



Year 10 Knowledge Organisers

Autumn Term 2022



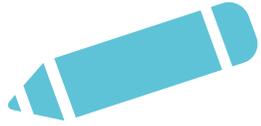
JWS: Working together to
turn your child's potential
into reality.



Name:

Tutor Group: 10

Own Notes



Name:

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JWS

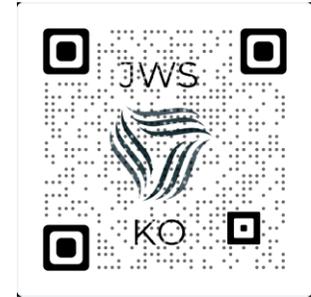
Year 10

Knowledge Organisers

Contents

Digital Copies of all Knowledge Organisers can be found on our school's website: jws.bham.sch.uk

In addition, you can scan the QR code on this page for a virtual e-book.



Year 10 Subjects

Art and Design
Business BTEC
Business Studies
Drama
English
French
Food Technology
Geography
History
iMedia

Mathematics
Media Studies
Photography
Physical Education
Physical Education GCSE
Religious Education
Science
Spanish
Sports Studies
Technology Product Design

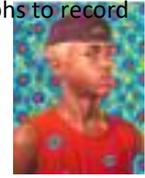
Art & Design: Fine Art

Urban Portraiture

1. AO1: Developing Ideas: 24 Marks

- Artist Inspiration**
- Kris Trappeniers
 - Cath Riley
 - Francoise Nielly
 - Kehinde Wiley
 - David Newman White
 - Nick Gentry
 - Mark Powell
 - Chuck Close
 - Joshua Miels
 - Lynn Hershman
 - Stephen Conroy
 - Peter Monkman
 - Ant Carver
 - Toby Mulligan
 - Laolu Senbanjo – (style inspiration)

Research must include:
Primary Sources: recording from life or your own photographs.
Secondary Sources: recording from work created by other people.
Photographs: Take a set of photographs to record from.



2. A02: Experimenting: 24 Marks

Tone: Use varying grades of tone from dark to light to create a realistic drawing

Colour: Experiment with colour mixing to make a larger colour spectrum. Mix, layer and blend complementary colours to make a colour darker instead of using black. E.g. Red + Green.

Contour Lines: Experiment with drawing a portrait using only line to depict the form and features.

Colour: Experiment with colour mixing to make a larger colour spectrum. Mix, layer and blend complementary colours to make a colour darker instead of using black. E.g. Red + Green.

3. WOW WORDS

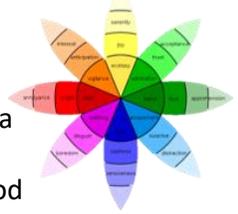
- | | |
|------------|---------------|
| DISGUST | SURPRISE |
| LOATHE | AMAZED |
| REPULSE | ASTONISHED |
| DISGUST | STUNNED |
| LOATHE | FLABBERGASTED |
| REPULSE | FEAR |
| SADNES | PAIN |
| SORROW | TRAUMA |
| MELANCHOLY | TORMENT |
| GRIEF | SUFFERING |
| MISSERY | AGONY |
| ANGER | |
| WRATH | |
| FURY | |
| RAGE | |
| ANNOYED | |



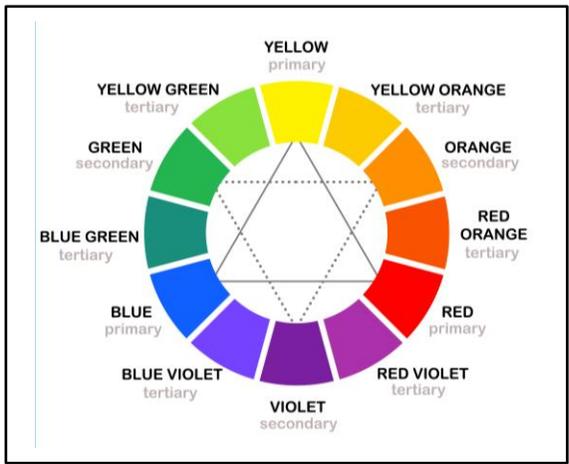
4. Expressions

EXPRESSIONS: Consider recording a variety of expressions and capturing a mood in your portraiture.

What is an expression?
 How can you convey emotion in a Portrait?
 How does colour impact the mood in a portrait?



5. The colour wheel

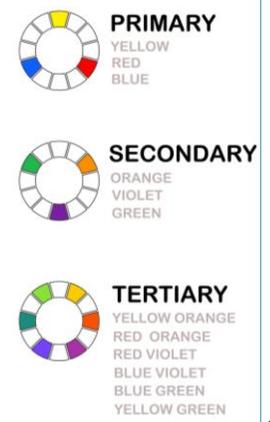


6. Primary, secondary and tertiary colours

The primary colours are **red, yellow** and **blue**. They cannot be made by mixing other colours together.

Secondary colours are made by mixing equal amounts of primary colours together.

A **tertiary** colour is made by mixing equal amounts of a primary colour and a secondary colour together.





KNOW IT

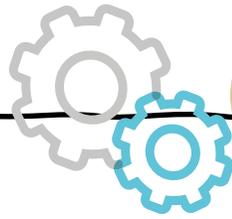
Proportion refers to the dimensions of a composition and relationships between height, width and depth. How proportion is used will affect how realistic or **stylised** something seems. Understanding and using correct proportion in **life drawing** and portraits allows an artist to create well-balanced, realistic representations of the human form.

Primary observation is working from a source directly from first-hand experience. Primary sources can be natural objects, artefacts, places, people or events.

Secondary observation is working from a material produced by others. Secondary sources can be reproductions of images and artefacts, photographs, film, video or web-based material.

I can use an artist to inspire my own work. Identify the key features of an artist's work.

Explore by gathering information for research and inspiration. Research using books, the internet, magazines and remember to record where the information is taken from. Look at artists that have based their work on similar themes.



THINK IT

What are the general guidelines for proportion when drawing a portrait?

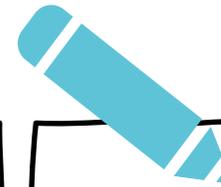
Why is drawing in proportion important when creating a portrait? What impact does exaggerating different features have on a portrait and why might an artist do this?

Research and analyse the work an artist. How can an artist inspire you? How can you link your work to your chosen artist?

Recording of ideas – have you selected appropriate source material? (images, photographs etc) How will you present this in your visual mind map as an introduction for your project?

How have you recorded your ideas?

Have you developed your observational awareness skills? Have you developed your drawing skills?



GRASP IT

From primary observation draw a self portrait from a mirror. Practice drawing in proportion considering the rules of proportion

From primary observation create a portrait by drawing a family member or a friend. Draw in pencil, starting with your outlines first, add your details, check your proportion and then add tonal shading to create a 3D form

Select and research a range of artists such as those in box 1 on this knowledge organiser or find your own. Search the theme of the artist's work e.g Urban portraiture art. You could then be more specific and search words such as black and white, drawing, illustrative, painting depending upon the style of work you enjoy and the media that you prefer to work in. What can you see? Is it a specific place/or person? (Consider time of day/weather/season/place/setting etc.)•What do you think it represents?•Does it tell a story? Can you imagine what happened before or what might happen next?•Could the work have symbolic or moral meaning?•How does it link with social, cultural or political history of that time?•How is it arranged? Is there a focal point?•What mood/atmosphere does it create? How does it make you feel?

Business: The Purpose and Nature of Business

1. Entrepreneurs

Characteristics of entrepreneurs:

Innovative – creative, imaginative and good at spotting an opportunity.

Risk Takers – Many new business ideas fail,

Hard-working and determined – they are prepared for a struggle

Organised – they are good at managing things.

2. Why do people Start Businesses

Why do people start businesses?

- To be their own boss and make their own decisions
- To keep all the profits of a business for themselves.
- To be employed and earn money
- An interest or hobby can grow into a business.
- To prove something to themselves (satisfaction)
- To get flexible working hours.
- To provide a service for others (social enterprise)
- They don't like their current job and want to do something different.
- They spot a business opportunity and believe they can make profits from it.

3. Business Sectors

The **primary, secondary and tertiary sectors**. Industry can be classified into these 3 categories. Primary includes fishing, farming, forestry, quarrying and mining.

Primary



These industries extract raw materials directly from the earth or sea.

Secondary



These industries process and manufacture products from raw materials.

Tertiary



These industries provide a service.

4. Business Functions

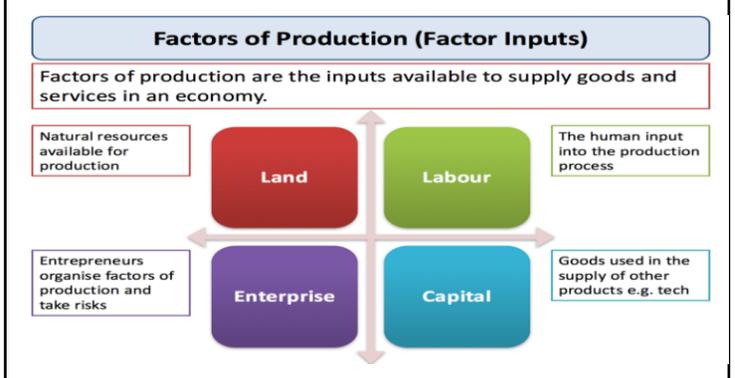
Finance – to raise money, to monitor

Marketing – to understand customers effectively

Operations – to produce the good or service.

Human Resources – to manage people. It includes recruiting, training and rewarding them.

5. Factors of Productions



6. External Influences on Business

Interest rates refer to the cost of borrowing money or the reward for saving money, expressed as a percentage.

Inflation refers to the rate at which prices are increasing.

Gross Domestic Product (GDP) measures all the income earned in a country's economy in a year.



KNOW IT

What an entrepreneurs does

State three reasons someone would start their own business

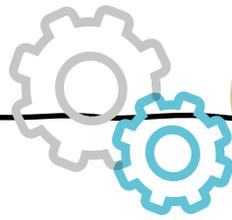
State the four factors of production

State the meaning of

- Primary industries
- Secondary industries
- Tertiary industries

Understand the following key terms

- Inflation
- GBP
- Interest rates



THINK IT

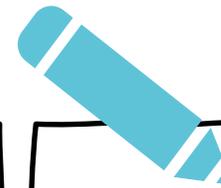
Explain the characteristics of a good entrepreneur

Explain two advantages and 2 disadvantages of starting your own Business

Explain what the four factors of production are

Explain how Businesses work in the following sectors

- Primary industries
- Secondary industries
- Tertiary industries



GRASP IT

Analyse what makes a good entrepreneur successful

Analyse how different businesses use the four factors of production

State the meaning or

- Primary industries
- Secondary industries
- Tertiary industries

Year 10

Business

The Purpose and Nature of Business

Drama: Devising (Unit 1 &2)

Devising

Your devising unit is split into 3 different parts. It is worth 30% of your GCSE and will be completed this year.

You start with the list of stimuli which you discuss in your devising groups. You create mind maps which help you focus on what to research and discuss next.

It is important that you spend some time on this first step, because it will help all of your group create an interesting set of ideas which can make the devising process easier.

Research tips

Research the artists, look at their previous work, look at interviews they've done, look at their influences and who they have influenced.

Stimuli

A stimulus or a list of stimuli are used in Drama to help create a performance. They don't have to be the subject or topic of the performance, but have to be the starting point where ideas are suggested and developed. You can develop your ideas through rehearsal techniques, discussion or further research

"A clear vision"

The mark scheme asks for a clear vision for your performance, this means you need to have thought about:

Set	Staging
Style	Props
Genre	Costume
Mood	Lighting / Sound
Atmosphere	
Intention	

Using rhythm and music

Rhythm, beats and music can help develop and grow your piece. Use key words, phrases, or the work of others linked to the artist to find something to listen to in rehearsal. You could use this alongside rehearsal strategies to create scenes or ideas:

Still Images (Naturalistic & Non)	Role on the Wall
Diary Entry	Mime
Thought Track	Gestus
Sculpting	Tempo Rhythm
Ranking	Improvisation
Angel & Devil	

Key words & phrases

Mime	Intention
Gesture	Style
Facial Expression	Naturalistic
Posture	Non-Naturalistic
Movement	Rehearsal
Stance	Development
Costume	Set
Props	Staging
Exaggeration	Proxemics
Clear	Symbolism
Mirroring	Semiotics
Sculpting	
"Yes, and..."	
"What if?"	
Vision	

How to develop a story

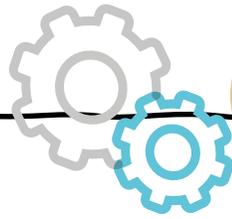
There are lots of ways to develop a story, but here are a few which could help you plan and develop something for your group to work with

- 1) **Start with Still Images**
- 2) **Build in Thought tracks**
- 3) **Flashback/Flashforward to create 2 more Still Images**
- 4) **Bring to life with Mime**
- 5) **Add Thought tracks**
- 6) **Discuss & develop**



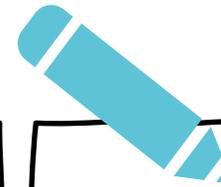
KNOW IT

1. Do I know what I have to do in my Devising Unit?
2. Do I know what I will start my devising unit with?
3. Do I know what I have to create?
4. Do I know how I am marked for my devising unit?
5. Do I know how to develop my ideas through research?
6. Do I know how to develop my ideas through rehearsal techniques?



THINK IT

1. In your devising Unit you will need to create your own performance with a group, completing a diary of coursework alongside.
2. You will start with a list of possible Stimuli, you will choose one as a group
3. Your piece should aim to be between 4-10 minutes long
4. You are marked practically on your contribution, communication, realisation and reflection of the stimuli, your coursework is marked on your research, vision, development and reflection.
5. Your research can involve almost anything, as long as you make the journey from your stimuli really clear
6. There are many useful rehearsal techniques, but STILL IMAGE, THOUGHT TRACK, SCULPTING, ROLE SWAP, FLASHBACK and IMPROV could all be useful ways to start



GRASP IT

Challenge

Think of what you can produce to help your group clearly understand your vision. There isn't a limit here, but you can use anything that you produce to help evidence your research and development. Below is a list of tasks you may choose to try:

Diary entry for a character	Create a timeline
Relationship map	Create a rehearsal playlist
Emotions graph	Research the era
Storyboard	Research the artist
Mind Map	Research influences
Write a new scene	Research key dates
Sketch a stage plan	Research key topic
Design a costume	Look for facts and stats
Design the set	
Create a mood board	Try to find practitioners
Write a Role on the Wall	How to Mark a moment?
Create a Character Profile	Research performance Styles
Write a monologue	

Year 10

Drama

Devising: Units 1 & 2

English: Macbeth

1. Character List

Macbeth: Thane of Glamis, Cawdor then King of Scotland

Lady Macbeth: The wife of Macbeth

Duncan: The King of Scotland

Malcom: Duncan's son and Prince of Cumberland

Donalbain: Duncan's younger son

Banquo: The friend of Macbeth and thane

Fleance: Banquo's son

Macduff: Thane of Fife

Lady Macduff: Macduff's wife

A Captain: in Duncan's army

Ross, Lennox, Angus: Scottish nobles

Seyton: A servant

Three Witches: Supernatural beings

Hecate: Queen of Witches

4. Social and Historical Context

- Macbeth was written in 1606, early in the reign of James I, who had been James VI of Scotland before he succeeded to the English throne in 1603.
- The Gunpowder Plot was a significant point for Shakespeare. He shows that the murderers of a king will be tormented by their own guilt – doomed.
- It was believed that kings were appointed by 'Divine Right' (chosen by God). To kill a king was to disobey God's will; a terrible sin.
- Shakespeare pays tribute to James' Scottish lineage and also his family's claim that they descended from the historical figure of Banquo.
- James believed in witches and feared that they would kill him. He wrote a book (Daemonologie) about how to identify a witch.

