



St Laurence School

6th Form

Pre-Year 12 Summer

Work 2023

*ALL work is due to be  
handed in during your first  
lesson in September.*

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# Art

## Research task - Still life/ Objects:

Research Task - make a virtual visit to the Tate through their website to produce your research task. Copy and paste the link below to find a wide range of artwork on display in the different Tate galleries in this country. Choose 1 artwork to do a detailed piece of research on. By clicking on your chosen artwork you will find some additional info on it.

<https://www.tate.org.uk/art/student-resource/exam-help/still-life>

Include an image of the artwork in your research, with the artist's name, title of the artwork and the date it was produced.

First - begin with a paragraph of background info on the artist – when they were working/ whether they were part of an art movement, what has happening in their life at the time and in the world etc. include any useful information on the artwork itself.

Next – produce a detailed visual analysis of your chosen artwork using the guide below -

## How to Analyse the Work of Others:

### Layout/composition

You need to consider how the work has been made up in terms of layout – which of the following have been used? Describe the layout and the effect this has on the work.

**All over** composition, **Grid like** layout, **Vertical** or **horizontal** layout, **Focal** point (main focus), **Centred** or **off centre**, **Balanced/ unbalanced**, **Combination of** images and text, **Close-up/ cropping**, **Leading lines**, **Use of repetition**, **Foreground, middle-ground and background**

### Colour choice:

You need to consider colour in the work – which of the following have been used? Describe the use of colour and the effective this has on the work.

**Limited** colours (only a couple of colours used), **complementary** colours (contrasting/ opposite), **key** colour (main colour), **harmonious** colours (side by side on the colour wheel/ similar), **monochrome** colour (produced in shades of one colour or black and white), **bold/ intense** colour, **primary or secondary** colours, **opaque** (not able to see through, not transparent), **transparent** (able to see through), **warm or cool**, **vibrant or muted**

### Materials and Techniques:

You need to consider how materials and techniques have been used in the work.

Describe the use of images, photographs, drawings etc in the work, how has it been made? Which techniques have been used? How have the materials been applied to the work? Do you think it was a quick or slow process? What is the scale of the work? How does this effect the way the viewer responds to it?

## Meaning/ Context (it is important to include this info to get higher marks)

What is the **meaning, message or mood** within the work? *This can be your opinion **backed up by evidence**.* What might have **influenced** the work? *Another artist, social, political, cultural, environmental or ethical contexts etc.* When was the art work produced – what was happening in the world at the time which may have had an impact on the artist's work? What might the viewer's response to the message/ mood of the work be?

## Your Opinion:

What do you like about it? Why? Use **artistic vocab** and evidence. What don't you like about it? Why? Use artistic vocab and evidence. What might you like to ask the maker of the work? How could it **influence** your own work?

## Practical tasks:

Produce a series of drawings based on the theme of 'Still life'. This could be objects that have special meaning to you, everyday objects in your home, bedroom or place of work.

Include:

1 A4 refined, tonal pencil drawing which includes 3 – 4 objects. Think about how you arrange them into a still life. You may want surrounding space around the objects or for some of the objects to be cropped out of the frame. Think about the surfaces and textures of the objects and how they fit together into a still life. It should take you at least 2 hours to produce. Use a soft leaded pencil such as a 2B or 4B for the darker tones.

1 A4 continuous line drawing of a single object. Use black ink pen or biro. This should be a quick drawing.

1 A4 drawing of a different object using the opposite hand to the one you usually draw with. Don't over think this, just give it a go!

1 A4 pen drawing of 2 – 3 objects using hatching and cross hatching to build up tone. It should take you at least 1 hour to produce.

# Biology

## A Level

### Summer work

#### Task 1: Structure and function of organelles in eukaryotic cells.

You learnt about cell structure at GCSE, however there is a lot more to it at A-level. Please come prepared in September with the following information, you should expect a test in week one. Learning this thoroughly now will help you throughout the A level course.

You need to know the difference between a prokaryotic cell (e.g. bacteria) and eukaryotic cells (e.g. plant, animal, fungal, algal). Both types of cell contain many organelles, you will be expected to know the structure and function of the following organelles and be able to label them on a diagram. You must also be able to relate the organelle content of a cell to its function.

- Cell-surface membrane
- Nucleus
- Mitochondria
- Chloroplasts
- Golgi apparatus
- Golgi vesicles
- Lysosomes
- Ribosomes
- Rough endoplasmic reticulum
- Smooth endoplasmic reticulum
- The cell wall
- The cell vacuole of plants For example:

| Name of organelle | Structure   | Function          |
|-------------------|---|-------------------|
| Ribosome          | Tiny organelle. Either free floating or can be attached to rough endoplasmic reticulum. Made up of proteins and RNA, does not have a membrane | Protein synthesis |

**Arithmetic and numerical computation**

| Skill   | Example   | Rating |
|---|---|--------|
| Recognise and make use of appropriate units in calculations                         | convert between units, e.g. mm <sup>3</sup> to cm <sup>3</sup> as part of volumetric calculations<br>work out the unit for a rate, e.g. breathing rate  |        |
| Recognise and use expressions in decimal and standard form                          | use an appropriate number of decimal places in calculations, e.g. for a mean<br>carry out calculations using numbers in standard and ordinary form, e.g. use of magnification<br>understand standard form when applied to areas such as size of organelles<br>convert between numbers in standard and ordinary form understand that significant figures need retaining when making conversions between standard and ordinary form, e.g.<br>0.0050 mol dm <sup>-3</sup> is equivalent to 5.0 × 10 <sup>-3</sup> mol dm <sup>-3</sup> |        |
| Use ratios, fractions and percentages   | calculate percentage yields<br>calculate surface area to volume ratio use scales for measuring<br>represent phenotypic ratios (monohybrid and dihybrid crosses)   |        |
| Estimate results  | estimate results to sense check that the calculated values are appropriate  |        |
| <i>Use calculators to find and use power, exponential and logarithmic functions</i> | <i>estimate the number of bacteria grown over a certain length of time</i>  |        |

**Handling data**

| Skill  | Example  | Rating |
|--|--|--------|
| Use an appropriate number of significant figures                                 | report calculations to an appropriate number of significant figures given raw data quoted to varying numbers of significant figures<br>understand that calculated results can only be reported to the limits of the least accurate measurement |        |
| Find arithmetic means  | find the mean of a range of data, e.g. the mean number of stomata in the leaves of a plant   |        |
| Construct and interpret frequency tables and diagrams, bar charts and histograms | represent a range of data in a table with clear headings, units and consistent decimal places<br>interpret data from a variety of tables, e.g. data relating to organ function   |        |

|  |   |  |
|--|---|--|
|  | plot a range of data in an appropriate format, e.g. enzyme activity over time represented on a graph<br>interpret data for a variety of graphs, e.g. explain electrocardiogram traces |  |
| Understand simple probability  |   |  |
| Understand the principles of sampling as applied to scientific data  | analyse random data collected by an appropriate means, e.g. use Simpson's index of diversity to calculate the biodiversity of a habitat   |  |
| Understand the terms mean, median and mode   | calculate or compare the mean, median and mode of a set of data, e.g. height/mass/size of a group of organisms  |  |
| Use a scatter diagram to identify a correlation between two variables  | interpret a scattergram, e.g. the effect of lifestyle factors on health   |  |
| Make order of magnitude calculations   | use and manipulate the magnification formula<br>magnification = $\frac{\text{size of image}}{\text{size of real object}}$   |  |
| Select and use a statistical test  | the chi-squared test to test the significance of the difference between observed and expected results<br>the Student's t-test<br>the correlation coefficient                          |  |
| Understand measures of dispersion, including standard deviation and range  | calculate the standard deviation<br>understand why standard deviation might be a more useful measure of dispersion for a given set of data, e.g. where there is an outlying result    |  |
| Identify uncertainties in measurements and use simple techniques to determine uncertainty when data are combined | calculate percentage error where there are uncertainties in measurement   |  |

## Task 2: A-level biology specification.

As you move through the course it is important that you keep track of what you have covered and start to highlight areas where additional work is needed. Please print yourself off a copy of the AQA specification and have it in your folders ready for lesson one. You can find a copy on the AQA website, alternatively there is a copy stored on the curriculum drive (student, science, A level, biology). Pages 11-35 are the AS content which you will be taught in year 12.

## Task 3: Mathematical skills

Hopefully it won't come as a surprise that there is a demand for good mathematical skills in A-level biology. At least 10% of marks in your biology exams will rely on these mathematical skills. Use the following table to assess your current ability. Be honest, some of these skills will be tested in week one so that your teachers are aware of where support is needed. Of course you will get plenty of opportunity to practise these skills over the 2 year course and we do not expect you to

be perfect at them all straight away. Some of these skills will be new to you and so do not worry about rating them as red at present. Keep this list in your file and revisit it regularly to ensure that you are aware of your strengths and weaknesses.

Use the following rating (both colours and numbers must be completed, and a mean score calculated):

Red – very unsure, not done this before. Put a number 1 in the box

Amber – I have come across this skill but I need to revise it. Put a number 2 in the box

Green – I am confident that I can do this. Put a number 3 in the box

| <b>Algebra</b>   |  |        |
|--|--|--------|
| Skill  | Example  | Rating |
| Understand and use the symbols: =, <, <<, >>, >  |  |        |
| Change the subject of an equation  | use and manipulate equations, e.g. magnification   |        |
| Substitute numerical values into algebraic equations using appropriate units for physical quantities | use a given equation, e.g. Simpson's index of diversity<br>$d = \frac{N(N-1)}{\sum n(n-1)}$  |        |
| Solve algebraic equations  | solve equations in a biological context, e.g. cardiac output = stroke volume x heart rate  |        |
| <i>Use logarithms in relation to quantities that range over several orders of magnitude</i>          | <i>use a logarithmic scale in the context of microbiology, e.g. growth rate of a microorganism such as yeast</i>   |        |
| <b>Graphs</b>  |  |        |
| Translate information between graphical, numerical and algebraic forms                               | understand that data may be presented in a number of formats and be able to use these data, e.g. dissociation curves   |        |
| Plot two variables from experimental or other data   | select an appropriate format for presenting data, bar charts, histograms, graphs and scattergrams  |        |
| Understand that $y = mx+c$ represents a linear relationship  | predict/sketch the shape of a graph with a linear relationship, e.g. the effect of substrate concentration on the rate of an enzyme-controlled reaction with excess enzyme                                   |        |
| <i>Determine the intercept of a graph</i>  | <i>read off an intercept point from a graph, e.g. compensation point in plants</i>   |        |
| Calculate rate of change from a graph showing a linear relationship                                  | Students may be tested on their ability to:<br><br>calculate a rate from a graph, e.g. rate of transpiration   |        |
| Draw and use the slope of a tangent to a curve as a measure of rate of change                        | use this method to measure the gradient of a point on a curve, e.g. amount of product formed plotted against time when the concentration of enzyme is fixed  |        |
| <b>Geometry and trigonometry</b>   |  |        |
| Calculate the circumferences, surface areas and volumes of regular shapes                            | calculate the circumference and area of a circle<br>calculate the surface area and volume of rectangular prisms, of cylindrical prisms and of spheres<br>e.g. calculate the surface area or volume of a cell |        |
| <b>mean score for competency in A level biology mathematical skills</b>                              |  |        |
| <b>(September 2015)</b>  |  |        |

*Skills in italics will only be examined at A-level*



## Business

Over the last few years we have seen more and more monthly subscription boxes coming to the market; these include popular subscriptions such as Graze boxes, Glossybox and Birchbox. However, it does not stop there. We consumers will buy anything that comes in a monthly subscription box, including DIY Craft boxes, gaming boxes, boxes with treats for our furry four-legged friends and even period pick me ups (no joke!).

### Task 1:

You have been given this cardboard box.  
How are you going to turn it into a profitable subscription?



Your task is to turn this box into a product that will make a profit. You can do anything to it; redesign the packaging, put things inside and so on. The box itself costs 50p.

You must

1. Draw a design of your product (this can be by hand or on the computer)
2. Write a brief business plan (two pages), including:
  - An outline of what your product is and why you chose it;
  - The finances you will need to start up your business. This should include estimated costs, selling price and forecast sales/profits
  - The market you are entering including and outline of your customers and your competition.
3. Create an accompanying PowerPoint presentation outlining your plans that you will present on the first day.

Some ideas to get you thinking that you cannot steal!



## **Task 2**

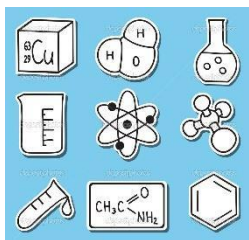
Purchase one of the following revision guides for Edexcel A Level Business:

ISBN-13: 9781292213217

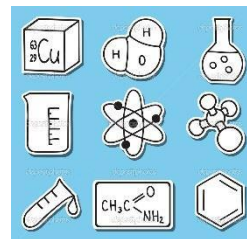
ISBN-13: 9781789082425

Conduct your own research and answer the following questions:

1. Briefly explain the difference between a mass and a niche market
2. Explain the advantages and limitations of both product and market orientation
3. Explain 3 non-price factors affecting the demand for a good or service
4. Explain 3 non-price factors affecting the supply of a good or service
5. Explain what is meant by the term 'price elasticity'
6. Using one product as an example, explain what is meant by price inelastic demand
7. Explain two benefits of strong branding
8. Briefly explain 5 different pricing strategies
9. In no more than two lines for each, explain the motivational theories of:
  - a. FW Taylor (scientific management)
  - b. Mayo (human relations theory)
  - c. Maslow (hierarchy of needs)
  - d. Herzberg (two factor theory)
10. Using one example for each, explain the following leadership styles:
  - a. Autocratic
  - b. Paternalistic
  - c. Democratic
  - d. Laissez-Faire
11. List two internal and 5 external sources of finance
12. Price is £350, Variable cost per unit is £100, Fixed costs are £25,000. Calculate both the breakeven points and the margin of safety if 150 units are sold.
13. Explain the difference between zero based budget and budgets based on historical figures
14. Explain what information is shown and the purpose of a balance sheet
15. Explain what is meant by labour productivity
16. Explain what is meant by the term capacity utilisation
17. What are the benefits and limitations of Just-In-Time (JIT) production?
18. Explain the difference between quality control and quality assurance
19. Explain how an increase in interest rates may affect a business selling speedboats
20. Explain how a devaluation of the £ may affect a business who import raw materials from China



## Chemistry



In order to make a successful transition from GCSE to A-Level it is essential that you start the course with a solid grasp of the fundamentals of Chemistry, as well as gain an insight into areas of the subject that will be developed over the two-year course.

This preparation will be in the shape of a workbook published by CGP, **Head Start for Chemistry**. You can order this from Amazon or any bookstore:

[https://www.amazon.co.uk/Head-Start-level-Chemistry-Level/dp/1782942807/ref=pd\\_sbs\\_14\\_1/262-4399433-8878319?encoding=UTF8&pd\\_rd\\_i=1782942807&pd\\_rd\\_r=4e1b4055-af8c-49cf-881a-4ebb9cdd579e&pd\\_rd\\_w=pJVfo&pd\\_rd\\_wg=gxxVC&pf\\_rd\\_p=2773aa8e-42c5-4dbe-bda8-5cdf226aa078&pf\\_rd\\_r=PRYQQHWHDJ3GPH2YENDQ&psc=1&refRID=PRYQQHWHDJ3GPH2YENDQ](https://www.amazon.co.uk/Head-Start-level-Chemistry-Level/dp/1782942807/ref=pd_sbs_14_1/262-4399433-8878319?encoding=UTF8&pd_rd_i=1782942807&pd_rd_r=4e1b4055-af8c-49cf-881a-4ebb9cdd579e&pd_rd_w=pJVfo&pd_rd_wg=gxxVC&pf_rd_p=2773aa8e-42c5-4dbe-bda8-5cdf226aa078&pf_rd_r=PRYQQHWHDJ3GPH2YENDQ&psc=1&refRID=PRYQQHWHDJ3GPH2YENDQ)

**ISBN-10:** 1782942807

**ISBN-13:** 978-1782942801

Using the supportive text, work through **all the questions** and self-assess these using the answers provided, as you go. Completion of the workbook will be checked at the start of the course. The workbook will take you through all the key topic areas, one at a time, as well as help to develop numerous Maths skills that will be an integral part of Physical Chemistry.

At the start of the course, there will be an opportunity to address areas you have highlighted as needing further work, via the afterschool Chemistry Club sessions.

If you have any problems with obtaining the workbook, or with the cost, then please contact me via [densmi@st-laurence.com](mailto:densmi@st-laurence.com) as soon as possible after the Yr12 induction day.

Good luck with the work and I hope you have an enjoyable Summer break.

Mr Smith

Head of Chemistry

# Criminology

Welcome to Level 3 Applied Diploma Criminology from WJEC. Your summer work is a valuable exercise in preparation for your Diploma in Criminology and will introduce you to different areas of our specification. You will cover all topics in greater depth, so be prepared over the summer and bring your 3 tasks to your first lesson.

## TASK 1

Please research the following crimes in the table below, make notes on what the crime is and provide at least 2 contemporary real life examples. These notes can be hand written or typed but must be on A4 paper so we can put it in your folder.

| CRIME                             |
|-----------------------------------|
| White-collar crime                |
| Moral crime                       |
| State crime                       |
| Technological crime               |
| Individual crime – hate crime     |
| Individual crime – honour crime   |
| Individual crime – domestic abuse |

## TASK 2

What does the term deviance mean? Write down a definition and learn.

What does the term criminal mean? Write down a definition and learn.

Using the information that you gathered above to compare and contrast crime and deviance using a range of real examples. You can write this as a table or venn diagram. Think about acts/behaviours that would be both criminal and deviant or actions that are criminal but not deviant.

## TASK 3

Write a 300-500 word summary on ONE criminal case demonstrating a **miscarriage of justice**. Examples could include Stephen Lawrence, Barry George, Sally Clarke, Colin Stagg, Central Park 5, Christopher Jeffries... or of course you can research your own!

In your write up, include:

1. A definition of what miscarriages of justice are
2. A brief overview of what happened in your chosen case
3. A discussion of whether or not justice was eventually served, and how this happened – explain the process

## Be Prepared

Organisation is the key to success in your first criminology NEA, so please bring with you to your first lesson an

A4 folder, dividers, stationery e.g. pens, highlighters etc. and lined paper. Your teacher will check you have these things in your first lesson and your 3 tasks.

St Laurence School Sixth Form

# Drama & Theatre

## Summer Work

Following on from your practical session on Punchdrunk theatre, research the world of immersive theatre. Be prepared to discuss your findings and pitch your own ideas in our first lesson in September.

### 1. Visit [www.punchdrunk.com](http://www.punchdrunk.com)

Explore the website and complete the following tasks:

- What can you find out about Punchdrunk's attitude towards, and expectations of, their audiences?
- Why are they called Punchdrunk?
- How do Punchdrunk describe their work? Why do they define themselves in this way?
- Choose **two** Punchdrunk productions to explore further. You must choose their latest production 'The Burnt City' and one other past production. What can you discover about them from the website and further online research (reviews are a useful source of information and there are also some videos on YouTube).

