'a can be Muslims.

2. PHILOSOPHY

Topic: Teleological and Cosmological arguments for the existence of God

Question: Having done some research on these two Philosophical arguments for the existence of God, which do you think is a better argument and why?

Finally, visit the EDUQAS website, which is the EXAM BOARD that we follow.

Go to the Religious Studies section, and check out the specification for yourselves and the SAM's (or Sample Assessment materials) and look at some of the sample exam papers.

Read through the Specification and start doing some research on some of the topics you discover there.

# A Level Sociology

## SOCIOLOGY SUMMER TRANSITION WORK



**Exam Board:** OCR

**Exam papers:** You will sit 3 exam papers at the end of year 13. Below is a detailed plan of how you will be assessed.

Content Overview	Assessment Overview	
<p>Introducing socialisation, culture and identity</p> <p>Themes developed through the context of one of three options:</p> <ul style="list-style-type: none"> <li>Families and relationships</li> <li>Youth subcultures</li> <li>Media</li> </ul>	<p>Socialisation, culture and identity (01)</p> <p>90 Marks</p> <p>1 hour 30 minutes written paper</p>	<p><b>30%</b></p> <p><b>of total A level</b></p>
<p>Research methods and researching social inequalities</p> <p>Understanding social inequalities</p>	<p>Researching and understanding social inequalities (02)*</p> <p>105 Marks</p> <p>2 hours 15 minutes written paper</p>	<p><b>35%</b></p> <p><b>of total A level</b></p>
<p>Globalisation and the digital social world</p> <p>Debates explored through a detailed study of one of three options:</p> <ul style="list-style-type: none"> <li>Crime and deviance</li> <li>Education</li> <li>Religion, belief and faith</li> </ul>	<p>Debates in contemporary society (03)*</p> <p>105 Marks</p> <p>2 hours 15 minutes written paper</p>	<p><b>35%</b></p> <p><b>of total A level</b></p>

# Digital Forms of Communication



Look at the image above; provide a definition for digital forms of communication.

Watch the following clip on YouTube: Catfish: The TV show Trailer.  
What impact do digital forms of communication have on our identities and relationships?

## “Digital forms of communication are negative for society”

*Do you agreed with this statement?*

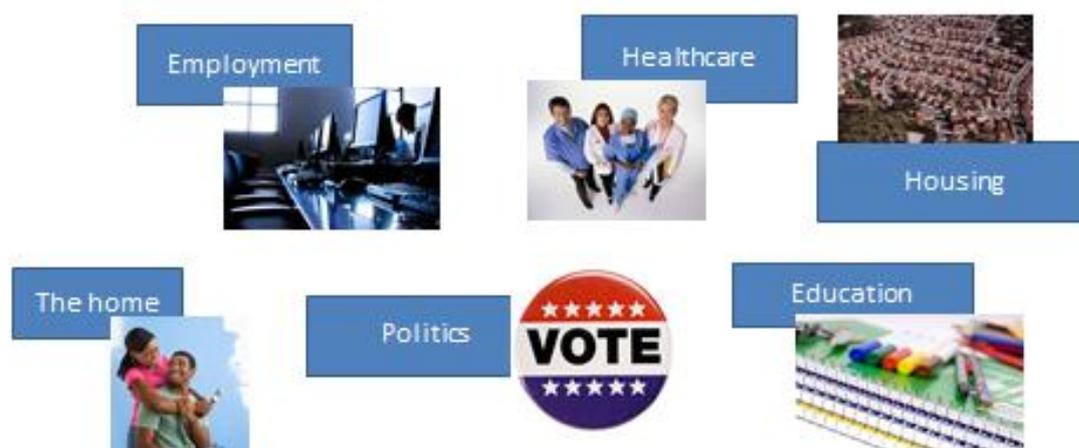
*Fill in the table*

<i>FOR</i>	<i>AGAINST</i>

## Social Inequality

### Gender Inequality

- Consider the following areas. Do you think that women or men experience disadvantage in any of these areas?



**Explain your answer**

**Benefit Street**

Watch the clip below from Benefit Street

<http://www.bing.com/videos/search?q=Youtube+benefit+street&view=detail&mid=F31D86C93D955B5D2621F31D86C93D955B5D2621&FORM=VIRE&adlt=strict>

**From the clip, how might an individual's social class be a factor in creating inequalities?**

## Ethnicity and Educational Achievement

What do the statistics show in regard to exam success and ethnicity?

