



Year 10
AUTUMN
Knowledge
Organisers

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

Name:
Tutor Group: 10

Homework Principles 2023-2024

Our Homework Principles are based on current, influential research:

At John Willmott School we set homework which supports students' understanding of their carefully sequenced curriculum as well as developing their committed and self-disciplined approach to their own academic studies. We know that homework has an impact by enabling pupils to undertake independent learning to practice and consolidate skills, learn key vocabulary, prepare for lessons, or revise for exams.

The Education Endowment Fund suggests that setting homework at Secondary School can accelerate learning by up to 5 months, however it is the quality of tasks set rather than quantity which enhances progress, which is why we are clear in our principles when planning homework against our curriculum implementation.

ACCESSIBLE

- A new Knowledge Organiser will be issued to all students at the start of each term. This will form the basis for most homework so that students have the resources at hand
- Homework tasks should be short and focused ensuring accessibility for all students
- Students will be set homework weekly for most subjects with adequate time for completion
- Students will be taught independent learning strategies as well as explicit teaching of our virtues and school routines to build learning habits

ACCESSIBLE

PRECISE

- Tasks have a defined and exact outcome
- Students will be directed to practise or retrieval or embedding the curriculum
- The way this will be assessed is communicated to students, as well as when this will happen
- Homework is designed to link to classroom learning, with clear signposting to prior, current or future knowledge
- Teachers are asked to plan homework tasks for the term in line with long term plans and summative assessments- this will be shared with students and parents

PRECISE

INFORMATIVE

- Teachers use homework as part of their formative assessment to adapt teaching to better respond to student need in terms of what students know and what they don't know yet
- Teachers will gather data through a variety of quality first teaching routine techniques which may include: Do Now Activities, Exit Tickets, Deliberate Practice; Questioning, Mini Whiteboards
- Student engagement is monitored as well as progress and attainment

INFORMATIVE

JWS

Year 10

Knowledge Organisers

Contents

Year 10 Subjects

Art and Design

Business BTEC

Business Studies

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Physical Education GCSE

Religious Education

Science

Sports Studies

Technology Product Design

Art & Design: Fine Art

Urban Portraiture

1. AO1: Developing Ideas: 24 Marks

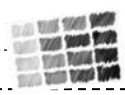
- Artist Inspiration**
- Kris Trappeniers
 - Cath Riley
 - Francoise Nielly
 - Kehinde Wiley
 - David Newman White
 - Nick Gentry
 - Mark Powell
 - Chuck Close
 - Joshua Miels
 - Lynn Hershman
 - Stephen Conroy
 - Peter Monkman
 - Ant Carver
 - Toby Mulligan
 - Laolu Senbanjo – (style inspiration)

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.



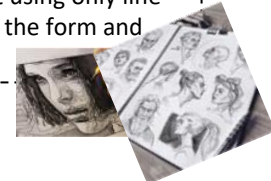
2. A02: Experimenting: 24 Marks

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
- LOATHE
- REPULSE
- DISGUST
- LOATHE
- REPULSE
- SADNES
- SORROW
- MELANCHOLY
- GRIEF
- MISSERY
- ANGER
- WRATH
- FURY
- RAGE
- ANNOYED

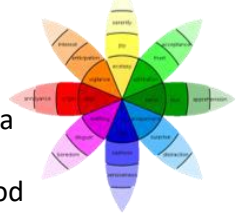
- SURPRISE
- AMAZED
- ASTONISHED
- STUNNED
- FLABBERGASTED
- FEAR
- PAIN
- TRAUMA
- TORMENT
- SUFFERING
- AGONY



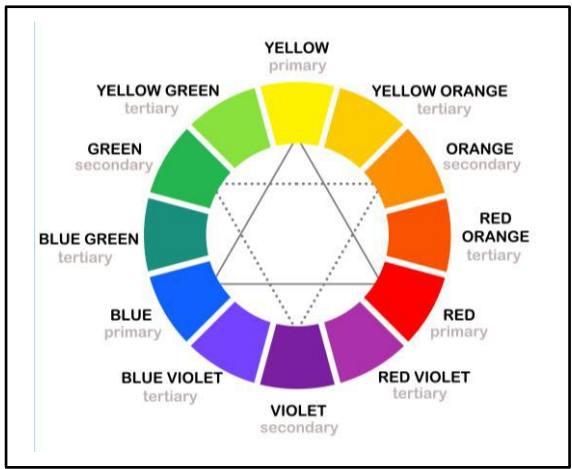
4. Expressions

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

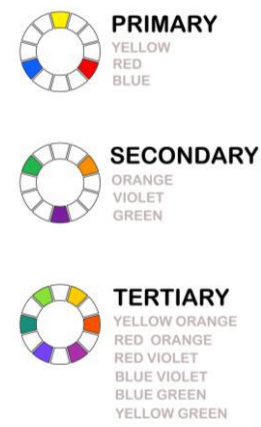


6. Primary, secondary and tertiary colours

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

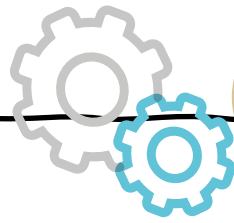
Proportion refers to the dimensions of a composition and relationships between height, width and depth. How proportion is used will affect how realistic or **stylised** something seems. Understanding and using correct proportion in **life drawing** and portraits allows an artist to create well-balanced,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

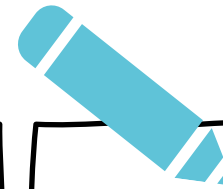
Why is drawing in proportion important when creating a portrait? What impact does exaggerating different features have on a portrait and why might an artist do this?

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.

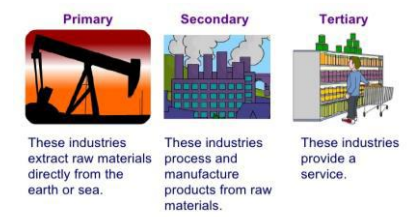
2. Why do people Start Businesses

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.