### 2. Watch the video 'Burn the Seats' with Felix Barrett and answer the following questions:

[Burn the Seats: Felix Barrett \(Future of StoryTelling 2013\) - YouTube](#)

- What does Felix Barrett say his 'personal mission' is?
- How does he describe the difference between the space of the disused building and a traditional theatre space?
- How does he describe his ideas for 'Punchdrunk Travel'?
- What does he say about the future of storytelling?

### 3. Read the article

#### Immersive Theatre by Justin Cash

Immersive theatre is a form of contemporary performance that usually includes elements of one or more of site-specific theatre, improvisational theatre, interactive/participatory theatre, environmental theatre, performance art and promenade theatre.

Immersion of the spectator in the drama is a key factor. Immersive theatre is often staged indoors but can also be performed at outdoor settings. Critical to most immersive theatre is the lack of a purpose-built structure we know as "the theatre". The actor-audience relationship is altered significantly. Gone are the plush red seats in neat little rows and one fixed area called "the stage". The forced separation between performer and spectator in the traditional theatre arrangement is eliminated. The boundaries between actor and audience are so blurred in an immersive theatre experience, they often barely exist.

Indoor settings for immersive theatre allow for a more intimate actor-audience relationship as the mere confines of the space(s) enable a close proximity between performer and spectator. These spaces often include multiple rooms and levels, such as disused warehouses, factories and empty school buildings. London's punchdrunk formed in 2000 and are widely considered the pioneer theatre company for contemporary immersive theatre. Their 2011 show *Sleep No More*, an adaptation of Shakespeare's *Macbeth* with a film noir inspiration, is still showing in an abandoned warehouse in the neighbourhood of Chelsea, Manhattan, renamed the McKittrick Hotel.

*'Sleep No More is an indoor promenade performance lasting up to three hours. There are five arrival times for each performance ranging from 6:00pm-12:00am depending on the day of the week. After admission, guests embark upon an individual journey and may stay inside the performance for as long as they wish. Following the culminating moment of the performance guests are welcome to stay on at the Manderley Bar.'*

*All guests are required to wear a mask while inside the hotel for Sleep No More. The mask will be provided upon arrival.'*

Immersive theatre often uses found spaces for their architecture or aesthetic with the audience placed in and around the "set(s)". This aspect borrows heavily from Richard Schechner's environmental theatre of the 1960s. The audience, unseparated from the action, becomes a participant, not an observer in the conventional sense.

Some immersive theatre shows are highly structured with the audience taken from location to location as one group, others have performers politely prompting "lost" spectators to head in the right direction, while some immersive theatre shows allow the audience to roam freely in any direction to multiple locations at their own leisure. Each participant, therefore, may have a highly individualised, unique theatre experience. This, of course, is part of the beauty of the form.

Whether indoors or outdoors, the moving of spectators from one location to another is similar to medieval liturgical dramas which had both site-specific performances (inside the church building) and fixed locations outdoors (mansion stages) where the audience would move from one to another.

The participatory aspects of many immersive theatre shows can involve both a physical and sensory experience. Spectators are often asked to hold props, sit at dinner tables, join performers on a couch, take on a role in the drama with instructions, or listen to or witness something in very close proximity. They are "inside" the action. Punchdrunk are well known for asking audience participants to wear masks during the performance, an experience in itself heightening one or more of the senses.

The improvisational nature of immersive theatre sometimes affects the outcome. Participants can be asked to be directly involved in the story, in turn changing the narrative. This is similar to Brazilian theatre practitioner Augusto Boal, whose forum theatre asked audience members to join the drama and become "spect-actors", ultimately altering the plot.

Some immersive theatre shows are more concerned with the plot than others. Immersive theatre that allows participants to wander from room to room not only encourages a different theatre experience for everyone, but also enables participants to view the action in different orders and in some cases miss the conclusion altogether. The plot in these shows is more like loosely connected episodes in each location,

than traditional scenes in a drama. Immersive theatre shows have more control over the audience by their very nature can also control the telling of the story for all concerned.

Whatever the case, immersive theatre is definitely about an intense, interactive theatre experience.

#### 4. Watch the videos

[Working In The Theatre: Immersive Theatre - YouTube](#)

[Alice's Adventures Underground 2017 Full Trailer - YouTube](#)

[I went to Alice's Adventures Underground in London \(Wonderland Sequel\) - YouTube](#)

#### 5. Answer the following questions – think about everything you have read or seen and you may also need to do your own research.

- What is your opinion of immersive theatre?
- Would you like to see a Punchdrunk show? Which one appeals to you the most and why? If you wouldn't want to see a Punchdrunk show, why not?
- What aspects of Punchdrunk's philosophy appeal to you? What would you like to find out more about?
- What are the criticisms or problems with immersive theatre?
- What do you think the future of immersive theatre is in our 'post covid' world? Will it grow and develop or fade away?

#### 6. Pitch your idea for a Punchdrunk show

Imagine Felix Barrett has asked you to create a Punchdrunk show. What would you do? Consider:

- Story/plot (Punchdrunk are often influenced by films or plays – what existing drama might be suitable for a Punchdrunk performance)
- Location (this could be a specific venue or more general terms. For example - is your story more suited to a hotel or an underground tunnel?)
- Characters
- Set
- Costumes
- How will the audience interact? What scenes would they watch? What 'one to one' experiences would you include?



## English Language and Literature

We will be studying the following texts from September which you will need to purchase and read over the summer. We have detailed the recommended editions where relevant. Please make every effort to obtain these copies as it will make it easier for page referencing in class.

### Essential Summer Work:

#### Buy and read the following texts:

1. **The Great Gatsby by F Scott Fitzgerald**, recommended edition: Wordsworth Classics ISBN 978-1853260414
2. **The Great Gatsby CGP study guide** ISBN 978-1847626684 or a similar text

It is helpful to write a short summary of each chapter as you read.

Once you have read the novel, we recommend you also watch a film version of this text. There are two very good films available:

The Great Gatsby (2013) directed by Baz Luhrmann starring Leonardo DiCaprio

The Great Gatsby (1974) starring Robert Redford.

**Buy a copy of Breaking Silence by Jacob Sam-La Rose** – only one edition available ISBN 978-1852249151

We will study 15 poems from this collection. Read the following *Song for a Spent 100w Bulb; Talk This Way; Make Some Noise; Turning Darker Still; Magnitude; Speechless 1-5; After Lazerdrome, McDonald's Peckham Rye; Plummeting; An Undisclosed Fortune; Here, Spirits; A Spell for Forgetting a Father.*

Make notes on what each poem seems to be about, striking language choices and how poems may link to the themes of identity, inequality, heritage and family.

Watch this 15-minute video of Sam-La Rose reading his poetry and discussing his writing at <https://www.bloodaxebooks.com/ecs/product/breaking-silence-1010>

### Non-Fiction Wider Reading

Read a range of magazines and newspapers to provide style models for original writing:

- *NME* – for music reviews
- *Vogue*- for fashion reviews
- Editorials in *The Guardian* and *The Independent* (available free online or via an app)
- *Private Eye*- satire
- *The Spectator* – travel writing

Listen to a quality podcast such as 'The Rest is Politics' or 'The Rest is History' on BBC Sounds

Watch a variety of television programmes such as CBBC, news output, a chat show like 'This Morning'

# English Literature

The objectives of this work are to build and extend your knowledge of English literature, and to prepare the texts you will begin studying in September.

**Reading** – We will be studying the following texts from September which you will need to purchase and read. We have detailed the recommended editions, please make every effort to obtain these copies as it will make it easier for page referencing in class.

## ***The Great Gatsby* by F Scott Fitzgerald**

Recommended edition: Penguin Modern Classics ISBN: 9780141182636

## ***All My Sons* by Arthur Miller**

Recommended edition: Penguin Modern Classics ISBN: 9780141189970

- Read the whole of *The Great Gatsby*. Focus any annotations on the presentation of the different aspects of love e.g. unrequited love, obsession, betrayal etc. Make some initial notes on the key characters and setting. We will begin studying this in September.
- Read the whole of *All My Sons*. Focus any annotations on the presentation of family, war and post-war society. We will begin studying this in September.
- You could research around the context of each text – what was happening from a historical/social/literary perspective? What might Miller/Fitzgerald’s messages have been? Make some notes on this.

As part of developing your wider reading, we would also like you to obtain and read the following texts over the summer:

## ***A Doll’s House* – Henrik Ibsen and *On Chesil Beach* – Ian McEwan**

There is no recommended copy you need to get for these and they should be available cheaply online.

You can also be reading novels/plays/poetry of your own choice, an enthusiasm for reading widely is essential for success in this course.

- **Viewing** – Initially we would advise you to avoid film adaptations of the novels you will be studying until after you have read the novel. There are some great TV programmes about literature: *Novels that Shaped the World* is on BBC iplayer <https://www.bbc.co.uk/iplayer/episode/m000b8mf/novels-that-shaped-our-world-series-1-1-a-womans-place>. *The Secret Life of Books* is also really interesting on iplayer <https://www.bbc.co.uk/programmes/b06j75p7>.
- **Listening** – BBC Radio 4’s programme *In Our Time* has a huge back catalogue of interesting shows about a vast range of topics, you could find the more literary ones such as the following on the poet W.H. Auden <https://www.bbc.co.uk/programmes/m000cc0r>. If you search for ‘Books’ on a podcast platform you will find a range of interesting podcasts about literature.

- **Writing** – you should make a few notes on the texts you will be studying in September – think about the way you made notes at GCSE literature (themes/key characters/style). You could also write a review of a novel of your choice. Read a few examples before you write:

<https://www.theguardian.com/books/books+tone/reviews>

St Laurence School Sixth Form

# Film Studies

**Objectives:**

- To broaden your film knowledge before you begin the Film Studies course
- To respond personally and critically to films
- To introduce you to the work of two directors we will study on the course

**Task 1: Your Film Diary**

Record your thoughts about the films you watch over the summer holiday using the Film Diary template below (*copy it out, or download and alter, so you have more space*). In order to **broaden your experience** of film, please make sure that you watch the types of film stipulated in the left hand column.

| Type of film   | Title of film, director of film, year of release, 2 or 3 cast members | Production company / Distributor | Your thoughts and stars out of 5 (5* highest) | Reviewers' comments: short quotations from reviews from a <u>reputable source</u> – i.e. a newspaper or magazine (or their website), such as Guardian, New York Times – NOT any old blog |
|--|---|----------------------------------|---|--|
| 1. a film made in a country outside the UK, in a language other than English   |   |                                  |   |  |
| Your own opinions about the film (200 words)   |   |                                  |   |  |
| 2. a documentary feature film  |   |                                  |   |  |
| Your own opinions about the film (200 words)   |   |                                  |   |  |
| 3. a modern independent film (2000-present). "Independent" means that it is not produced and/or distributed by a large corporation such as Warner Bros, Universal, Sony, Twentieth Century Fox |   |                                  |   |  |
| Your own opinions about the film (200 words)   |   |                                  |   |  |

## Task 2: Orson Welles and Spike Lee, and the idea of the auteur

- Research what an ‘auteur’ is (as distinct from simply a ‘filmmaker’) – make a definition you’re happy with
- We will be studying and comparing *The Lady from Shanghai* (dir. Welles) and *Do the Right Thing* (dir. Lee); we will be considering their films in relation to the idea of the auteur, and asking whether these directors can be counted as auteurs. In order that you have exposure to the films of these directors other than those on the course, **we would like you to watch one other film directed by Welles, and one other film directed by Lee.**
- Some of these films are available on platforms like Netflix or Amazon, or are available to pay to stream on YouTube; Lee’s latest film, *Da Five Bloods*, streams on Netflix from mid-June. We also have *Citizen Kane*, *A Touch of Evil*, and *Macbeth* (all directed by Welles), and *Inside Man* and *She’s Gotta Have It* (both directed by Lee) on school mediastream. As you do, please note down some initial thoughts about the techniques the directors use in the films; you can use the table below if you like.

| Techniques   | Welles film | Lee film |
|--|-------------|----------|
| Are there any ways that the director uses the camera that stand out for you? Are there specific shots that attract your attention or you feel are creative or unusual? |             |          |
| How does the director use sound?   |             |          |
| Do you think that the director is trying to convey any specific messages to the spectator? For example, about power or gender, the make-up of society?                 |             |          |
| Based on what you found out about what an ‘auteur’ is, do you think there is any evidence in the films to suggest that either Welles or Lee counts as an auteur?       |             |          |

# French

## **TASK 1**

During Y12 you will be studying a film, "Au revoir les enfants". Make sure you have watched the film in full. Copies of the film with English subtitles are available in the ILC and can be borrowed when back at school. Alternatively, you may wish to purchase your own copy of the DVD or find it online.

## **TASK 2**

In order to help you understand the film, complete and bring to the first lesson the following research tasks:

1. Research the director of the film (Louis Malle) and bring 10 facts in English about him.
2. Research the historical period in which the film was set. Write 100-200 words in English about what was happening in France in 1944.

## **TASK 3**

Use [www.verbix.com](http://www.verbix.com) to complete the grammar booklet you were given during the induction session. Please email Mrs Barber [laubar@st-laurence.com](mailto:laubar@st-laurence.com) for a copy if you did not attend.

## **TASK 4**

Research the following topics, in English, which will be studied during year 12 (complete the grid we started during the induction session):

- Marriage and divorce
- The French school system
- Strikes in France
- Other countries where French is spoken
- Famous French speaking musicians from around the world
- Festivals in countries where French is spoken

## **TASK 5**

Bring at least one article of your choice (this can be from a French newspaper or magazine) which you have found interesting to discuss with the group.

Try some of the independent study tasks below. Suggested tasks:

- Watch a French film or TV show (a selection available in ILC or on Media Stream).
- Listen to French music or radio. This website has a wide range of suggested stations which can be streamed live: <http://www.listenlive.eu/france.html>
- Choose an interesting article on this website: <http://www.lesdebrouillards.com/> Look up key vocabulary and write a summary in French or English
- Browse current affairs on French newspaper websites <http://www.onlinenewspapers.com/france.htm>
- Go to <http://www.languagesonline.org.uk/> On the left hand menu, go to Francais and then Grammar unit and revise some of the tenses you feel less confident with.

# Geography

The following tasks are designed to introduce you to your Geography A-Level and to prepare you for the course in September. Your work will be utilised in lessons and is **vital to your course for your exams in Yr13** so your teachers expect 100% effort and a demonstration of your independent research/study skills. Ensure you are able to make the best possible first impression! Textbook pages to help you for the physical geography work can be found here but is a **starting point**:

W:\Student\Humanities\Geography\KS5\Pre-Year 12 work\Yr12 summer work\Textbook pages

## Human Geography: "Globalisation" – What are the causes and impacts of globalisation

*[How long? 2-3 hours]*

### Aim:

- To understand the multiple causes of globalisation
- To demonstrate with example an understanding of the causes & impacts of globalisation on modern society

### Tasks:

1. Read the article from Geography Review titled "Globalisation: What are the causes?" Make clear notes on this. You should also begin a glossary of key terms from those on page 2 and answer the discussion questions on the final page.
2. Watch the documentary Supersized Earth: Episode 2 The Way We Live [Supersized Earth - Media Streaming - Powered by Planet eStream \(st-laurence.com\)](#). Whilst watching this, create a mind map of notes about the ways in which our world has changed due to globalisation.

## Physical Geography: "Coastal Landscapes and Change" – How do characteristic coastal landforms contribute to coastal landscapes?

*[How long? 3 hours]*

### Aim:

- To understand how waves and erosion generate erosional landforms
- To understand the processes of transport and deposition forming depositional landforms
- Recognise the influence of sub-aerial processes that change landforms.

### Task:

You are to complete clear and detailed notes a number of coastal landforms in preparation for Enquiry Question 2 of the Coasts topic. The landforms you need to know are listed below.

You must ensure that **each landform is documented on separate pieces of paper**, with clear diagrams showing their formation, clear explanations on how each is formed linking in key terminology wherever relevant and **a real life example**. As a final part of the work, there should be an annotated map of the **Jurassic Coast** showing the location of each of these landforms.

### Landforms:

|  |                       |
|--|-----------------------|
| 1. Mass movement types (fall, topple, transitional slide, rotational slide, flow); | 6. Blow hole;         |
| 2. Hard rock cliff collapse;   | 7. Bayhead beach;     |
| 3. Berm;   | 8. Tombolo;           |
| 4. Wave cut platform & notch;  | 9. Bar/barrier beach; |
| 5. Cave, arch, stack & stump;  | 10. Cuspate foreland; |
|  | 11. Hooked spit.      |





# Globalisation

## What are the causes?

Globalisation is much talked about, but what does it mean, and what drives it? Here Emma West explains the basic causes of globalisation and provides some tips for answering exam questions on this topic

**W**hat is globalisation? There is no single accepted meaning, but the following definition from the International Monetary Fund (IMF) is a useful starting point:

The process through which an increasingly free flow of ideas, people, goods, services and capital leads to the integration of economies and societies.

This definition is not too long to quote in an examination and it covers three significant elements of globalisation:

- It is a process: 'something that happens'.
- It is a dynamic situation that is evolving.
- It has outcomes. These are characterised by greater integration of places and people in both economic and social terms.

### The players in globalisation

#### Trade blocs

Trade blocs are groupings of countries. Examples of such blocs are the European Union (EU), the North American Free Trade Area (NAFTA) and the Association of South East Asian Nations (ASEAN). Countries within a bloc reach agreements which reduce **taxes, tariffs and quotas** in trading between

GeographyReviewExtras

Download our Powerpoint on the Trans Pacific Partnership (TPP) at [www.hoddereducation.co.uk/geographyreviewextras](http://www.hoddereducation.co.uk/geographyreviewextras) for an update on trading blocs.

them. This allows much freer trade within the blocs and deepens integration between member states. Figure 1 shows the world's main trading blocs.

### The World Trade Organization (WTO)

The WTO has 157 member countries. Its aim is to reduce trade barriers within and between trade blocs and to enforce agreed rules about trading arrangements. Agreement about trade between the blocs has not always been smooth and negotiations are still going on following the Doha Round of talks which started in 2001.

All nations wish to expand their markets overseas, but they want to protect themselves from competition in their own markets. They tend to see the 'walls' of their trade bloc as a way to defend themselves from competition. This is particularly evident in the way NAFTA and the EU restrict certain agricultural imports, such as sugar, in order to protect their own farmers. Despite this protectionism, the WTO has enabled more trade between blocs to occur and it is a key player in determining the terms of trade and thus enhancing globalisation.