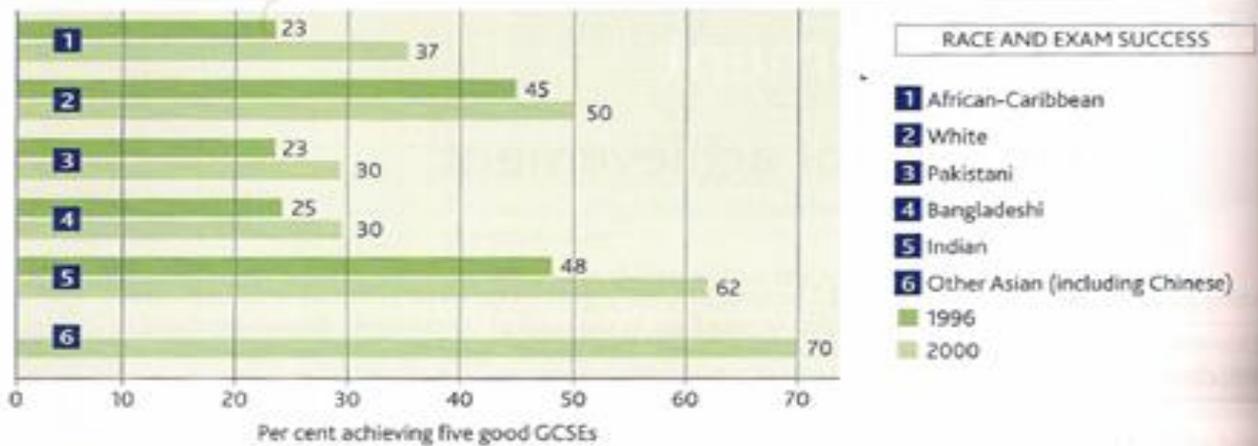


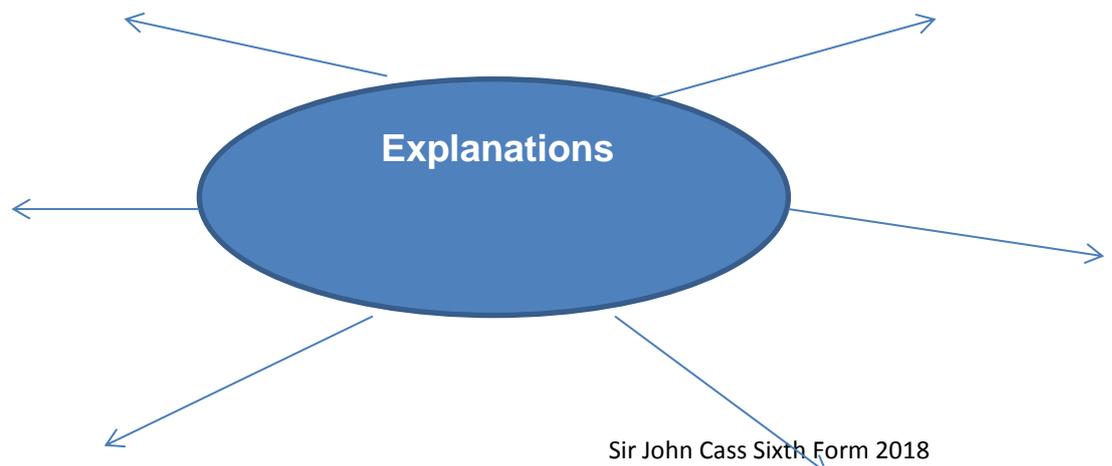
Fig. 4.4 Ethnicity and exam success

What do the statistics show in regard to exam success and ethnicity?

### Explanations

Watch the following clip on YouTube called; *Teacher TV: Black Boys*

Brainstorm all the reasons why black boys are underperforming?



# A Level Spanish

---

At A Level, we study AQA.

## What will I learn?

During this course you will develop your linguistic skills alongside your understanding of the culture and society of the countries where Spanish is spoken.

## You will study:

- technological and social change, looking at the multicultural nature of Hispanic society.
- highlights of Hispanic artistic culture, including a focus on Spanish regional identity and the cultural heritage of past civilisations.
- aspects of the diverse political landscape of the Hispanic world.
- the influence of the past on present-day Hispanic communities.

Throughout your studies, you learn the language in the context of Hispanic countries and issues and influences which have shaped them. You will study texts and film and will have the opportunity to carry out independent research on an area of your choice.

## Course structure

The AQA A level in Spanish comprises three units.