4. Business Functions

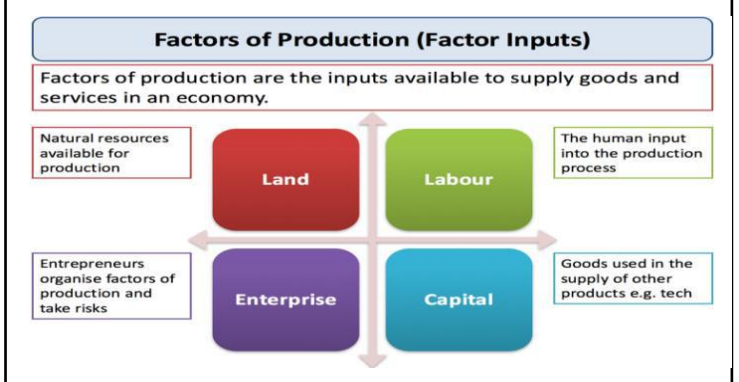
Finance – to raise money, to monitor

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

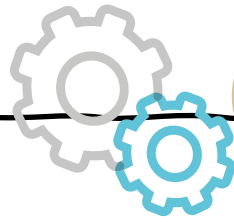
State the four factors of production

State the meaning of

- Primary industries
- Secondary industries
- Tertiary industries

Understand the following key terms

- Inflation
- GBP
- Interest rates



THINK IT

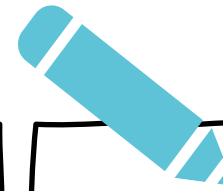
Explain the characteristics of a good entrepreneur

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

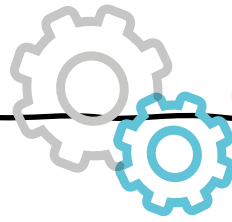
There are lots of ways to develop a story, but here are a few which could help you plan and develop something for your group to work with

- 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**



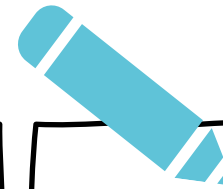
KNOW IT

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	

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Drama

Devising: Units 1 & 2

Question 2

Question Two: How does the writer use language to...? 8 marks

Language devices	Effects
Adjective	Describes the noun.
Alliteration	Makes the phrase <u>memorable</u> . Adds <u>rhythm and rhyme</u> .
Adverb	Describes an action.
Metaphor	Compares two different things.
Onomatopoeia	Sounds like.
Personification	Brings objects to life
Simile	Compares two different things.

English: Language Paper One

What - The writer purposely creates a sense of foreboding through use of a semantic field of fear.

How - The noun 'shadows' unsettles the reader due to the unknown element that is implied. When used in conjunction with the verb 'grew' it suggests that this situation is getting worse.

Why - The growing 'shadows' build a sense of continuous uncertainty and mystery as we do not know who the shadowy figures are and what kind of danger they pose, forcing sympathy with the boy - we are invested in his safety. The boy's fear symbolises a wider fear of the unknown and loss of innocence.

Question 4

Year 10

Question Four: How far do you agree that...? 20 marks

Here are two examples of how you can write your response.

- **Respond** to the statement and make a comment on it
- **Support** with quotes
- **Identify methods (language and structural techniques)**
- **Evaluate** methods in relation to the statement.
- **Comment** on the ideas in the statement, the meaning of the quote and its effect

Question 3

Question Three: How does the writer use structure to...? 8 marks

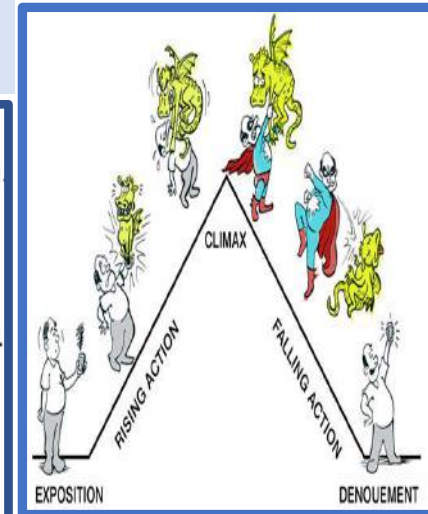
What - The writer changes the focus from the bus to the girl with red hair
How - 'eyes the colour of that green ribbon shot with gold they had got from Paris last week'
Why - to create a sense of contrast and envy, suggesting to us the sadness Rosabel feels with her life. The girl represented what Rosabel wishes she had. Focusing on this woman makes us empathise with her situation. We see how she lives and then how others more fortunate live. The drab, unpleasant bus represents her life, and the girl is the one attractive and pleasant part of her day.

Structural devices	Definitions
Narrative perspective	1 st person - 'I' makes the text more relatable/believable. 3 rd person - 'he/she/they' gives the reader more information about multiple perspectives in the text.
Exposition	Initial ideas: setting, character, plot detail.
Climax	Most intense or decisive point.
Motif	Reoccurring ideas/objects/elements
Linear/non-linear narrative	Events told chronologically. Events not told chronologically
Cyclical narrative	Ends the way it begins.

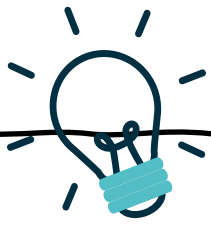
Question 5

Write a description or a narrative (40 marks).

- DROP**
The reader into the action
- SHIFT**
To another time (e.g. flashback) or contrasting mood or alternative place.
- ZOOM IN**
On a tiny detail back where you started.
- ZOOM OUT**
And leave the location.