2. Key Words

Characterisation

Prologue

Epilogue

Theme

Perspective

Genre

Tragedy

Eponymous

Protagonist

Antagonist

Anti-hero

Foil

Context

Soliloquy

Monologue

Tyranny

5. Themes

Ambition & Power

Loyalty & Guilt

Fate & Freewill

Reality & Appearance

The Supernatural

Violence

Gender & Cruelty

Kingship & Tyranny

Order & Chaos

Time

3. Plot Summary

Act 1: Three witches set the scene and atmosphere for the play. They cast prophecies on Macbeth saying that he will become Thane of Cawdor and King. Macbeth and Banquo have just returned from war between Scotland and Norway. Macbeth was successful in war so King Duncan makes him Thane of Cawdor and decides to stay at Macbeth's castle when he returns. Macbeth writes a letter to his wife about the prophecies. Lady Macbeth creates a plan to murder the King so they will become King and Queen. Macbeth does not want to kill Duncan to begin with but Lady Macbeth manipulates him into doing so.

Act 2: Macbeth is still unsure about murdering Duncan but finally goes through with the plan. However, as soon as it is done he panics, forgetting to leave the daggers on the sleeping guards to frame them. He refuses to return to the scene so Lady Macbeth has to wipe blood on the guards to complete the plan. The next morning, when the body is found, Malcolm and Donalbain (Duncan's sons) flee Scotland in order to stay alive and not be blamed for their father's murder.

Act 3: After Duncan's death, Banquo begins to think that Macbeth was the true murderer. In order to keep this a secret, Macbeth sends people to murder Banquo and his son (Fleance) but Fleance escapes. Macbeth holds a banquet for all the other lords at his castle. At this banquet, Macbeth sees Banquo's ghost. Macbeth begins to show signs of mental illness, shouting at the ghost and the guests, making everyone uneasy. Lady Macbeth cannot calm him so she sends the guests home.

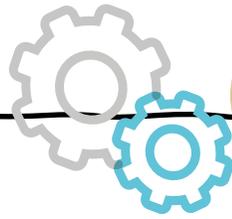
Act 4: Macbeth becomes obsessed with power and begins to ask the witches for more prophecies. The witches tell Macbeth that he should be fearful of Macduff but also that he cannot be killed by any man born; he should only fear when the Burnham wood begins to move. Macduff goes to England to beg Malcolm to defeat Macbeth and while he is away, Macbeth attacks Macduff's castle, killing his entire family. Soon after, Malcolm takes an army back to Scotland to defeat Macbeth.

Act 5: Lady Macbeth begins to panic over her guilt of the murders. She sleep-walks and re-enacts her reading of Macbeth's original letter. She becomes gradually more and more unwell and eventually dies by falling from the castle battlements. Scottish lords begin to think that Macbeth is not the rightful King so they join Malcolm in his attack on Macbeth's army. Macbeth is not overly worried to begin with but when he confronts Macduff he learns that Macduff was cut from his mother's womb and not naturally born. Macduff then kills Macbeth by beheading him. Malcolm now becomes the rightful king of Scotland.



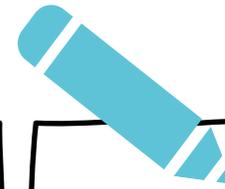
KNOW IT

1. Give a definition of each key word.
2. List all the characters in the text.
3. List all the figurative language techniques that you can recall.
4. How are the characters related to each other?
5. Can you summarise the plot in 50 words?
6. Can you list the 10 most important plot points?
7. Can you put the main plot points into chronological order?
8. Which 5 words best describe the protagonist?
9. Which 5 words would you use to describe other key characters?
10. What are the main themes in the text?
11. What are the social and historical links to the text?
12. What are the names of the critical theories that can be applied to your analysis?



THINK IT

1. Why is the context of a play/novel important?
2. How do the main themes link to the protagonist?
3. How do the main themes link to other characters in the text?
4. Can you explain what each critical theory is about?
5. Is the author challenging, endorsing, or simply reflecting the dominant ideas and assumptions of the time and place in which they are writing?



GRASP IT

1. What is the impact of the opening of the text?
2. What is the impact of figurative language use within the text?
3. Why are the key themes important for the reader/audience to understand?
4. How does critical theory relate to this text?
5. Why might a modern day audience or contemporary reader criticise the author's intended message?

Year 10

English

Macbeth

French: Holidays

1. HOLIDAYS - USING TENSES

Je vais	I go
Je voyage en	I travel by
Je reste / je loge dans	I stay in
Je suis allé(e)	I went
J'ai voyage en	I travelled by
Je suis resté(e)/j'ai logé	I stayed
j'allais	I used to travel by
Je voyageais en	I used to stay
Je restais / logeais	I'm going to go
Je vais aller	I'm going to travel by
Je vais voyager en	by
Je vais rester/loger	I'm going to stay in

2. TRANSACTIONAL LANGUAGE

Pouvez-vous m'aider?	Can you help me
Je voudrais...	I would like
Pour jour(s)/nuit(s)	For day(s) / night(s)
Pour semaine(s)	For week(s)
Est-ce qu'il y a...	Is there...
J'ai perdu....	I've lost...
On m'a volé...	Someone has stolen...
C'est à quelle heure...	What time....
Où est...	Where is....
Pour aller.....	How do I get to....
C'est combien?	How much is it?
Pouvez-vous recommander...?	Can you recommend?
Le train / avion / bus part/arrive à quelle heure?	What time does the train/plane/bus leave/arrive?
C'est quel quai?	What platform?

3. STAR WORDS

Aujourd'hui	Today
Maintenant	Now
Demain	Tomorrow
Le lendemain	The next day
Hier	Yesterday
Autrefois	In the past
Le matin	In the morning
L'après-midi	In the afternoon
Le soir	In the evening
Le lundi	On Mondays
Jusqu'à	Until
Pendant	During
Premier	First
Tout de suite	Straight away
Avant	Before

4. PALMO

How to describe a photo

P eople
A ction
L ocation
M ood
O pinion

Dans la photo il y a personnes
Ils sont en train de + infinitive
La scène se déroule
Ils ont l'air.....
J'aime/ je n'aime pas parce que

5. BORD

B asic answer	Nomalement je vais en Espagne
O pinion	J'adore Espagne parce qu' il fait du soleil.
R eason	
D evelopment	Je pense que c'est très animé,
U ncommon language	Je reste dans un hôtel pour me relaxer.
M erge	

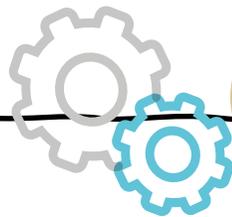
6. SAYING 'IN,AT,TO'

au + masc country	au Portugal
en + fem country	en Angleterre
aux + plural country	aux Etats-Unis
à + city	à Paris
dans + building	dans un hôtel
L'année dernière je suis allé à Paris en France.	
Normalement je vais aux Etats-Unis où je reste dans un hôtel luxueux.	
L'année prochaine je vais aller au Portugal et je vais rester dans un camping.	



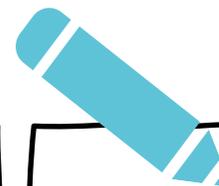
KNOW IT

1. Translate: Last year I went to France
2. Translate: Usually I travel by plane
3. Translate. Next year I am going to stay in a hotel
4. Translate. When I was little I used to go on holiday to Wales
5. Translate. Last year the weather was cold
6. Translate. I would like to visit Paris
7. Translate. I would like a room with a view
8. Translate. Where is the post office please?
9. Translate. Can you recommend a good restaurant?
10. Translate: I have lost my passport.



THINK IT

1. Write a short paragraph in French about your holiday last year
2. Write a short paragraph in French saying where you are going to go next year and what you are going to do there.
3. Translate. I love travelling by plane
4. Translate I don't like staying in hotels
5. Translate. In my opinion France is more beautiful than England.
6. Translate. I have a really bad stomach ache
7. Improve sentences 3 - 5 by adding a justified opinion.
8. Translate. How do I get to the pharmacy?
9. Translate. If I was rich I would travel around the world
10. Translate. I believe that Paris is the most beautiful city in the world.



GRASP IT

1. Improve paragraph 1 by including some uncommon language
2. Improve paragraph 2 by including some uncommon language
3. Change each of your sentences in paragraph 2 from the 1st person to the 3rd person. I to He / She
4. Give one advantage and one disadvantage of staying in a hotel.
5. Write 2 negative sentences about holidays using ne....jamais and ne.....plus.
6. Imagine you are at the police station reporting a stolen item. Give an account of what happened and describe the missing item.
7. Express an opinion about why you think it is important to go on holiday.
8. Imagine you are in a tourist office – you know nothing about the area you are staying and want to find out as much as you can. Write down 5 questions you could ask?

Year 10

French

Holidays

Geography: Changing Economic World



1. Causes of Uneven development

Natural Resources	Natural Hazards
<ul style="list-style-type: none"> •Fuel sources such as oil. •Minerals and metals for fuel. •Availability for timber. •Access to safe water. 	<ul style="list-style-type: none"> •Risk of tectonic hazards. •Benefits from volcanic material and floodwater. •Frequent hazardous undermine development
Climate	Location/Terrain
<ul style="list-style-type: none"> •Reliability of rainfall to benefit farming. •Extreme climates limit industry and affects health. •Climate can attract tourists. 	<ul style="list-style-type: none"> •Landlocked countries may find trade difficulties. •Mountainous terrain makes farming difficult. •Scenery attracts tourists.

2. Consequences of uneven development

Wealth	People in more developed countries have higher incomes than less developed countries.
Health	Better healthcare means that people in more developed countries live longer.
Migration	If nearby countries have higher levels of development or are secure, people will move to seek better opportunities and standard of living.

3. Measuring Development

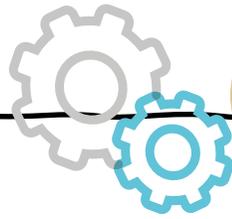
How do we measure if a country is rich or poor ?

Employment type	The proportion of the population working in primary, secondary, tertiary and quaternary industries.
Gross Domestic Product per capita	This is the total value of goods and services produced in a country per person, per year.
Gross National Income per capita	An average of gross national income per person, per year in US dollars.
Social indicators examples	
Infant mortality	The number of children who die before reaching 1 per 1000 babies born.
Literacy rate	The percentage of population over the age of 15 who can read and write.
Life expectancy	The average lifespan of someone born in that country.
Mixed indicators	
Human Development Index	A number that uses life expectancy, education level and income per person.
Limitations of social and economic measures - In isolation these measurements can be misleading. GNI per capita only shows economic development and says nothing about whether people in a country have a good quality of life .	



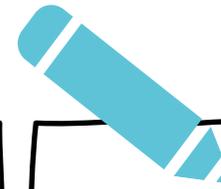
KNOW IT

1. What has caused uneven development ?
2. Why are landlocked countries the poorest countries in the world ?
3. What's the advantages of having natural resources for HICs ?
4. What's the most accurate indicate to measure development ?
5. Where the richest countries located in the world ?
6. Where are the poorest countries located ?
7. How did colonialism create uneven development ?
8. What is the infant mortality rate ?
9. What is migration ?
10. How does uneven development cause migration ?



THINK IT

1. Explain why life expectancy is higher in HICs than LICs.
2. How can tourism help to close the development gap?
3. How do illnesses and diseases result in uneven development ?
4. What are diseases of affluence ? Why are HICs affected by these ?



GRASP IT

1. To what extent do physical factors influence development.
2. Explain how aid can help address uneven development.
3. Explain the potential issues of using GNI to measure a country's wealth.
4. How does industrial development help address uneven development ?

Year 10

Geography

Changing Economic World

History: The First World War: 1918

1. Russia Leaves

The Tsar of Russia **abdicates** in February 1917 and is replaced by a provisional government. Another revolution in October 1917 turns Russia into a **communist** country. In March 1918 Russia signs the Treaty of **Brest-Litovsk** with Germany and officially pulls out of the war. Germany now no longer faced a war on **two fronts**.

4. WOW WORDS

Blockade: The blocking of resources into a country, usually by sea.
Abdicates: When a monarch relinquishes their crown.
Hindenburg Line: A line of German trenches made out of concrete.
Hurricane Bombardment: thousands of heavy shells dropping quickly.

2. USA joins the war

America was one of the richest countries in the world; huge supplies of **coal, oil, iron, cotton, wheat and horses** would boost the British-French war effort.

50,000 American troops arrive per week from June 1918. This would balance the **loss of the Russians**.

Germany now had a race against time to attack on the Western Front **before the American** troops arrived.

Germany's **unrestricted submarine warfare** led to the sinking of the passenger ship, the **Lusitania**, in May 1915. 128 Americans died. This was the first step in events which led to America **joining the war**.

5. Ludendorff's Spring Offensive

General Ludendorff planned an attack against the British to force them and France to surrender **before the USA arrived**. The plan involved the use of **stormtroopers, poisonous mustard gas and a hurricane bombardment**.

The British were outnumbered and confused, thousands fled or surrendered, the **stalemate had broken**. Germany advanced **60km** but had lost over **220,000 men** and did not have replacements. The German advance had left a **salient** in the front line, leaving them vulnerable.

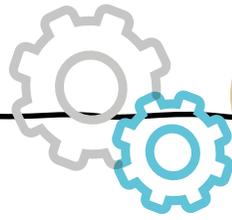
3. Key Events

Russian Revolution 1917 and withdrawal March 1918	
	USA declares war April 1917
Ludendorff's Spring Offensive March - July 1918	
	Foch becomes Commander-in-Chief March 1918
Hundred Days Offensive August - November 1918	
	Revolution in Germany Winter 1918
Kaiser abdicates November 1918	
Armistice signed 11 th November 1918	



KNOW IT

1. What causes Russia to leave the war?
2. How do Russia officially leave the War?
3. Why does this benefit Germany?
4. What does America bring with it to the war effort?
5. What caused America to join the war officially?
6. What was General Ludendorff's purpose?
7. What tactics did he use in his offensive?
8. How did they leave Germany vulnerable?



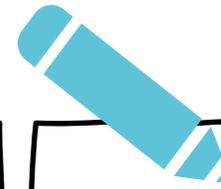
THINK IT



Why is Germany happy about Russia being dragged away?

What causes Russia to be dragged away from the war?

Who would have made this source and for what purpose?



GRASP IT

'The entry of USA to the war was the main reason for the defeat of Germany'. How far do you agree? 16 + 4 SPaG marks.

Write an account of Ludendorff's Spring Offensive was the beginning of then end of the war. 8 marks

Write an account of how Russia's withdrawal from the war benefited its enemies. 8 marks.

Year 10

History

The First World War: 1918

Hospitality and Catering: Types of Provision

1. Hotel and Guest House Standards

Hotels and guest houses standards are awarded and given star ratings. You should know what criteria is needed to be met for an establishment to receive each star rating.



Ratings between one and five rosettes could be awarded based on the following:

- different types and variety of foods offered
- quality of the ingredients used
- where the ingredients are sourced
- how the food is cooked, presented and tastes
- skill level and techniques used as well as the creativity of the chef.

Coveted by many chefs but bestowed upon only to an excellent few.
Getting a star (or three) could change the fate of a restaurant.

 High quality cooking, worth a stop	 Excellent cooking, worth a detour	 Exceptional cuisine, worth a special journey
---	--	---

Good Food Guide

A rating between one and 10 could be awarded based on the following:

- cooking skills
- quality of ingredients
- techniques and cooking skills shown.

2. Commercial and Non-Commercial

Commercial (non-residential) catering establishment that aim to make a profit from their service, but no accommodation is provided.

Non-commercial (residential): the hospitality and catering provision offers accommodation but does not aim to make a profit from the service they provide.

Commercial (non-residential) catering establishments that aim to make a profit from their service, but no accommodation is provided.

Non-commercial (non-residential): catering establishments with no accommodation provided and don't aim to make a profit from their service.