Paper 1: Listening, reading and writing

Paper 2: Writing (Essay on a novel + a film)

Paper 3: Speaking (involving discussion on a topic of your choice)

## General Topic Areas for A level Spanish

The topics you will cover are as follows:

Year 1	Year 2
<b>Aspects of Hispanic society</b> <ul style="list-style-type: none"><li>• Modern and traditional values</li><li>• Cyberspace</li><li>• Equal rights</li></ul>	<b>Multiculturalism in Hispanic society</b> <ul style="list-style-type: none"><li>• Immigration</li><li>• Racism</li><li>• Integration</li></ul>
<b>Artistic culture in the Hispanic world</b> <ul style="list-style-type: none"><li>• Modern day idols</li><li>• Spanish regional identity</li><li>• Cultural heritage</li></ul>	<b>Aspects of political life in the Hispanic world</b> <ul style="list-style-type: none"><li>• Today's youth, tomorrow's citizens</li><li>• Monarchies and dictatorships</li><li>• Popular movements</li></ul>

## Transition Activities: How can you prepare for A Level Spanish?

**Task 1: Write a book review / film review, one page long.**

<b>Watch:</b> <i>VOLVER – film by Pedro Almodóvar</i>	<b>Read:</b> <i>Like water for Chocolate – book by Laura Esquivél</i>
---	---

**Task 2: Prepare a presentation**

Find an article or articles on an element of Hispanic culture that interests you and write a one page summary of what you learnt.

<b>Examples:</b>	
Barcelona Football Club language	The region of Catalonia + the Catalan
Bullfighting	The Spanish artist Picasso

**Task 3: Grammar**

Complete the verb table for the regular –ar verb escuchar (to listen)

Present tense	Preterite	Imperfect
Yo escucho	Yo	Yo
Tú	Tú escuchaste	Tú
Él /Ella	Él /Ella	Él /Ella escuchaba
Nosotros	Nosotros	Nosotros
Vosotros	Vosotros	Vosotros
Ellos	Ellos	Ellos
Near future	Future	Conditional
Yo	Yo	Yo
Tú	Tú	Tú
Él /Ella	Él /Ella	Él /Ella
Nosotros vamos a escuchar	Nosotros	Nosotros
Vosotros	Vosotros escucharéis	Vosotros
Ellos	Ellos	Ellos escucharían

Now complete the verb table for the irregular verb hacer (to do / make)

Present tense	Preterite	Imperfect
Yo hago	Yo	Yo
Tú	Tú hice	Tú
Él /Ella	Él /Ella	Él /Ella hacía
Nosotros	Nosotros	Nosotros
Vosotros	Vosotros	Vosotros
Ellos	Ellos	Ellos

Near future	Future	Conditional
Yo	Yo	Yo
Tú	Tú	Tú
Él /Ella	Él /Ella	Él /Ella
Nosotros vamos a hacer	Nosotros	Nosotros
Vosotros	Vosotros haréis	Vosotros
Ellos	Ellos	Ellos harían

#### Task 4: Reading

Read the text, choose the correct word from the table and write the letter in the box

##### El matrimonio forzado

Completa el siguiente texto, escogiendo palabras de la lista (A – R).  
Escribe la letra de la palabra en la casilla. ¡Atención! – las letras I, J y L no están utilizadas.

[10 marks]

Unas al	A	alcanzada
forzado	B	casaría
había si	C	centrales
supuest	D	consentimiento
	E	desempleo
Sunita h	F	detenía
de su p:	G	existe
una solt	H	falta
con el h	K	interveniera
	M	negara
Las alur	N	prometida
interrum	O	protestar
que no	P	rechazan
	Q	viola
	R	zonas

El caso de los n

Please note: Letters I, J and L do not appear in the above grid.

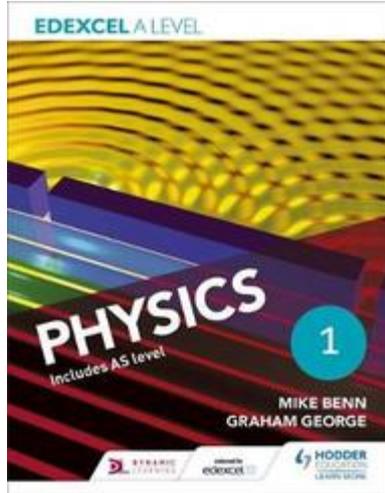
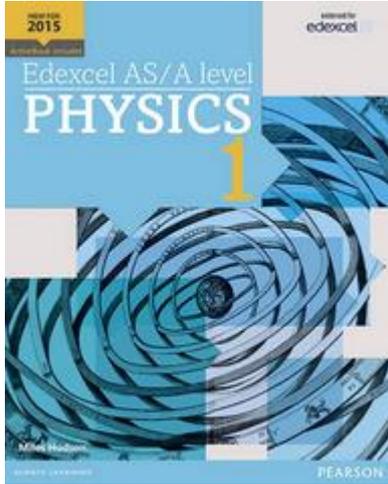
tienen una media de 11 años, pero pueden ser incluso más jóvenes.

Para las Naciones Unidas, el matrimonio forzado  los derechos humanos básicos de las niñas, castigándolas a un destino de aislamiento, violencia sexual,  de educación y problemas de salud.

# A-Level Physics

---

A guide to help you get ready for A-level Physics, including everything from topic guides to online learning resources.