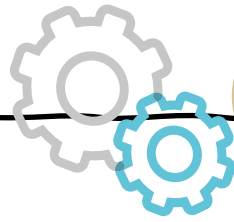


- I -ing word
- S simile
- P preposition
- A adverb / adverbial
- C connective
- E -ed word



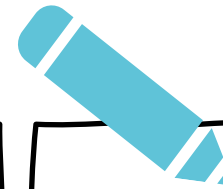
KNOW IT

1. What is implicit and explicit information?
2. What do the letters in AAAMOPS stand for? What is the effect of each letter?
3. Identify the six structural features and write down their definitions.
4. What does evaluate mean?
5. Identify discourse markers that demonstrate addition and contrast?
6. What do the letters in ISPACE stand for?
7. What is the difference between a flat character and a round character?
8. What does Drop, Shift, Zoom In, Zoom Out mean?



THINK IT

1. What do you need to do for question one?
2. What do you do with the extract for question 2? Which paragraph structure do you use?
3. What do you do with the extract for question 3? Which paragraph structure do you use?
4. What do you do with the extract for question 4? Which paragraph structure do you use?
5. What could you be asked to write for question 5?
6. What do you need to include when answering question 5?



GRASP IT

1. Read a newspaper article or fictional text and practice finding four things about the given topic.
2. Identify and annotate a newspaper article or fictional text for language devices. Choose 3 techniques and comment on their effects.
3. Watch a film and identify the structural techniques used in the beginning, middle and end. Try to focus on why the film has been casted this way. You could create a storyboard.
4. Read two opposing views about controversial topics such as: the death penalty, animal rights, GMO, etc. Evaluate how the writers present their points. Decide which article is most effective and explain why.
5. Use thought provoking images as stimuli for a narrative or description. Write a four/five paragraph plan using the: Drop, Shift, Zoom in and Zoom Out technique. Choose one plan to write in paragraphs. Remember to include all of the elements listed in your success criteria (Think it – question 6).



English: A Christmas Carol

Year
10

1. Character List

Ebenezer Scrooge – A selfish businessman who transforms into a charitable philanthropist.

Fred – Scrooge's nephew.

Jacob Marley – Scrooge's dead business partner who returns as a ghost to warn Scrooge to change his ways.

Bob Cratchitt – Scrooge's clerk who lives in poverty. He loves his family, is happy and morally upright.

Tiny Tim – Bob's ill son who inspires Scrooge's transformation.

Mrs Cratchitt – Bob's wife.

The Ghost of Christmas Past – The first spirit.

The Ghost of Christmas Present – The second spirit.

The Ghost of Christmas Yet To Come – The third and last spirit.

Fezziwig – Scrooge's ex-employer.

Belle – Scrooge's fiancé who left him due to his greed.

Fan – Scrooge's sister; Fred's mother.

4. Social & Historical Context

- Victorian England was a time of huge population increase.
- The Industrial Revolution caused an influx of workers to the larger cities. This caused over-crowding and the rapid spread of disease.
- Childbirth was very dangerous and many women died giving birth. Lots of children died during their infancy.
- Dickens was forced to leave school to support his mother when his father was sent to debtor's prison.
- He advocated better treatment of the poor and set up 'Ragged Schools' with Lord Shaftsbury.
- The novella was written to evoke a change in the rich Victorian businessmen who exploited the poor.
- Poverty often led to living on the streets. Those who could not cope with the street conditions went to the workhouses.
- Workhouses were known for the harsh treatment and living conditions.

2. Themes

Poverty & Greed
Justice & Guilt
Redemption
Fate & Freewill
Family & Isolation
The Supernatural
Social Responsibility
Time

5. Key Words

Allegory
Ambiguity
Analepsis
Morality tale
Malthusian
Omniscient
Narrator
Pathetic fallacy
Prolepsis
Protagonist
Symbolism
Zeitgeist

3. Plot Summary

1. Ebenezer Scrooge is at work in his counting house. Despite the Christmas Eve cold, he refuses to spend money on coals for the fire. Scrooge's turns down his nephew, Fred's, invitation to his Christmas party and the request of two men who want money for charity.

2. Scrooge is visited by the ghost of his dead partner, Jacob Marley, who tells Scrooge that, due to his greedy life, he has to wander the Earth wearing heavy chains. Marley tries to stop Scrooge from doing the same. He tells Scrooge that three spirits will visit him during the next three nights. Scrooge falls asleep.

3. He wakes and the Ghost of Christmas Past takes Scrooge into the past. Invisible to those he watches, Scrooge revisits his childhood school days, his apprenticeship with a jolly merchant named Fezziwig, and his engagement to Belle, who leaves Scrooge as he loves money too much to love another human being. Scrooge sheds tears of regret before being returned to his bed.

4. The Ghost of Christmas Present shows Scrooge Christmas as it will happen that year. Scrooge watches the Cratchit family eat a tiny meal in their little home. He sees Bob Cratchit's crippled son, Tiny Tim, whose kindness and humility warm Scrooge's heart. The spectre shows Scrooge his nephew's Christmas party. Scrooge asks the spirit to stay until the very end. Toward the end of the day the ghost shows Scrooge two starved children, Ignorance and Want. He vanishes as Scrooge notices a dark, hooded figure coming.

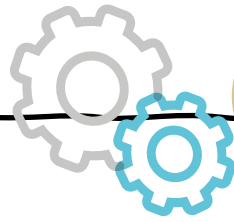
5. The Ghost of Christmas Yet to Come takes Scrooge through a sequence of scenes linked to an unnamed man's death. Scrooge, is keen to learn the lesson. He begs to know the name of the dead man. He finds himself in a churchyard with the spirit pointing to a grave. Scrooge looks at the headstone and is shocked to read his own name. He is desperate to change his fate and promises to change his ways. He suddenly finds himself safely tucked in his bed.

6. Scrooge rushes out onto the street hoping to share his newfound Christmas spirit. He sends a turkey to the Cratchit house and goes to Fred's party. As the years go by, he continues to celebrate Christmas with all his heart. He treats Tiny Tim as if he were his own child, gives gifts for the poor and is kind, generous and warm.



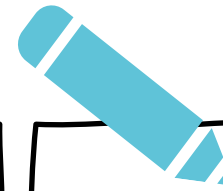
KNOW IT

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?