3. Types of Service

The different types of food services in the catering sector. You should know the meaning of each one and be able to provide examples. For instance;

Table service

- **Plate:** the food is put on plates in the kitchen and served by waiting staff. Good portion control and food presentation consistent.
- **Sliver service** is when the food is served to you using a spoon and fork.

Different types of residential types of service in the hospitality and catering sector. You should know the different types of service offered in various hospitality provisions.

Rooms:

- single/ double/ king/ family
- suite (en-suite bath/ shower room, shared facilities).

Refreshments:

- breakfast/ lunch/ evening meal
- 24-hour room service/ restaurant available.

4. Food Poisoning Bacteria

The main causes of food poisoning bacteria are:

- **Bacillus cereus:** found in reheated rice and other starchy foods.
- **Campylobacter:** found in raw and undercooked poultry and meat and unpasteurised milk.
- **Clostridium perfringens:** found in human and animal intestines and raw poultry and meat.
- **E-coli:** found in raw meat, especially mince.
- **Listeria:** found in polluted water and unwashed fruit and vegetables.
- **Salmonella:** found in raw meat, poultry and eggs.
- **Staphylococcus aureus:** found in human nose and mouth.

Food can cause ill-health if it is stored, prepared and/or cooked incorrectly or if a person unknowingly eats a food that they are allergic or intolerant to. All hospitality and catering provision need to follow laws that ensure food is safe to eat.

You need to know the following types of employment contracts and working hours.

- **Casual:** Zero contract, there is no sick pay or holiday entitlement with this type of employment.
- **Full time (permanent):** Works 5 days, a contract of this nature allows the employee to have sick pay and holiday entitlement.
- **Part-time (permanent):** Works 3 days, has sick pay and holiday entitlement in this type of contact.
- **Seasonal:** this type of contract is used when a business needs more staff due to busy times throughout the year, such as the Christmas period.
- **Zero hours contract:** Work only when business requires, no sick pay or holiday entitlement is offered for this type of contract.

Hospitality and Catering: Health and Safety

5. Food Hazards

A food hazard is something that makes food unfit or unsafe to eat that could cause harm or illness to the consumer. There are three main types of food safety hazards:

- Chemical – from substances or chemical contamination e.g. cleaning products.
- Physical – objects in food e.g. metal or plastic.
- Microbiological – harmful bacteria e.g. bacterial food poisoning such as Salmonella.

7. Environmental Health Officer (EHO)

The EHO can carry out an inspection of any hospitality and catering premise at any time during business hours – they do not need to make an appointment. During an inspection, the EHO will check to make sure that:

- the premises are clean
- equipment is safe to use
- pest control measures are in place
- waste is disposed properly
- all food handlers have had food hygiene and safety training
- all food is stored and cooked correctly
- all food has best-before and use-by dates
- there is a HACCP plan to control food hazards and risks.

6. Environmental Issues

The 3 R's

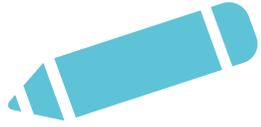
The chef will need to think about environmental issues when planning a menu. Can the chef reduce the amount of ingredients bought as well as reducing food waste? Can the chef reuse ingredients to create new dishes for example stale bread made into bread-and-butter pudding? Can the kitchen recycle waste wherever possible? Running the kitchen sustainably will save money. The above will also need to be considered for front of house how to reduce plastic and waste.

8. HACCP- Hazard Analysis Critical Control Point

Every food business lawfully needs to ensure the health and safety of customers whilst visiting their establishment. To ensure this, they need to take reasonable measures to avoid risks to health. HACCP is a food safety management system which is used in businesses to ensure dangers and risks are noted and how to avoid them.

Hazard		Critical control Point
Receipt of food	Food items damaged when delivered / perishable food items are at room temperature / frozen food that is thawed on delivery.	Check that the temperature of high-risk foods are between 0°C and 5°C and frozen are between -18°C and -22°C. Refuse any items that are not up to standard.
Food storage (dried/chilled/frozen)	Food poisoning / cross contamination / named food hazards / stored incorrectly or incorrect temperature / out of date foods.	Keep high-risk foods on correct shelf in fridge. Stock rotation – FIFO. Log temperatures regularly.
Food preparation	Growth of food poisoning in food preparation area / cross contamination of ready to eat and high-risk foods / using out of date food.	Use colour coded chopping boards. Wash hands to prevent cross-contamination. Check dates of food regularly. Mark dates on containers.
Cooking foods	Contamination of physical / microbiological and chemical such as hair, bleach, blood etc. High risk foods may not be cooked properly.	Good personal hygiene and wearing no jewellery. Use a food probe to check core temperature is 75°C. Surface area & equipment cleaned properly.
Serving food	Hot foods not being held at correct temperature / foods being held too long and risk of food poisoning. Physical / cross-contamination from servers.	Keep food hot at 63°C for no more than 2 hours. Make sure staff serve with colour coded tongs or different spoons to handle food. Cold food served at 5°C or below. Food covered when needed.

Own Notes



A large, empty rectangular box with a hand-drawn black border, intended for writing notes.

A rectangular box with a hand-drawn black border, intended for writing notes.

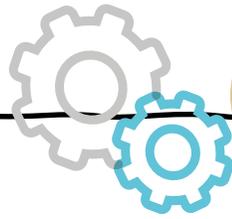
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A large, empty rectangular box with a hand-drawn black border, intended for writing notes.



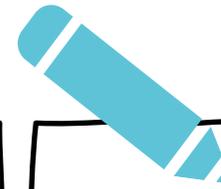
KNOW IT

1. Define how hotels and B & B's are rated
2. Define the term food service.
3. What are the different job roles within the hospitality and catering industry?
4. What is the difference between commercial and non commercial?
5. What is the difference between commercial residential and non commercial non residential?
6. What are the 3 R's?
7. What types of contracts are available in the hospitality and catering sector?
8. What hazards need to be considered when preparing food?
9. What rating does the Environmental Health Officer give to food premises?
10. Define food poisoning.
11. Define HACCP.



THINK IT

1. Explain what the ratings are and what would you expect in a 5* hotel.
2. Explain the different food services that are available and what factors need to be considered.
3. Explain the different roles within hospitality and catering establishments.
4. Explain what establishments come under commercial and non-commercial.
5. Explain how establishments can reduce waste.
6. Give examples of what type of contract to have depending on your age.
7. Give examples of good food hygiene practices.
8. Explain why it is important that food premises are inspected.
9. Explain what the EHO will look for when they inspect premises.
10. Give examples of different types of food poisoning.
11. Complete a HACCP table for safe preparation for spaghetti bolognese.



GRASP IT

1. Make a list of the items that you would expect to find in a room when staying in a hotel. What else can be added to make it 5*.
2. Consider a café in your local area, how do the staff speak to you, what are they wearing, can you identify the staff easily, what type of service do they operate.
3. Consider the environment and how establishments can reduce the carbon footprint.
4. Why is it important that employees are given a contract?
5. Explain what hospitality and catering means.
6. Why should chefs use foods that are in season.
7. Explain what powers the EHO have.
8. How can premises improve their hygiene rating?

Year 10

Hospitality and Catering

Provision. Health and Safety

iMedia

The Two Main Types

Traditional Media:

- Film
- Television
- Radio
- print

New Media:

- computer games
- interactive media
- Internet
- digital publishing

Sectors of the Media Industry

Products within digital publishing

- Online magazine
- eBooks

Products within computer games

- Audio
- Music
- Animation
- Special effects (SFX, VFX)
- AR/VR
- Digital games

Products within interactive media and internet

- Digital imaging and graphics
- Social media platforms/apps
- Multimedia
- come countries development.
- Websites

Technical

- Camera operator
- Sound editor
- Audio technician
- Web developer
- Games Developer
- Video Editor

Production

Pre-production

Animator

Production

Animator, Camera operator

Post-production

Animator, Audio and sound, senior roles

Senior Job Roles

Campaign Manager - allocates the correct job to the **correct person** to so that different aspects of the campaign are not missed. The campaign manager also decides on what **advertising strategy** is used to ensure the promotion to the right target audience.

Production manager – responsible for **managing between different departments**. May be responsible for scheduling and budgets

Editor – in print and digital publishing an editor will be responsible for **deciding the content** that will be published in books, magazines or newspapers. They may **alter the tone** or structure of copy or decide on the images and titles to be used

Creative director – they head up a creative team, **lead the strategy and look of a design project**. This position is often seen in TV, film and games production and graphic design.

Creative

Scriptwriter - A script writer creates a screenplay using either a word processor or specialist screenwriting software

Copy Writer - A copy writer creates copy (text) that engages, entertains, informs or educates the reader

Web designer is responsible for the look and feel of a web site using HTML and CSS

iMedia

How to analyse an image

What message is the image trying to convey?

What emotion or experience are you feeling?

What colour(s) are in the background?

What colour(s) are in the foreground?

Emotive Words

- Warm
- Sad
- Warning
- Mysterious
- Frightening
- Warning
- Calm
- Relaxing
- Happy
- Cheerful

How style content and layout are linked to the purpose



Image used on a website advertising winter breaks in Scotland.

The orange and red tones of the first are reflected in the surface and background helping to indicate warmth inside.

The cup warmer is in red, helping to give a warm feel. It is also associated with being a traditional Christmas colour, which will help to elicit enjoyable times or link to Christmas holiday breaks.

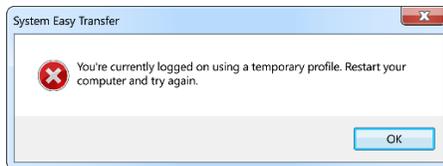
Technical

Image to be used in advertising for a new bank account that is easy to set up in 3 minutes using an app



The use of green leaves helps to indicate nature and combined with the stones suggest a calm process for setting up a new account. The use of green is also often associated with money.

Inform



An error has occurred on a computer.

The use of red on the cross icon helps to indicate a serious problem.

The use of red on the X button (top right) shows that a negative effect may happen from pressing it (often the window closes, or data may be lost – in this case, it is to be consistent with all other windows in the operating system).

The use of blue for the window title and OK button suggest a professional/calming colour. They are likely to be safe to drag or press.

Managers



A sci-fi thriller film

The lighting and fog effect add to the suspense of the frame. A green/blue colour on the person on the right contrasts with a red colour behind the machine/monster. These colours may indicate good/bad characters in the plot.

iMedia: Client Requirements

Audience and Segmentation

Categories of audience segmentation:-

- Age
- Gender
- Occupation
- Income
- Education
- Location
- Interests
- Lifestyle

Example Client Brief

Fitness Fanatic currently have three gyms in one city. One difference with their gym is that people must go at certain times of day when there will be instructors present and group support. The gym is open to both **men and women** who are **over 16**.

Customers must visit the gym at least three times per week. They want to grow their business by encouraging more people to join their gym. As such they have decided to invest in making some **posters** to be put up in the local area and on social media.

Purpose of advertisements

To **promote/advertise**.
To encourage more people to join the gym / to grow the business

Who are the Audience

- People who are over 16 and want to get fit.
- Men and women who have not joined a gym before but are already doing other activities for their fitness.
- Men and women who have joined a different gym and could be persuaded to move across.
- Men and women who have never even thought about joining a gym or getting fit.
- Men and women who don't want to go their own to the gym and need a support group or instructor.

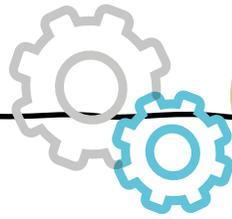
Products produced

Posters (with different formats to fit different advertising spaces and different resolutions depending on whether print or online).



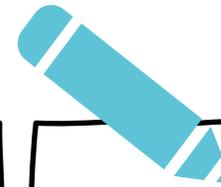
KNOW IT

1. The difference between traditional media and new media
2. The types of products produced by different sectors
3. Know the basic responsibilities of job roles within the production cycle
4. Know that some job roles are specific to pre-production, production and post-production
5. Know that some job roles span over multiple production phases
6. Know the different purposes of media products
7. know the different categories of audience segmentation
8. Know examples of the way audiences are grouped for each segmentation type



THINK IT

1. Name the two sectors from traditional media and two sectors from new media
2. List as many media products as possible within the media industry
3. Understand creative, technical and senior job roles.
4. Revise the method of how to identify the purpose of an image.
5. Know all the different categories of audience segmentation
6. From an image you should be able to identify the purpose and audience segmentation.



GRASP IT

- How has traditional media evolved into new media
- Link the media products with a given brief.
- Use both a brief and a media product to identify audience segmentation

Year 10

iMedia

Client Requirements

Media Studies: Key Theories

Audiences

1. Uses & Gratification Theory

The theory suggests that consumers use media products for at least one of these reasons:

Identity – , share similar values to, etc.

Educate – to learn new things.

Entertain - to be entertained a form of 'escapism'

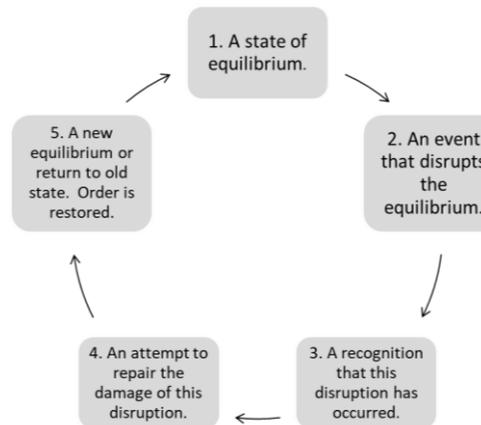
Social Interaction –allows for conversation between other people

2. Propp's Character Theory

Propp suggested that every narrative has eight different character types, these character types are:

- The hero**— Main charact on the quest.
- The villain** — fights the hero in some way.
- The dispatcher** — send hero on mission.
- The helper** — helps the hero in the quest.
- The princess or prize** —object of the quest.
- The father** — gives the task to the hero.
- The donor** — prepares the hero or gives the hero some.
- The false hero** — takes credit for the hero's actions

5. Todorov's Narrative Theory



4. Hypodermic Needle Theory

The media injects ideas and views into the brains of the audience therefore controlling the way that people think and behave. People are often seen as passive.

3. WOW WORDS

Denotations = what you can see

Connotations = What is suggested or implied

Representation = People, Places & Idea

Intertextuality = When one type of media reference another

Camera Angles & types of shots = Refer to your book for the full list

Enigma Code = A question posed which encourages people to watch.

6. Stuard Hall's Reception Theory



Preferred reading

The audience responds in exactly the way the media producer wants them to.



Negotiated reading

Where the audience compromises between the producers intended reading and their own opinions and preferred reading of media text.



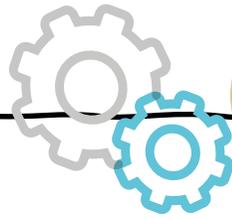
Oppositional or resistant readings

The audience rejects the meaning or intended reading of the media product.



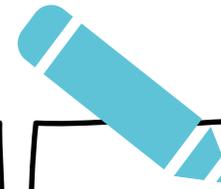
KNOW IT

1. Why an audience consumes a product? (Gratification Theory)
2. The different types of characters (Propp's)
3. The 5 parts of Gratification Theory
4. Audience Reception Theory – Preferred reading, Negotiated reading and oppositional reading



THINK IT

1. Why do some audiences consume products for different reasons? (An adult might go to the cinema to socially interact with others, rather than a child that would go for entertainment.)
2. My might a 'hero' character be different when considered over a series to an individual episode?
3. Why might there be several 'disruptions' in a storyline?



GRASP IT

- What are the pleasures and rewards for music video audiences? (Gratification Theory)
- How has technology enabled self-production of music?
Explain how camerawork, sound and editing make meanings in the extract from His Dark Materials, The City of Magpies.
- How does Kim Kardashian Hollywood converge various parts of the Kardashian brand and why?