At A Level, we study Edexcel.

The course includes three exam papers on the following topics:

- Mechanics
- Electric Circuits
- Electric and Magnetic Fields
- Nuclear and Particle Physics
- Materials
- Wave and Particle Nature of Light
- Thermodynamics
- Space
- Nuclear Radiation
- Gravitational Fields
- Oscillations
- Working as a Physicist

There will be a minimum of 40% of questions across all three exams which require maths, including topics such as:

- Rearranging and substituting equations
- Differentiation (AS Maths)
- Logarithms and exponentials (AS Maths)
- Straight line graphs
- Trigonometry

- **Proofs (AS Maths)**

You will also complete numerous core experiments relating to topics you learn as part of the course and learn associated data analysis techniques.

## Pre-Knowledge Topics

A level Physics will use your knowledge from GCSE and build on this to help you understand new and more demanding ideas. Complete the following tasks to make sure your knowledge is up to date and you are ready to start studying:

### Research

To get the best grades in A Level Physics you will have to get good at completing independent research and making your own notes on difficult topics. Below are links to 5 websites that cover some interesting Physics topics.

Using the Cornell notes system: <http://coe.jmu.edu/learningtoolbox/cornellnotes.html> make 1 page of notes **from each site** covering a topic of your choice.

a) <http://home.cern/about>

CERN encompasses the Large Hadron Collider (LHC) and is the largest collaborative science experiment ever undertaken. Find out about it here and make a page of suitable notes on the accelerator.

b) [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. Have a look at this award winning website and make a page of suitable notes.

c) <https://phet.colorado.edu/en/simulations/category/html>

PhET create online Physics simulations when you can complete some simple experiments online. Open up the resistance of a wire html5 simulation. Conduct a simple experiment and make a one page summary of the experiment and your findings.

d) <http://climate.nasa.gov/>

NASA's Jet Propulsion Laboratory has lots of information on Climate Change and Engineering Solutions to combat it. Have a look and make notes on an article of your choice.

Rearrange the following:

1.  $E = m \times g \times h$  to find  $h$
2.  $Q = I \times t$  to find  $I$
3.  $E = \frac{1}{2} m v^2$  to find  $m$
4.  $E = \frac{1}{2} m v^2$  to find  $v$
5.  $v = u + at$  to find  $u$
6.  $v = u + at$  to find  $a$
7.  $v^2 = u^2 + 2as$  to find  $s$
8.  $v^2 = u^2 + 2as$  to find  $u$

Rearrange the following:

1. Write 2530 in standard form.
2. Write 280 in standard form.
3. Write 0.77 in standard form.
4. Write 0.0091 in standard form.
5. Write 1 872 000 in standard form.
6. Write 12.2 in standard form.
7. Write  $2.4 \times 10^2$  as a normal number.
8. Write  $3.505 \times 10^1$  as a normal number.
9. Write  $8.31 \times 10^6$  as a normal number.
10. Write  $6.002 \times 10^2$  as a normal number.
11. Write  $1.5 \times 10^{-4}$  as a normal number.
12. Write  $4.3 \times 10^3$  as a normal number.

Give to 3 significant figures:

1. 3.4527
2. 40.691
3. 0.838991
4. 1.0247
5. 59.972

## Atomic Structure

You will study nuclear decay in more detail at A level covering the topics of radioactivity and particle physics. In order to explain what happens you need to have a good understanding of the model of the atom. You need to know what the atom is made up of, relative charges and masses and how sub atomic particles are arranged.

The following video explains how the current model was discovered

[www.youtube.com/watch?v=wzALbzTdnc8](http://www.youtube.com/watch?v=wzALbzTdnc8)

Describe the model used for the structure of an atom including details of the individual particles that make up an atom and the relative charges and masses of these particles. You may wish to include a diagram and explain how this model was discovered by Rutherford

## Forces and Motion

At GCSE you studied forces and motion and at A level you will explore this topic in more detail so it is essential you have a good understanding of the content covered at GCSE. You will be expected to describe, explain and carry calculations concerning the motion of objects. The websites below cover Newton's laws of motion and have links to these in action.

<http://www.physicsclassroom.com/Physics-Tutorial/Newton-s-Laws>

<http://www.sciencechannel.com/games-and-interactives/newtons-laws-of-motion-interactive/>

Sketch a velocity-time graph showing the journey of a skydiver after leaving the plane to reaching the ground.

Mark on terminal velocity.

## Waves

You have studied different types of waves and used the wave equation to calculate speed, frequency and wavelength. You will also have studied reflection and refraction.

Use the following links to review this topic.