French: Who am I?

1. KEY VERBS

Avoir	<u>To have</u>
J'ai	I have
Il/ elle a	He/she has
Nous avons	We have
Ils/ elles ont	They have
Etre	<u>To be</u>
Je suis	I am
Il/ elle est	He/she is
Nous sommes	We are
Ils/ elles sont	They are
Aller	<u>To go</u>
Je vais	I go
Nous allons	We go

2. STRUCTURES TO TALK ABOUT RELATIONSHIPS

je m'entends bien avec	I get on well with
je ne m'entends pas avec	I don't get on well with
je me dispute avec	I argue with
je m'amuse avec	I have fun with
je m'occupe de	I look after
Il / elle me comprend	He/ she understands me
Il / elle m'estime	He / she values me
Il / elle m'aide beaucoup	He / she helps me a lot

3. STAR WORDS

aujourd'hui	today
maintenant	now
demain	tomorrow
le lendemain	the day after
hier	tomorrow
	yesterday
autrefois	in the past
le matin	in the morning
l'après-midi	in the afternoon
le soir	in the evening
ce / cet / cette / ces	this
(le) lundi	(on) Monday(s)

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 + inf
 La scène se déroule à/ dans + place
 Ils ont l'air contents/ tristes
 Je pense que*

5. BORD

B asic answer	Je m'entends bien avec mon frère cadet.
O pinion	Il est assez actif comme moi parce qu'il adore faire du sport.
R eason	
D evelopment	Je dirais que mon frère est très fiable.
U ncommon language	Il est moins agaçante que mon frère aîné.
M erge	

6. 3 TENSES

Present tense

Je joue – I play je regarde – I watch

Past tense

Je suis allé (e) (s) – I went J'ai joué - I played
 C'était – it was

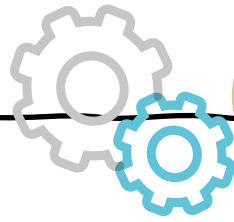
Near future tense

Je vais jouer - I am going to play ce sera – it will be
 Je vais aller – I am going to go



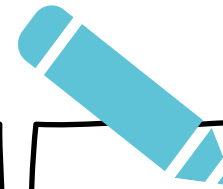
KNOW IT

1. Translate: je m' amuse avec mes copines
2. Translate : Je m'occupe de mes petites soeurs l'après-midi.
3. Translate: Maintenant je m'entends bien avec mon frère mais je me dispute souvent avec ma sœur
4. Translate : Yesterday I played rugby with my brother
5. Translate: Mon héros est un acteur. Il est grand et il a les cheveux bruns et les yeux bleus. Il porte des lunettes. Il est travailleur et courageux. J'admire mon héros car il a joué dans beaucoup de films.
6. Describe this photo using PALMO



THINK IT

1. Write a simple sentence describing yourself using the verb *avoir* in the present tense.
2. Write a simple sentence describing your personality using the verb *être* in the present tense
3. Write a simple sentence to say who you get on with and who you don't get on with.
4. Rewrite sentence 2 using the near future tense.
5. Write this sentence in the near future, adding a time expression and an opinion : Je m'occupe de ma petite sœur.
6. Rewrite the paragraph to the left in the feminine form. Pay attention to pronouns and adjectives.



GRASP IT

1. Change this sentence from first person to third.
J'ai les yeux bleus et les cheveux bruns.
2. Change this sentence from first person to third.
Je suis assez intelligente et vraiment sportive.
3. Write 20+ words to say what are you going to do tomorrow, where, with whom and how you anticipate the day will be.
4. Write 20+ words to say what you did yesterday and what you will do this afternoon.
5. Explain why this is a good sentence:
Maintenant, je m'entends bien avec mon frère mais quand j'étais plus jeune, ce n'était pas le cas !
6. Write a 30-word description of your hero.

Year 10

French

Who am I ?

French: Town and Local Area

1. MY TOWN

J'habite dans une ville...	I live in a... town
Tranquille/ bruyante	quiet/noisy
belle/laide	beautiful/ugly
historique/moderne	historic/modern
Dans ma ville il y a...	In my town there is/ are
un hotel de ville	a town hall
un cinéma	a cinema
una plage	a beach
una place	a town square
On peut.....	You can...
S'amuser	Have a good time
Manger des plats typiques	Eat local dishes
Faire du tourisme	go sightseeing

2. PROS & CONS OF MY CITY

Ce que j'aime le plus/ le moins ...	The thing I like the most / least is that...
Le meilleur/ pire est que	The best / worst thing is that...
Il y a trop de circulation	There is too much traffic
Il y a peu de pollution	There is little pollution
Il y a tant de bruit	There is so much noise
La ville est plus bruyant que la campagne	The town is noisier than the countryside
Le musée est moins divertissant que le centre commercial	The museum is less interesting than the town centre
On a besoin de plus d'espaces verts	We need more... green spaces / pedestrian zones

3. STAR WORDS

Tôt	Early
Tard	Late
Rapide	Quick(ly)
Assez	Quite
Seul	Alone/only
Un peu	A bit
Il y a + time	Ago
Il y a	There is/are
Toujours	Always
Quelquefois	Sometimes
Souvent	Often
Chaque	Each
Après	After
Avant	Before
Quand	When

4. PALMO

How to describe a photo

People
Action
Location
Mood
Opinion

Dans la photo il y a personnes
Ils sont en train de + inf
La scène se déroule à/ dans + place
Ils ont l'air contents/ tristes
Je pense que

5. BORD

B asic answer	J'habite à Birmingham.
O pinion	J'adore ma ville parce qu'il y a beaucoup à faire.
R eason	
D evelopment	A mon avis, c'est très animé.
U ncommon language	Je vais au centre-ville pour faire du shopping.
M erge	