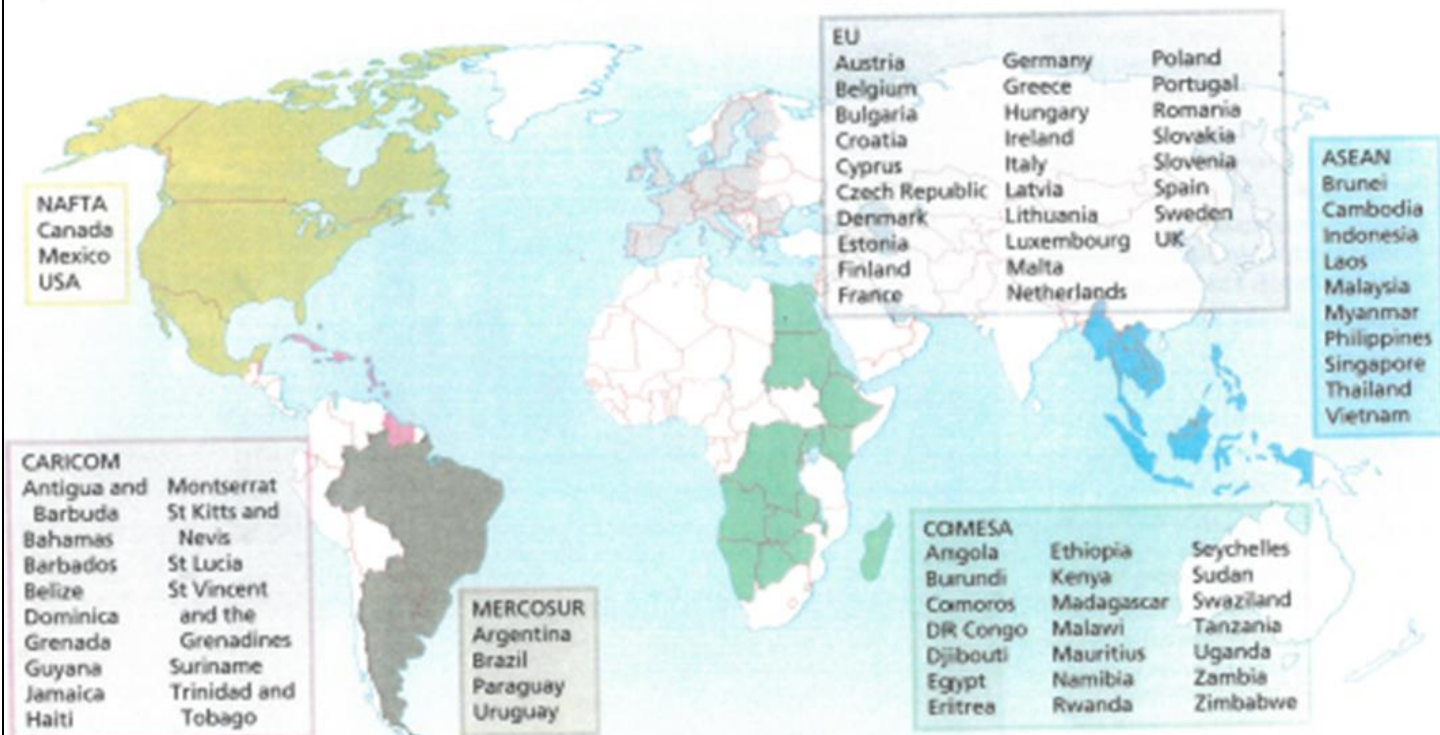


Figure 1 Map showing the main trading blocs



## Transnational corporations (TNCs)

Companies such as Nike and Apple have operations in many countries and are one of the main drivers of globalisation. They try to keep costs down by locating manufacturing in countries where labour is less expensive, either by building their own factories in these countries, or by **outsourcing** manufacturing to local firms. This process has resulted in a **global shift** of manufacturing activity away from high-income countries (HICs) towards lower-income countries (notably in southeast Asia).

However, there are other factors involved in the location of labour, such as level of

skill in the workforce, efficiency, willingness to work long hours and levels of unionisation. You should consider these as well when answering questions about globalisation, to give your examination answers greater balance. For example, English is widely spoken in India and there is a large pool of university graduates in the country. These factors have been crucial in TNCs outsourcing 'back office' functions to locations such as Bangalore. Other considerations include the cost of land, level of planning regulation and range of incentives offered by governments to encourage companies to establish themselves.

Investment also flows from lower-income countries into higher-income nations as companies site themselves inside trading blocs in order to avoid tariffs and quotas, and to increase their global reach. For example, in the UK, the Indian TNC Tata owns Jaguar Land Rover, the Tetley Tea brand, and numerous steel and chemical outlets and has also established an engineering technology centre in the West Midlands. At the same time a **reshoring** trend has emerged: companies that had moved production overseas, often to China, are starting to relocate back to the UK. An example is Hornby toys.

## Governments

As already mentioned, governments work with other governments to form trading relationships. They also have influence over factors such as wage rates, taxation, and regional planning. They vary in their attitude to the nature and type of foreign direct investment (FDI) and so are to some extent 'gatekeepers' to TNCs. However, the negotiating position of poorer countries is not always strong and they can sometimes be overridden by more powerful forces, both from TNCs and from stronger political units.

## Technology

In order for businesses to operate in fragmented locations, effective communication of information is essential. The development of satellite and fibre-optic communications enabled the growth of the internet and mobile phone systems with all the associated benefits of faster, more extensive and cheaper communications. It has allowed the 'friction' of physical distance to be reduced as information and money can move instantly around the world.



MSC Oscar is the largest container ship built so far

Information and money can flow 'virtually' around the globe but raw materials, components and finished products must still be physically transported from place to place. Here too, globalisation has gained momentum due to developments in technology. In January 2015 the world's largest container ship sailed from China to the UK. The MSC Oscar is 396 m long and has a capacity of 19,224 standard containers.

This is an extreme example, but ships routinely carry loads of over 9,000 containers. Containerisation, which started to develop in the 1960s, has reduced the cost of shipping



Jaguar Land Rover is one of the UK companies owned by Tata

## Glossary

### Foreign direct investment (FDI)

Investment from one country into another by companies rather than governments. It involves establishing operations or acquiring tangible assets, including stakes in other businesses.

**Global shift** The changing geographical location of the world's manufacturing industry.

**Glocalisation** The process of global brands being adapted for a local market, but still retaining something of their original identity. McDonald's is a popular example.

**International Monetary fund (IMF)** An organization of 188 countries with its HQ in Washington, DC. Its mission is to foster global monetary cooperation, secure financial stability, facilitate international trade, promote high employment and sustainable economic growth, and reduce poverty around the world.

**Outsourcing** Buying goods or services from an outside supplier, often overseas.

**Quota** A limited quantity of a particular product or substance that can be imported or exported within a set time period.

**Reshoring** Bringing outsourced personnel and services back to the location from which they were originally offshored.

**Tariff** A tax imposed on imported goods and services. Tariffs are used to restrict trade, as they increase the price of imported items, making them more expensive to consumers.

**Tax** A compulsory contribution to state revenue, levied by the government.

**Trade bloc** An agreement between regions or countries to reduce barriers to trade between them.

**Transnational corporation (TNC)** A company with operations in many countries.



considerably. Larger cargoes can be carried and the mechanisation of the process has made it more efficient and cost effective.

Developments in air travel have also enhanced globalisation. Larger and faster aircraft have increased capacity and reduced travelling times, in effect 'shrinking distance'.

#### Consumers

All products need a market and the growth of consumer demand around the world has contributed to globalisation. Products are not only manufactured in many countries, but they are marketed and sold in them too. The

rise of global brands is a highly visible aspect of globalisation. Companies invest significant sums of money in developing their brand identity so that they are instantly recognisable around the world. Some brands are kept the same wherever the product is sold, e.g. Coca Cola, but companies also adapt their brands to fit local markets, a process known as glocalisation.

HICS remain the core markets for consumer goods, but as other countries experience economic growth, new consumer markets emerge, for example those in Brazil and China where disposable incomes have been rising.

#### The media

Development of communications technology has made the world seem smaller. Digital communication means that large media corporations such as the BBC and NewsCorp we can receive information about events more immediately, frequently and from a much wider range of places. We are also exposed to an ever increasing range of cultural influences through film, music and literature, all of which support greater integration.

#### Writing exam answers on this topic

It is important to understand that the drivers of globalisation are varied. Good answers will be able to identify a balanced range of

#### Further reading

The World Trade Organization: [www.wto.org](http://www.wto.org)

A summary of information about trading blocs from Economics Online: [www.economicsonline.co.uk/Global\\_economics/Trading\\_blocs.html](http://www.economicsonline.co.uk/Global_economics/Trading_blocs.html)

BBC article 'Why companies are 'reshoring' back to Britain': [www.bbc.co.uk/news/business-26235707](http://www.bbc.co.uk/news/business-26235707)

factors and use examples to illustrate how they influence the process. This column has outlined several distinct causes of globalisation which could be used as a structure. However, it is also important to recognise that no single factor is a cause by itself. Rather, a mixture of powerful economic and technological circumstances combine to allow 'deepening and lengthening' of global connections. It is a good idea to comment on the varying importance of the different factors in different places, showing that you understand that the process is complex.

It is essential to read the command words in the questions carefully — it is easy to write about impacts instead of causes. However in the case of globalisation there is wonderful scope to show that the initial impacts of globalisation can in fact become the factors that continue to develop it. For example, one of the impacts of TNCs investing in new locations is the creation of jobs. This can result in raised disposable incomes. This then creates a demand for consumer goods which (as already mentioned above) helps to stimulate global demand and trade. Similarly developments in air transport have led to an increase in foreign travel which then leads to greater social awareness and therefore 'interconnectedness'. Don't shy away from making these points where appropriate. The examiner will appreciate them.

#### Questions for discussion

- 1 Can you define globalisation?
- 2 What are the most important drivers of globalisation?
- 3 Can you identify economic, social and technological factors influencing globalisation?
- 4 Why are some places more integrated in the global economy than others?

Emma West is a geography teacher living in Kingston upon Thames.





# German

## TASK 1 – Preparation to study a film: Part 1

During Y12 have been studying a film, "Goodbye, Lenin". Make sure you have watched the film in full. Copies of the film with English subtitles are available in the ILC and the film is also available on the school's Media Stream. Alternatively, you may wish to purchase your own copy of the DVD or find it online.

## TASK 2 – Preparation to study a film: Part 2

In order to help you understand the film, complete the following research task:  
Research the historical period in which the film was set. Write 100-200 words in English about what was happening in Germany in 1989. You will need to include information about the fall of the Berlin Wall and some of the key differences in society on the East and West sides of Germany. This will also help you for the book discussion.

## TASK 3 – Grammatical revision

- Conjugating verbs. Use [www.verbix.com](http://www.verbix.com) to conjugate the following verbs in the present tense (the ich, du, er, wir, ihr, Sie, sie forms of the verb). Make sure you know what all of these pronouns mean, and the meanings of the verbs below.
- **sein, haben, werden, lesen, sehen, fahren, machen, tragen, wollen, sollen, können, dürfen, müssen, mögen**
- Consolidating your understanding of tenses. Use [www.verbix.com](http://www.verbix.com) to check out these verbs below in the present tense, the perfect tense, the future tense and the imperfect tense (all for 'ich').
- **sein, lesen, fahren, gehen, tragen**

## TASK 4 – Development of cultural understanding

Research the following topics, in English with key words and phrases noted down in German. Try to find some key facts and statistics about the situation in Germany. You will already have some notes on most of these topics. Deepen your knowledge and have at least one particular example for each bullet point.

- Environmental issues and projects/ initiatives in German speaking countries
- The German job market and leading companies in German speaking countries
- The German education system
- Famous German speaking musicians from around the world
- Popular German media, e.g. newspapers
- Festivals and traditions in countries where German is spoken

## Task 5 – News article

Bring at least one article of your choice (this can be from a German newspaper or magazine) which you have found interesting to discuss with the group.

German newspapers/ magazines: Die Tagesschau, Süddeutsche Zeitung, Deutsche Welle, Der Spiegel, Fokus, Nachrichten leicht, ...

Try some of the independent study tasks below. Suggested tasks:

- 1) Watch a German film or TV show (a selection are available in ILC or on Media Stream, but also look on Netflix, e.g. Deutschland 83, Crime).
- 2) Listen to German music, radio or podcasts (e.g. on Spotify).
- 3) Deutsche Welle: Langsame gesprochene Nachrichten. Below is a link to current news reports in German, which are each 100 seconds long. These reports are 'slowly spoken news' and are aimed at people learning German. They change regularly and there are also interesting articles, as well as current news. <http://www.dw.de/deutsch-lernen/nachrichten/s-8030>. Over the summer holiday, try to watch at least one a week and record any new vocabulary. You can also get a transcript of some of the reports, so have a look on the website to see what is available and how it can help you improve your listening skills and knowledge of current events.

# Graphics

## Beginners guide to Adobe Illustrator Summer Project

For your summer project I hope to give you an introduction and working understanding of Adobe Illustrator.

You will evidence your work through three vector illustrations based on food.  
This is essential for giving you a basic working understanding of a frequently used program.

### Introduction

Please watch the video below that will give you a quick overview of Adobe Illustrator.

<https://www.youtube.com/watch?v=dY094-vb56M>

### Illustrator Tutorials

Please watch the video below and complete the Illustrator Tutorials:

<https://www.loom.com/share/d096b273e1e441d081ea545b7ef62f9d>

Completion time for these may be many hours so may be completed over a few weeks.

### Creating an Artist Research Board

#### 30 Pins



wall murals painted hippie



Another Ghost



New Year, Same Me: Yeye  
Weller's latest illustrations



Please watch the video below and create a board on your Illustrator project using the website Pinterest

<https://www.loom.com/share/27febb81301a42ac80d8d875f95d4c8e>

Here are some artists to get you started:

Owen Davey, Elen Winata, Crushiform, Tisk Barzanji, Petra Eriksson, Rob Bailey, Karolis Strautniekas and Charley Harper.

Task 1 – Fruit Bowl



Using the shape builder tool on illustrator, create an illustration of a fruit bowl.

This task will help you master basic shapes and colour.

Use the loom video below to help you with some of the tools:

<https://www.loom.com/share/50de64fbc7364a4a82fa3995dc765578>

### Task 2 – Favorite Meal

Using the shape builder tool on Illustrator and some of the skills you developed in the last task, create an illustration of your favorite meal.

Use Pinterest to inform and inspire your designs.



### Task 3 – Illustrated Recipe

On illustrator, using your own illustrations and typography, create an illustrated recipe of your choosing.

<https://www.loom.com/share/41d9cf7809c94792bbb7639146793926>

Hand In

Please email me the fruit bowl, favorite meal and recipe illustration on completion to [ricbru@st-laurence.com](mailto:ricbru@st-laurence.com)

# History

## Democracy and Dictatorships in Germany 1919-63

### Task 1

On A3 paper produce a Timeline of German history, 1918 - 45. Colour code events: Political, Economic, Military and Social and provide a *brief* description of each event (one sentence maximum). Include the following key events, as well as any others you think important:

|  |  |                                |   |  |
|--|--|--------------------------------|---|--|
| Defeat in WW1                                | Kiel Mutiny                                      | Ebert appointed Chancellor     | Spartacist Uprising                                     | Signing of the ToV                               |
| Kapp Putsch                                  | Occupation of the Ruhr                           | Period of hyperinflation       | Munich Beer Hall putsch                                 | Dawes Plan                                       |
| Death of Ebert                               | Hindenburg appointed President                   | Locarno Conference             | Germany joining the LoN                                 | Creation of Muller's coalition government        |
| Young Plan                                   | Death of Stresemann                              | Wall St Crash                  | Bruning appointed chancellor                            | Resignation of Bruning/ appointment of von Papen |
| Papen dismissed/replaced by Schleicher       | Hitler appointed chancellor                      | Reichstag Fire                 | Last democratic elections under the Weimar constitution | Day of Potsdam                                   |
| Enabling Law passed                          | All political opposition declared illegal        | The Night of the Long Knives   | Death of Hindenburg                                     | The New Plan introduced                          |
| The Four-Year Plan established under Goering | The creation of the RHSA (Reich Security Office) | Concordat signed with the Pope | Nuremberg Race Laws introduced                          | Kristallnacht                                    |
| Outbreak of WW2                              | German invasion of USSR (Operation Barbarossa)   | Wannsee Conference             | The Final Solution                                      | Goebbels 'Total war Speech'                      |
| Stauffenberg Bomb Plot                       | German surrender                                 | Yalta Conference               | Potsdam Conference                                      | Nuremberg Trials                                 |

### **Task 2**

Complete the following table. Define the key term, explain it and consider the historical significance of each one.

| Key term                    | Definition | Explanation | Significance |
|-----------------------------|------------|-------------|--------------|
| The Stab in the back myth   |            |             |              |
| Ludendorff's October reform |            |             |              |
| The Spartacist revolt       |            |             |              |
| The Weimar Constitution     |            |             |              |
| First past the post         |            |             |              |
| Article 48                  |            |             |              |
| The Treaty of Versailles    |            |             |              |
| The Kapp Putsch             |            |             |              |
| Reparations                 |            |             |              |
| The Triple Crisis (1923)    |            |             |              |

### **Task 3**

Create a short biography for each of the following key individuals that we will encounter in the first unit of work on the creation of the Weimar Republic and its early years of crisis.

|                  |                     |                      |                 |                     |
|------------------|---------------------|----------------------|-----------------|---------------------|
| Erich Ludendorff | Paul von Hindenburg | Prince Max von Baden | Friedrich Ebert | Phillip Scheidemann |
| Wilhelm Groener  | Gustav Noske        | Walther Rathenau     | Wolfgang Kapp   | Gustav Stresemann   |

### **Reading list:**

#### **Core textbook:**

- Access to History: Democracy and Dictatorships in Germany 1919-63, Geoff Layton.
- Aiming for an A in A-level History, Nicholas Fellows (2018) **(HIGHLY RECCOMENDED)**

#### **Other useful textbooks:**

- SHP Weimar and Nazi Germany, John Hite and Chris Hinton
- Democracy and Dictatorships in Germany 1919-1963, Nicholas Fellows
- My revision notes OCR AS/A-level History: Democracy and Dictatorships in Germany 1919-1963, Nicholas Fellows



### Wider reading:

- A History of Germany 1918 - 2014: The Divided Nation, 4th Edition, Mary Fulbrook (2014) **(HIGHLY RECOMMENDED)**
- Hitler and Nazi Germany, Frank McDonough (2001)
- Hitler and Nazism, Dick Geary (2000)

**Challenging wider reading:** (The following books are detailed and more complex, ideal for those aiming for A/A\*)

- The Coming of the Third Reich, Richard J. Evans (2003)
- The Third Reich in Power, Richard J. Evans (2005)
- The Nazi Dictatorship: Problems and Perspectives of Interpretation, Isan Kershaw (2000)

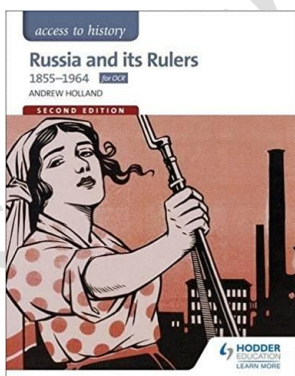
### Suggested TV documentaries:

- Hitler's Circle of Evil (Netflix)
- Auschwitz: The Nazis and the Final Solution (Netflix)
- Einsatzgruppen: The Nazi Death Squads (Netflix)
- The Rise of the Nazi Party (Amazon Prime)
- The Nazis - A Warning from History (BBC)

### Suggested film list:

- The Rise of Evil (on YouTube)
- The Pianist
- Schindler's List
- Downfall
- Conspiracy
- Valkyrie
- Escape from Sobibor
- Life Is Beautiful

## OCR A-level History: Russia and its Rulers 1855-1964



Please note that you will need to purchase a copy of the course textbook for the Russia topic. **It is vital that you buy the Second Edition.**

'Russia and its Rulers 1855-1964' **(Second edition)** by Andrew Holland.