Magazines : Front cover of *Tatler*, January 2021 / Front cover of *Heat*, 21-27 November 2020
Advertising & marketing: Galaxy TV ad (2014) / NHS Blood online / OMO Print ad
Newspapers: *Daily Mirror* – Newspaper **Edition**: Friday 5 March 2021 / *The Times* - Newspaper **Edition**: Friday 5 March 2021
Online, social and participatory media: Product: Marcus Rashford / Kim Kardashian
Video Games: Kim Kardashian – *Hollywood* / Lara Croft – *Go*
Radio: Radio 1 Launch Day / Kiss Breakfast on KISS Radio
Music video: Arctic Monkeys – *Bet you look good on the dance floor* (2005) / Blackpink – *How You Like That* (2020)
Film: *Black Widow* / *I*, Daniel Blake
Television* **Section A Media 2**: *His Dark Materials* (2020) BBC TV Series. **Series 2, Episode 1: The City of Magpies** / *Dr Who*, **Series 1, Episode 1 An Unearthly Child** (1963)

Photography: Shape & Colour

1. Composition

Composition
Composition is the way the different elements within a scene are placed within the frame of a photograph.

- Compositional devices**
- Rule of thirds
 - Foreground interest and depth
 - Leading lines
 - Diagonals and triangles
 - Rule of odds

2. Experimentation

Experimentation
Chose a free app e.g snapseed, photopea, befunky or pixlr and create 10 edits using the different functions in the app. Be sure to explore vignette, double exposure, white balance and black & white. Save your edits. How can your edits link to your research?

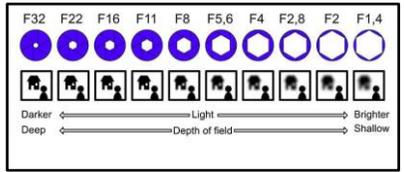


3. WOW WORDS

- Pattern
- Evoke
- Mood
- Feeling
- Portray
- Texture
- Symmetry
- Asymmetry
- Scale
- Balance
- Depth of field
- Angular
- Organic
- Lines
- Curves
- Contrast
- Viewpoint
- Negative space
- Filled space
- Distort
- Express
- Foreground
- Background
- Visual tension

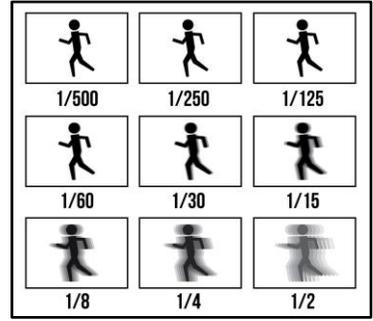
4. Aperture

Aperture
Aperture is an opening which light travels through. Aperture controls the brightness in a photographic image and it is expressed as an f number.



5. Shutter speed

Shutter speed
Shutter speed is the length of time the digital sensor or film is exposed to light.



6. Photographer inspiration

Photographers
Look at the work of others for inspiration.

Vilde Rolfson
Marc GC Photography



Other Photographers

Olafur Eliasson
Sven Pfrommer
Bill Armstrong





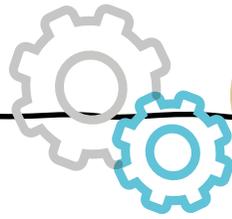
KNOW IT

Composition is the way the different elements within a scene are placed within the frame of a photograph.

Think about what shape and colour is and how you can explore this theme in your own work. Research the definition of shape and colour. Create a visual mind map about shape and colour and what it means. e.g objects, nature, man made, macro. Collect a range of primary and secondary sources such as images, objects relevant to the theme.

Research a range of photographers that link with your theme (such as those in box 6). Identify the characteristics of the photographers style/technique. Find out key facts about the artist to allow you to gain a broader understanding of their work. Take photographs that are clearly inspired by the photographer.

Demonstrate that you have used the photographer as inspiration in your own work and to inspire your own ideas. Take photographs that use the photographers ideas (shape, colour composition, objects, subject etc)



THINK IT

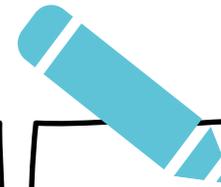
How does using composition impact the visual quality of your photograph? Name 5 compositional devices.

Develop your knowledge and understanding of techniques. Have you taken a range of photographs using different compositional devices. How do these link with your photographer inspiration?

How have you edited your photographs? Have you explored different techniques in photoshop? How do these impact your photographs?

Have you annotated your digital edits to explain what you have done, how you have done it, what works and what doesn't?

How can you reflect upon your work and make refinements?



GRASP IT

Take a set of 10 photographs for your portfolio that uses the compositional device rule of thirds.

Take a set of 10 photographs for your portfolio that uses the compositional device full frame.

Evaluate your strengths and improvements. What are the strengths in your work? Why do you think that? Did you identify any problems? How did you solve them? Were you able to fully realise your intentions? Why or why not? How could you further develop your ideas?

Create a series of 10 digital edits outside of lessons using your mobile phone and a free app such as those suggested in box 2. Print your work off in school and add to your portfolio to show further experimentation, development and refinement.

Create 10 physical experiments that explore shape and colour. Cutting shapes out from your photographs and layering them together. Find a photographer to make links to this experimentation.

Year 10

Photography

Shape & Colour

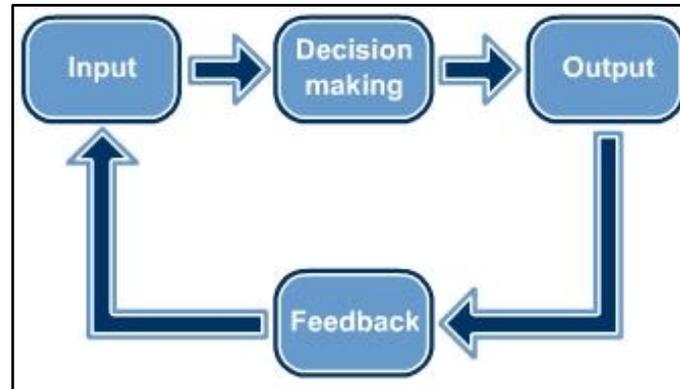
GCSE Sports Psychology: Classification of Skill & Information Processing

Open & Closed Skills

Open – performed in a changing environment where a performer has to react and adapt to external factors. E.g. position of players during a football tackle.

Closed – Performed in the same predictable environment and is not affected by external factors. E.g. a break in snooker.

Information Processing Model



Wow words

- Classification
- Continuum
- Information processing
- Input
- Output
- Decision making
- Feedback
- Environmental factors

Basic / Complex

Basic – this is a simple skill and doesn't need much concentration. E.g. running

Complex – a skill that requires a lot of concentration e.g. volley in football.

Input – the information you receive through your senses.

Decision making – deciding how to respond to the input. Will compare to what is happening at the time and past experiences.

Output – muscles react to the messages from the brain telling them what to do to perform the skill.

Feedback – receive extrinsic or intrinsic feedback which helps to improve the skill next time.

Self / Externally Paced

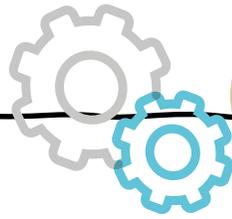
Self paced – Starts when the player decides. E.g. corner kick in football.

Externally paced – starts because of external factors. E.g. opponents closing you down in football may dictate when you make a pass.



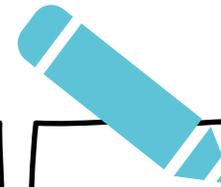
KNOW IT

1. How are skills classified?
2. What defines a basic/complex skill?
3. How many stages are in the information processing model?
4. Define a self paced skill.
5. Define an externally paced skill.



THINK IT

1. Give an example of a changing surrounding for an open skill.
2. Give an example of a predictable sporting environment.
3. How is input processed through the human body?
4. What are the two different types of feedback?



GRASP IT

1. Explain your example of a changing surrounding for an open skill.
2. Why are closed skills more replicatable?
3. Explain an example of the senses being stimulated by input in your sport.
4. Justify the purpose of the different types of feedback a coach can use.

Physical Education: Netball



1. KEY SKILLS

- **Passing and receiving** – different types of passes include chest pass, bounce pass, shoulder pass and overhead pass.
- **Attacking** – getting free from an opponent in order to receive the ball. Includes the skills of sprinting, dodging and changing direction.
- **Shooting** – With one hand under the ball and the other steadying it at the side, keep your eyes on the hoop, bend your knees and push the ball with the fingers.
- **Defending** – Marking your opposite player both with and without the ball.
- **Footwork** – You must land with a 1-2 landing or with 2 feet. You must then not move the landing foot.
- **Holding space** – trying to keep space in which to receive a pass. Especially useful in the circle.

2. COURT & POSITIONS

Netball Positions: (and who they mark)

Goal Shooter- allowed in the shooting third only (GK)

Goal Attack- allowed in the shooting and centre third (GD)

Wing Attack- allowed in the centre and shooting third but not the circle(WD)

Centre- allowed everywhere except the 2 circles (C)

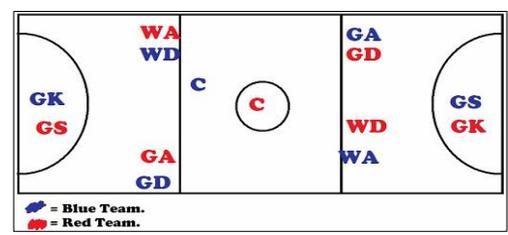
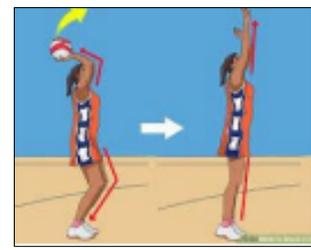
Wing Defence - allowed in the centre and defending third but not the circle (WA)

Goal Defence- allowed in the defending third and the centre third (GA)

Goal Keeper- allowed in the defending third only. (GS)

4. COACHING SHOOTING

- Feet shoulder width apart facing the post.
- Ball held high directly ABOVE your head.
- Knees and elbows are slightly bent to push off.
- Eyes looking at a point above the ring.
- Flick the ball upwards using wrist and index finger



3. WOW WORDS

- Passing
- Contact
- Defence
- Dodging
- Footwork
- Held Ball
- Interception
- Landing
- Offside
- Pivot
- Replaying the ball
- Shoulder pass
- Change of direction
- Marking
- Obstruction



5. COACHING DEFENDING

Stage 1. Mark the player they haven't got the ball yet but you can still man-mark them.

Stage 2. Your player's received the ball and now you're up close to make life difficult for them.

Stage 3. You're marking the space – anticipating the pass and preparing to drive in front to snatch it away





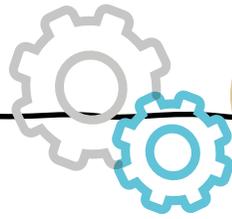
KNOW IT

Technical

1. What are the three types of pass?
2. How can I receive the ball?
3. How can I attack space effectively?
4. What players can I use to score?
5. What are the 7 positions in a team?

Health, Fitness & Well-Being

6. How can running help improve my well-being?
7. How do we warm up for netball?
8. What physical benefits does a warm-up bring?
9. How can I train for invasion sports, like netball?
10. What are the principles of training?



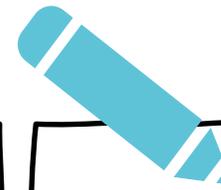
THINK IT

Technical

1. When should each type of pass be used?
2. Describe the players positions and what their roles are in the team.
3. Why is attacking space important?
4. What order of play should you go through? Start from the GK. Why?
5. Give an example of creating space for your position.

Health, Fitness & Well-Being

6. What benefits do you get out of playing invasion games like netball?
7. What 3 components of a warm-up should be used?
8. How will this develop your body to gain an advantage in netball?
9. How can this be applied to your game?
10. What is your favourite position & why?



GRASP IT

Technical

1. Why is it important to give a pass appropriate accuracy and power?
2. How can footwork & pivoting help receive the ball in a game situation?
3. Who restarts from a centre pass? How do you know?
4. Explain what is meant by the term replaying/repossession
5. Why do GS need to be good creating space in the game?

Health, Fitness & Well-Being

6. How do you think this sport will help you at school?
7. Create a warm-up plan for you to use before a competitive match.
8. Why is muscular endurance a benefit for invasion sports?
9. What will happen to your understanding if you play in all the different positions?



Netball

Year 10

Physical Education

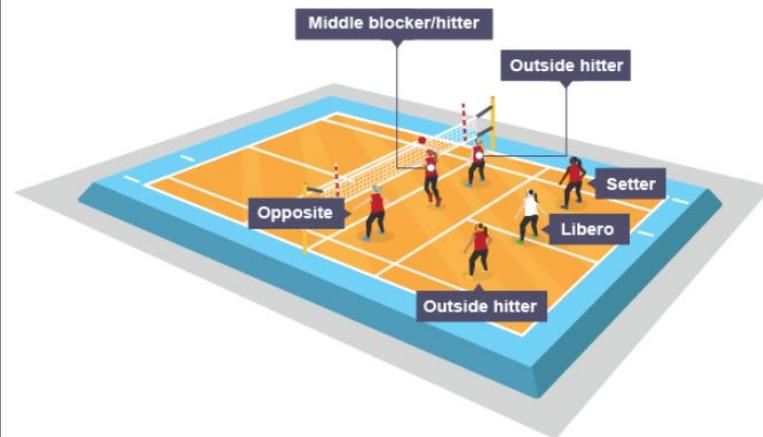
Physical Education: Volleyball

Part One

Rules & Regulations

- ❑ An official volleyball court is 18 m × 9 m.
- ❑ To start a point, the server can serve from anywhere behind the end line, either overarm or underarm, into the opposing team's side of the court.
- ❑ The opposing team is allowed a maximum of three touches on their side of the court before sending the ball back over the net.
- ❑ A player is not allowed to touch the ball twice in a row. However, they could hit the ball on the first and third contact.
- ❑ The ball must be hit - not caught.
- ❑ In side out scoring, the serving team scores a point when the opponents fail to return the ball over the net, hit the ball out of bounds or commit an infraction.
- ❑ Whichever team wins the point then goes on to serve.
- ❑ Every time a team wins the serve from the other team, the players rotate their position on court clockwise so that everyone gets a chance to serve

Player Positions



Officials

A first (or main) referee, second referee, a scorer and two line judges are required to umpire an official game of volleyball. Just like most sports, the main referee upholds the rules throughout the whole game and their decision is final.

However, unlike football, a volleyball team is allowed to make a formal protest with the scorer. The second referee stands opposite the main referee and is responsible for all substitutions, timeouts and the actions of the scorer's table.

Wow words

Dig	Setter	Libero
Blocker	Centre line	
Service line	Out of bounds	

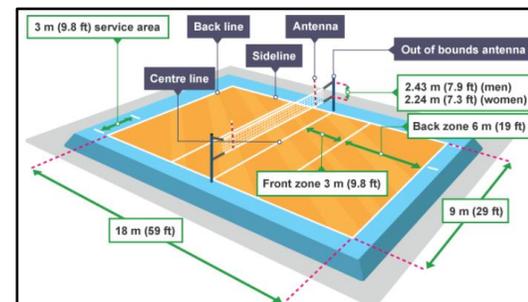
Scoring

In competitive adult matches all games are played to a best of five sets.

Volleyball is very different to most sports as the first four sets are played to 25 points, but if the match goes to a fifth set this game is only played to 15 points.

In order to win a set, a team must win by two clear points.

Court Dimensions



Volleyball – Serve, Dig, Set & Block

Serve



A volleyball serve can be hit either overarm or underarm. A player is allowed to travel with the ball and jump whilst serving, and providing it reaches the opponent's court, it is deemed legal.

Stage one

Stand in position on the balls of your feet, with knees slightly flexed. Face forwards with your chest facing towards the target. Hold the ball in front of your body with left hand, right hand held back. Body weight should be on the back foot.

Stage two

Throw the ball gently into the air, swing the straight arm forward to strike underneath the ball with the heel of the hand, with your fingers clenched. Transfer bodyweight from back to front foot.

Stage three

Follow through with the fist pointing towards the intended target or the sky.