6. 3 TENSES

Present tense –
Je regarde – I watch
Je vais – I go
Je fais – I do

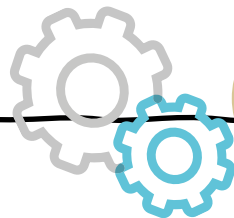
Past tense
ER verbs j'ai visité – I visited
IR verbs j'ai fini – I finished
RE verbs j'ai vendu – I sold

Near future tense
Use the near future to say **I am going to...**
Use the present tense of **aller** + infinitive
Je vais visiter la plage – I am going to visit the beach



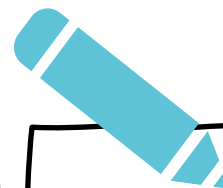
KNOW IT

1. Translate: Dans ma ville on peut manger des plats typiques
2. Translate: Il y a tant de pollution.
3. Translate: Il ya trop de voitures
4. Translate: Il pleiut souvent.
5. Translate: Je vais visiter les magasins.
6. Translate: In my city it rains sometimes.
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. J'habite Birmingham – correct the sentence.
2. What time phrase could you use with 'Je suis allé en ville' and why?
3. Change this sentence into the future tense 'je fais du shopping' and add in a time indicator. Explain what you changed and why.
4. Write 2 sentences about your town.
5. Finish the sentence – J'adore ma ville parce que
6. List 2 past tense time phrases
7. Le meilleur c'est que ma ville est très grande. Underline the example of uncommon language.
8. *J'habite en Angleterre depuis huit ans.* Explain why the present tense is used.
9. La semaine prochaine je vais visiter le musée. Which tense is used here. Explain why.
10. Hier je suis allé au cinéma Identify which tense is used here and why.



GRASP IT

1. Imagine you are in a shop in France. Say the tee-shirt is too big.
2. Imagine you are in a shop in France. Ask how much it is.
3. Imagine you are in a shop in France. Say that you would like to buy a present.
4. Imagine you are in a shop in France. 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
Décis ta ville
8. 80-90 Word Bullet point
Les avantages et les inconvénients de ma ville
9. 80-90 Word Bullet point
Ce que tu as fait récemment dans ta ville
10. 80-90 Word Bullet point
Ce que tu vas faire la semaine prochaine. Now consider how you would merge the 4 previous bullet points.

Year 10

French

Town and Local Area

Geography: Natural Hazards

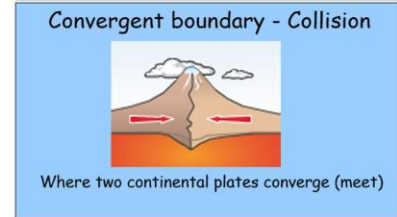
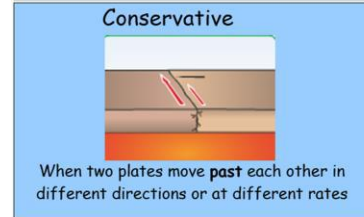
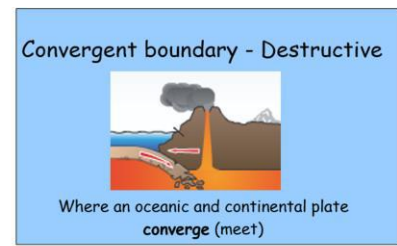
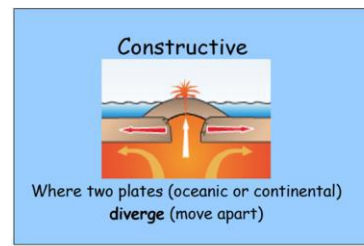
1. Natural Hazards

A natural event (for example an earthquake, volcanic eruption, tropical storm, flood) that threatens people or has the potential to cause damage, destruction and death.

Hazard risk The probability or chance that a natural hazard may take place.



2. What tectonic plate boundaries create natural hazards?



3. WOW Words

Immediate responses - The reaction of people as the disaster happens and in the immediate aftermath.

Long-term responses - Later reactions that occur in the weeks, months and years after the event.

Monitoring - Recording physical changes, such as earthquake tremors around a volcano, to help forecast when and where a natural hazard might strike.

4. What factors can make natural hazards worse?

Human

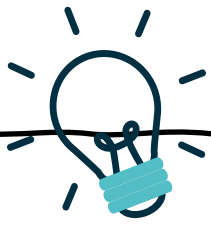
- Population density
- Poor quality buildings
- Lack of defences
- Lack of warning/preparation

Physical

- Duration (length of time they last)
- Speed of onset (how quickly they occur)
- Size of the area they effect

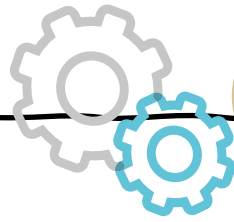
5. Why do people live in hazardous areas?

- Some people have no choice but to live in hazardous areas because they are too poor to move away
- Some people are attracted by the opportunities tourism can bring through these areas
- Some people take advantage of the fertile land to grow crops
- Some people are attracted to cheap geothermal energy
- Some people are willing to take the risk for well paid jobs e.g. California, USA
- Some people want to live in successful major cities which often lie on flat land next to rivers



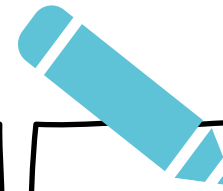
KNOW IT

1. Where are constructive plate boundaries generally found ?
2. At which plate boundary are the most dangerous earthquakes and volcanoes found ?
3. What is an earthquake's focus ?
4. What is an earthquake's epicentre ?
5. What are seismic waves ?
6. What are some of the primary effects of earthquakes ?
7. What are some of the secondary effects of earthquakes ?
8. What essential aid is given in immediately after an earthquake?
9. What is the priority of long-term responses after a natural disaster?
10. Why are some natural hazards deadlier than others ?



THINK IT

1. How are earthquakes and volcanoes formed at a destructive plate boundaries ?
2. How does the level of development impact on the effects and responses of tectonic hazards ?
3. Explain the benefits of geothermal energy.
4. Explain the difference between a shallow and deep focus earthquake. Which will be the more dangerous ? Explain.