<https://www.amazon.co.uk/Access-History-Russia-Rulers-1855-1964/dp/1471838943>

### Task 1

#### Key words

Create a glossary of definitions for the following key words and phrases.

|                   |                       |                       |                         |                           |
|-------------------|-----------------------|-----------------------|-------------------------|---------------------------|
| Autocracy         | Proletariat           | Democratic centralism | Russification           | Okhrana                   |
| Gulags            | Command economy       | New Economic Policy   | Gosplan                 | Eastern Question          |
| De-Stalinisation  | Bolsheviks            | Orthodoxy             | Treaty of Brest-Litovsk | Land and Liberty          |
| Narodniks         | Stakhanovite movement | Nazi-Soviet Pact      | Duma                    | Collectivisation          |
| October manifesto | Slavophiles           | 'Great spurt'         | Totalitarianism         | Emancipation of the serfs |

To record each definition, a short explanation of what it was and its significance, create a table like this and complete it:

| Key term              | Definition | Explanation | Significance |
|-----------------------|------------|-------------|--------------|
| Autocracy             |            |             |              |
| Proletariat           |            |             |              |
| Democratic centralism |            |             |              |

### Task 2

#### Historical overview

All the materials you require for this task can be found in the 'Summer 2020 work' folder in the KS5 History Curriculum folder entitled 'A2 Russian History'. Please email Mr MacLachlan directly if you are unable to access these: [NEIMAC@st-laurence.com](mailto:NEIMAC@st-laurence.com)

- Using each summary of the challenges facing each ruler when they came power, create a timeline of the period 1855-1964, by reading through the summaries of the situation confronting each new leader at the beginning of their rule.
- You should also begin to familiarise yourself with the key text used throughout the course '**Russia and its Rulers 1855-1964**' by **Andrew Holland** so use pages 6-10 to increase your knowledge and add to your timeline.
- There are opportunities on each summary sheet to record your observations before transferring the most important parts onto your timeline. On the upper part of the timeline summarise the challenges and on the lower part note down the extent of either change or continuity of the challenges in comparison with the previous regime.
- You can create your own digital timeline or use the one provided.

### Task 3

Key texts/Further reading

### **Core textbook**

'Russia and its Rulers 1855-1964' (Second edition) by Andrew Holland

### **Highly recommended**

'The Modernisation of Russia 1856-1985' by John Lavar

'Russia and the USSR' 1855-1991' by Stephen Lee

'Years of Russia and the USSR 1851-1991' by David Evans and Jane Jenkins

'Revolutionary Russia 1891-1991' by Orlando Figes

'Russia 1855-1991 From Tsars to Commissars' by Peter Oxley

### **Wider reading**

'The Court of the Red Tsar' by Simon Sebag-Montefiore

'The Communist Manifesto' by Karl Marx and Friedrich Engels

'Tsarist Russia 1801-1917' by J Hite

'A people's tragedy' by Orlando Figes

'Gulag' by Anne Applebaum

'The Romanovs' by Simon Sebag-Montefiore

'Russia' by Martin Sixsmith

'The Origins of the Cold War 1941-1949' by M McCauley

'The Gulag Archipelago' by Alexander Solzhenitsyn

'The Whisperers' by Orlando Figes

'The Great Terror' by Robert Conquest

'The Penguin History of Modern Russia; From Tsarism to the 21<sup>st</sup> Century' by Robert Service

### **Filmography**

The 1996 BBC series on the Russian Revolution can be found on YouTube and is an excellent detailed analysis of the revolutionary era of Russian history.

'Dr Zhivago' by David Lean is a beautiful retelling of many key events from 1900 onward, whilst 'One day in the life of Ivan Denisovich' (based on the book by dissident writer Alexander Solzhenitsyn) is an unflinching look at life in the gulag from a prisoners' perspective.

'Battleship Potemkin', directed by the Sergei Eisenstein is an account of the 1905 mutiny by the crew on board the Potemkin against their officers. It is frequently cited as one of the best films ever made.

Eisenstein also made the propaganda classic 'October', retelling the events of the Bolshevik takeover from a somewhat biased perspective.

Lastly, a recent addition and a very black comedy is 'The Death of Stalin', it revolves around the jockeying for power after Stalin's death by the inner circle of Soviet politburo members, each fuelled by mutual loathing and fear of each other.

# Law

Law: summer project

## English Legal System: Sentencing



As part of your upcoming Law studies, you will be learning about how the English legal system works, you will learn the process of how criminal cases are heard in the courts, the roles of the legal personnel who will assist these cases and how the guilty offender is punished by the courts. These tasks will allow you to gain an understanding of some of the aspects of sentencing that judges must consider when they are punishing the guilty offender and passing the sentence for the crime that they have committed.



| Summer Task Check List:                      | Task Complete            |
|--|--------------------------|
| Task 1: Key Legal Terms                      | <input type="checkbox"/> |
| Task 2: Sentencing Aims                      | <input type="checkbox"/> |
| Task 3: Factors in Sentencing                | <input type="checkbox"/> |
| Task 4: Sentencing Cases.                    | <input type="checkbox"/> |
| Task 5: Insight into the Sentencing Act 2020 | <input type="checkbox"/> |



### Useful Resources

Tutor2u  
Sentencing Blogs



Sentencing  
Council



CPS,  
Sentencing



Gov.uk –  
How sentences  
are worked out



Courts and  
Tribunals  
Judiciary



Sentencing  
Act 2020



# Task 1 Key Legal Terms

When studying Law, you will use different key legal terms and it is important to know and understand what each term means. You should research the UK definitions of each of the following terms.

| Key Term    | Definition | Did you get this correct? |
|-------------|------------|---------------------------|
| Defendant   |            |                           |
| Prosecution |            |                           |
| Offender    |            |                           |
| Magistrate  |            |                           |
| A Jury      |            |                           |
| Solicitor   |            |                           |
| Barrister   |            |                           |

| Key Term          | Definition | Did you get this correct? |
|-------------------|------------|---------------------------|
| Crown Court       |            |                           |
| Magistrates Court |            |                           |
| Indictment        |            |                           |

## Introduction to Sentencing

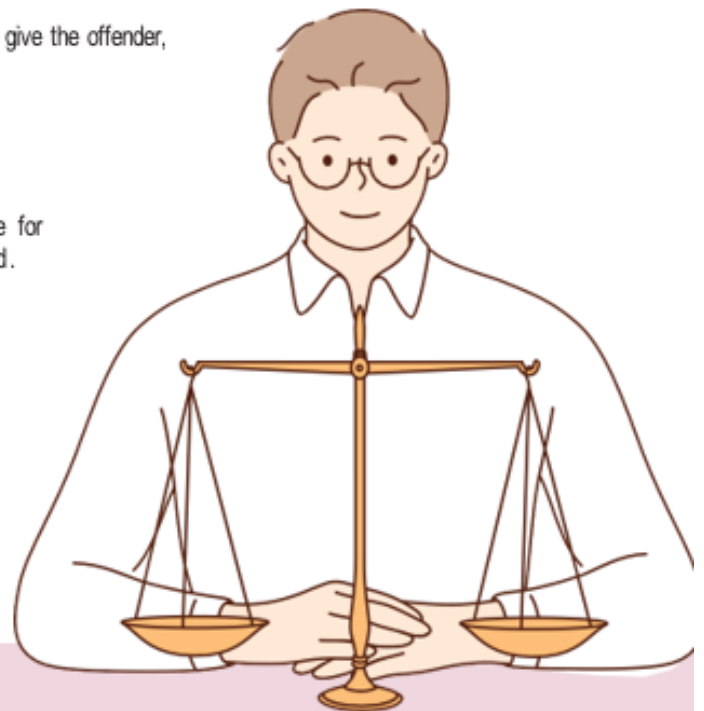
When a person is suspected of committing a crime, their first encounter with the law is often dealt with by the police, who will question them and gather evidence around their involvement in the crime. If the police believe that the person has committed the crime, they will pass this to the Crown Prosecution Service (CPS) who will decide whether there is enough evidence and whether it is in the interests of justice to charge the individual with the criminal offence. It will then be the role of the criminal courts to determine whether the person is guilty or innocent.

When the court case starts the person who has been accused of the crime will be known as the defendant, they will have the opportunity in court to plead guilty or not guilty to the crime. If they plead not guilty, a trial will happen and either a bench of Magistrates (3 people) or a jury (12 people) will decide if the defendant is guilty or not guilty. If the defendant pleads guilty or are later found guilty by the Magistrates or the jury, it will then be the role of the Magistrates or the judge to sentence the defendant for the crime that they have committed. Once they are guilty the defendant will then be known as the offender.

When the judge or Magistrate is deciding what sentence to give the offender, they will consider a number of things such as:

- The aim of the sentence
- The factors within the case
- Sentencing guidelines

They will use these to decide the most appropriate sentence for the offender and to reflect the crime that was committed.





## Sentencing within the English Legal System



The defendant has pleaded guilty or been found guilty by the Magistrates or Jury. They will now be known as the offender.



There will then be a sentencing hearing, here the Judge or Magistrates will decide the most appropriate sentence to give the defendant for the crime that has been committed.

When deciding the sentence, the judge will consider the following:



### The aims and purpose of the sentence

Here the magistrate/judge will consider what they want to achieve when they sentence the offender. Do they want to punish them? Rehabilitate them? Deter them from committing a crime again?



### The factors in the case

They will look at various aspects of the case and the case facts and decide if certain elements or factors justify a more serious or more lenient sentence.



### Sentencing Guidelines

The magistrates/judge will look at sentencing guidelines. Each criminal offence has a guideline, these will outline the different sentences that can be given based on the different aspects and factors involved within the case.



## Task 2 Sentencing Aims

The first thing that a Judge or Magistrate will consider is the aim and purpose of their sentence. They will consider what they want to achieve for the offender with the sentence that they will pass. The different aims that they can consider can now be found in Section 57 of the Sentencing Act 2020.

**Task:** Below you will find an explanation of each of the different aims and purposes of sentencing. You should read each explanation and then using the different types of sentences listed below the table, decide which sentence could be used by the judge to achieve that aim or purpose.

| Aim/Purpose of Sentencing                                   | Explanation   | The sentence type that would achieve this aim | Did you get this correct? |
|---|---|---|---------------------------|
| Punishment of Offenders                                     | The offender's <u>behaviour</u> deserves to be punished. The sentence should be seen as giving the offender 'just <u>deserts</u> ' and the punishment should fit the crime that they have committed.  |   |                           |
| Reduction in Crime  | Here the offender will receive a sentence that will aim to reduce crime, this could be done by giving a harsh sentence to deter the offender and other people from committing crimes again in the future. The offender and others in society will not commit future crimes because they will be in fear of receiving harsh punishments. |   |                           |
| Reform and Rehabilitation of Offenders                      | The sentence will aim to reform or rehabilitate the offender. The sentence will change the offender's <u>behaviour</u> and tackle the reasons why they commit a crime in the hope that they will not commit crimes again.   |   |                           |
| Protection of the Public                                    | This aim works upon the principle that the public needs to be protected from dangerous offenders. The sentence will remove the offender from society as a whole or parts of it to ensure that the offender is incapable of committing crimes, so the public are protected from them.  |   |                           |
| To Make Reparation to the People Affected by Their Offences | This aim will require the offender to compensate the victim or society for the crime that they committed. Here the sentence will make sure that the offender will repay the victim of the crime or <u>society as a whole</u> .  |   |                           |

### Possible Sentencing Types:

A fixed term prison sentence that is proportionate to the crime eg if murder is committed then a life sentence is given

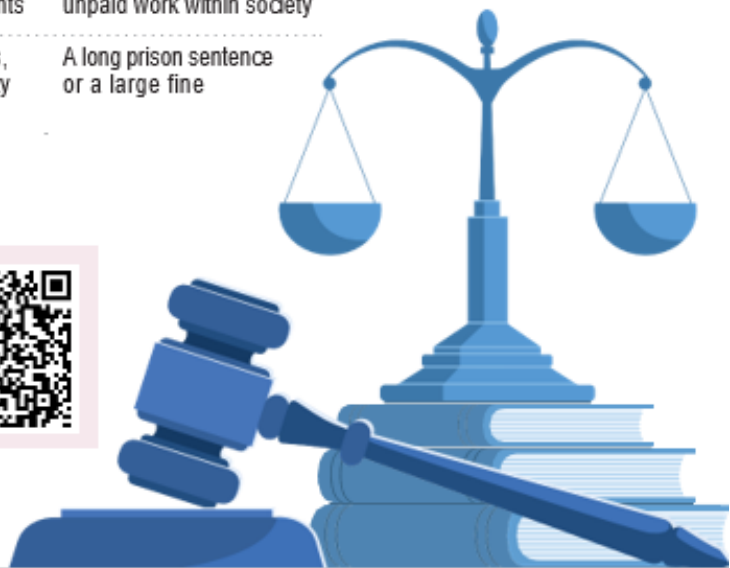
Drug and Alcohol treatment or education requirements

Compensation order or unpaid work within society

Long prison sentences, curfew, prohibited activity order

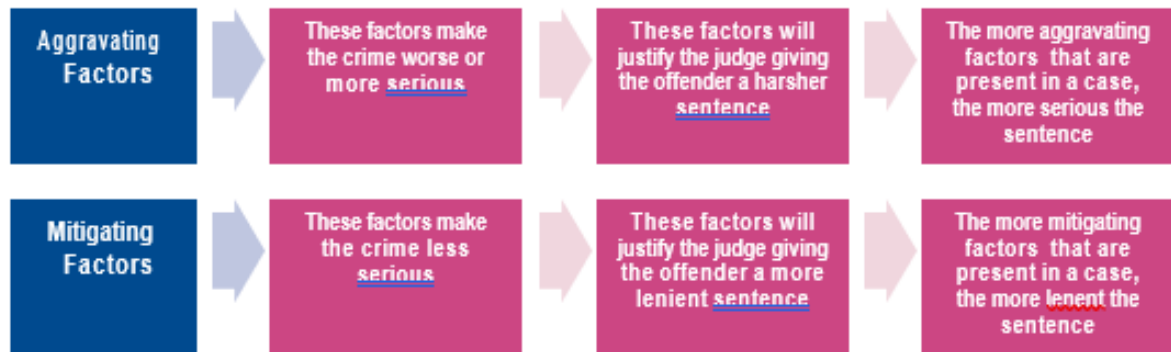
A long prison sentence or a large fine

Further information on types of sentences can be found on the Sentencing Council website:



## Task 3 Sentencing Factors

When the Magistrate or the judge is trying to decide the most appropriate sentence for the offender, they will look at the facts (story) of the case and identify any aggravating or mitigating factors that could help them determine how serious or lenient the sentence should be.



Using the definitions of aggravating and mitigating factors, look at the list of factors below and identify if the factor is aggravating or mitigating.

| Aggravating Factors<br>These make the crime seem worse |   | Mitigating Factors<br>These make the crime seem less serious or bad |                            |  |
|--|---|---|----------------------------|--|
| A vulnerable victim                                    | The offender is suffering from a mental illness | Showing no remorse  | Racially aggravated crimes | The offender has no previous convictions |
| The offender is a child                                | Use of a weapon                                 | The offender has previous convictions                               | An early guilty plea       | Co-operating with the police             |

## Task 4 Sentencing cases

Research the following cases and create a case file on each of the offenders. You should complete the following for each case:

- Explain the facts of the case.
- Identify the aggravating and mitigating factors in the case.
- Detail the sentence that was given.
- Decide if you think that the sentence was justified and explain why.

**Thomas Mair (2016)**

**Case facts**

.....

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.....

.....

| Aggravating Factors | Mitigating Factors |
|---------------------|--------------------|
|                     |                    |

The Sentence Given:

Is this sentence justified? Why?

# William Cornick (2014)

## Case facts



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| Aggravating Factors | Mitigating Factors |
|---------------------|--------------------|
|                     |                    |

|                     |                                  |
|---------------------|----------------------------------|
| The Sentence Given: | Is this sentence justified? Why? |
|---------------------|----------------------------------|

# Rose West (1995)

## Case facts



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| Aggravating Factors | Mitigating Factors |
|---------------------|--------------------|
|                     |                    |

|                     |                                  |
|---------------------|----------------------------------|
| The Sentence Given: | Is this sentence justified? Why? |
|---------------------|----------------------------------|

# Henry Long (2020)



## Case facts

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| Aggravating Factors | Mitigating Factors |
|---------------------|--------------------|
|                     |                    |

|                     |                                  |
|---------------------|----------------------------------|
| The Sentence Given: | Is this sentence justified? Why? |
|---------------------|----------------------------------|

# Task 5 Insight into the Sentencing Act 2020

**Insight Task:**  
**The Sentencing Act 2020**





You should scan the QR codes and access the Tutor2U blog post upon the Sentencing Act 2020. Read the blog carefully and answer the following questions to gain an insight and understanding of the legal importance of this Act.




1 What is the purpose of the Sentencing Act 2020?

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2 What is the function of the Law Commission, why do you think that they chose sentencing as a project to be involved in?