<http://www.bbc.co.uk/education/clips/zb7gkqt>

<https://www.khanacademy.org/science/physics/mechanical-waves-and-sound/mechanical-waves/v/introduction-to-waves>

<https://www.khanacademy.org/science/physics/mechanical-waves-and-sound/mechanical-waves/v/introduction-to-waves>

- 1) Draw a diagram showing the refraction of a wave through a rectangular glass block. Explain why the ray of light takes this path.
- 2) Describe the difference between a longitudinal and transverse waves and give an example of each
- 3) Draw a wave and label the wavelength and amplitude

# A Level Politics

---

## A Level Politics Specification

<b>Component 1: UK Politics (*Component code: 9PL0/01)</b>
<b>Written examination: 2 hours</b> <b>33% of the qualification</b> <b>84 marks</b>
<b>Content overview</b> 1. Political Participation, students will study: <ul style="list-style-type: none"><li>• democracy and participation, political parties, electoral systems, voting behaviour and the media.</li></ul> 2. Core Political Ideas, students will study: <ul style="list-style-type: none"><li>• conservatism, liberalism, socialism.</li></ul>

<b>Component 2: UK Government (*Component code: 9PL0/02)</b>
<b>Written examination: 2 hours</b> <b>33% of the qualification</b> <b>84 marks</b>
<b>Content overview</b> 1. UK Government, students will study: <ul style="list-style-type: none"><li>• the constitution, parliament, Prime Minister and executive, relationships between the branches.</li></ul> 2. Non-core political ideas, students will study: <ul style="list-style-type: none"><li>• one idea from the following: anarchism, ecologism, feminism, multiculturalism, nationalism.</li></ul>

<b>Component 3: Comparative Politics (*Component code: 9PL0/3A or 3B)</b>
<b>Written examination: 2 hours</b> <b>33% of the qualification</b> <b>84 marks</b> <b>Students study either USA (9PL0/3A) or Global (9PL0/3B)</b>
<b>Content overview</b> For Global (3B) students will study: <ul style="list-style-type: none"><li>• sovereignty and globalisation, global governance: political and economic, global governance: human rights and environmental, power and developments, regionalism and the European Union, comparative theories.</li></ul>

## Transition Guide – Preparing for A-level Politics

### Component 1

This component focuses upon people's participation to Politics and their day to day involvement with political issues. In order to prepare for the component complete the following tasks.

#### **Task 1**

Look at the website "Votes at 16" and write:

- a. 100 word statement why the voting age should be lowered
- b. 100 word statement why the voting age should stay the same

#### **Task 2**

Use the following website to answer the questions below:

<https://www.bbc.co.uk/news/election/2017/results>

#### **Democracy and Participation**

1. What was turnout in the election?
2. How did youth turnout compare to the last General Election?
3. Which areas had the highest turnout and why was this the case?
4. Despite the fact that turnout was better than in previous years, why was it still disappointing?
5. Give an example if an area where turnout was particularly low.

### Component 2

This component focuses on how the Government works and looks at the systems and institutions that control and run the UK.

#### **Task 1**

##### **Research**

Make profiles upon **two** of the following Prime Ministers.

*Theresa May, David Cameron, Tony Blair, Margret Thatcher, John Major, James Callaghan*

Be sure to include the information below for each.

- Political Party:
- Dates in office:
- Previous posts:
- Background:
- Key policies:
- Legacy/key achievements/controversies:

#### **Task 2**

Visit the UK Supreme Court or Houses of Parliament (both in central London). Write a 500 word summary about how one of these institutions work.

### **Component 3**

This component focuses upon issues which effect nations across the world and impact their political policies.

#### **Task 1**

Watch the following episode of Turning Point:

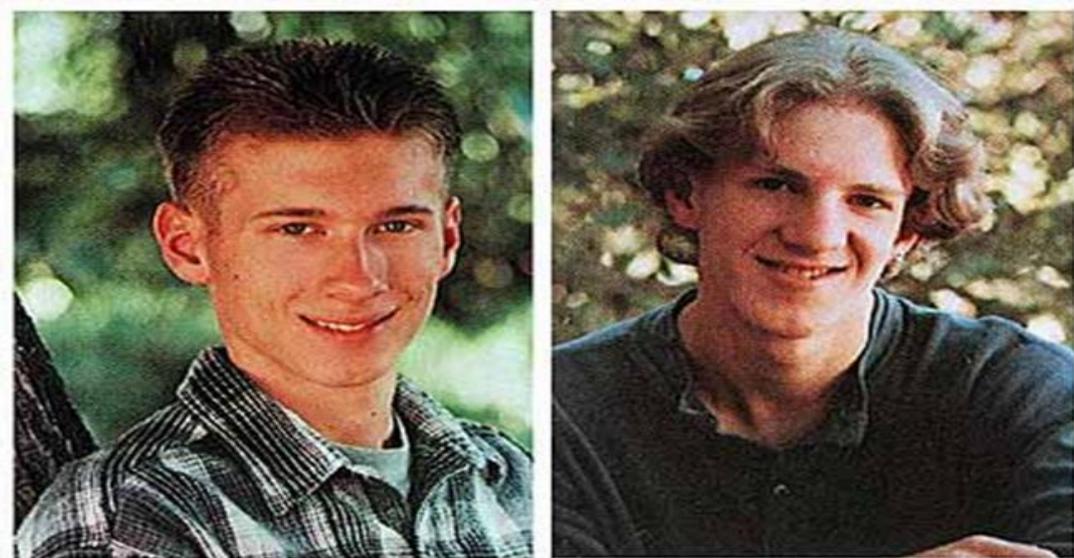
<https://www.bbc.co.uk/iplayer/episode/b09g0214/turning-points-unscripted-reflections-by-steve-richards-series-1-5-brexit-referendum>