GRASP IT

1. How far do you agree that the primary effects of an earthquake are more damaging than secondary effects ?
2. How far do you agree that climate change is caused by human activity ?
3. Explain the advantages and disadvantages of living in a tectonic active area(s)
4. How far do you agree that primary responses are more important than secondary responses when responding to natural hazards ?

History: Britain, Health and the People

1. The Renaissance

Renaissance means **rebirth**. It began with close study of **classic texts** and was critical of old translations.

There was a greater interest in how the human body worked based on **observation and dissection**.

Artists attended dissections of human corpses and did wonderful illustrations for medical books.

Return of classical texts led to a renewed faith in the **four humours theory and treatment by opposites**.

4. WOW WORDS

Renaissance: The rebirth of classical ideas and texts.

Anatomy: The study of the human body.

Cauterisation: The process of pouring boiling oil onto a battle wound to close it.

2. Andreas Vesalius – Anatomy

Studied **anatomy**, became professor of surgery and anatomy at Padua. He was allowed to do **dissections**. Did his own dissections and wrote books based on his observations using accurate diagrams to illustrate his work. His most famous book was '**On The Fabric of the Human Body**' written in 1543. He was able to point out some of **Galen's mistakes**. Vesalius said there were no holes in the septum of the heart and that the **jaw bone** is not made up of two bones. Vesalius **encouraged doctors to dissect** and look for themselves.

5. William Harvey – Circulation of the Blood

Discovers the **circulation of the blood, disproving Galen's ideas**. Identifies the difference between arteries and veins. Becomes doctor the King, his ideas are very influential. To spread his ideas he writes "**An Anatomical Account of the Motion of the Heart and Blood**". However, bleeding operations still continue after Harvey as **people are unsure** of what else to do. Blood groups are discovered in 1901, which makes blood transfusions successful.

3. Ambroise Paré – Surgery

Paré was a **battlefield surgeon**; this was still a low status profession.

In battle, he **ran out of boiling oil** which was used for treating gunshot wounds.

Paré made an old Roman ointment of **roses, turpentine and egg yolk**. Paré develops **ligatures** to seal wounds instead of using a cauterising iron.

Carried out an experiment to **disprove Galen** by proving the bezoar stone isn't a treatment for position.

Writes '**Notes on Surgery**' and becomes the King's surgeon.

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 contract.
- **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 taking notes.

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

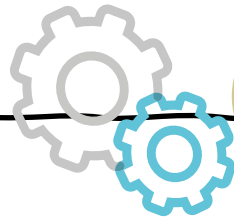
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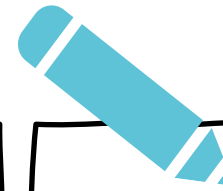
KNOW IT

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?

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

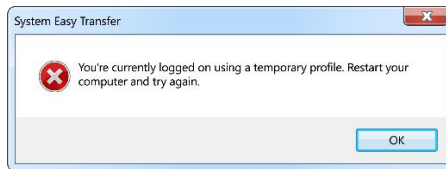


The use of green leaves helps to indicate nature and combined with the stones suggest a calm process for setting up a new account. The use of green is also often associated with money.

Emotive Words

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

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.

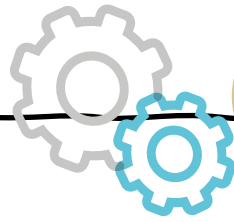
Products produced

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



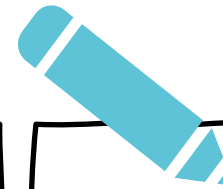
KNOW IT

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'

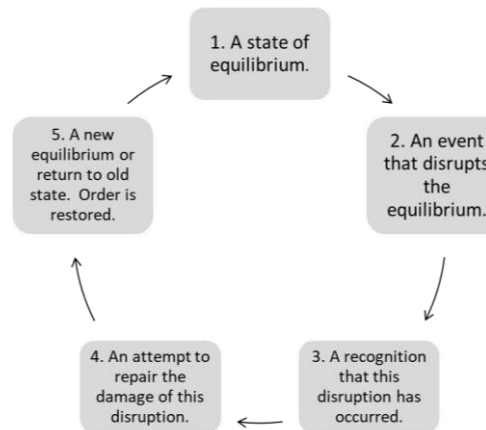
Social Interaction –allows for conversation between other people

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.



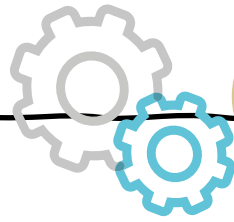
Oppositional or resistant readings

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



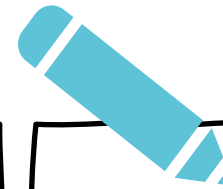
KNOW IT

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?



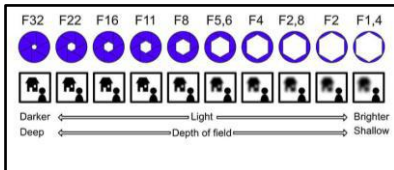
3. WOW WORDS

- 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

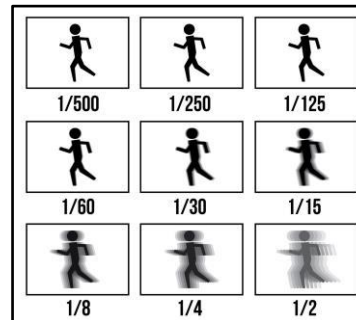
Aperture is an opening which light travels through. Aperture controls the brightness in a photographic image and it is expressed as an f number.



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





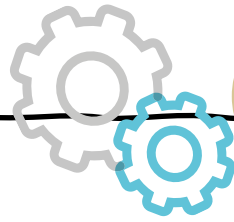
KNOW IT

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

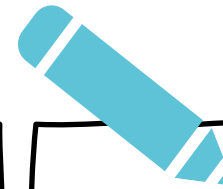
How does using composition impact the visual quality of your photograph? Name 5 compositional devices.