Dig



The dig shot requires players to get low and to stop the ball touching the ground. When completed successfully the shot provides accurate and consistent passing, which is essential to create a multiple attack.

Stage one

Stand in position on the balls of both feet, with knees slightly flexed. Drive off from legs to get towards the path of the ball.

Stage two

Keep both eyes on the ball. Place the back of the right hand on top of the palm of the left hand. Bring both thumbs together and place them side by side. Keep fingers and thumbs close together. Lock your elbows together. Hold arms out straight in front.

Stage three

Hands start low in front of the body and swing up to strike the ball upwards. Strike the ball with the lower forearms. Follow through with the hands pointing towards the intended target or the sky.

Set



The set shot is a delicate attacking shot that is an important part of the pass-set-spike sequence required for a successful attack.

Stage one

Stand in position on the balls of your feet, with knees slightly flexed. Drive off from legs to get towards the path of the ball. Call for the ball. Get in line with the ball's path. Keep your eyes on the ball at all times.

Stage two

Move towards the ball. Extend your elbows so that your arms are out in front of you at head height. Slightly flex your elbows. Have your palms facing up and fingers spread. Keep your eyes on the ball.

Stage three

Watch the ball. Face the ball in ready position with knees slightly flexed. Hands are held above the head, palms up. Move body underneath the ball and push the ball into the air with your fingertips. Extend knees to help with the push into the air. Follow through with fingers pointing at the sky.

Block



The block is not technically a maintaining possession shot, but a well-timed and effective block diffuses an offensive attack.

Stage one

Stand in position on the balls of your feet, with knees slightly flexed. Drive off from legs to get towards the path of the ball. Get in line with the ball's path. Keep your eyes on the ball at all times.

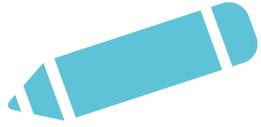
Stage two

Move towards the ball. Extend arms up above head. Have your palms facing forward and fingers spread. Keep your eyes on the ball.

Stage three

Upon contact, try to angle the ball downwards. Begin to land move arms outwards for balance. Flex knees to help cushion landing. Get back into position to regain formation.

Own Notes



A large, empty rectangular box with a hand-drawn black border, intended for taking notes.

A rectangular box with a hand-drawn black border, intended for taking notes.

A rectangular box with a hand-drawn black border, intended for taking notes.

A large, empty rectangular box with a hand-drawn black border, intended for taking notes.



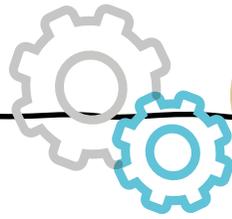
KNOW IT

Technical

1. How do I serve?
2. How should I dig the ball?
3. How can I attack space effectively?
4. What methods can I use to score a point?
5. How do I set?
6. What is the role of a libero?

Health, Fitness & Well-Being

7. How can exercise help my well-being?
8. Why do we warm up?
9. How can I train for this sport?
10. What are the principles of training?



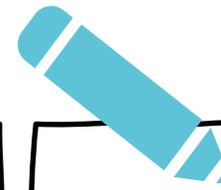
THINK IT

Technical

1. What type of serve is most appropriate?
2. Describe three things a player can do when in possession of the ball.
3. Why is attacking space important?
4. Where should you aim when at the net?
5. Give an example of defending.

Health, Fitness & Well-Being

6. What mental benefits do you get out of playing invasion games?
7. What 3 components of a warm-up should be used?
8. How will this develop my body to give me an advantage?
9. How can they be applied to your training?



GRASP IT

Technical

1. Why is it important to use appropriate power?
2. How can the dig or set be used to receive the ball in a game situation?
3. What are your three main shots when you receive the ball?
4. Explain how to score a game as an official.
5. Who serves & how do you know?

Health, Fitness & Well-Being

6. How do you think sport will help you at school?
7. Create a warm-up plan for you to use before a competitive match.
8. Why is muscular endurance a benefit for invasion sports?
9. What will happen to my body if I keep overloading my training?

Year 10

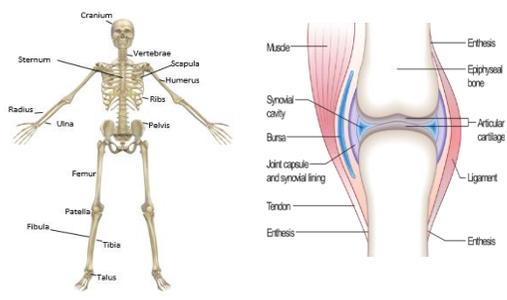
Physical Education

Volleyball

GCSE Physical Education: Paper One

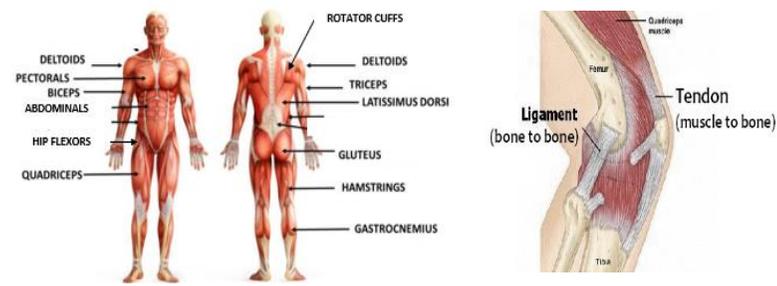
Skeletal System

- Structure & function of the skeleton
- Types of bones classification
- Structure of a synovial joint
- Types & locations of hinge, ball & socket joints.



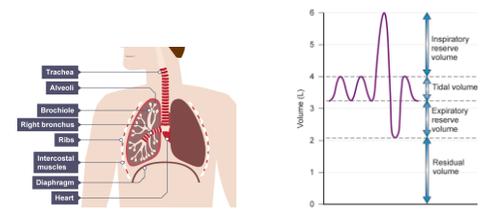
Muscular System

- Names & location of key muscles
- Role of each muscle
- Antagonistic muscle pairs
- Connective tissues
- Types of muscle contraction



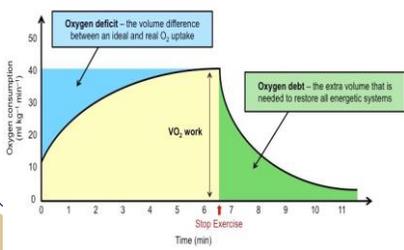
Respiratory System

- Mechanics of breathing
- Gaseous exchange process
- Aerobic & anaerobic respiration
- Lung volumes & a spirometer trace



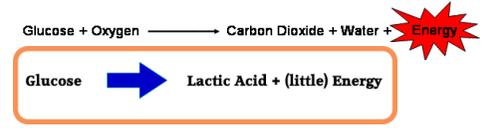
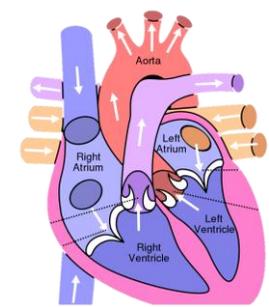
Movement Analysis

- Classification of lever systems.
- Components of a lever system & movements within human body.
- Types of movement
- Planes of motion & sporting examples.
- Axes of rotation & sporting examples



Cardiac system

- Labelling the cardiac system
- Structure & function of blood vessels
- The cardiac cycle
- Vascular shunt mechanism & blood redistribution



Physical training

- Components of fitness
- Principles of training
- Exercise intensity & training zones
- Methods of training
- Seasonal training
- Preventing injuries
- Warming up & cooling down

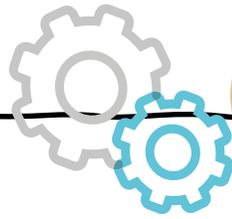
Use of data

- Types of data
- Analysing & interpreting data



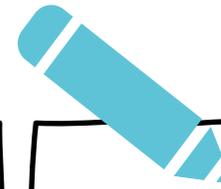
KNOW IT

1. State the 15 main bones.
2. Recall the four classification of bone
3. Describe the key functions of the skeleton.
4. Label a synovial joint image
5. State the 13 main muscles.
6. What are the 3 types of muscle contraction
7. Label the pathway of air.
8. Label an image of the heart.



THINK IT

1. Explain the role of each bone classification.
2. For each function of the skeleton name a bone which matches this.
3. Where are the main synovial joints in the body?
4. Describe the role/purpose of each muscle.
5. Describe the pathway of air.
6. State the order of the cardiac cycle.



GRASP IT

1. Give an example of how a particular bone allows a sporting movement to take place.
2. Describe a sporting action for each bone classification.
3. Analyse how each joint allows a certain type of bodily movement.
4. Explain examples of each type of muscle contraction.
5. Explain the process of gaseous exchange.

Year 10

GCSE Physical Education

Paper One

GCSE Physical Education: Paper Two

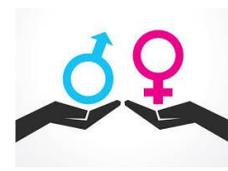
Skill Classification & Information Processing

- Place skills on continuums including;
 - Open to Closed
 - Basic to Complex
 - Self paced to externally paced
 - Fine movements to Gross movement
- Explain the information processing model stages (below image)



Social groups & engagement factors

- Factors which affect participation in sport & physical activity, including;
 - Age
 - Gender
 - Ethnicity & religion
 - Friends, family & peers
 - Disability



Health, fitness & well-being

- Physical, fitness, mental & social benefits to participating in physical activity
- Sedentary lifestyles, obesity & related diseases.
- Body somatotypes



Guidance, goal setting & types of feedback

- Explain the 4 main types of guidance a coach might use to help performers.
- Explain the 6 types of feedback a coach can use for performers.
- Describe the two types of goals that can be set & SMART factors.



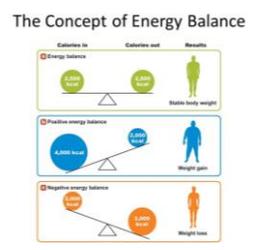
Performance Enhancing Drugs, Player & Spectator Conduct

- 7 main groupings of PEDs
- Advantages & disadvantages to PEDs.
- Conduct of players e.g. etiquette.
- Strategies to combat hooliganism and poor behaviour.



Energy, Diet, Nutrition & Hydration

- Energy factors & guidance
- Factors affecting dehydration
- Healthy balanced diet & nutrition



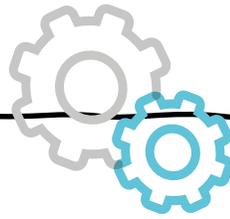
Use of data

- Types of data
- Analysing & interpreting data



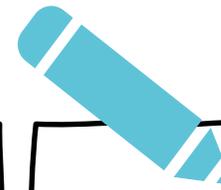
KNOW IT

1. What defines a skill?
2. What makes a skill open or closed?
3. What is meant by the term gross/fine?
4. What are the four stages of the information processing model?
5. What are the four types of guidance?
6. What are the 6 types of feedback a performer can be given?
7. What does the acronym SMART stand for?
8. What are the social factors affecting participation?
9. What are the 7 groups of PEDs athletes may use?
10. What is a sedentary lifestyle?
11. What is a balanced diet made up of?



THINK IT

1. Pick a skill and place it on a continuum to cover all factors.
2. Explain each stage of the information processing model.
3. How can a coach use mechanical guidance in swimming?
4. Explain the best type of feedback for a beginner.
5. What factors can be measured in an invasion game?
6. Describe one disability for which sport is adapted.
7. How is blood doping carried out?
8. Explain one negative lifestyle factor.



GRASP IT

1. On a continuum describe where a rugby conversion would sit, give reasons for your answer.
2. Using a sport of your choice give an example of what Input might be during a competitive match.
3. Evaluate the use of guidance for an elite performer.
4. Explain the difference between health, fitness & well-being

Year 10

GCSE Physical Education

Paper Two

Religious Education: Islamic Practices

1. The five pillars of Sunni Islam.

The five pillars are the five most important duties for all Muslims, and are seen as the key to living a perfect Muslim life.

1. **Shahadah**: Statement of faith – “There is one God and Allah is the messenger of God”.
2. **Salah**: Prayer 5 times a day using special rak’ahs (prayer positions).
3. **Zakah**: Giving 2.5% of your savings to charity
4. **Sawm**: Fasting during daylight hours during the month of Ramadan.
5. **Hajj**: Going to Makkah on a religious pilgrimage at least once in your life

4. Jihad.

Greater Jihad - “to strive”; The daily struggle to live as a good Muslim.

It is:

- To practice the 5 pillars.
- To seek justice for all.
- To rise above greed and selfishness.

Lesser Jihad - The use of violence in self-defence, or to defend Islam/Allah.

- It cannot be used aggressively and should never be used to kill civilians (non-soldiers)
- The Crusades were an example of a true Jihad.
- Terrorism is NOT jihad!

2. 10 obligatory acts of Shi’a Islam.

The ten obligatory acts combine the Five Pillars with some additional duties. These are followed by Twelver Shi’a Muslims.

1. **Salah** – prayer.
2. **Sawm** – fasting.
3. **Zakah** – charitable giving.
4. **Khums** – 20% of tax (half goes to charity and half to religious leaders).
5. **Hajj** – pilgrimage.
6. **Jihad** – The struggle to maintain the faith and defend Islam.
7. **Amr-bil-Maruf** – encouraging people to do what is good.
8. **Nahi Anil Munkar** – discouraging people from doing what is wrong.
9. **Tawallah** – showing love for God and people who follow him.
10. **Tabarra** – not associating with enemies of God.

5. WOW WORDS

Niyyah: Having the right intention in one's heart to do an act for the sake of Allah.

Ummah: The Arabic word meaning ‘community’, which in Islam, refers to the whole Muslim world, or the community of believers.

Ibadah: Every action a Muslim does is a form of worship or devotion to Allah.

3. Festivals.

Id-ul-Adha

- The festival of sacrifice.
- Most important festival.
- Marks the end of Hajj.
- Remembers Ibrahim being prepared to sacrifice his son Ishma’il.
- New clothes, food presents, Id prayers at mosque, animal eaten.

Id-ul-Fitr

- Festival of fast-breaking
- End of Ramadan (fasting)
- Feast, clothes, mosque for special sermon
- Zakah-ul-Fitr – special charity contribution
- Generosity and gratitude

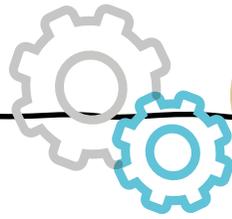
Ashura

Most important to Shi’a Islam – remembers when Husayn was killed (martyred).



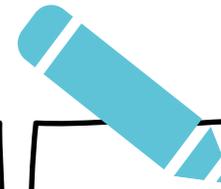
KNOW IT

- What the five pillars of Sunni Islam are and their significance.
- How Muslims perform each of the five pillars in their daily lives.
- What the ten obligatory acts of Shi'a Islam are and their significance.
- The origins, celebrations and importance of Id-ul-Fitr and Id-ul-Adha.
- The origin and meaning of Ashura and how the festival is commemorated.
- The concept of Jihad and the difference between greater jihad and lesser jihad.
- Common misconceptions of lesser Jihad.
- The meanings of the concepts Niyyah, Ummah and Ibadah and how such concepts link into Islamic practices.



THINK IT

- What is the importance of Zakah to Muslims?
- What difficulties might a Muslim face during Ramadan in Britain today?
- Do you think Hajj is easy or like a holiday for Muslims?
- 'Money should be spent on charity rather than Muslim Festivals' – What is your opinion and why?
- 'Greater jihad is more important than lesser jihad' – What is your opinion and why?



GRASP IT

The commemoration of Ashura

The day of Ashura (day of remembrance) is an important Shi'a festival that remembers the death of Husayn at the battle of Karbala.

Shi'a Muslims commemorate Ashura by:

- performing plays and re-enactments to tell the story of Husayn's death.
- taking part in public expressions of grief and mourning.
- In Iraq, many Shi'a Muslims visit Husayn's tomb.