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3 What changes does the Sentencing Act 2020 make to the laws of sentencing in the UK?

| Sentencing Provision               | Sentencing Act 2020 Reference | Previous Statutory Reference          |
|------------------------------------|-------------------------------|---------------------------------------|
| Adult Aims of Sentencing           |                               | Section 142 Criminal Justice Act 2003 |
| Aggravating and Mitigating Factors |                               | Section 143 Criminal Justice Act 2003 |
| Custodial Sentencings              |                               | Section 152 Criminal Justice Act 2003 |
| Mandatory Life Sentences           |                               | Section 225 Criminal Justice Act 2003 |

Table continues on the next [page](#)

## 12 Law Summer Project



| Sentencing Provision             | Sentencing Act 2020 Reference | Previous Statutory Reference   |
|----------------------------------|-------------------------------|--|
| Life Sentence for Second Offence |                               | Section 122 The Legal Aid, Sentencing and Punishment of Offenders Act (LAPSO) 2012   |
| Extended Sentences               |                               | Section 226-230 Criminal Justice Act 2003 and Section 124 The Legal Aid, Sentencing and Punishment of Offenders Act (LAPSO) 2012 |
| Suspended Sentences              |                               | Section 189 Criminal Justice Act 2003 and Section 68 The Legal Aid, Sentencing and Punishment of Offenders Act (LAPSO) 2012      |
| Fines                            |                               | Section 163 Criminal Justice Act 2003  |
| Discharges                       |                               | Section 7 Criminal Justice Act 1948  |
| Community Orders                 |                               | Section 177 Criminal Justice Act 2003 and Section 166 The Legal Aid, Sentencing and Punishment of Offenders Act (LAPSO) 2012     |

### Support Resources for Law



|   |  |
|---|--|
| <b>Poster Packs</b>                       | <a href="http://www.tutor2u.net/law/reference/poster-handout">www.tutor2u.net/law/reference/poster-handout</a>             |
| <b>Retrieval Quizzes</b>                  | <a href="http://www.tutor2u.net/law/reference/revision-quizzes">www.tutor2u.net/law/reference/revision-quizzes</a>         |
| <b>Online study notes and key cases</b>   | <a href="http://www.tutor2u.net/law/reference/study-notes">www.tutor2u.net/law/reference/study-notes</a>                   |
| <b>A-Level Law Study Books</b>            | <a href="http://www.tutor2u.net/law/store/student-revision-support">www.tutor2u.net/law/store/student-revision-support</a> |
| <b>A-Level Law Assessment Packs</b>       | <a href="http://www.tutor2u.net/law/store/exam-practice-assessment">www.tutor2u.net/law/store/exam-practice-assessment</a> |
| <b>A-Level Law Livestream and Replays</b> | <a href="http://www.tutor2u.net/law/live/archive">www.tutor2u.net/law/live/archive</a>                                     |

Subscribe to the Tutor2u YouTube Channel for access to A-Level Law revision [videos](#)



Sign up to the tutor2u Law Blog to keep up to date with legal developments and law in the [news](#)



### Student Workshops

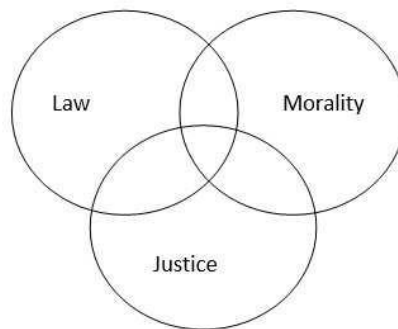
**Year 13**  
[www.tutor2u.net/workshops/a-level-law-grade-booster](http://www.tutor2u.net/workshops/a-level-law-grade-booster)



## **Activity 1**

Look at the diagram below and use it to help you:

- a. Write a definition of each of the terms i.e. Law, Morality, Justice.
- b. Explain how the circles overlap:
  - i. How can the law and justice be satisfied but not morality?
  - ii. How can something be seen as moral and just but be against the law?
  - iii. How can something be legal and moral but not be seen as just?



## **Activity 2 (Read/watch the following articles and video)**

Edward Colston's statue

[Throwing Colston's statue in the Harbour](#)

The removal of Edward Colston's statue from the harbour

[Colston's statue is pulled out of the Harbour](#)

Protestors are unlikely to be prosecuted

[Protestors are unlikely to be prosecuted](#)

Churchill's statue

[Boarding up of Churchill's statue](#)

Use the information to answer the following questions:

- a. Do you think that the actions of the protestors were:-
  1. Legal
  2. Moral
  3. Achieved Justice
- b. Should the statue have been pulled out of the harbour, or should it have been left there? Please explain your reasons.
- c. Protestors
  1. Do you think the protestors should be prosecuted?
  2. Explain the legal loophole that prevents their prosecution.
- d. Do you think the protestors have gone too far or should we also remove Churchill's Statue? Please explain your reasons.

## Mathematics

The following tasks and challenges focus on key fundamental skills that you need to ensure you have mastered in order to apply them to more complicated, less structured problems/situations. A-Level Mathematics is an algebra based course which means you will be required to thoroughly understand techniques efficiently, accurately and flexibly. It is quite feasible to gain a high grade at GCSE without having mastered these fundamental skills. Experience shows that students who begin this course with inadequate algebraic skills struggle through the course. There is a weekly KS5 Maths Club for support & challenge.

*With all of this in mind - You will complete the following over the summer:*

- MyMaths Homeworks (4 tasks set)
- Written solutions to a set of questions (later in this document)
- Work through AMSP modules to challenge/support you via <https://amsp.org.uk/resource/gcse-alevel-transition-resources>

### We expect:

- Your written solutions to the questions on the following pages to be ready to submit the **first lesson** back.
- Your written work from the AMSP modules ready to submit the **first lesson** back
- MyMaths Homeworks to be completed with at least 90% correct on each task by **Sept 8<sup>th</sup>**

Email Ms Ridewood [janrid@st-laurence.com](mailto:janrid@st-laurence.com) if you have any problems accessing Mymaths tasks or AMSP modules

In the first week back you will sit a series of 6 tests, 3 per lesson. Each lasting about 15 mins and with a focus on one of the fundamental skills.

The pass mark is 100% - you will need to re-sit in a session after school (you will have to seek help with that skill from other students, MyMaths and/or your teacher).

| MINI-TEST | SKILL FOCUS           |
|-----------|-----------------------|
| 1         | Fractions             |
| 2         | Expanding             |
| 3         | Factorising           |
| 4         | Laws of Indices       |
| 5         | Completing the square |
| 6         | Manipulating surds    |

| ASSIGNED MYMATHS TASKS  |  |
|---|--|
| A-LEVEL MATHEMATICS   | A-LEVEL FURTHER MATHEMATICS  |
| MyMaths - New Spec A-Level<br><br>'Pure/Algebra/Algebraic Manipulation'<br>'Pure/Algebra/Indices 1'<br>'Pure/Algebra/Indices 2'<br>'Pure/Algebra/Surds 1' | In addition to the other assigned tasks, you need to complete:<br>MyMaths - New Spec A-Level<br><br>'Pure/Proof/Proof by deduction'<br>'Pure/Exponentials & Logarithms/Exponential Graphs' |



Methods and answers should be presented formally on a separate piece (or pieces) of paper. You do not have enough space here to do so.

## FUNDAMENTAL SKILLS ASSESSMENT

NO CALCULATORS

### FRACTIONS

Fully simplify:

1)  $\frac{2}{5} - \frac{3}{11}$       2)  $\frac{6}{7} \times \frac{8}{9}$

3)  $\frac{2}{11} \div \frac{3}{7}$       4)  $3\frac{4}{9} - 2\frac{5}{7}$

5)  $\frac{3x^2}{4xy^3}$       6)  $\frac{18x^4 - 8x^2y^2}{12x^4y - 16x^3y^2}$

7)  $\frac{2x}{(x+1)} - \frac{3}{(x-5)}$       8)  $\frac{4}{y^3x} - \frac{9}{x^3y}$

### EXPANDING

Expand & fully simplify:

1)  $3(4a - 2)$

2)  $(2a - 7)(3a + 4)$

3)  $4(2a + 3)^2$

4)  $2(a+3) - 7(a-2)$

5)  $(5a + 9)(5a - 9)$

6)  $5a(2a - 1) - (a^2 + 3a - 5)$

### FACTORISING

Fully factorise:

1)  $8a^2 - 12a$

2)  $a^2 - 6a - 8$

3)  $3a^2 - 75$

4)  $4a^2 - 9b^2$

### LAWS OF INDICES

Evaluate:

1)  $36^{\frac{1}{2}}$

2)  $8^2 \times 8^{11}$

3)  $97^0$

4)  $5^{-1}$

5)  $8^{\frac{2}{3}}$

6)  $64^{\frac{5}{6}}$

Simplify, leaving in index form

1)  $(a^2b)^3$

2)  $a^4 \times b \times a^{-3}$

3)  $b \times \frac{a^{-4}}{b^{-1}}$

4)  $(\sqrt[4]{a})^{-3}$

### COMPLETING THE SQUARE

Write the following in the form

$(ax + b)^2 + c$ , where a,b,c are written as integers or fractions.

1)  $x^2 + 6x - 10$

2)  $x^2 - 3x + 5$

3)  $4x^2 + 8x + 12$

4)  $5x^2 - 3x + 13$

### MANIPULATING SURDS

Simplify where possible:

1)  $\sqrt{12}$

2)  $4\sqrt{3} \times 3\sqrt{27}$

3)  $(\sqrt{2} + 5)(\sqrt{7} - 3)$

4)  $(2\sqrt{5} + \sqrt{7})^2$

5)  $\frac{5}{\sqrt{3}}$

6)  $\frac{(\sqrt{3} - 2)}{(\sqrt{5} + 3)}$

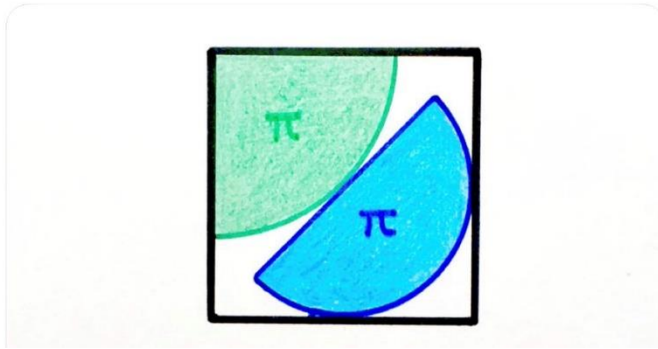
7)  $\sqrt{2} + 5\sqrt{8} - 2\sqrt{7} + 3\sqrt{196}$

## Further Maths

**Part 1** Please present full solutions to these problems. State any assumptions you have made and present your answers exactly (do not round them).

Question 1

What's the area of the square?



Question 2: It is well known that, for a sheet of A4 paper, the ratio of the short side to the long side is  $1:\sqrt{2}$ , that is to say the long side is  $\sqrt{2}$  times the length of the short side.

Consider a sheet of A4 paper. Let us give the short side the length of 1 unit and the long side the length of  $\sqrt{2}$  units.

If I fold the paper, follow the following 2 steps, to make a new shape, what is the new perimeter? What is the shape formed?



Step 1: Fold the corner over so the short edge lies flat with the long edge.



Step 2: Fold the other corner over so that the two triangles formed lie on the same line.

**Part 2** Please present your findings. This need not be a full solution; you should communicate your ideas and what you think this means

# MY FAVOURITE PROBLEM IS...

1. Start with any triangle.

2. Mark a point one third of the way along each edge moving anticlockwise from each corner.

3. Join these points to the 'opposite' corner to make a new triangle.

4. What fraction of the original triangle is the new triangle?

Based on a problem in The Mathematical Gazette

This problem can be solved in several ways, using techniques from GCSE or A level and even beyond that! The surprising result fascinated Nobel Prize winning Physicist Richard Feynman.

Experiment with equilateral triangles, what do you notice? Justify your conclusion(s) algebraically.

What happens with other shapes? What happens when you change the proportions of the marker points?

Research why Richard Feynman was fascinated by this result? Produce a poster/power point or piece of written work communicating your findings.



# Music

## Task 1 - Performing

Prepare a solo performance of 2 contrasting pieces. Your choice of pieces should reflect your current level of performance skill and demonstrate your ability to show different techniques eg:

- pianists may wish to prepare one piece by a classical composer and one in a jazz style
- singers may consider one classical song and one music theatre song
- guitarists may choose to perform one piece in a classic rock style and one blues

You should be ready to record your performance during the 1<sup>st</sup> 2 weeks in September.

## Task 2 - Listening

- Symphony No 101 – Haydn
- Symphony No 104 – Haydn
- Symphony No 40 OR 41 - Mozart
- Symphony No 3 'Eroica' – Beethoven

## Task 3

Research the development of the SYMPHONY during the Classical period. You should be ready to present your work as a Power-point.

You should focus on:

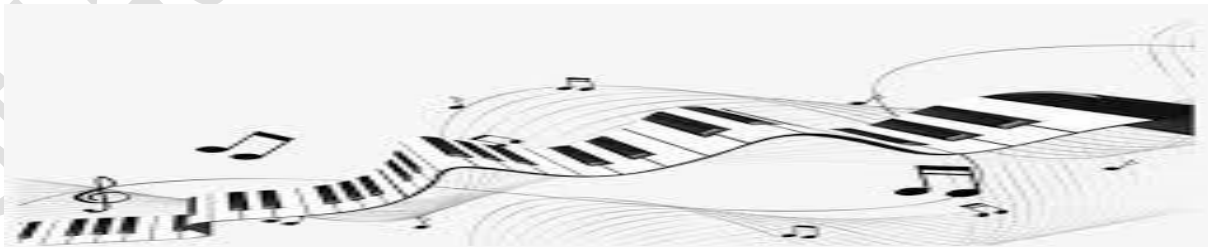
- Definition/performance forces/general structure
- Haydn and his work at the royal court of Esterhazy
- Developments by his near contemporaries, especially Mozart and Beethoven

### **Suggested recordings:**

Academy of St Martin in the Fields conducted by Sir Neville Marriner

Concertgebouw Orchestra conducted by Nikolaus Harnoncourt

Orchestre Revolutionnaire et Romantique conducted by John Eliot Gardiner





## Philosophy & Ethics

Philosophy is a vital subject, living and relevant. It contains within it the seeds for your own happiness and self-understanding as well as the source of hope for our collective futures.

Don't pass up this chance you have to reflect deeply and make a difference. It's a confusing world - but one full of wonder and potential

### Task 1 – The Cave

“An enormous rock falls and blocks the exit of a cave you and five other tourists have been exploring. Fortunately, you spot a hole elsewhere and decide to let "Big Jack" out first. But Big Jack, a man of generous proportions, gets stuck in the hole. He cannot be moved and there is no other way out.

### VOTE RESULTS

Should you blast Big Jack out?

Yes 74.12%

No 25.88%

19377 votes cast

Results are indicative and may not reflect public opinion

The high tide is rising and, unless you get out soon, everyone but Big Jack (whose head is sticking out of the cave) will inevitably drown. Searching through your backpack, you find a stick of dynamite. It will not move the rock, but will certainly blast Big Jack out of the hole. Big Jack, anticipating your thoughts, pleads for his life. He does not want to die, but neither do you and your four companions. Should you blast Big Jack out?

What choices are available to us in the cave? Who should we save and why? Should we save anyone? I want you to explore these choices and analyse the strengths and weaknesses of those choices. By the end of the essay I would like you to have made a decision as to what you would do and why? Try and put your ideas into categories.

## Task 2 – The Illusions of life

Read and make notes on the following Articles (The Problems of Philosophy by Bertrand Russell and The New York Times Article on the illusion of freedom.

You should set out your work in using the following headings: Paragraph, Important information, Clarification, Questions and Predictions. Remember Philosophy is rarely understood the first time and needs to be read more than once in order to gain understanding

## Task Three – How do the articles on the Illusion of perception affect your ideas in the cave example?

Having read the previously mentioned articles I want you to now reflect on your previous work on the cave example. How certain are you of the choices that you have made? Would you change your analysis of the cave situation or not? This should be at least one side of A4

What are we looking for?

We want you to demonstrate the following skills:

- Analysis: taking a whole and separating it into its separate parts. Basically you should include a wide range of information based on the questions that you have been asked. One paragraph per idea.
- Evaluation: to judge the value of something. This is when you show us why you feel something is worth studying. Pinpoint the valuable parts of the subject

These are important skills in A - level Philosophy. It is important that you are practicing these skills right from the word go. We also want to show you the difference between focusing on a textbook (GCSE) and focusing on reading around the topic (A level).

## Presentation

- I would like you write in clear paragraphs. You should have one idea for each paragraph.
- I would like to see lots of interesting examples that show me that you understand the questions.
- Examples can be found throughout life. Films, TV and Newspapers are rich sources of philosophical and ethical content. Keep your eyes open for interesting examples.
- Include your own opinion
- Do not forget to answer the questions set
- I would like you to bring in a printed copy of your work in the first week of the new September term

Some books that you might find interesting to read are: General Reading:

- Sophie's World
- Philosophy for beginners
- 101 philosophy problems
- Zeno and the Tortoise, How to think like a philosopher A level Introductions
- Puzzle of Ethics
- Puzzle of Philosophy

All of these books can be purchased very cheaply on Amazon.

#### CHAPTER I. APPEARANCE AND REALITY

Is there any knowledge in the world which is so certain that no reasonable man could doubt it? This question, which at first sight might not seem difficult, is really one of the most difficult that can be asked. When we have realized the obstacles in the way of a straightforward and confident answer, we shall be well launched on the study of philosophy--for philosophy is merely the attempt to answer such ultimate questions, not carelessly and dogmatically, as we do in ordinary life and even in the sciences, but critically, after exploring all that makes such questions puzzling, and after realizing all the vagueness and confusion that underlie our ordinary ideas.

In daily life, we assume as certain many things which, on a closer scrutiny, are found to be so full of apparent contradictions that only a great amount of thought enables us to know what it is that we really may believe. In the search for certainty, it is natural to begin with our present experiences, and in some sense, no doubt, knowledge is to be derived from them. But any statement as to what it is that our immediate experiences make us know is very likely to be wrong. It seems to me that I am now sitting in a chair, at a table of a certain shape, on which I see sheets of paper with writing or print. By turning my head I see out of the window buildings and clouds and the sun. I believe that the sun is about ninety-three million miles from the earth; that it is a hot globe many times bigger than the earth; that, owing to the earth's rotation, it rises every morning, and will continue to do so for an indefinite time in the future. I believe that, if any other normal person comes

into my room, he will see the same chairs and tables and books and papers as I see, and that the table which I see is the same as the table which I feel pressing against my arm. All this seems to be so evident as to be hardly worth stating, except in answer to a man who doubts whether I know anything. Yet all this may be reasonably doubted, and all of it requires much careful discussion before we can be sure that we have stated it in a form that is wholly true.

To make our difficulties plain, let us concentrate attention on the table. To the eye it is oblong, brown and shiny, to the touch it is smooth and cool and hard; when I tap it, it gives out a wooden sound. Anyone else who sees and feels and hears the table will agree with this description, so that it might seem as if no difficulty would arise; but as soon as we try to be more precise our troubles begin. Although I believe that the table is 'really' of the same colour all over, the parts that reflect the light look much brighter than the other parts, and some parts look white because of reflected light. I know that, if I move, the parts that reflect the light will be different, so that the apparent distribution of colours on the table will change. It follows that if several people are looking at the table at the same moment, no two of them will see exactly the same distribution of colours, because no two can see it from exactly the same point of view, and any change in the point of view makes some change in the way the light is reflected.

For most practical purposes these differences are unimportant, but to the painter they are all-important: the painter has to unlearn the habit of thinking that things seem to have the colour which common sense says they 'really' have, and to learn the habit of seeing things as they appear. Here we have already the beginning of one of the distinctions that cause most trouble in philosophy--the distinction between 'appearance' and 'reality', between what things seem to be and what they are. The painter wants to know what things seem to be, the practical man and the philosopher want to know what they are; but the philosopher's wish to know this is stronger than the practical man's, and is more troubled by knowledge as to the difficulties of answering the question.

To return to the table. It is evident from what we have found, that there is no colour which pre-eminently appears to be the colour of the table, or even of any one particular part of the table--it appears to be of different colours from different points of view, and there is no reason for regarding some of these as more really its colour than others. And we know that even from a given point of

view the colour will seem different by artificial light, or to a colour-blind man, or to a man wearing blue spectacles, while in the dark there will be no colour at all, though to touch and hearing the table will be unchanged. This colour is not something which is inherent in the table, but something depending upon the table and the spectator and the way the light falls on the table. When, in ordinary life, we speak of \_the\_ colour of the table, we only mean the sort of colour which it will seem to have to a normal spectator from an ordinary point of view under usual conditions of light. But the other colours which appear under other conditions have just as good a right to be considered real; and therefore, to avoid favouritism, we are compelled to deny that, in itself, the table has any one particular colour.