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

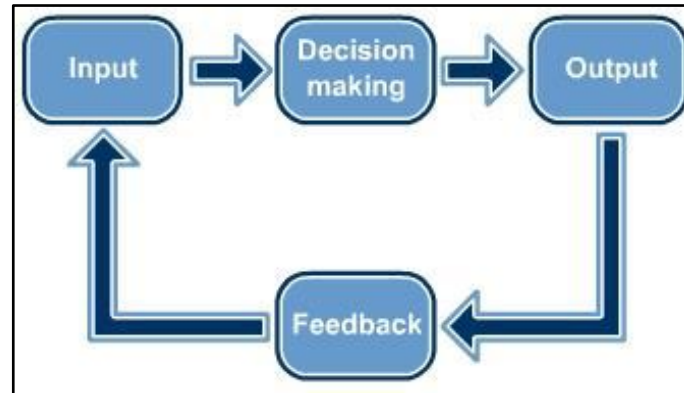
GCSE Sports Psychology: Classification of Skill & Information Processing

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

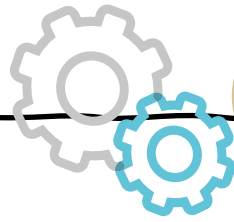
Self paced – Starts when the player decides. E.g. corner kick in football.

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



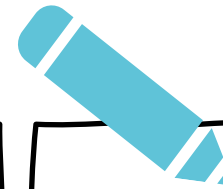
KNOW IT

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)

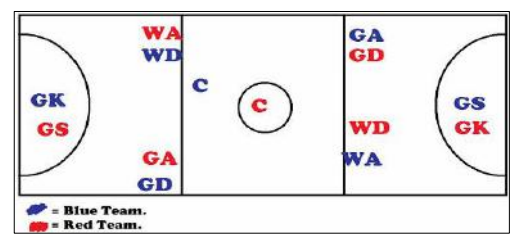
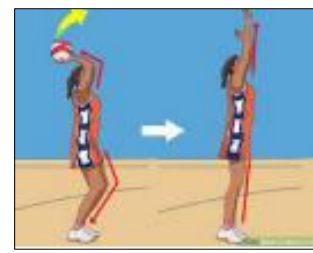
Wing Defence - allowed in the centre and defending third but not the circle (WA)

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

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





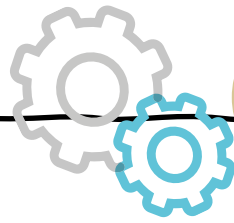
KNOW IT

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?



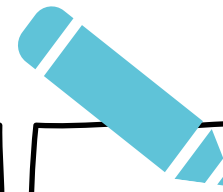
THINK IT

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

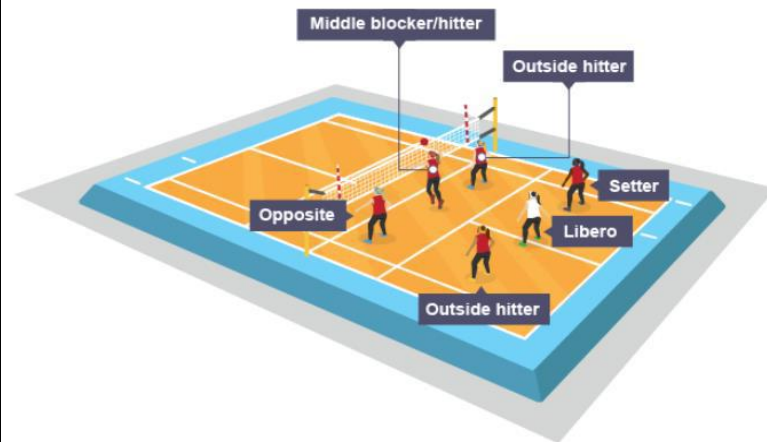
Physical Education: Volleyball

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	

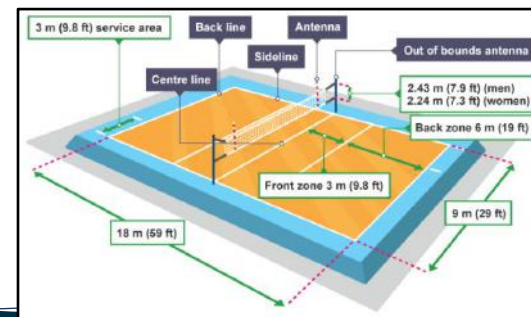
Scoring

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

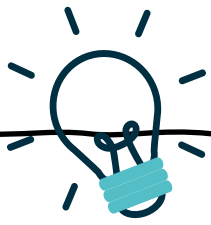
Stand in position on the balls of your feet, with knees slightly flexed. Drive off from legs to get towards the path of the ball. Get in line with the ball's path. Keep your eyes on the ball at all times.

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.



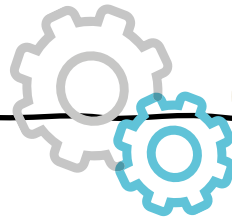
KNOW IT

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?