Can you provide further explanation for each of the ways that Shi'a Muslims commemorate Ashura?

Think about why they do this and if there would be any benefits or challenges to these actions.

Year 10

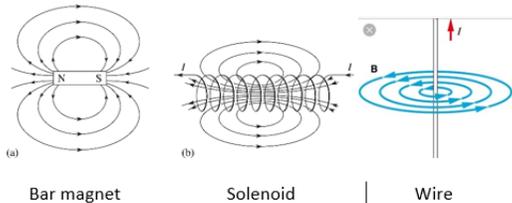
Religious Education

Islamic Practices

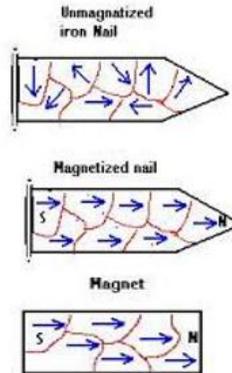
Science: Physics: Magnetism

1. Magnetic Fields

Magnets and wires with a current flowing through them have magnetic fields. You need to know what they look like.



2. Permanent and induced magnets

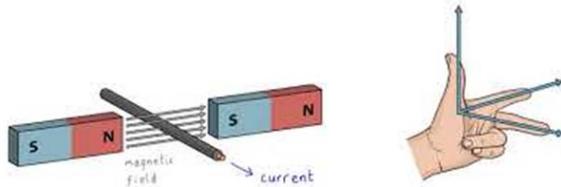


Permanent magnets are made from hard magnetic materials. The domains are lined up and it is difficult to undo this (unless you use heat or a lot of force). Soft magnetic materials have domains that line up when they are in a magnetic field but quickly move back to their original state once they are removed from the magnetic field. They make great cores for electromagnets. Materials that are not magnetic do not have domains.

Key words

- Solenoid – A coil of wire
- Magnetic Field – the area around the magnet where the force acts
- Permanent magnet – A material that has domains that are permanently lined up so that it stays magnetic even when it is not in a magnetic field
- Induced magnet – A material that has domains that line up when the material is within a magnetic field, making the material magnetic temporarily.
- Alternating current – current that is constantly changing direction (e.g. mains electricity or from an alternator)
- Direct current – current that travels in one direction only (e.g. from a battery/cell/dynamo)
- Conventional current – in the past current was thought to flow from positive to negative. We now know that electrons flow from negative to positive but it takes a long time for science to catch up so we still refer to conventional current sometimes.

3. The motor effect

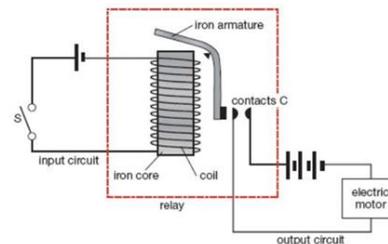


A wire that has a current flowing through it produces its own magnetic field. When this wire interacts with another magnetic field (e.g. from permanent magnets) the wire will move. We can use Fleming's left hand rule to find out which way it will move

(first finger = field, second finger = current, thumb = motion).

4. Using electromagnets

Relay switch

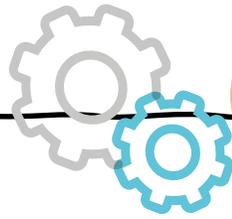


Electromagnets have many uses. This simple relay switch allows us to switch on a high voltage circuit (such as in a car engine) using a low voltage circuit (when you put the key in the ignition). This makes it safer.



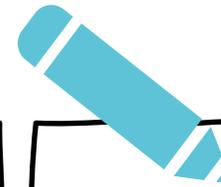
KNOW IT

- List the 3 magnetic materials
- What happens when you put the north pole of one magnet next to the north pole of another magnet?
- What happens when you put the south pole of one magnet next to the north pole of another magnet?
- What happens when you put a magnet near a magnetic material?
- Describe an electromagnet
- What does your thumb represent when you use the right hand thumb rule? What do your fingers represent?
- When using Flemings left hand rule what do the following fingers represent?
First finger, second finger, thumb
- What does a transformer do?
- List three uses of electromagnets
- List three uses of motors
- Total score**



THINK IT

- Explain the difference between permanent and induced magnets
- Explain how an electromagnet is made
- Give three ways that we can make an electromagnet stronger
- Explain how we can get a wire to move within a magnetic field
- Explain how AC electricity can be generated
- Explain how DC electricity can be generated.
- What does "conventional current" mean?
- Explain how step up and step down transformers work
- What is the transformer equation? Give an example to show how it is used.
- Explain how speakers work
- Total score**



GRASP IT

- Compare the uses of permanent and induced magnets
- Compare alternators and dynamos
- Compare speakers to microphones
- Sketch graphs to show the PD generated by alternators and by dynamos.
- Justify the use of transformers in the national grid
- Design a gadget that uses either an electromagnet. Explain what your gadget is for and how it will work
- Research the "war of the currents" and find a way to re-tell the story to others (poem, song, artwork, sculpture, etc)
- Draw a labelled diagram of a relay switch and explain how it works
- Draw a labelled diagram of a an electronic buzzer and explain how it works
- Prove that adding transformers to the national grid reduces energy losses.
- Total score**

Year 10

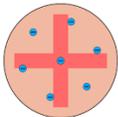
Science: Physics

Magnetism

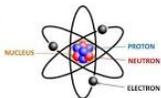
Science: Atomic Structure

Atomic Model

Thompson's plum pudding model shows that the atom is a ball of positive charge with negative electrons embedded in it. Was incorrect.



Rutherford's alpha particle scattering experiment found a central area of positive charge. The nuclear model has a positive nucleus and electrons in shells. Later, neutrons were discovered the nucleus.

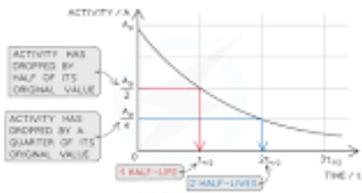


Nuclear model

Half life

Half life is the time taken for the amount of radiation given out by a source to halve. Radioactive decay is random but half life allows it to be measured as a rate the source decays.

Activity is measured in becquerels (Bq)

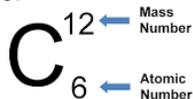


Isotopes

Isotopes are an atom of the same element with different numbers of neutrons. All elements have different isotopes but there are usually 1 or 2 stable ones. The others decay into other elements by giving out radiation.

Atomic number – the number of protons (the number of electrons is the same in an atom)

Mass number – the total number of protons and neutrons



Nuclear fission and fusion (Physics only)

Nuclear fission is the splitting of a large and unstable atom's nucleus (e.g. uranium or plutonium) into two smaller nuclei and the release of neutrons and energy.

In power stations, unstable nuclei are bombarded with neutrons. The nuclei undergo fission and split. Two smaller nuclei are formed plus neutrons. Energy is released. Released neutrons cause more nuclei to split which produces a chain reaction. The reaction is controlled using control rods which absorb the neutrons (slowing down the chain reaction). A coolant removes the heat energy, usually to produce steam.

Nuclear fusion. Process of forcing the nuclei of two atoms close together forming a single larger nucleus. The two nuclei collide at high speed. Energy is released when the nuclei fuse together. The sun's core releases energy due to the nuclear fusion reaction of hydrogen nuclei into helium nuclei

Ionising radiation

Alpha particles are made of 2 protons and 2 neutrons, like a helium nucleus.

They travel a few cm's in air and can be stopped by paper. They are strongly ionising

Beta particles are high speed electrons made in the nucleus by a neutron turning into a proton and an electron.

They travel a few metres in air and can be stopped by aluminium around 5mm thick.

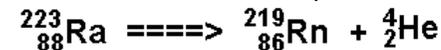
They are moderately ionising

Gamma rays are electromagnetic waves.

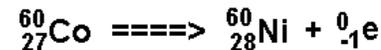
They travel long distances in air and are stopped by thick lead or metres of concrete. They are weakly ionising.

Nuclear equations

In alpha decay a helium nucleus (2 protons and 2 neutrons) is emitted. The new element formed has a mass number that has decreased by 4 and atomic number that has decreased by 2.



In beta decay a neutron turns into a proton. An electron is emitted. The new element formed has a mass number that stays the same and an atomic number which increased by 1.

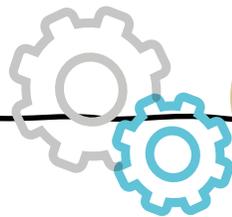


There are no changes to the nucleus when gamma rays are emitted.



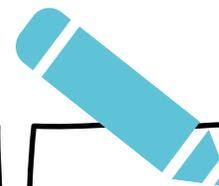
KNOW IT

1. What is the charge on a proton, neutrons and electrons?
2. What is the charge found on a proton, neutron and electron?
3. Why do atoms have no overall charge?
4. Describe the difference between the mass number and the atomic number
5. What is the unit of radioactive decay?
6. What is an isotope?
7. Name the 3 types of radiation that a nucleus can emit?
8. What are natural sources of background radiation?
9. What are artificial sources of background radiation?
10. Draw the atomic structure of a Na atom.



THINK IT

1. What is radioactive contamination?
2. What is radioactive irradiation?
3. Explain the difference between alpha, beta and gamma radiation
4. What happens to the atomic number when beta decay occurs?
5. What is nuclear fission?
6. Hydrogen has two radioactive isotopes H₂ and H₃- will they have the same half-life? Explain your answer.
7. Write the nuclear equation for: Bismuth-211 decays by alpha emission
8. Write the nuclear equation for: Uranium-235 decays by alpha emission
9. Strontium has a half-life of one day. A sample contains 2400 strontium nuclei. How many will be left after 4 days?
10. What needs to occur to trigger nuclear fission?



GRASP IT

1. What is radioactive activity?
2. What is radioactive decay?
3. Describe the term half-life.
4. Rank alpha, beta and gamma from highest ionising ability to least.
5. If a radioactive substance has an activity of 7000 Bq and has a half-life of 3 days. What is the radioactivity after 4 half-lives?
6. Calculate the number of protons, neutrons and electrons in a Cl atom?
7. Explain the alpha scattering experiment?
8. Describe the differences between the plum pudding model and the nuclear model of the atom.
9. Explain why alpha radiation is more dangerous inside the body?
10. A radioactive chemical has an activity of 120 000Bq. What is the activity of this chemical after 4 half-lives have passed?

Year 10

Science

Atomic Structure

Science: Chemical Changes

Extraction of metals

Reactivity series
Metals below carbon are extracted by reduction with carbon
Metals above carbon are extracted by electrolysis

potassium	most reactive	K
sodium		Na
calcium		Ca
magnesium		Mg
aluminium		Al
carbon		C
zinc		Zn
iron		Fe
tin		Sn
lead		Pb
hydrogen		H
copper		Cu
silver		Ag
gold		Au
platinum	least reactive	Pt

Reactions of acids

pH scale measures acidity, 0→14, acid → alkali
Acid + metal → salt + hydrogen
Acid + base → salt + water
Acid + carbonate → salt + carbon dioxide + water

Hydrochloric acid → CHLORIDES
Sulfuric acid → SULFATES
Nitric acid → NITRATES

Strong acids completely dissociate in water
Weak acids partially dissociate in water

Acids contain hydrogen, H⁺ ions
Alkalis contain OH⁻ ions

Key words

Oxidation the addition of oxygen during a chemical reaction or the loss of electrons

Reduction the removal of oxygen during a chemical reaction or the gain of electrons

Displacement when a more reactive element replaces a less reactive element from its compound.

Neutralisation the reaction between an acid and a base

Electrolysis

Electrolysis is the splitting of a substance using electricity.
An ionic substance is molten or in solution so the ions can move.
Ions are attracted to the oppositely charged electrode
Positive → negative
Negative → positive

Required practical

Making a pure dry salt
A metal oxide is added to an acid in excess.
The substance is filtered to remove the excess
The solution is heated to remove excess water
Some liquid remains and is left to crystallise

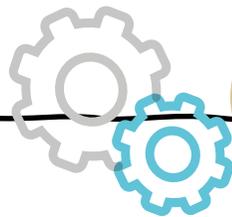
Oxidation and reduction

Oxidation
Is
Loss
Reduction
Is
Gain
Of electrons
Mg → Mg²⁺ + 2e⁻ oxidation
2O²⁻ → O₂ + 4e⁻ reduction



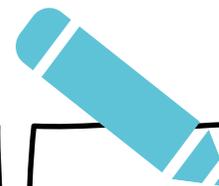
KNOW IT

1. Write a definition for reactants.
2. Write a definition for products.
3. Identify what state symbols are
4. Identify the ions present in an acid
5. Identify the ions present in an alkali
6. Describe what the term aqueous means.
7. Describe what a word equation is.
8. Describe what a displacement reaction is.
9. Describe what a neutralisation reaction is.
10. What colour does universal indicator turn a neutral solution.



THINK IT

1. What is the general word equation for a metal reacting with an acid.
2. What product is formed when magnesium is oxidised by oxygen.
3. Write out the formulas for nitric acid, hydrochloric acid and sulfuric acid.
4. What are the two substances needed to make magnesium sulfate?
5. Write a word equation for the reaction between iron and oxygen.
6. Write the name of the salt made when magnesium reacts with hydrochloric acid.
7. Write a balanced symbol equation for the reaction of calcium carbonate reacting with sulfuric acid, including state symbols.
8. Write a four-step process to make copper sulfate crystals.
9. Write a guide on how to balance equations.
10. In terms of electrons does the metal atom get reduced or oxidised during displacement?



GRASP IT

1. Explain the difference between a strong and weak acid.
2. The pH of a solution rises from 2 to 5, what factor has the hydrogen ion concentration of the solution changed by.
3. Explain the difference between an alkali and a base.
4. Explain how you can use the reactivity series to work out whether or not it is possible to extract a metal from its oxide by reduction with carbon.
5. Write an ionic equation for the reaction between hydrochloric acid and potassium hydroxide.
6. A solution is made from 6g of citric acid added to 100cm³ of water. What is the concentration of the solution in g/dm³
7. Explain oxidation in terms of electron transfer using sodium Chloride, NaCl as an example.
8. Following the addition of alkali to acid solution the pH changed from 4 to 7. By how many times did the concentration of H⁺ ions change?
9. Explain what the end point is of a titration?
10. Explain what type of reaction you get when you react lithium hydroxide with hydrochloric acid.

Year 10

Science

Chemical Changes

Science: Energy Changes

Exothermic reactions

Exothermic reactions release energy to the surroundings.
 Chemical energy is converted to heat and light energy.
 The products have less energy than the reactants
 These reactions get hot. Most reactions are exothermic
 Examples:
 Respiration
 Combustion
 Displacement
 Metals and acids
 Uses:
 Self heating cans and hand warmers

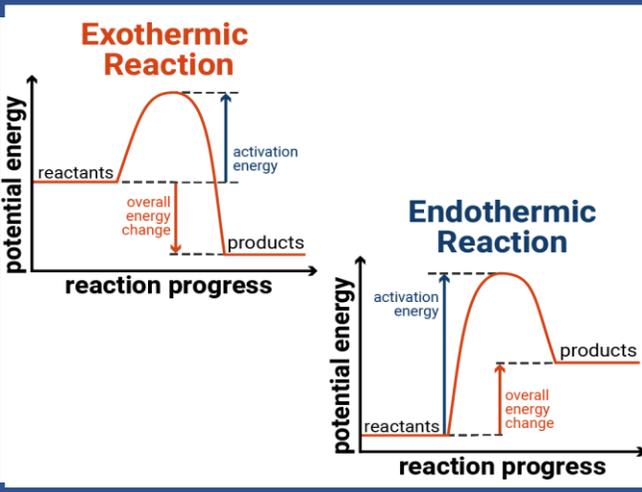
Endothermic reactions

Endothermic reactions take energy in from the surroundings.
 Light or heat energy are converted to chemical energy
 The products have more energy than the reactants
 These reactions get cold. There are not many endothermic reactions
 Examples:
 Photosynthesis
 Thermal decomposition
 Uses:
 Sports injury packs

Key words

Endothermic reaction- Releases energy to its surroundings. The temperature goes up.
 Exothermic reaction – Absorbs energy from its surroundings. The temperature goes down.
 Conservation of Energy - Energy cannot be created or destroyed, it is transformed from one energy store to another. This is usually as heat or light.
 Activation energy – needed to start a reaction. Catalyst – speeds up a reaction by finding an alternative pathway.