- Outline the arguments for and against BREXIT
- As you understand, what will be the implications for the UK?
- As you understand, how will BREXIT impact European policy?
- From your own knowledge, what may be the consequences upon Global politics and policies?

# A Level Psychology

---

## Welcome to Psychology Psychological Approaches



### What do you think?

These pictures are of Eric Harris (left) and Dylan Klebold (right) who were aged 18 and 17 in 1999.

You are now a Psychologists think of the following two questions

1. What one word would you use to describe EACH of these men?
2. What do you think they are doing now, aged 34 and 33?

### Were you right?

Task: While watching the video (<https://www.youtube.com/watch?v=AUSJ6rqEWUY>), consider the different explanations for Eric & Dylan's behaviour.

Task: write down the different factors which *could* explain Eric & Dylan's behaviour.

- For example – brain damage

Can you think of AT LEAST 3 different examples?



### Psychological Approaches

Each of our Psychologists below represent one of the main psychological approaches. On the posters, the Psychologists explain what they believe...use these psychologists to help you with the next task.

### Psychodynamic Approach



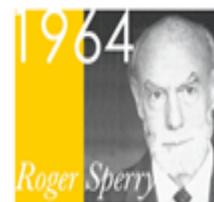
### Behavioural Psychologists



### Cognitive Psychologists



### Biological Psychologists



**Top 10 psychology films - for all you Netflix addicts!**

- **A Beautiful Mind (2001):** Ron Howard's brilliant film not only educates the viewer about schizophrenia but ingeniously brings the viewer to empathize - and to a degree - experience the confusing pain of schizophrenia, as portrayed by Russell Crowe as mathematics genius, John Nash.
- **Memento (2000):** Another film that ingeniously brings the viewer a close-up experience of someone who is suffering, in this case a man struggling with retrograde amnesia.
- **One Flew over the Cuckoo's Nest (1975):** For a generation of students new to psychology, this film offers a slice of their profession's history, as seen in the barbaric and controlling treatment of patients at a psychiatric hospital.
- **To Kill a Mockingbird (1962):** Regarded by the American Film Institute as depicting the greatest hero in American cinema, Atticus Finch (Gregory Peck), an attorney who defends a Black man accused of rape. Heroes and exemplars portrayed in films can serve as powerful motivators in treatment.
- **Ordinary People (1980) and Good Will Hunting (1997):** while not perfect portrayals of psychologists (it is unethical to choke your client!), Judd Hirsch and Robin Williams play empathic and motivating therapists that educate and inspire their clients and the viewer.
- **Life is Beautiful (1998):** Italian film that shows us the extremes of what humans are capable of - the horrors of Nazism as well as tremendous creativity, humor, and sacrifice.
- **The Shawshank Redemption (1994):** one of the most popular films ever made, perhaps due to the ease an individual can relate to the story of a man wrongfully imprisoned but never giving up hope. Since most clients seeking psychology services are seeking hope, this is a great film to recommend as a treatment adjunct.
- **The Hours (2003):** interweaving story of three women, played by Meryl Streep, Julianne Moore, and Nicole Kidman, from different generations that serves as a useful teaching tool on mood disorders, suicide, and coping behaviors.
- **American Beauty (1999).** It's difficult to not be inspired by this Oscar-winning film. It is a rhapsody of mindfulness, finding beauty in each moment, and the possibility in every human being for change. If you do not enjoy this film the first time around, take another viewing and do as the alternate title for the film suggests - "look closer."

# BTEC Health and Social Care

---

## Level 3 Health and Social Care OCR Cambridge Technical Extended Diploma in Health and Social Care



You will complete this course over two years, it is equivalent to 3 A-levels.

This will involve completing both coursework units (which are **internally** assessed) and examination units (which are **externally** assessed).