The same thing applies to the texture. With the naked eye one can see the grain, but otherwise the table looks smooth and even. If we looked at it through a microscope, we should see roughnesses and hills and valleys, and all sorts of differences that are imperceptible to the naked eye. Which of these is the 'real' table? We are naturally tempted to say that what we see through the microscope is more real, but that in turn would be changed by a still more powerful microscope. If, then, we cannot trust what we see with the naked eye, why should we trust what we see through a microscope? Thus, again, the confidence in our senses with which we began deserts us.

The shape of the table is no better. We are all in the habit of judging as to the 'real' shapes of things, and we do this so unreflectingly that we come to think we actually see the real shapes. But, in fact, as we all have to learn if we try to draw, a given thing looks different in shape from every different point of view. If our table is 'really' rectangular, it will look, from almost all points of view, as if it had two acute angles and two obtuse angles. If opposite sides are parallel, they will look as if they converged to a point away from the spectator; if they are of equal length, they will look as if the nearer side were longer. All these things are not commonly noticed in looking at a table, because experience has taught us to construct the 'real' shape from the apparent shape, and the 'real' shape is what interests us as practical men. But the 'real' shape is not what we see; it is something inferred from what we see. And what we see is constantly changing in shape as we move about the room; so that here again the senses seem not to give us the truth about the table itself, but only about the appearance of the table.

Similar difficulties arise when we consider the sense of touch. It is true that the table always gives us a sensation of hardness, and we feel that it resists pressure. But the sensation we obtain depends upon how hard we press the table and also upon what part of the body we press with; thus the various sensations due to various pressures or various parts of the body cannot be supposed to reveal directly any definite property of the table, but at most to be signs of some property which perhaps causes all the sensations, but is not actually apparent in any of them. And the same applies still more obviously to the sounds which can be elicited by rapping the table.

Thus it becomes evident that the real table, if there is one, is not the same as what we immediately experience by sight or touch or hearing. The real table, if there is one, is not immediately known to us at all, but must be an inference from what is immediately known. Hence, two very difficult questions at once arise; namely, (1) Is there a real table at all? (2) If so, what sort of object can it be?

It will help us in considering these questions to have a few simple terms of which the meaning is definite and clear. Let us give the name of 'sense-data' to the things that are immediately known in sensation: such things as colours, sounds, smells, hardnesses, roughnesses, and so on. We shall give the name 'sensation' to the experience of being immediately aware of these things. Thus, whenever we see a colour, we have a sensation of the colour, but the colour itself is a sense-datum, not a sensation. The colour is that of which we are immediately aware, and the awareness itself is the sensation. It is plain that if we are to know anything about the table, it must be by means of the sense-data--brown colour, oblong shape, smoothness, etc.--which we associate with the table; but, for the reasons which have been given, we cannot say that the table is the sense-data, or even that the sense-data are directly properties of the table. Thus a problem arises as to the relation of the sense-data to the real table, supposing there is such a thing.

The real table, if it exists, we will call a 'physical object'. Thus we have to consider the relation of sense-data to physical objects. The collection of all physical objects is called 'matter'. Thus our two questions may be re-stated as follows: (1) Is there any such thing as matter? (2) If so, what is its nature?

The philosopher who first brought prominently forward the reasons for regarding the immediate objects of our senses as not existing independently of us was Bishop Berkeley (1685-1753). His Three Dialogues between Hylas and Philonous, in Opposition to Sceptics and Atheists, undertake to prove that there is no such thing as matter at all, and that the world consists of nothing but minds and their ideas. Hylas has hitherto believed in matter, but he is no match for Philonous, who mercilessly drives him into contradictions and paradoxes, and makes his own denial of matter seem, in the end, as if it were almost common sense. The arguments employed are of very different value: some are important and sound, others are confused or quibbling. But Berkeley retains the merit of having shown that the existence of matter is capable of being denied without absurdity, and that if there are any things that exist independently of us they cannot be the immediate objects of our sensations.

There are two different questions involved when we ask whether matter exists, and it is important to keep them clear. We commonly mean by 'matter' something which is opposed to 'mind', something which we think of as occupying space and as radically incapable of any sort of thought or consciousness. It is chiefly in this sense that Berkeley denies matter; that is to say, he does not deny that the sense-data which we commonly take as signs of the existence of the table are really signs of the existence of something independent of us, but he does deny that this something is non-mental, that it is neither mind nor ideas entertained by some mind. He admits that there must be something which continues to exist when we go out of the room or shut our eyes, and that what we call seeing the table does really give us reason for believing in something which persists even when we are not seeing it. But he thinks that this something cannot be radically different in nature from what we see, and cannot be independent of seeing altogether, though it must be independent of our seeing. He is thus led to regard the 'real' table as an idea in the mind of God. Such an idea has the required permanence and independence of ourselves, without being--as matter would otherwise be--something quite unknowable, in the sense that we can only infer it, and can never be directly and immediately aware of it.

Other philosophers since Berkeley have also held that, although the table does not depend for its existence upon being seen by me, it does depend upon being seen (or otherwise apprehended in



sensation) by some mind--not necessarily the mind of God, but more often the whole collective mind of the universe. This they hold, as Berkeley does, chiefly because they think there can be nothing real--or at any rate nothing known to be real except minds and their thoughts and feelings. We might state the argument by which they support their view in some such way as this: 'Whatever can be thought of is an idea in the mind of the person thinking of it; therefore nothing can be thought of except ideas in minds; therefore anything else is inconceivable, and what is inconceivable cannot exist.'

Such an argument, in my opinion, is fallacious; and of course those who advance it do not put it so shortly or so crudely. But whether valid or not, the argument has been very widely advanced in one form or another; and very many philosophers, perhaps a majority, have held that there is nothing real except minds and their ideas. Such philosophers are called 'idealists'. When they come to explaining matter, they either say, like Berkeley, that matter is really nothing but a collection of ideas, or they say, like Leibniz (1646-1716), that what appears as matter is really a collection of more or less rudimentary minds.

But these philosophers, though they deny matter as opposed to mind, nevertheless, in another sense, admit matter. It will be remembered that we asked two questions; namely, (1) Is there a real table at all? (2) If so, what sort of object can it be? Now both Berkeley and Leibniz admit that there is a real table, but Berkeley says it is certain ideas in the mind of God, and Leibniz says it is a colony of souls. Thus both of them answer our first question in the affirmative, and only diverge from the views of ordinary mortals in their answer to our second question. In fact, almost all philosophers seem to be agreed that there is a real table: they almost all agree that, however much our sense-data--colour, shape, smoothness, etc.--may depend upon us, yet their occurrence is a sign of something existing independently of us, something differing, perhaps, completely from our sense-data, and yet to be regarded as causing those sense-data whenever we are in a suitable relation to the real table.

Now obviously this point in which the philosophers are agreed--the view that there is a real table, whatever its nature may be--is vitally important, and it will be worth while to consider what reasons there are for accepting this view before we go on to the further question as

to the nature of the real table. Our next chapter, therefore, will be concerned with the reasons for supposing that there is a real table at all.

Before we go farther it will be well to consider for a moment what it is that we have discovered so far. It has appeared that, if we take any common object of the sort that is supposed to be known by the senses, what the senses \_immediately\_ tell us is not the truth about the object as it is apart from us, but only the truth about certain sense-data which, so far as we can see, depend upon the relations between us and the object. Thus what we directly see and feel is merely 'appearance', which we believe to be a sign of some 'reality' behind. But if the reality is not what appears, have we any means of knowing whether there is any reality at all? And if so, have we any means of finding out what it is like?

Such questions are bewildering, and it is difficult to know that even the strangest hypotheses may not be true. Thus our familiar table, which has roused but the slightest thoughts in us hitherto, has become a problem full of surprising possibilities. The one thing we know about it is that it is not what it seems. Beyond this modest result, so far, we have the most complete liberty of conjecture. Leibniz tells us it is a community of souls: Berkeley tells us it is an idea in the mind of God; sober science, scarcely less wonderful, tells us it is a vast collection of electric charges in violent motion.

Among these surprising possibilities, doubt suggests that perhaps there is no table at all. Philosophy, if it cannot \_answer\_ so many questions as we could wish, has at least the power of \_asking\_ questions which increase the interest of the world, and show the strangeness and wonder lying just below the surface even in the commonest things of daily life.

## CHAPTER II. THE EXISTENCE OF MATTER

In this chapter we have to ask ourselves whether, in any sense at all, there is such a thing as matter. Is there a table which has a certain intrinsic nature, and continues to exist when I am not looking, or is the table merely a product of my imagination, a dream-table in a very prolonged dream? This

question is of the greatest importance. For if we cannot be sure of the independent existence of objects, we cannot be sure of the independent existence of other people's bodies, and therefore still less of other people's minds, since we have no grounds for believing in their minds except such as are derived from observing their bodies. Thus if we cannot be sure of the independent existence of objects, we shall be left alone in a desert--it may be that the whole outer world is nothing but a dream, and that we alone exist. This is an uncomfortable possibility; but although it cannot be strictly proved to be false, there is not the slightest reason to suppose that it is true. In this chapter we have to see why this is the case.

Before we embark upon doubtful matters, let us try to find some more or less fixed point from which to start. Although we are doubting the physical existence of the table, we are not doubting the existence of the sense-data which made us think there was a table; we are not doubting that, while we look, a certain colour and shape appear to us, and while we press, a certain sensation of hardness is experienced by us. All this, which is psychological, we are not calling in question.

In fact, whatever else may be doubtful, some at least of our immediate experiences seem absolutely certain.

Descartes (1596-1650), the founder of modern philosophy, invented a method which may still be used with profit--the method of systematic doubt. He determined that he would believe nothing which he did not see quite clearly and distinctly to be true. Whatever he could bring himself to doubt, he would doubt, until he saw reason for not doubting it.

By applying this method he gradually became convinced that the only existence of which he could be quite certain was his own. He imagined a deceitful demon, who presented unreal things to his senses in a perpetual phantasmagoria; it might be very improbable that such a demon existed, but still it was possible, and therefore doubt concerning things perceived by the senses was possible.

But doubt concerning his own existence was not possible, for if he did not exist, no demon could deceive him. If he doubted, he must exist; if he had any experiences whatever, he must exist. Thus his own existence was an absolute certainty to him. 'I think, therefore I am,' he said (Cogito, ergo

sum\_); and on the basis of this certainty he set to work to build up again the world of knowledge which his doubt had laid in ruins. By inventing the method of doubt, and by showing that subjective things are the most certain, Descartes performed a great service to philosophy, and one which makes him still useful to all students of the subject.

But some care is needed in using Descartes' argument. 'I think, therefore I am' says rather more than is strictly certain. It might seem as though we were quite sure of being the same person to-day as we were yesterday, and this is no doubt true in some sense. But the real Self is as hard to arrive at as the real table, and does not seem to have that absolute, convincing certainty that belongs to particular experiences. When I look at my table and see a certain brown colour, what is quite certain at once is not '\_I\_ am seeing a brown colour', but rather, 'a brown colour is being seen'. This of course involves something (or somebody) which (or who) sees the brown colour; but it does not of itself involve that more or less permanent person whom we call 'I'. So far as immediate certainty goes, it might be that the something which sees the brown colour is quite momentary, and not the same as the something which has some different experience the next moment.

Thus it is our particular thoughts and feelings that have primitive certainty. And this applies to dreams and hallucinations as well as to normal perceptions: when we dream or see a ghost, we certainly do have the sensations we think we have, but for various reasons it is held that no physical object corresponds to these sensations. Thus the certainty of our knowledge of our own experiences does not have to be limited in any way to allow for exceptional cases. Here, therefore, we have, for what it is worth, a solid basis from which to begin our pursuit of knowledge.

The problem we have to consider is this: Granted that we are certain of our own sense-data, have we any reason for regarding them as signs of the existence of something else, which we can call the physical object? When we have enumerated all the sense-data which we should naturally regard as connected with the table, have we said all there is to say about the table, or is there still something else--something not a sense-datum, something which persists when we go out of the room? Common sense unhesitatingly answers that there is. What can be bought and sold and pushed about and have

a cloth laid on it, and so on, cannot be a \_mere\_ collection of sense-data. If the cloth completely hides the table, we shall derive no sense-data from the table, and therefore, if the table were merely sense-data, it would have ceased to exist, and the cloth would be suspended in empty air, resting, by a miracle, in the place where the table formerly was. This seems plainly absurd; but whoever wishes to become a philosopher must learn not to be frightened by absurdities.

One great reason why it is felt that we must secure a physical object in addition to the sense-data, is that we want the same object for different people. When ten people are sitting round a dinner-table, it seems preposterous to maintain that they are not seeing the same tablecloth, the same knives and forks and spoons and glasses. But the sense-data are private to each separate person; what is immediately present to the sight of one is not immediately present to the sight of another: they all see things from slightly different points of view, and therefore see them slightly differently. Thus, if there are to be public neutral objects, which can be in some sense known to many different people, there must be something over and above the private and particular sense-data which appear to various people. What reason, then, have we for believing that there are such public neutral objects?

The first answer that naturally occurs to one is that, although different people may see the table slightly differently, still they all see more or less similar things when they look at the table, and the variations in what they see follow the laws of perspective and reflection of light, so that it is easy to arrive at a permanent object underlying all the different people's sense-data. I bought my table from the former occupant of my room; I could not buy \_his\_ sense-data, which died when he went away, but I could and did buy the confident expectation of more or less similar sense-data. Thus it is the fact that different people have similar sense-data, and that one person in a given place at different times has similar sense-data, which makes us suppose that over and above the sense-data there is a permanent public object which underlies or causes the sense-data of various people at various times.

Now in so far as the above considerations depend upon supposing that there are other people besides ourselves, they beg the very question at issue. Other people are represented to me by certain sense-data, such as the sight of them or the sound of their voices, and if I had no

reason to believe that there were physical objects independent of my sense-data, I should have no reason to believe that other people exist except as part of my dream. Thus, when we are trying to show that there must be objects independent of our own sense-data, we cannot appeal to the testimony of other people, since this testimony itself consists of sense-data, and does not reveal other people's experiences unless our own sense-data are signs of things existing independently of us. We must therefore, if possible, find, in our own purely private experiences, characteristics which show, or tend to show, that there are in the world things other than ourselves and our private experiences.

In one sense it must be admitted that we can never prove the existence of things other than ourselves and our experiences. No logical absurdity results from the hypothesis that the world consists of myself and my thoughts and feelings and sensations, and that everything else is mere fancy. In dreams a very complicated world may seem to be present, and yet on waking we find it was a delusion; that is to say, we find that the sense-data in the dream do not appear to have corresponded with such physical objects as we should naturally infer from our sense-data. (It is true that, when the physical world is assumed, it is possible to find physical causes for the sense-data in dreams: a door banging, for instance, may cause us to dream of a naval engagement. But although, in this case, there is a physical cause for the sense-data, there is not a physical object corresponding to the sense-data in the way in which an actual naval battle would correspond.) There is no logical impossibility in the supposition that the whole of life is a dream, in which we ourselves create all the objects that come before us. But although this is not logically impossible, there is no reason whatever to suppose that it is true; and it is, in fact, a less simple hypothesis, viewed as a means of accounting for the facts of our own life, than the common-sense hypothesis that there really are objects independent of us, whose action on us causes our sensations.

The way in which simplicity comes in from supposing that there really are physical objects is easily seen. If the cat appears at one moment in one part of the room, and at another in another part, it is natural to suppose that it has moved from the one to the other, passing over a series of intermediate positions. But if it is merely a set of sense-data, it cannot have ever been in any place where I did not

see it; thus we shall have to suppose that it did not exist at all while I was not looking, but suddenly sprang into being in a new place. If the cat exists whether I see it or not, we can understand from our own experience how it gets hungry between one meal and the next; but if it does not exist when I am not seeing it, it seems odd that appetite should grow during non-existence as fast as during existence. And if the cat consists only of sense-data, it cannot be hungry, since no hunger but my own can be a sense-datum to me. Thus the behaviour of the sense-data which represent the cat to me, though it seems quite natural when regarded as an expression of hunger, becomes utterly inexplicable when regarded as mere movements and changes of patches of colour, which are as incapable of hunger as a triangle is of playing football.

But the difficulty in the case of the cat is nothing compared to the difficulty in the case of human beings. When human beings speak--that is, when we hear certain noises which we associate with ideas, and simultaneously see certain motions of lips and expressions of face--it is very difficult to suppose that what we hear is not the expression of a thought, as we know it would be if we emitted the same sounds. Of course similar things happen in dreams, where we are mistaken as to the existence of other people. But dreams are more or less suggested by what we call waking life, and are capable of being more or less accounted for on scientific principles if we assume that there really is a physical world. Thus every principle of simplicity urges us to adopt the natural view, that there really are objects other than ourselves and our sense-data which have an existence not dependent upon our perceiving them.

Of course it is not by argument that we originally come by our belief in an independent external world. We find this belief ready in ourselves as soon as we begin to reflect: it is what may be called an \_instinctive\_ belief. We should never have been led to question this belief but for the fact that, at any rate in the case of sight, it seems as if the sense-datum itself were instinctively believed to be the independent object, whereas argument shows that the object cannot be identical with the sense-datum. This discovery, however--which is not at all paradoxical in the case of taste and smell and sound, and only slightly so in the case of touch--leaves undiminished our instinctive belief that there \_are\_ objects \_corresponding\_ to our sense-data. Since this belief does not lead to any difficulties, but on the contrary tends to simplify and systematize our account of our experiences, there seems no



good reason for rejecting it. We may therefore admit--though with a slight doubt derived from dreams--that the external world does really exist, and is not wholly dependent for its existence upon our continuing to perceive it.

The argument which has led us to this conclusion is doubtless less strong than we could wish, but it is typical of many philosophical arguments, and it is therefore worth while to consider briefly its general character and validity. All knowledge, we find, must be built up upon our instinctive beliefs, and if these are rejected, nothing is left. But among our instinctive beliefs some are much stronger than others, while many have, by habit and association, become entangled with other beliefs, not really instinctive, but falsely supposed to be part of what is believed instinctively.

Philosophy should show us the hierarchy of our instinctive beliefs, beginning with those we hold most strongly, and presenting each as much isolated and as free from irrelevant additions as possible. It should take care to show that, in the form in which they are finally set forth, our instinctive beliefs do not clash, but form a harmonious system.

There can never be any reason for rejecting one instinctive belief except that it clashes with others; thus, if they are found to harmonize, the whole system becomes worthy of acceptance.

It is of course possible that all or any of our beliefs may be mistaken, and therefore all ought to be held with at least some slight element of doubt. But we cannot have reason to reject a belief except on the ground of some other belief. Hence, by organizing our instinctive beliefs and their consequences, by considering which among them is most possible, if necessary, to modify or abandon, we can arrive, on the basis of accepting as our sole data what we instinctively believe, at an orderly systematic organization of our knowledge, in which, though the possibility of error remains, its likelihood is diminished by the interrelation of the parts and by the critical scrutiny which has preceded acquiescence.