Reaction profiles



Required practical

Measure 15cm³ of acid
 Pour into a polystyrene cup
 Take the temperature and record
 Add 2g of zinc powder
 Measure the temperature and record the highest temperature.
 Repeat with acid and carbonate and acid and base.

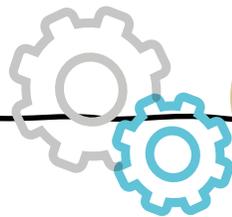
Bond energies

Bond breaking is an endothermic process
 Bond making is an exothermic process
 The difference between the energy required to break the bonds and the energy released when bonds are formed is the **overall energy change of the reaction.**



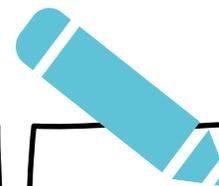
KNOW IT

1. What do you call a reaction that transfers energy to its surroundings?
 2. What do you call a reaction that takes in energy from its surroundings?
 3. Give two examples of an exothermic reaction
 4. Give two examples of an endothermic reaction.
 5. Which reaction takes place in handwarmers?
 6. Which reaction takes place in ice packs?
 7. Write a definition for reduction
 8. Write a definition for oxidation.
9. Sep only
Why is it not possible to make an electrical cell using two electrodes made from zinc metal?
10. Sep only
An electrical cell is made using iron and zinc. Which metal will be reduced



THINK IT

1. Describe the various ways to identify that a chemical reaction has taken place.
2. Describe the temperature change during an exothermic reaction.
3. Describe the temperature change during an endothermic reaction.
4. Draw a flow diagram to explain how a self-heating can works.
5. Describe the chemical reaction that takes place in a disposable hand warmer.
6. Describe the law of conservation of energy.
7. Describe what happens to bonds of reactants during a chemical reaction
8. Describe what happens to the bonds of products during a chemical reaction
9. If the energy required to break the bonds is greater than the energy transferred to the surrounding when bonds are made, will the reaction be exothermic or endothermic?
10. Sep only
Describe how the reactivity metals is used to produce voltage.



GRASP IT

1. Explain why endothermic reactions take in energy and reduce the temperature of the surroundings.
2. Explain why exothermic reactions give out energy and increase the temperature of the surroundings.
3. Draw an energy level diagram for an exothermic reaction between nitric acid and sodium hydroxide.
4. Draw an energy level diagram for an endothermic reaction when ammonium nitrate dissolves in water.
5. Draw a table to summarise the differences between an exothermic and endothermic reaction.
6. Explain why a catalyst is used during a reaction.
7. Explain the term activation energy.
8. Sep only
Which gases are pumped into the fuel cell and what is the waste product?

Year 10

Science

Energy Changes

Science: Infectious Diseases

Part One

Communicable disease

Pathogens are microorganisms that enter the body and cause communicable disease (infectious). Plants and animals can be infected by them.

Bacteria are small cells that can reproduce very quickly in the body. They produce toxins that make you feel ill, damaging your cells and tissues.

Viruses are much smaller than bacteria; they can also reproduce quickly in the body. Viruses live inside your cell where they replicate. They then burst out of the cell, releasing new viruses.

Protists are eukaryotes (multicellular). Some are parasites which live on or inside other organisms, often carried by a vector.

Fungi are sometimes single celled, others have hyphae that grow and penetrate human skin and the surface of plants. They can produce spores which can spread to other plants.

Viral diseases

Measles is spread by droplets of liquid from sneezes and coughs etc. symptoms include a red rash on the skin and a fever. Measles can be serious or even fatal, it can lead to pneumonia. Most people are vaccinated against measles when they are very young.

HIV is spread by sexual contact or exchanging body fluids. HIV can be controlled by antiviral drugs; this stops the viruses replicating. The virus attacks the cells in the immune system. If the immune system is badly damaged, the body cannot cope with other infections. This is the late stage and is called AIDS.

Tobacco mosaic virus (TMV) is a virus that affects many species of plants e.g. tomatoes. It causes a mosaic pattern on the leaves of plants - parts of the leaves become discoloured. The discolouration means the plants can't carry out photosynthesis as well, so the virus affects growth

How pathogens spread

Pathogens can be spread in many ways, for example:

Water - by drinking dirty water e.g. cholera.

Air - carried by air and breathed in e.g. influenza.

Direct contact - touching contaminated surfaces including the skin, e.g. athlete's foot.

Fungal and protist diseases

Fungal

Rose black spot shows as black spot on the leaves of the plant, this means less photosynthesis occurs. As a result, the plant does not grow as well. It is spread by the wind or the water. They can be treated by using fungicides and taking the leaves off the infected plant.

Protists

Malaria is caused by a protist, mosquitoes are the vectors. They become infected when they feed on an infected malaria case cause fever, it can also be fatal.

Bacterial diseases

Salmonella bacteria causes food poisoning. Symptoms include fever, stomach cramps, vomiting and diarrhoea. The symptoms are caused by the toxins produced by the bacteria. Food contaminated with salmonella can give you food poisoning. Most poultry in the UK will have had a vaccination against salmonella

Gonorrhoea is a sexually transmitted bacterial disease, passed on by sexual contact. Symptoms include pain when urinating and thick yellow/green discharge from the vagina or penis. To prevent the spread, people should be treated with antibiotics and use a condom

Vaccinations

Vaccinations have been developed to protect us from future infections. A vaccination involves an injection of a **dead** or **weakened** version of the pathogen. They carry antigens which cause your body to produce antibodies which will attack the pathogen. If you are infected again, the white blood cells can produce antibodies quickly.

Science: Infectious Diseases

Part Two

Year
10

Drugs

Painkillers relieve the pain and symptoms, but do not tackle the cause

Antibiotics kill the bacteria causing the problem, but do not work on viruses. Viruses are very difficult to kill because they live inside the body cells
Chemicals produced by plants to defend themselves can be used to treat human diseases:

- Aspirin (willow)**
- Digitalis (foxglove)**
- Penicillin (mould)**

Fighting diseases

Defence system

1. The skin acts as a barrier to pathogens.
2. Hairs and mucus in your nose trap particles.
3. The trachea and bronchi secrete mucus to trap pathogens. They also have cilia which move backwards and forwards to transport the mucus towards the throat. This traps any pathogens and the mucus is usually swallowed.
4. The stomach contains hydrochloric acid to kill any pathogens that enter the body via the mouth

The immune system

This kills any pathogens that enter the body

White blood cells have 3 lines of attack:

- phagocytosis is when white blood cells engulf pathogens and then digest them
- they produce antitoxins to neutralise the toxins
- They also produce antibodies. Pathogens have antigens on their surface, antibodies produced by the white blood cells lock on to the antigen on the outside of the pathogen. White blood cells can then destroy the pathogens. Antibodies are specific to one antigen and will only work on that pathogen

3. WOW WORDS

KEY WORDS

Pathogen - microorganisms that enter the body and cause disease (e.g. bacteria, virus, protist, fungi)

Communicable - Infectious diseases that can easily spread

Immune - if you have a high enough antibody level to protect you against a particular infection, you are said to be immune

White blood cells - part of the immune system involved in destroying pathogens

Antibodies - also known as B-lymphocytes. They are produced by white blood cells and attack new pathogens

Antigens - a unique molecule found on the surface of invading pathogens

Antitoxins - these counteract toxins produced by invading bacteria

Vaccination - an injection containing small amounts of dead or inactive pathogens

Drugs - a substance that has an effect on the body

Placebo - a substance that's like the drug being tested but doesn't do anything

Antibiotic resistance - bacteria that have mutated causing them to not be killed by antibiotics

Developing drugs

There are three main stages in drug testing:

Pre-clinical testing:

1. Drugs are tested on human cells and tissues.
2. Testing carried out on living animals. Clinical testing:
3. Tested on healthy human volunteers in clinical trials. Starts with a very low dose, then tested on people with the illness to find the optimum dose.

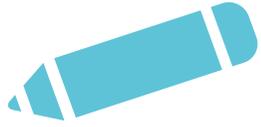
Placebo is a substance that is like the drug, but does not do anything.

Placebo effect is when the patient thinks the treatment will work even though their treatment isn't doing anything.

Blind trial is when the patient does not know whether they are getting the drug or the placebo.

Double-blind trial is when both the doctor and the patient do not know whether they are getting the drug.

Own Notes



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A rectangular box with a hand-drawn black border, intended for taking notes.

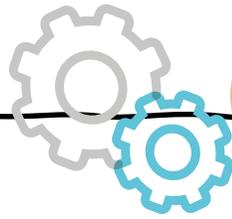
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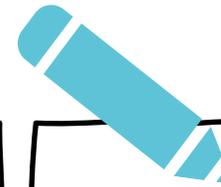
KNOW IT

1. What is a pathogen?
2. Name the four classes of pathogens.
3. Name four ways in which diseases caused by pathogens can be spread.
4. How is the bacterial disease Gonorrhoea spread?
5. What are antibiotics?
6. Name four ways in which the spread of diseases can be reduced or prevented.?
7. What are the four first line non-specific defence systems of the human body against pathogens?
8. How is HIV spread?
9. What are vaccinations?
10. What are the symptoms of the measles virus?



THINK IT

1. Why does is there a short delay between infection by a pathogen and feeling ill from the infection?
2. What are the initial symptoms of HIV infection?
3. How does Salmonella cause disease and what are the symptoms?
4. How is the spread of Salmonella controlled in the UK?
6. Why are children vaccinated against the measles virus?
6. How can the spread of the bacterial disease Gonorrhoea be controlled?
7. What is TMV and what type of organism does it affect?
8. What are the symptoms of TMV?
9. What issues are there with the treatment for Gonorrhoea?
10. In what way might bacteria cause damage to cells and tissues?



GRASP IT

1. In what way might bacteria cause damage to cells and tissues?
2. How does HIV lead to AIDS?
3. What is rose black spot disease and how is it spread. Explain how it affects a plant?
4. How is the spread of malaria controlled?
6. Name three ways in which white blood cells help to defend against pathogens.
6. Identify two types of white blood cells and explain how they fight against pathogens?
7. What is the purpose of vaccination programmes and explain how they can prevent future infections?
8. What are the current concerns around antibiotic treatment?
9. What are the current concerns around antibiotic treatment?
10. How are monoclonal antibodies made?

Year 10

Science

Infectious Diseases

Spanish: Town and Local Area

1. MY TOWN

Vivo en una ciudad...	I live in a... village
tranquila/ruidosa	quiet/noisy
bonita/fea	beautiful/ugly
histórica/moderna	historic/modern
En mi ciudad hay...	In my town there is/are
un ayuntamiento	a town hall
un cine	a cinema
una playa	a beach
una plaza mayor	a town square
Se puede.....	You can...
disfrutar de las vistas	enjoy the views
probar platos típicos	try local dishes
hacer turismo	go sightseeing

2. PROS & CONS OF MY CITY

Lo que más / menos me gusta es que ...	The thing I like the most / least is that...
Lo mejor / peor es que	The best / worst thing is that...
Lo bueno/ malo es que	The good / bad thing is that
La playa es tan bonita / el centro es tan popular	The beach is so pretty / the centre is so popular
hay tantas diversiones / tantos museos	there's so much to do / so many museums
las tiendas están tan cerca	the shops are so close
es tan ruidoso	it's so noisy
hay tanto tráfico / tanta contaminación	there's so much traffic / so much pollution
Necesitamos más...	We need more...
zonas verdes / zonas peatonales	green spaces / pedestrian zones

3. STAR WORDS

Temprano	Early
Tarde	Late
Rápido	Quick(ly)
Bastante	Quite
Solo	Alone/only
Un poco	A bit
Hace + time	Ago
Hay	There is/are
Siempre	Always
A veces	Sometimes
A menudo	Often
Cada	Each
Después	After
Antes	Before
Cuando	When

4. PALMO

How to describe a photo
P eople
A ction
L ocation
M ood
O pinion
 En la foto hay ... personas
 Está(n)+ gerund (jugando/comiendo)
 Está (n) en + place
 Me parece(n) alegre(s) / triste(s)
 Creo que

5. BORD

B asic answer Vivo en Birmingham.
O pinion Me gusta mucho mi ciudad porque hay mucho que hacer.
R eason
D evelopment A mi parecer, es muy animada.
U ncommon language Voy al centro comercial para comprar ropa.
M erge

6. 3 TENSES

Present tense – remember 'o' = I
 Vivo – I live

Past tense
 AR verbs visité – I visited
 ER/ IR verbs comí – I ate

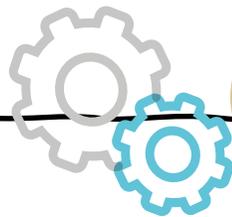
Near future tense
 Use the near future to say **I am going to...**
 Use the present tense of **ir** + a + infinitive
Voy a visitar la playa – I am going to visit the beach

Using a **different person** adds complexity
Vamos a sacar fotos – **We are going** to take photos



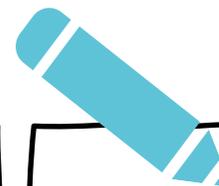
KNOW IT

1. Translate: En mi ciudad se puede probar platos típicos.
2. Translate: Mi ciudad está situada al lado del mar.
3. Translate: Voy a comprar un regalo.
4. Translate: Llueve mucho en Birmingham.
5. Translate: Voy a visitar la playa y nadar en el mar.
6. Translate: In my city it rains often.
7. Translate: I live in a noisy city. There is a large square and and a cinema.
8. Translate: I prefer the countryside.
9. Translate: In my city you can go sightseeing.
10. Translate: The worst thing about my city is there is so much traffic!



THINK IT

1. Vivo Birmingham – correct the sentence.
2. What time phrase could you use with 'fui a la playa' and why?
3. Change this sentence into the future tense 'juego al tenis' and add in a time indicator. Explain what you changed and why.
4. Write 2 sentences about your town.
5. Finish the sentence – me encanta mi ciudad porque
6. List 2 past tense time phrases
7. Lo mejor es que mi ciudad está cerca de la playa.
Underline the example of uncommon language.
8. *Ahora vivo en Barcelona.*
Explain why the present tense is used.
9. La semana proxima, voy a visitar a mi abuela.
Which tense is used here. Explain why.
10. Ayer, fui al cine.
Identify which tense is used here and why.



GRASP IT

1. Imagine you are in a shop in Spain. Say the tee-shirt is too big.
2. Imagine you are in a shop in Spain. Ask how much it is.
3. Imagine you are in a shop in Spain. Say that you would like to buy a present.
4. Imagine you are in a shop in Spain. Explain that there is a problem with the item.
5. Extend the BORD text to include Uncommon language and make a list of connectives / strategies you would use to merge it in a piece of writing.
6. Adapt the BORD text to talk about where you live.
7. 80-90 Word Bullet point
Lo que hay en tu ciudad
8. 80-90 Word Bullet point
Lo bueno y lo malo de tu ciudad
9. 80-90 Word Bullet point
Lo que hiciste en tu ciudad recientemente
10. 80-90 Word Bullet point
Lo que vas a hacer este fin de semana. Now consider how you would merge the 4 previous bullet points.