Within the course you would complete the following units:

- Building positive relationships
- Equality, diversity and rights
- Health, safety and security
- Antimony and physiology
- Infection control
- Personalisation and person-centred approach to care
- Safeguarding
- Impact of long-term physiological conditions
- Supporting those with dementia
- Supporting people with mental health conditions
- Research in health and social care
- Looked after children and young people
- Sexual health, reproduction and early development stages
- Nutrition for health
- Supporting people with learning disabilities
- Caring for older people
- Promoting positive behaviour

Transition activities to prepare for level 3 health and social care

TASK ONE: Use the following website: <https://www.nhs.uk/Conditions/> to find out about the symptoms and causes of the health conditions below. Record your research onto the worksheet.

**Cystic fibrosis**

Symptoms:

Causes:

**Coeliac disease**

Symptoms:

Causes:

**Glaucoma**

Symptoms:

Causes:

**TASK TWO:** Use the table below to record your food and drink intake for one day. Once you have done this find out what nutrients and how many are in the foods you have consumed.

	Foods/ drinks consumed	Nutritional values
Breakfast		
Lunch		
Dinner		
Snacks		

What are the daily recommended values of each nutrient for someone in your age group?

Are you consuming the right quantity of nutrients? Which nutrients are you lacking? Which are you consuming enough of? Which are you consuming more of (if so)?

# BTEC Business

---

## Level 3 Extended Diploma in Business

Edexcel BTEC

New specification written and endorsed by employers



- Two year course
- Equivalent to 3 A levels
- 13 units of study in total
- 4 of the units are exam units
- Students get to learn about business and practise the skills set desired by current employers
- Chance to join the nationally recognised Career Ready Programme



**Mandatory areas of study are:**

Unit 1 Exploring Business

Unit 2 Developing a Marketing Campaign

Unit 3 Personal and Business Finance

Unit 4 Managing an Event

Unit 5 International Business

Unit 6 Principles of Management

Unit 7 Business Decision Making

Other units of study include:

- Customer Service
- Creative Promotion
- Market research
- Team building
- Pitching for a new Business
- Recruitment and Selection

**Transition Activities**

1. Produce a one page document in word, in business report format on “The importance of effective customer service in the fast food industry”
2. Create a basic business plan (using a suitable template that you find online) for a micro business idea (perhaps online) that you have in mind.

# Certificate in Financial Studies (Level 3)

---

This is a standalone course equivalent to one A Level, which can be taken alongside a BTEC Level 3 qualification.

In conjunction with both:



## Key features of the programme:

- Two year course resulting in an A Level equivalent qualification, graded A-E
- Four units of study (each unit counts as 15 credits)

Unit 1- Financial Capability in the Immediate and Short Term

Unit 2- Financial Capability in the Medium and Long Term

Unit 3- Sustainability of an Individual's Finances

Unit 4- Sustainability of the Financial Services System

- All four units are 100% exam assessed (ranging from multiple choice questions, pre-release case study material, short and long answers). Exams range from 45 minutes to 1hour and 45 minutes.
- Provider of the qualification is the University College London, and the Institute of Financial Studies

This course will equip you with all the essential knowledge needed for successfully managing your finances throughout each stage of your life. Borrowing, saving and payment methods are key areas of study

**Transition Activities:**

1. Research online the role and remit of the FCA (Financial Conduct Authority) and produce two paragraphs in MS Word on this
2. Research 'becoming an accountant' as a career path: what studies, exams and training are required to become one.
3. Metro Bank has caused a banking revolution on the high street. Research this and explain why this is the case in no more than two paragraphs.

# BTEC Computing

---

## **BTEC National IT/Computing: Transition Guide**

**Examination Board:** Pearson

This course is made up of both Information Technology and Computing:

- BTEC Level 3 National Foundation Diploma in Computing (1 ½ A Level Equivalent)
- BTEC Level 3 National Foundation Diploma Information Technology (1 ½ A Level Equivalent)

### **BTEC Level 3 National Foundation Diploma Information Technology**

<b>Pearson BTEC Level 3 National Foundation Diploma in Information Technology</b>	510 GLH Equivalent in size to 1.5 A Levels. 6 units of which 4 are mandatory and 2 are external. Mandatory content (76%). External assessment (41%).	This qualification is designed to support learners who wish to study information technology (IT) as a one-year, full-time course, or for those wishing to take it alongside another area of complementary or contrasting study, as part of a two-year, full-time study programme. If taken as part of a programme of study that includes other appropriate BTEC Nationals or A levels, it supports progression to higher education.
---	--	---

### **BTEC Level 3 National Foundation Diploma in Computing**

<b>Pearson BTEC Level 3 National Foundation Diploma in Computing</b>	510 GLH Equivalent in size to 1.5 A Levels. 6 units of which 4 are mandatory and 2 are external. Mandatory content (76%). External assessment (41%).	This qualification is designed to support learners who wish to study computing as a one-year, full-time course, or for those wishing to take it alongside another area of complementary or contrasting study, as part of a two-year, full-time study programme. If taken as part of a programme of study that includes other appropriate BTEC Nationals or A levels it supports progression to higher education.
--	--	--