This function, at least, philosophy can perform. Most philosophers, rightly or wrongly, believe that philosophy can do much more than this--that it can give us knowledge, not otherwise attainable,

concerning the universe as a whole, and concerning the nature of ultimate reality. Whether this be the case or not, the more modest

function we have spoken of can certainly be performed by philosophy, and certainly suffices, for those who have once begun to doubt the adequacy of common sense, to justify the arduous and difficult labours that philosophical problems involve.

### CHAPTER III. THE NATURE OF MATTER

In the preceding chapter we agreed, though without being able to find demonstrative reasons, that it is rational to believe that our sense-data--for example, those which we regard as associated with my table--are really signs of the existence of something independent of us and our perceptions. That is to say, over and above the sensations of colour, hardness, noise, and so on, which make up the appearance of the table to me, I assume that there is something else, of which these things are appearances. The colour ceases to exist if I shut my eyes, the sensation of hardness ceases to exist if I remove my arm from contact with the table, the sound ceases to exist if I cease to rap the table with my knuckles. But I do not believe that when all these things cease the table ceases. On the contrary, I believe that it is because

the table exists continuously that all these sense-data will reappear when I open my eyes, replace my arm, and begin again to rap with my knuckles. The question we have to consider in this chapter is: What is the nature of this real table, which persists independently of my perception of it?

To this question physical science gives an answer, somewhat incomplete it is true, and in part still very hypothetical, but yet deserving of respect so far as it goes. Physical science, more or less unconsciously, has drifted into the view that all natural phenomena ought to be reduced to motions. Light and heat and sound are all due to wave-motions, which travel from the body emitting them to the person who sees light or feels heat or hears sound. That which has the wave-motion is either aether or 'gross matter', but in either case is what the philosopher would call matter. The only properties which science assigns to it are position in space, and the power of motion according to the laws of motion. Science does not deny that it may have other properties; but if so, such other properties are not useful to the man of science, and in no way assist him in explaining the phenomena.

It is sometimes said that 'light is a form of wave-motion', but this is misleading, for the light which we immediately see, which we know directly by means of our senses, is not a form of wave-motion, but something quite different--something which we all know if we are not blind, though we cannot describe it so as to convey our knowledge to a man who is blind. A wave-motion, on the contrary, could quite well be described to a blind man, since he can acquire a knowledge of space by the sense of touch; and he can experience a wave-motion by a sea voyage almost as well as we can. But this, which a blind man can understand, is not what we mean by light: we mean by light just that which a blind man can never understand, and which we can never describe to him.

Now this something, which all of us who are not blind know, is not, according to science, really to be found in the outer world: it is something caused by the action of certain waves upon the eyes and nerves and brain of the person who sees the light. When it is said that light is waves, what is really meant is that waves are the physical cause of our sensations of light. But light itself, the thing which seeing people experience and blind people do not, is not supposed by science to form any part of the world that is independent of us and our senses. And very similar remarks would apply to other kinds of sensations.

It is not only colours and sounds and so on that are absent from the scientific world of matter, but also space as we get it through sight or touch. It is essential to science that its matter should be in a space, but the space in which it is cannot be exactly the space we see or feel. To begin with, space as we see it is not the same as space as we get it by the sense of touch; it is only by experience in infancy that we learn how to touch things we see, or how to get a sight of things which we feel touching us. But the space of science is neutral as between touch and sight; thus it cannot be either the space of touch or the space of sight.

Again, different people see the same object as of different shapes, according to their point of view. A circular coin, for example, though we should always judge it to be circular, will look oval unless we are straight in front of it. When we judge that it is circular, we are judging that it has a real shape which is not its apparent shape, but belongs to it intrinsically apart from its appearance. But

this real shape, which is what concerns science, must be in a real space, not the same as anybody's apparent space. The real space is public, the apparent space is private to the percipient. In different people's private spaces the same object seems to have different shapes; thus the real space, in which it has its real shape, must be different from the private spaces. The space of science, therefore, though connected with the spaces we see and feel, is not identical with them, and the manner of its connexion requires investigation.

We agreed provisionally that physical objects cannot be quite like our sense-data, but may be regarded as causing our sensations. These physical objects are in the space of science, which we may call 'physical' space. It is important to notice that, if our sensations are to be caused by physical objects, there must be a physical space containing these objects and our sense-organs and nerves and brain. We get a sensation of touch from an object when we are in contact with it; that is to say, when some part of our body occupies a place in physical space quite close to the space occupied by the object. We see an object (roughly speaking) when no opaque body is between the object and our eyes in physical space. Similarly, we only hear or smell or taste an object when we are sufficiently near to it, or when it touches the tongue, or has some suitable position in physical space relatively to our body. We cannot begin to state what different sensations we shall derive from a given object under different circumstances unless we regard the object and our body as both in one physical space, for it is mainly the relative positions of the object and our body that determine what sensations we shall derive from the object.

Now our sense-data are situated in our private spaces, either the space of sight or the space of touch or such vaguer spaces as other senses may give us. If, as science and common sense assume, there is one public all-embracing physical space in which physical objects are, the relative positions of physical objects in physical space must more or less correspond to the relative positions of sense-data in our private spaces. There is no difficulty in supposing this to be the case. If we see on a road one house nearer to us than another, our other senses will bear out the view that it is nearer; for example, it will be reached sooner if we walk along the road. Other people will agree that the house which looks nearer to us is nearer; the ordnance map will take the same view; and thus everything points to a spatial relation between the houses corresponding to the relation between the sense-data

which we see when we look at the houses. Thus we may assume that there is a physical space in which physical objects have spatial relations corresponding to those which the corresponding sense-data have in our private spaces. It is this physical space which is dealt with in geometry and assumed in physics and astronomy.

Assuming that there is physical space, and that it does thus correspond to private spaces, what can we know about it? We can know only what is required in order to secure the correspondence. That is to say, we can know nothing of what it is like in itself, but we can know the sort of arrangement of physical objects which results from their spatial relations. We can know, for example, that the earth and moon and sun are in one straight line during an eclipse, though we cannot know what a physical straight line is in itself, as we know the look of a straight line in our visual space. Thus we come to know much more about the relations of distances in physical space than about the distances themselves; we may know that one distance is greater than another, or that it is along the same straight line as the other, but we cannot have that immediate acquaintance with physical distances that we have with distances in our private spaces, or with colours or sounds or other sense-data. We can know all those things about physical space which a man born blind might know through other people about the space of sight; but the kind of things which a man born blind could never know about the space of sight we also cannot know about physical space. We can know the properties of the relations required to preserve the correspondence with sense-data, but we cannot know the nature of the terms between which the relations hold.

With regard to time, our feeling of duration or of the lapse of time is notoriously an unsafe guide as to the time that has elapsed by the clock. Times when we are bored or suffering pain pass slowly, times when we are agreeably occupied pass quickly, and times when we are sleeping pass almost as if they did not exist. Thus, in so far as time is constituted by duration, there is the same necessity for distinguishing a public and a private time as there was in the case of space. But in so far as time consists in an order of before and after, there is no need to make such a distinction; the time-order which events seem to have is, so far as we can see, the same as the time-order which they do have. At any rate no reason can be given for supposing that the two orders are not the same. The same is usually true of space: if a regiment of men are marching along a road, the shape of the regiment will look different from different points of view, but the men

will appear arranged in the same order from all points of view. Hence we regard the order as true also in physical space, whereas the shape is only supposed to correspond to the physical space so far as is required for the preservation of the order.

In saying that the time-order which events seem to have is the same as the time-order which they really have, it is necessary to guard against a possible misunderstanding. It must not be supposed that the various states of different physical objects have the same time-order as the sense-data which constitute the perceptions of those objects. Considered as physical objects, the thunder and lightning are simultaneous; that is to say, the lightning is simultaneous with the disturbance of the air in the place where the disturbance begins, namely, where the lightning is. But the sense-datum which we call hearing the thunder does not take place until the disturbance of the air has travelled as far as to where we are. Similarly, it takes about eight minutes for the sun's light to reach us; thus, when we see the sun we are seeing the sun of eight minutes ago. So far as our sense-data afford evidence as to the physical sun they afford evidence as to the physical sun of eight minutes ago; if the physical sun had ceased to exist within the last eight minutes, that would make no difference to the sense-data which we call 'seeing the sun'. This affords a fresh illustration of the necessity of distinguishing between sense-data and physical objects.

What we have found as regards space is much the same as what we find in relation to the correspondence of the sense-data with their physical counterparts. If one object looks blue and another red, we may reasonably presume that there is some corresponding difference between the physical objects; if two objects both look blue, we may presume a corresponding similarity. But we cannot hope to be acquainted directly with the quality in the physical object which makes it look blue or red.

Science tells us that this quality is a certain sort of wave-motion, and this sounds familiar, because we think of wave-motions in the space we see. But the wave-motions must really be in physical space, with which we have no direct acquaintance; thus the real wave-motions have not that familiarity which we might have supposed them to have. And what holds for colours is closely similar to what holds for other sense-data. Thus we find that, although the \_relations\_ of physical objects have all sorts of knowable properties, derived from their correspondence with the relations of sense-data,

the physical objects themselves remain unknown in their intrinsic nature, so far at least as can be discovered by means of the senses. The question remains whether there is any other method of discovering the intrinsic nature of physical objects.

The most natural, though not ultimately the most defensible, hypothesis to adopt in the first instance, at any rate as regards visual sense-data, would be that, though physical objects cannot, for the reasons we have been considering, be exactly like sense-data, yet they may be more or less like. According to this view, physical objects will, for example, really have colours, and we might, by good luck, see an object as of the colour it really is. The colour which an object seems to have at any given moment will in general be very similar, though not quite the same, from many different points of view; we might thus suppose the 'real' colour to be a sort of medium colour, intermediate between the various shades which appear from the different points of view.

Such a theory is perhaps not capable of being definitely refuted, but it can be shown to be groundless. To begin with, it is plain that the colour we see depends only upon the nature of the light-waves that strike the eye, and is therefore modified by the medium intervening between us and the object, as well as by the manner in which light is reflected from the object in the direction of the eye. The intervening air alters colours unless it is perfectly clear, and any strong reflection will alter them completely. Thus the colour we see is a result of the ray as it reaches the eye, and not simply a property of the object from which the ray comes. Hence, also, provided certain waves reach the eye, we shall see a certain colour, whether the object from which the waves start has any colour or not. Thus it is quite gratuitous to suppose that physical objects have colours, and therefore there is no justification for making such a supposition. Exactly similar arguments will apply to other sense-data.

It remains to ask whether there are any general philosophical arguments enabling us to say that, if matter is real, it must be of such and such a nature. As explained above, very many philosophers, perhaps most, have held that whatever is real must be in some sense mental, or at any rate that whatever we can know anything about must be in some sense mental.

Such philosophers are called 'idealists'. Idealists tell us that what appears as matter is really

something mental; namely, either (as Leibniz held) more or less rudimentary minds, or (as Berkeley contended) ideas in the minds which, as we should commonly say, 'perceive' the matter. Thus idealists deny the existence of matter as something intrinsically different from mind, though they do not deny that our sense-data are signs of something which exists independently of our private sensations. In the following chapter we shall consider briefly the reasons--in my opinion fallacious--which idealists advance in favour of their theory.

I was free man – Illusions of life

I was a free man until they brought the dessert menu around. There was one of those molten chocolate cakes, and I was suddenly being dragged into a vortex, swirling helplessly toward caloric doom, sucked toward the edge of a black (chocolate) hole. Visions of my father's heart attack danced before my glazed eyes. My wife, Nancy, had a resigned look on her face.

The outcome, endlessly replayed whenever we go out, is never in doubt, though I often cover my tracks by offering to split my dessert with the table. O.K., I can imagine what you're thinking. There but for the grace of God.

Having just lived through another New Year's Eve, many of you have just resolved to be better, wiser, stronger and richer in the coming months and years. After all, we're free humans, not slaves, robots or animals doomed to repeat the same boring mistakes over and over again. As William James wrote in 1890, the whole "sting and excitement" of life comes from "our sense that in it things are really being decided from one moment to another, and that it is not the dull rattling off of a chain that was forged innumerable ages ago." Get over it, Dr. James. Go get yourself fitted for a new chain-mail vest. A bevy of experiments in recent years suggest that the conscious mind is like a monkey riding a tiger of subconscious decisions and actions in progress, frantically making up stories about being in control.

As a result, physicists, neuroscientists and computer scientists have joined the heirs of Plato and Aristotle in arguing about what free will is, whether we have it, and if not, why we ever thought we did in the first place.

"Is it an illusion? That's the question," said Michael Silberstein, a science philosopher at



Elizabethtown College in Pennsylvania. Another question, he added, is whether talking about this in public will fan the culture wars.

“If people freak at evolution, etc.,” he wrote in an e-mail message, “how much more will they freak if scientists and philosophers tell them they are nothing more than sophisticated meat machines, and is that conclusion now clearly warranted or is it premature?”

Daniel C. Dennett, a philosopher and cognitive scientist at Tufts University who has written extensively about free will, said that “when we consider whether free will is an illusion or reality, we are looking into an abyss. What seems to confront us is a plunge into nihilism and despair.”

Mark Hallett, a researcher with the National Institute of Neurological Disorders and Stroke, said, “Free will does exist, but it’s a perception, not a power or a driving force. People experience free will. They have the sense they are free.

“The more you scrutinize it, the more you realize you don’t have it,” he said.

That is hardly a new thought. The German philosopher Arthur Schopenhauer said, as Einstein paraphrased it, that “a human can very well do what he wants, but cannot will what he wants.”

Einstein, among others, found that a comforting idea. “This knowledge of the non-freedom of the will protects me from losing my good humor and taking much too seriously myself and my fellow humans as acting and judging individuals,” he said.

How comforted or depressed this makes you might depend on what you mean by free will. The traditional definition is called “libertarian” or “deep” free will. It holds that humans are free moral agents whose actions are not predetermined. This school of thought says in effect that the whole chain of cause and effect in the history of the universe stops dead in its tracks as you ponder the dessert menu.

At that point, anything is possible. Whatever choice you make is unforced and could have been otherwise, but it is not random. You are responsible for any damage to your pocketbook and your arteries.

“That strikes many people as incoherent,” said Dr. Silberstein, who noted that every physical system that has been investigated has turned out to be either deterministic or random. “Both are bad news for free will,” he said. So if human actions can’t be caused and aren’t random, he said, “It must be — what — some weird magical power?”

Photo Credit Jonathan Rosen

People who believe already that humans are magic will have no problem with that.

But whatever that power is — call it soul or the spirit — those people have to explain how it could stand independent of the physical universe and yet reach from the immaterial world and meddle in our own, jiggling brain cells that lead us to say the words “molten chocolate.”

A vote in favor of free will comes from some physicists, who say it is a prerequisite for inventing theories and planning experiments.

That is especially true when it comes to quantum mechanics, the strange paradoxical theory that ascribes a microscopic randomness to the foundation of reality. Anton Zeilinger, a quantum physicist at the University of Vienna, said recently that quantum randomness was “not a proof, just a hint, telling us we have free will.”

Is there any evidence beyond our own intuitions and introspections that humans work that way?

### Two Tips of the Iceberg

In the 1970s, Benjamin Libet, a physiologist at the University of California, San Francisco, wired up the brains of volunteers to an electroencephalogram and told the volunteers to make random motions, like pressing a button or flicking a finger, while he noted the time on a clock.

Dr. Libet found that brain signals associated with these actions occurred half a second before the subject was conscious of deciding to make them.

The order of brain activities seemed to be perception of motion, and then decision, rather than the other way around.

In short, the conscious brain was only playing catch-up to what the unconscious brain was already doing. The decision to act was an illusion, the monkey making up a story about what the tiger had already done.

Dr. Libet’s results have been reproduced again and again over the years, along with other experiments that suggest that people can be easily fooled when it comes to assuming ownership of their actions. Patients with tics or certain diseases, like chorea, cannot say whether their movements are voluntary or involuntary, Dr. Hallett said.

In some experiments, subjects have been tricked into believing they are responding to stimuli they couldn’t have seen in time to respond to, or into taking credit or blame for things they couldn’t have done. Take, for example, the “voodoo experiment” by Dan Wegner, a psychologist at Harvard, and Emily Pronin of Princeton. In the experiment, two people are invited to play witch doctor.

One person, the subject, puts a curse on the other by sticking pins into a doll. The second person, however, is in on the experiment, and by prior arrangement with the doctors, acts either obnoxious, so that the pin-sticker dislikes him, or nice.

After a while, the ostensible victim complains of a headache. In cases in which he or she was unlikable, the subject tended to claim responsibility for causing the headache, an example of the “magical thinking” that makes baseball fans put on their rally caps.

“We made it happen in a lab,” Dr. Wegner said.

Is a similar sort of magical thinking responsible for the experience of free will?

“We see two tips of the iceberg, the thought and the action,” Dr. Wegner said, “and we draw a connection.”

Photo Credit Jonathan Rosen

But most of the action is going on beneath the surface. Indeed, the conscious mind is often a drag on many activities. Too much thinking can give a golfer the yips. Drivers perform better on automatic pilot. Fiction writers report writing in a kind of trance in which they simply take dictation from the voices and characters in their head, a grace that is, alas, rarely if ever granted nonfiction writers.

Naturally, almost everyone has a slant on such experiments and whether or not the word “illusion” should be used in describing free will. Dr. Libet said his results left room for a limited version of free will in the form of a veto power over what we sense ourselves doing. In effect, the unconscious brain proposes and the mind disposes.

In a 1999 essay, he wrote that although this might not seem like much, it was enough to satisfy ethical standards. “Most of the Ten Commandments are ‘do not’ orders,” he wrote.

be what everyone cares about.

The belief that the traditional intuitive notion of a free will divorced from causality is inflated, metaphysical nonsense, Dr. Dennett says reflecting an outdated dualistic view of the world.

Rather, Dr. Dennett argues, it is precisely our immersion in causality and the material world that frees us. Evolution, history and culture, he explains, have endowed us with feedback systems that give us the unique ability to reflect and think things over and to imagine the future. Free will and determinism can co-exist.

“All the varieties of free will worth having, we have,” Dr. Dennett said.

“We have the power to veto our urges and then to veto our vetoes,” he said. “We have the power of imagination, to see and imagine futures.”

In this regard, causality is not our enemy but our friend, giving us the ability to look ahead and plan. “That’s what makes us moral agents,” Dr. Dennett said. “You don’t need a miracle to have responsibility.”

Other philosophers disagree on the degree and nature of such “freedom.” Their arguments partly turn on the extent to which collections of things, whether electrons or people, can transcend their origins and produce novel phenomena.