Year 10

Spanish

Town and Local Area

Topic Area 1

Types of provision for outdoor and adventurous activities include:

Local Providers

- Go ape

National Sports centres

- Holme Pierrepoint,
- Tollymore,
- Plas y Brenin

Voluntary Organisations

- Scouts
- Duke of Edinburgh Award

Topic Area 2- Equipment

Safety



Specialist



Topic Area 2- Clothing



Safety Clothing
Worn to prevent injuries



Specialist Clothing
Required to aid performance in a specific activity



General Clothing
More general items of clothing that can be worn during various activities

Topic Area 3



Topic area 4

Benefits of Participating in Outdoor & Adventurous Activities



Mental benefits e.g. self-confidence, enjoyment, motivation



Physical benefits e.g. health and fitness, fresh air, sunlight



Social benefits e.g. communication, team working, problem solving

Risk assessment

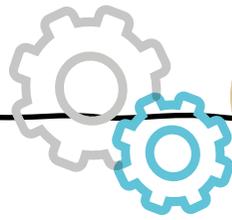
Considerations when creating a risk assessment:





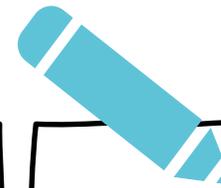
KNOW IT

1. Can I name 3 local providers of outdoor and adventurous activities?
2. Can I describe 5 pieces of safety equipment for a range of outdoor sports?
3. Can I describe 5 pieces of specialist equipment for a range of outdoor sports?
4. Can I provide examples of specialist and safety clothing needed in outdoor activities
5. Can I identify a range of considerations needed when planning an outdoor and adventurous activity
6. Can I identify a range of benefits of taking part in outdoor and adventurous activities?



THINK IT

1. Can I name 3 national providers of outdoor and adventurous activities?
2. Can I explain the use of 5 pieces of safety equipment for outdoor activities?
3. Can I describe 5 pieces of specialist equipment for a range of outdoor sports?
4. Can I describe the uses of specialist and safety clothing needed for outdoor activities
5. Can I describe a range of considerations needed when planning an outdoor and adventurous activity
6. Can I describe a range of benefits of taking part in outdoor and adventurous activities?



GRASP IT

1. Can I name 3 voluntary providers of outdoor and adventurous activities?
2. Can I analyse why safety equipment is important in a range of outdoor activities?
3. Can I analyse why specialist equipment is important in a range of outdoor activities?
4. Can I explain the benefits of both safety and specialist clothing needed for outdoor activities
5. Can I explain a range of considerations needed when planning an outdoor and adventurous activity
6. Can I explain a range of benefits of taking part in outdoor and adventurous activities?

Year 10

Cambridge National in Sports Studies

Unit R187

Design & Technology Core Technical Principles

1. New and Emerging Technologies

Automation: Automated machines are programmed to carry out a procedure multiple times, e.g. repeatedly creating the shape of a car door using a press, to improve production time.

Robotics: Robots are one part of automation but robots use AI to collect information and improve the performance of a procedure.

4. Energy Generation and Storage

Fossil fuels are a finite resource, meaning that they cannot be replaced once extracted from the ground. Examples of fossil fuels are coal, oil and natural gas.

Nuclear Power: A huge amount of energy can be produced through the nuclear process using a relatively small amount of **uranium**. The energy is produced as heat through the **fission process**. It is more efficient than fossil fuels and no harmful gasses are released however disposal of uranium is difficult and costly.

Renewable energy: Solar – uses **sunlight** to generate energy, huge source of free source to create power, the panels can be **expensive** and will produce **less energy** in **winter**. **Wind** – uses the wind to generate energy through wind turbines, **does not pollute** the air, has **expensive** set-up costs, some people do not like their **appearance**.

Batteries: The two main types of batteries that are commonly used are 'single-use' and 'rechargeable'. Alternatively a **wind-up mechanism** allows the user to generate energy by using muscle power to turn a hand crank. This provides **kinetic energy** to power the device, requires no additional batteries and is ready to be used whenever the user needs it.

2. Developments in New Materials

A **modern material** is a material that has been developed through the invention of new or improved processes to improve the **properties** of the **material**, e.g. to make them **stronger, faster, lighter** and **tougher**. Examples are **graphene, LCD's** and **nanomaterials**.

Smart Materials: exhibit a **physical change** in response to some **external stimuli**.

Shape-memory alloys are metal **alloys** that can remember their shape when heated, e.g. Nitinol used in dental braces and glasses.

Thermochromic pigments change colour when their temperature changes.

Photochromic pigments change their properties when exposed to **ultraviolet (UV) light**, e.g. glasses that turn into sunglasses.

Technical textiles have been developed e.g.

Conductive fabrics allow a small electrical current to safely pass through them. This technology is used for touch-screen gloves

5. Mechanical Devices

Most products rely on **movement** to work, eg in a pair of scissors the blades need to move together to cut. This movement is called a **motion**, and the motion of a product may be hidden or visible. The 4 types of **motion**:

Linear **Rotary** **Oscillating** **Reciprocating**



3. WOW WORDS

Fair Trade = Trade in which fair prices are paid to the farmers and workers who create products.

Finite Resources = Resource that can only be used once and is in limited supply. For example, oil is a finite resource.

Fossil Fuels = Natural, finite fuel formed from the remains of living organisms, eg oil, coal and natural gas.

Renewable energy = Power that is generated using natural resources that will not run out, eg wind and wave power.

Nomex = a technical textile which is flame-resistant material used for firefighters.

Kevlar = a technical textile tightly woven fabric that has great impact resistance.

6. Material Categories

Paper and Board: Papers are made from **wood pulp**. They are measured by **weight**, in grams per square metre (**gsm**).

Timber comes from **trees**, they can be categorised in two groups **softwoods** and **hardwoods**.

Metals are found naturally and are **mined** from the **earth** and can be categorised as **ferrous, non-ferrous** or **alloys**.

Polymers are formed by processing **crude oil** but they can be made from both **natural** and **synthetic** resources. They can be **thermoforming** or **thermosetting**.

Textiles can be either natural (from plants and animals) or synthetic (man made) fibres.



KNOW IT

How to describe a product:

What is it made from? Who is it for? When would it be used? Where is it used? How much does it cost? How has it been made?

Core technical Principles:

State what a smart material is.

State what a modern material is.

State what a technical textile is.

What biomimicry is.

The main source of energy used in the world is currently fossil fuels.

Know what fossil fuels are and where they come from.

The impact of new technologies on society.

A range of renewable energy sources: solar, wind, tidal, biomass.

Analysis is reflecting on your designs/ product and assessing its strengths and weaknesses.

Ergonomics is how comfortable/ easy a design is to use and how well it meets the users needs.

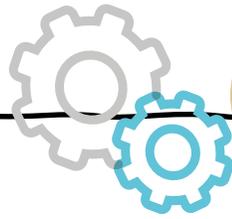
Maths and design and technology:

How to calculate percentages.

How to calculate area.

How to calculate volume.

How to read graphs and tables.



THINK IT

How to interpret products that are new:

What is my reaction to this product?

Who might the user or owner be?

Why might they want to buy it?

Is it designed well, if so, why/why not?

Is it easy to use?

How well is it made?

Is it well finished (polished, sanded, varnished)?

Is the cost appropriate?

What happens at the end of its product life? (recycled, landfill, can it be repaired/ reused)

Consider the environmental impact of designs:

When designing and manufacturing a product, it is important to consider its life cycle.

Life cycle is the time from a products manufacture, to its recycling or disposal, at the end of its useful life. We need to consider the 6 R's: Reduce, reuse, recycle, refuse, repair and rethink.

Core technical Principles:

Give an example of how a smart material can be used in a product.

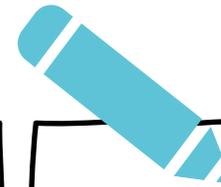
Give an example of a modern material.

Give examples of technical textiles.

Give an example of how biomimicry has been used in development and innovation in engineering/ design.

Calculate the surface area of a product.

Calculate the volume of a product.



GRASP IT

Synthesis:

Would I want to own or use this product?

What influenced the appearance of a product and the way it works?

How might the design have been developed?

How would you test this to see..?

Could you redesign to improve a part of the design?

What innovation techniques could you use to improve it? Biomimicry? Divergent thinking?

Evaluation – according to criteria and state:

What is wrong with the product?

Why is this product more or less popular than other similar products?

What difficulties would manufactures have making this product?

Why have these materials been chosen?

Could you analyse the lifecycle of an existing product and advise opportunities where designers could make it more sustainable by using the 6 r's?

Could you explain how you could improve a product through the use of smart materials?

Could you find out how modern materials have improved the performance of products?

Year 10

D & T: Product Design

Core Technical Principals

Design & Technology: Timbers

1. Preparing Timber

The tree is '**felled**' (cut down). The tree trunks (logs) are stored in the forest before going to the sawmill. This allows some of the water content to evaporate. The logs are then transported to the sawmill. At the sawmill, the logs are cut into '**boards**' using equipment such as circular saws and bandsaws. This is called '**conversion**'. The first stage of conversion is a process called '**breaking down**', which means rough sawing. The second stage is called '**resawing**' and refers to more **accurate / precise** cutting and finishing, such as planing and further machining. The timber is then '**seasoned**' either by air drying or by kiln.

4. Manufactured Boards

Usually made from **waste wood** and **adhesive**. Used in **construction** for **interior furniture**. They are more **stable** than natural woods and are less likely to **warp** and **twist**. They are available in many **sheet sizes** and **thicknesses**.
Plywood - Layered in odd numbered sheets. Strong due to layers glued at 90° angles. Susceptible to splintering **Used** in sheds and cladding, furniture, flooring, boats.
MDF - will swell if exposed to moisture. Sheets can be heavy. Smooth finish. No grain.
Chipboard - Large chips of wood glued together under pressure, brittle, difficult to shape and finishes poorly, absorbent and low in cost.

2. Softwoods and Hardwoods

Timber comes from trees, which have to grow to full maturity before they can be cut down for wood. Timbers can be split into two categories: **softwoods** and **hardwoods**.

Softwood

Softwoods come from **coniferous** trees. These often have pines or needles, and they stay evergreen all year round - they do not lose leaves in the autumn. They are faster growing than hardwoods, making them cheaper to buy, and are considered a **sustainable** material. Examples of softwoods are: Paraná pine, Scots pine and Western red cedar.

Hardwood

Hardwoods come from **deciduous** trees, which have large flat leaves that fall in the autumn. Hardwoods take longer to grow, are not easily sourced and are expensive to buy. Examples of hardwoods are: Balsa, Beech, Jelutong, Mahogany and Oak.

5. Finishes

Some physical properties of timbers can be changed, such as colour and texture, by applying a surface **finish** to the wood. The way a timber looks can be altered through several methods: **staining, varnishing, oiling, waxing, painting**. This can also **increase the durability** of the product, **weather protect** and **prevent defects**.

3. WOW WORDS

Source = where a material comes from.

Hardwood = Timber from a deciduous tree. Slow growing and expensive.

Softwood = Timber from an evergreen or coniferous tree. Fast growing and cheap.

Deciduous = a tree that loses its leaves.

Seasoned = the process through which **excess water / moisture is removed**,

Tight-grained = Timber with a high ring count, slower growing and denser.

Loose-grained = Timber with a low ring count- faster growing.

Knot = where a branch would have been.

Weather resistant = A tight-grained timber has good water and heat resistance.

Stiff = A timber that does not bend easily.

Easy to work = easy to cut and shape.

6. Processes

Steaming: soaking thin lengths of wood or plywood in a steamer box makes the timber flexible enough to twist and bend.

Laminating: thin sheets of wood can be pressed together in a mould to form a three-dimensional structure.

CAD/CAM:

Laser cutters: cut and engrave thin sheet timber quickly and accurately including complex shapes.

CNC routers and milling machines:

uses a rotating cutting tool. This tool is able to move along multiple axes to create a range of shapes and designs.



KNOW IT

The categorisation and properties of hardwoods and softwoods.

Natural timber is harvested from deciduous (hardwoods) and coniferous (softwood) trees
Natural timber can be identified using a range of discriminators: weight, colour, grain, texture, durability and ease of working.

Natural timber is protected and aesthetically enhanced using different finishes.

Manufactured timbers are made from natural timbers and made from particles/fibres or laminates.

The stock forms of timber are: plank, board, strip, square, and dowel.

Timber defects include: shrinkage, splits, shakes, knots, fungal attack.

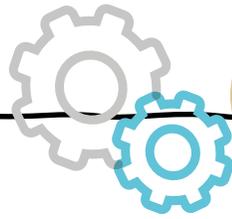
Hardwoods: beech, oak, mahogany, balsa and jelutong.

Softwoods: scots pine, western red cedar and parana pine.

Strengths, weaknesses of the following manufactured boards: plywood, MDF - medium density fibreboard, chipboard and hardboard. The impact on the environment of deforestation.

Designers should be changing society's view on waste and encouraging recycling.

How to undertake a life-cycle analysis of a material or product.



THINK IT

Explain the physical and working properties of hardwoods, softwoods and man-made boards: toughness, flexibility, grain structure, strength, absorbency, surface finish, colour and hardness.

Give examples of what manufactured timbers are used for: plywood, MDF (Medium Density Fibreboard), chipboard and veneered boards.

Give examples of material finishes for timber.

Give examples of what different softwoods and hardwoods are used for.

Explain the benefit of choosing timbers over non-renewable materials.

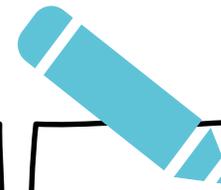
Explain the process of getting a timber from source to sale.

Explain which parts of products would use which stock forms for example dowel can be used in the axle of a toy car.

Explain how you could reduce the cost of a timber product by using veneers or material finishes on a cheaper timber.

Name the organisation who plant a tree for every tree they chop down.

Explain what sustainable forestry management is.



GRASP IT

Explain why materials are used for what products relating to their material properties e.g. oak is often used in wooden flooring because it is durable and has an attractive wood grain finish.

Consider if there are exceptions to the general rules e.g. Balsa wood is a hardwood but is not dense and is extremely lightweight and can be cut and shaped using a knife.

Explain how to apply finishes to natural and manufactured timber and how they can be used to improve the aesthetic appeal.

Evaluate the environmental impacts at each stage of producing a timber product.

Explain the impacts of felling trees on wildlife, habitat and the environment.

Consider the carbon footprint of transporting timber.

Explain the difference between air drying and kiln seasoning.

Explain the process of conversion.

Year 10

D & T: Product Design

Timbers

Mathematics

Hegarty Maths Home Support Guide

Homework Guidance

One task is set per class using www.hegartymaths.com

The homework task is always set at the start of the week and due in at the start of the following week.

Student expectations:

- Watch the video for the set task
- Make clear notes from the video
- Complete the task, aiming for 80% as a minimum
- If a student is struggling with the task, use the building blocks to aid prior learning
- When completing the quiz, use the video given for the task. Find the part of the video that answers a similar question and use this to help by following the methods used.

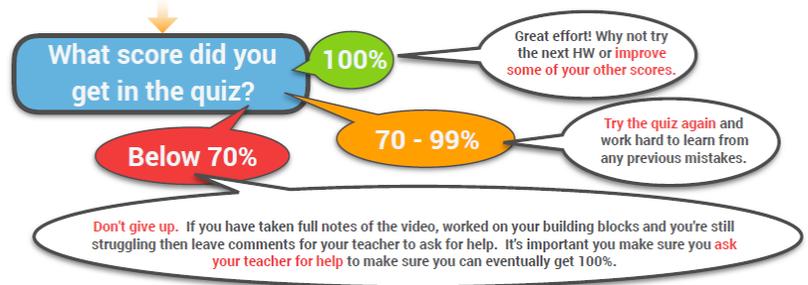
Learning maths is like learning anything. You need to practise and always put in effort. Trying your best and always putting in effort is crucial to the process. HegartyMaths is totally committed to helping students improve at maths.

I was in the bottom set in maths in my school. I started doing lots of HegartyMaths and got better at maths. My teacher saw my progress in HegartyMaths and combined with my end of term assessment I was moved up two sets!

Happy Student @ Heston Community School

HegartyMaths is a amazing place to learn new things it shown me the best videos on how to work out the hardest questions

Happy Student @ Harris Academy Morden



Doing a task



Please refer to your student Planner for additional Maths resources.