**Year 12:**

Year 12	Course	Unit Title	GLH	
Unit 1	Computing	Principles of Computer Science	120	External Exam
Unit 2	Computing	Fundamentals of Computer Systems	90	External Exam
Unit 1.	IT	Information Technology Systems	120	External Exam
Unit 2.	IT	Creating Systems to Manage Information	90	External Task
Unit 3.	IT	Using Social Media in Business	90	Coursework
Unit 5	IT	Data Modelling	60	Coursework
Unit 6	IT	Website Development	60	Coursework

**Year 13:**

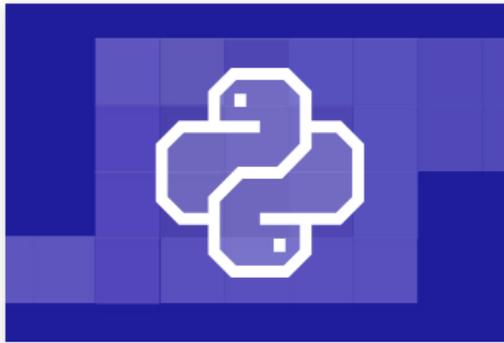
Unit 8	Computing	Business Applications of Social Media	90	Coursework
Unit 10	Computing	Human-computer Interaction	60	Coursework
Unit 22	Computing	Systems Analysis and Design	60	Coursework
Unit 7	Computing	Systems Security and Encryption	90	Coursework
Unit 4	IT	Programming	90	Coursework

## Transition Activities: How can you prepare for A Level Computer Science?

### Task 1: Programming

#### Programming Activity:

Register with [www.codecademy.com](http://www.codecademy.com) and work through “Programming with Python” tutorial.



#### Programming with Python

Learn Python fundamentals that set you up to work in web development and

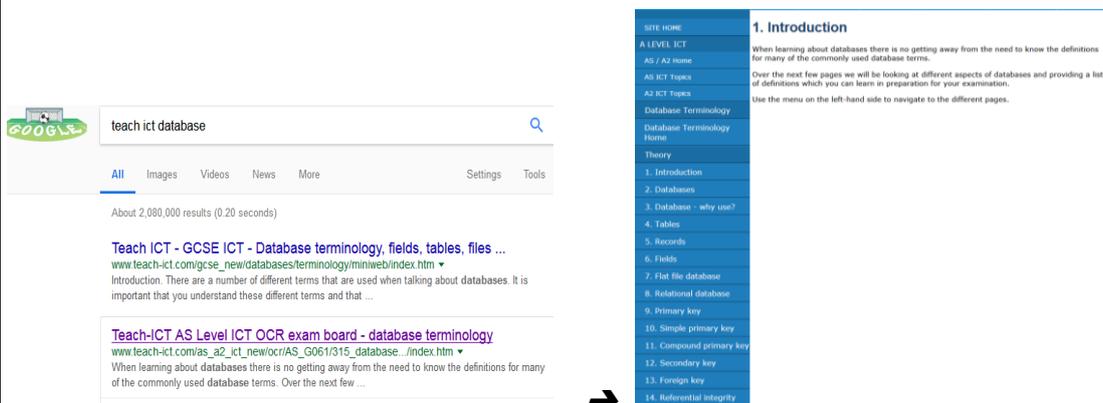
### Task 2: Understand Relational Database

#### Read

*Teach ICT Theory*

*Read through topics on “Database”,*

Google the following terms “**Teach ICT Database**” and choose the 2<sup>nd</sup> result.



The screenshot shows a Google search for "teach ict database". The search results are displayed below the search bar. The first result is "Teach ICT - GCSE ICT - Database terminology, fields, tables, files ..." from www.teach-ict.com. The second result is "Teach-ICT AS Level ICT OCR exam board - database terminology" from www.teach-ict.com. An arrow points from the second result to a table of contents for the "1. Introduction" page of the second result.

SITE HOME	1. Introduction
A LEVEL ICT	When learning about databases there is no getting away from the need to know the definitions for many of the commonly used database terms.
AS / A2 home	
AS ICT Topics	Over the next few pages we will be looking at different aspects of databases and providing a list of definitions which you can learn in preparation for your examination.
A2 ICT Topics	Use the menu on the left hand side to navigate to the different pages.
Database Terminology	
Database Terminology Home	
Theory	
1. Introduction	
2. Databases	
3. Database - why use?	
4. Tables	
5. Records	
6. Fields	
7. Flat file database	
8. Relational database	
9. Primary key	
10. Simple primary key	
11. Compound primary key	
12. Secondary key	
13. Foreign key	
14. Referential integrity	