These so-called emergent phenomena, like brains and stock markets, or the idea of democracy, grow naturally in accordance with the laws of physics, so the story goes. But once they are here, they play by new rules, and can even act on their constituents, as when an artist envisions a teapot and then sculpts it — a concept sometimes known as “downward causation.” A knowledge of quarks is no help in predicting hurricanes — it’s physics all the way down. But does the same apply to the stock market or to the brain? Are the rules elusive just because we can’t solve the equations or because something fundamentally new happens when we increase numbers and levels of complexity?

Opinions vary about whether it will ultimately prove to be physics all the way down, total independence from physics, or some shade in between, and thus how free we are. Dr. Silberstein, the Elizabethtown College professor, said, “There’s nothing in fundamental physics by itself that tells us we can’t have such emergent properties when we get to different levels of complexities.”

He waxed poetically as he imagined how the universe would evolve, with more and more complicated forms emerging from primordial quantum muck as from an elaborate computer game, in accordance with a few simple rules: "If you understand, you ought to be awestruck, you ought to be bowled over."

George R. F. Ellis, a cosmologist at the University of Cape Town, said that freedom could emerge from this framework as well. "A nuclear bomb, for example, proceeds to detonate according to the laws of nuclear physics," he explained in an e-mail message. "Whether it does indeed detonate is determined by political and ethical considerations, which are of a completely different order."

I have to admit that I find these kind of ideas inspiring, if not liberating. But I worry that I am being sold a sort of psychic perpetual motion machine. Free wills, ideas, phenomena created by physics but not accountable to it. Do they offer a release from the chains of determinism or just a prescription for a very intricate weave of the links? And so I sought clarity from mathematicians and computer scientists. According to deep mathematical principles, they say, even machines can become too complicated to predict their own behavior and would labor under the delusion of free will.

Photo Credit Jonathan Rosen

If by free will we mean the ability to choose, even a simple laptop computer has some kind of free will, said Seth Lloyd, an expert on quantum computing and professor of mechanical engineering at the Massachusetts Institute of Technology.

Every time you click on an icon, he explained, the computer's operating system decides how to allocate memory space, based on some deterministic instructions. But, Dr. Lloyd said, "If I ask how long will it take to boot up five minutes from now, the operating system will say 'I don't know, wait and see, and I'll make decisions and let you know.'"

Why can't computers say what they're going to do? In 1930, the Austrian philosopher Kurt Gödel proved that in any formal system of logic, which includes mathematics and a kind of idealized computer called a Turing machine, there are statements that cannot be proven either true or false. Among them are self-referential statements like the famous paradox stated by the Cretan philosopher Epimenides, who said that all Cretans are liars: if he is telling the truth, then, as a Cretan, he is lying.

One implication is that no system can contain a complete representation of itself, or as Janna Levin, a cosmologist at Barnard College of Columbia University and author of the 2006 novel about Gödel, "A Madman Dreams of Turing Machines," said: "Gödel says you can't program intelligence as complex as yourself. But you can let it evolve. A complex machine would still suffer from the illusion of free will."

Another implication is there is no algorithm, or recipe for computation, to determine when or if any given computer program will finish some calculation. The only way to find out is to set it computing and see what happens. Any way to find out would be tantamount to doing the calculation itself.

"There are no shortcuts in computation," Dr. Lloyd said.

That means that the more reasonably you try to act, the more unpredictable you are, at least to yourself, Dr. Lloyd said. Even if your wife knows you will order the chile rellenos, you have to live your life to find out.

To him that sounds like free will of a sort, for machines as well as for us. Our actions are determined, but so what? We still don't know what they will be until the waiter brings the tray.

That works for me, because I am comfortable with so-called physicalist reasoning, and I'm always happy to leverage concepts of higher mathematics to cut through philosophical knots.

### The Magician's Spell

So what about Hitler?

The death of free will, or its exposure as a convenient illusion, some worry, could wreak havoc on our sense of moral and legal responsibility. According to those who believe that free will and determinism are incompatible, Dr. Silberstein said in an e-mail message, it would mean that "people are no more responsible for their actions than asteroids or planets." Anything would go.

Dr. Wegner of Harvard said: "We worry that explaining evil condones it. We have to maintain our outrage at Hitler. But wouldn't it be nice to have a theory of evil in advance that could keep him from coming to power?"

He added, "A system a bit more focused on helping people change rather than paying them back for what they've done might be a good thing."

Dr. Wegner said he thought that exposing free will as an illusion would have little effect on people's lives or on their feelings of self-worth. Most of them would remain in denial.

"It's an illusion, but it's a very persistent illusion; it keeps coming back," he said, comparing it to a magician's trick that has been seen again and again. "Even though you know it's a trick, you get fooled every time. The feelings just don't go away."

In an essay about free will in 1999, Dr. Libet wound up quoting the writer Isaac Bashevis Singer, who once said in an interview with the Paris Review, "The greatest gift which humanity has received is free choice. It is true that we are limited in our use of free choice. But the little free choice we have is such a great gift and is potentially worth so much that for this itself, life is worthwhile living."

I could skip the chocolate cake, I really could, but why bother? Waiter!

# Photography

## Research Task:

Find 4 examples of work by one of these famous Photographers:

Don McCullin / William Eggleston / Marin Parr / Phillip Lorca Dicoria

Devin Allen / Adrienne Raquel / Nobuyoshi Araki / Raghu Rai

Now choose ONE of the images from your FOUR and make a detailed analysis of their work using this sheet below to help you. Include the date and title if you can.

## How to Analyse the Work of Others:

### Layout/composition

You need to consider how the work has been made up in terms of layout – which of the following have been used? Describe the layout and the effect this has on the work.

**All over** composition, **Grid like** layout, **Vertical** or **horizontal** layout, **Focal** point (main focus), **Centred** or **off centre**, **Balanced/ unbalanced**, **Combination of** images and text, **Close-up/** cropping, **Leading lines**, **Use of repetition**, **Foreground, middle-ground and background**

### Colour choice:

You need to consider colour in the work – which of the following have been used? Describe the use of colour and the effective this has on the work.

**Limited** colours (only a couple of colours used), **complementary** colours (contrasting/ opposite), **key** colour (main colour), **harmonious** colours (side by side on the colour wheel/ similar), **monochrome** colour (produced in shades of one colour or black and white), **bold/ intense** colour, **primary or secondary** colours, **opaque** (not able to see through, not transparent), **transparent** (able to see through), **warm or cool, vibrant or muted**

### Materials and Techniques:

You need to consider how materials and techniques have been used in the work. Describe the use of images, photographs, drawings etc in the work, how has it been made? Which techniques have been used? How have the materials been applied to the work? Do you think it was a quick or slow process? What is the scale of the work? How does this effect the way the viewer responds to it?

### Meaning/ Context (it is important to include this info to get higher marks)

What is the **meaning, message or mood** within the work? *This can be your opinion backed up by evidence.* What might have **influenced** the work? *Another artist, social, political, cultural, environmental or ethical contexts etc.* When was the art work produced – what was happening in the world at the time which may have had an impact on the artist's work? What might the viewer's response to the message/

mood of the work be?

**Your Opinion:**

What do you like about it? Why? Use **artistic vocab** and evidence. What don't you like about it? Why? Use artistic vocab and evidence. What might you like to ask the maker of the work? How could it **influence** your own work?

**Practical tasks:**

Produce a series of photographs on ANY of the words below, (you may choose more than one if you like). You need to have a **minimum of 25 photos** which show that you have considered composition, good lighting and interesting subject matter. These can be printed and presented when you return to school. Try and edit some if you can with the Free downloads on this page.

- |            |                   |
|------------|-------------------|
| Texture    | Colour            |
| Pattern    | Weather           |
| Contrast   | Still Life        |
| Taste      | Interior/Exterior |
| Reflection | Personal Space    |
| Organic    | Movement          |
| Mood       | Symmetry          |
| Abstract   | Line              |
| Light      | Calm              |

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**Adobe Lightroom** <https://lightroom.adobe.com>

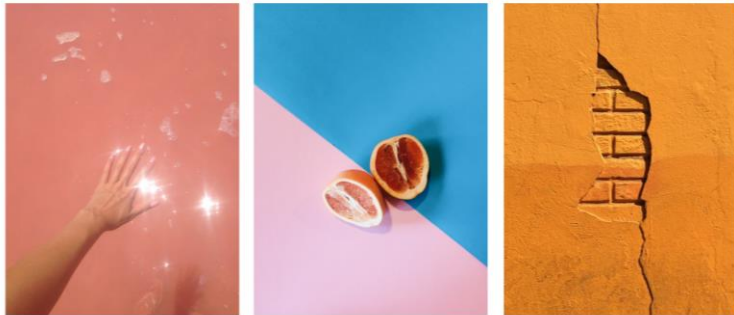
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**Adobe Photoshop Express**

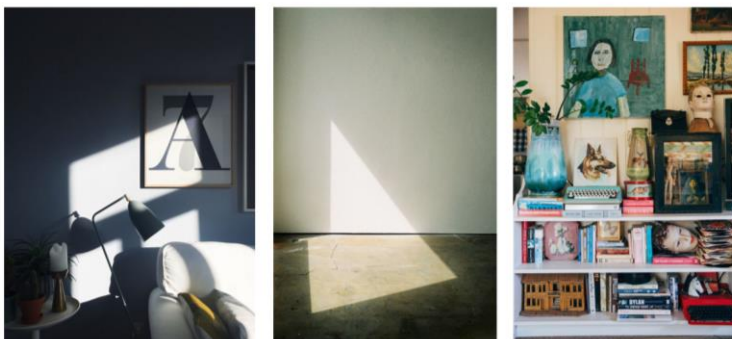
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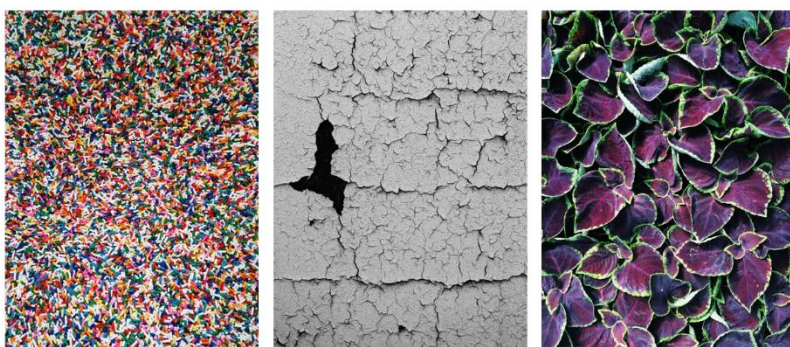
### Some good examples: Colour



### Some good examples: Interior



### Some good examples: Texture



ul Sixth Form

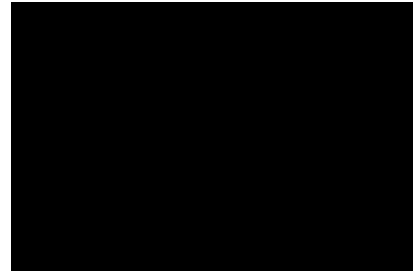
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# Physical Education

## Sport in society – Pre-industrial Britain.

Using the video, fill in the boxes, showing your understanding of Pre – industrial Britain and its impact on participation in sports and pastimes.



|  |                                     |
|--|-------------------------------------|
| <p><b>Social class</b></p>                       | <p><b>Gender</b></p>                |
| <p><b>Law and order</b></p>                      | <p><b>Education/literacy</b></p>    |
| <p><b>Availability of time</b></p>               | <p><b>Availability of money</b></p> |
| <p><b>Type and availability of transport</b></p> |                                     |

### **Skill Acquisition /Psychology**

Research the 6 different Classification Continuums - ENVIRONMENT open-closed / PACING self-paced - externally paced/ ORGANISATION High-Low/ CONTINUITY Discrete-serial -continuous/ MUSCULAR INVOLVEMENT Gross-fine

With this information create a power point presentation using sports clips from You tube to explain these continuums to your peers.

Key information to include are the 6 continuums, a definition of each of the classifications and a video clip example of each.

### **Applied Anatomy and Physiology**

Create an A3 poster titled 'The Skeletal System and Movement Patterns'

You need to include:

- A diagram of the skeleton, labelling the following bones: sternum, rib cage, vertebral column, pelvic girdle, scapula, humerus, ulna, radius, carpals, metacarpals, phalanges, femur, tibia, fibula, tarsals, fibula, phalanges, talus.
- Shade in the axial and appendicular parts of the skeleton on your diagram and add a key.
- Write a paragraph about the different functions of the skeleton.
- Describe, include a diagram and give examples of the following types of synovial joint in the human body: hinge joint, pivot joint, gliding joint, condyloid joint, ball and socket joint.
- Label the following structures on a diagram of a synovial joint: ligaments, synovial fluid, articular cartilage, joint capsule, bursa. Explain the structure and function of each.
- Explain and give examples of the following movement patterns: flexion, extension, abduction, adduction, dorsiflexion, plantarflexion, horizontal flexion, horizontal extension, lateral rotation and medial rotation.

## Physics

The A Level Physics course begins by taking you to a deeper understanding of the basic principles of Physics that you studied at GCSE. In preparation for this, you need to get yourself a copy of Head Start for Physics (published by CGP). You can order this from Amazon or any bookstore.

[https://www.amazon.co.uk/Head-Start-level-Physics-Level/dp/1782942815/ref=sr\\_1\\_1?s=books&ie=UTF8&qid=1529661094&sr=1-1&keywords=head+start+to+a-level+physics](https://www.amazon.co.uk/Head-Start-level-Physics-Level/dp/1782942815/ref=sr_1_1?s=books&ie=UTF8&qid=1529661094&sr=1-1&keywords=head+start+to+a-level+physics)

Using the supportive text, work through all the questions – the answers are there to guide you in the workbook. The book takes you through all the fundamental topics, one at a time. By the end of the summer and the end of the book, you will be fully up to speed and secure in your knowledge and understanding, as well as the key skills needed for a positive strong start to the 2 year course.

If you have any problems with obtaining the workbook, or with the cost, then please contact me [matcro@st-laurence.com](mailto:matcro@st-laurence.com) as soon as possible before the end of this term.

We look forward to seeing you bright, sparky and full of Physics in September. !

Best regards,

Mr. Croft  
Head of Physics

# Psychology

Welcome to A Level psychology. Your summer work is to conduct a piece of scientific research. Research is vital in the world of social science, and we want you to learn about ONE of the key methods used, know how to conduct the method, design your own study, and write up your report findings.

You are going to undertake a content analysis. (This is a type of qualitative analysis used in psychology)

Task 1 – Firstly you need to find out what content analysis is. To help you prepare you need to watch the webinar below. You can also complete your own research on content analysis and find out how they are conducted in the world of social science

[Conducting a content analysis watch the clip](#)

A content analysis is a standard methodology in the social sciences for studying the content of media communication. It is a type of observational research where you study someone or some aspect of society indirectly through their communication – so that could be text, film, radio, TV, adverts, social media timeline, blogs, diaries and letters etc.

On the curriculum drive in the social science student folder (psychology KS5) you will find an example content analysis research project written by an undergraduate. You need to read through it and understand how to write up a report/investigation

2. You will carry out your own content analysis on a range of Disney/Pixar films from 1937 to the present day.

We want you to conduct a content analysis on ONE theme /aspect from a range of Disney/Pixar films.

You can choose a theme from below or design your own.

Are there gender differences in the roles given to characters?

For example:

Are men heroes and girls princesses? Are females portrayed as more submissive than males? Are men more likely to have the power/resources/wealth?

You could do the passive or active question that is in the example research project on the curriculum drive

You could focus on “Have roles changed over time?” [Gender roles and Disney](#) click to read more about this.

4 easy steps to conducting your own content analysis:

Step one: Choose your topic question/theme and your sample of films. You would need to sample

characters from at least 5 films to gather meaningful data.

Step two : You need to create codes/categories to count. In content analysis, themes need to be counted (quantified)

Draw these up into a table such as.....

| <b>Codes</b>           | Tally (how many times) |
|------------------------|------------------------|
| Male argues/fights     |                        |
| Man displays wealth    |                        |
| Female argues/fights   |                        |
| Female displays wealth |                        |
| Other categories       |                        |

Step three: Watch the film and the characters several times and record/tally every time you see the behaviour

You now have your quantitative data (numerical data)

Step four:

Create a table(s) and graph your results so that your findings can be easily displayed.

Step five:

Explain your findings and evaluate your work. For example....

What conclusions can you draw from your research?

Were there any limitations in your design? What themes would you pick next time and how would you change your design.

Include – What did you investigate? What was your hypotheses? How did you conduct it? (Method/procedure) What were your results? Include tables/graphs and write a brief evaluation (limitations/changes). Use subheadings to help structure your report

This is should be at least 2 sides of A4. Please hand in during your first lesson back.

# Sociology

Welcome to sociology. Your summer work is to conduct two pieces of research. Research is vital in the world of social sciences, and we want you to learn about TWO of the methods used in sociology. You will find out about quantitative and qualitative research and then design your own studies and write up your findings.

Research Methods:

In sociology researchers can use both quantitative and qualitative methods to obtain their data. Use the link attached to find out the key differences between the two.

[Quantitative and qualitative methods](#)

Questionnaires/surveys

You are going to conduct your own sociological questionnaire or survey and collect data on ONE aspect of society that we cover from the EDUCATION OR FAMILIES topics.

Why are there large gender differences in subject choice at GCSE and A Level? Why are girls outperforming boys at GCSE and A Level? Do sanctions such as detentions work? Have schools changed over time? How did COVID impact learners?

Your questionnaire/survey

You must design a questionnaire, with between 6-8 questions on your given area. You will need to break your topic up into smaller questions. Your questions can include both open and closed questions so that you obtain both qualitative and quantitative data.

For example:

1. Are you male or female?
2. Did you choose sociology because ... (pick your top 3 reasons)

- You are interested in social sciences
- You know someone who has studied it?
- It is a new area of interest etc....

You will need to carry out your questionnaire on a range of different people. Aim to ask 5 people the same questionnaire. Ask over 16s only. Ask them to consent. Offer anonymity (no names ) and offer confidentiality (only you and I will see their results)

Then: Present your questionnaire findings in an appropriate table and graph form and draw conclusions about your findings.

## Interviews

You are going to conduct your own semi structured interview and collect data on ONE aspect of the Crime and Deviance topic. [semi structured interview what is it - Google Search](#)

You must design a set of interview questions (between 3 and 4) on one aspect of crime. You could look at perception of crime, punishments, attitudes to police, use of prison. Etc

For example:

1. Do you feel that crime is increasing in the UK?
2. What crimes are most concerning for you?
3. Do you think that the government/other agencies can do more to reduce crime?

Ask different people from those who completed your questionnaire. Your aim is to carry out your interview on at least 3-5 people. Record their answers so that you have a detailed record of their views and can make a transcript. Ask over 16s only. Ask them to consent. Offer anonymity (no names ) and offer confidentiality (only you and I will see their results)

You will need to draw conclusions from your interviews and explain what you have found.

[Types of interviews](#) this clip will help you understand how interviews differ.

<https://www.youtube.com/watch?v=QwhK-iEyXYA>

Finally this link above is a great crash course in methods used in sociology, well worth a watch before you start our course!!! See you in September for more Sociology.

Please hand in your research write ups during your first lesson back.