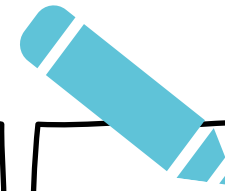
THINK IT

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

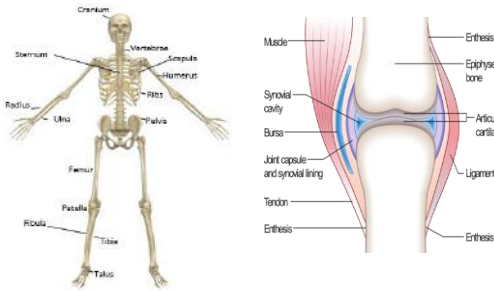
Physical Education

Volleyball

GCSE Physical Education: Paper One

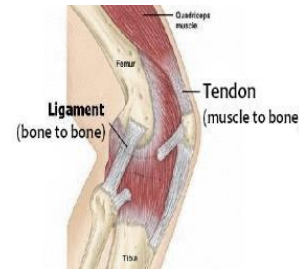
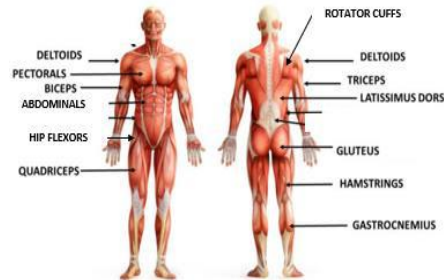
Skeletal System

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



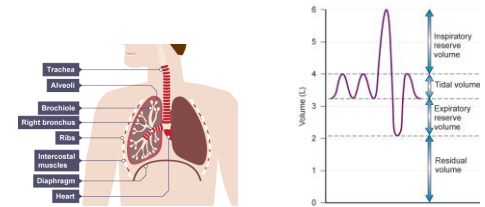
Muscular System

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



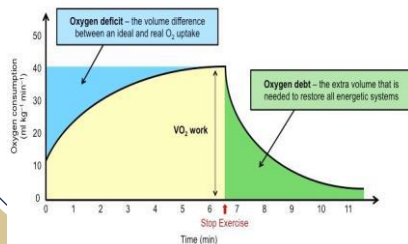
Respiratory System

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



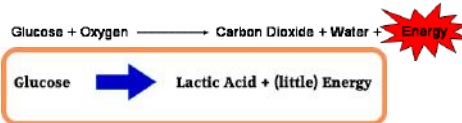
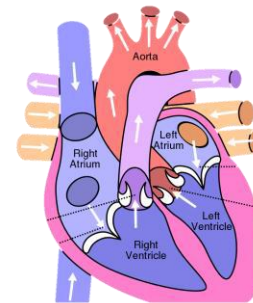
Movement Analysis

- 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

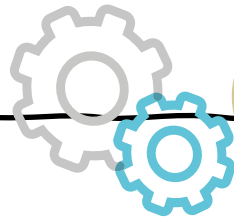
Use of data

- Types of data
- Analysing & interpreting data



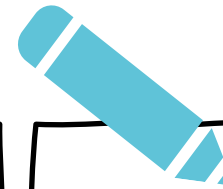
KNOW IT

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.



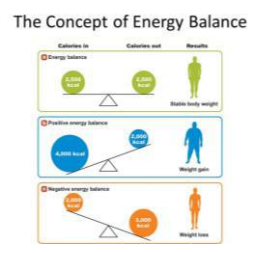
Performance Enhancing Drugs, Player & Spectator Conduct

- 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



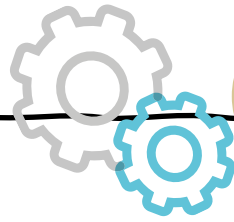
Use of data

- Types of data
- Analysing & interpreting data



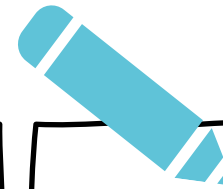
KNOW IT

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: Christian Beliefs

1. Creation

In the book of **Genesis**, it says that God created the world in 6 days, and on the 7th He rested.

Some Christians take this **LITERALLY** and read this story as fact (**fundamentalist**). Others see the Genesis story as a symbol or metaphor (Liberal). Adam is the first man and is created from the dust of the earth.

Eve sins, by being **tempted by the devil** and eating the forbidden fruit. Humans are banished from Eden. They must now work, feel pain and die.

"In the beginning God created the heavens and the earth."

"Then God said, 'Let them rule over the fish of the sea and over the birds of the sky.'

4. Crucifixion

Jesus was sentenced to death by Pontius Pilate, the Roman Governor by **crucifixion**. There are several ways in which the crucifixion affects Christians today. It gives them confidence that if they accept Jesus' sacrifice, sin can no longer destroy their love because God forgives those who faithfully ask for **forgiveness**. They believe that suffering is a part of life, just as it was a part of Jesus' life and that, having experienced it, God understands what the sufferer is going through.

"Forgive them Father for they do not know what they do."

2. The Holy Trinity

Means three in one God in three parts (God is divisible): The **Father**, the **Son**, and the **Holy Spirit**.

The Nicene Creed explains the nature of The Trinity:

The Father is the powerful creator of everything – "Maker of heaven and earth"

The Son is Jesus Christ, who came to Earth as God in human form.

The Holy Spirit is the invisible power of God that works within the world today to guide and inspire us.

"I believe in one God: The Father, Son and Holy Spirit."



5. The Resurrection

Jesus was placed in a tomb on Good Friday.

Some of Jesus' female followers went to the tomb Jesus was nowhere to be found and the stone had rolled away

The belief that Jesus rose from the dead is known as the **resurrection** and is a key teaching in the Christian faith. After meeting his disciples and asking them to carry on his good work, Jesus left them for the last time and **ascended**, body and soul, into Heaven.

"Jesus said to her, 'I am the resurrection and the life. The one who believes in me will live, even though they die.'"

3. Wow Words

- Omnipotent (all powerful)
- Omniscient (all knowing)
- Omnipresent (everywhere)
- Benevolent (loving)
- Transcendent (beyond understanding)
- Immanent (personal)
- Just (fair and the perfect judge)
- Eternal (no beginning and no end)
- Forgiving (he will forgive sins)

6. incarnation

Christians believe Jesus is the Son of God. He is God in human form, or God 'incarnate'.

This means that he is fully human and fully God (divine) at the same time.

This is important because it shows that Jesus is truly God on earth, but he understands our suffering and problems as he was a human.

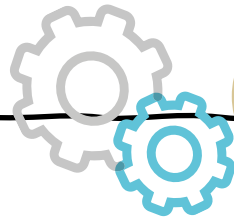
He shows he is God as he forgives sins, performs miracles and was resurrected at death. He shows he is human as he feels pain, was born to a human mother, and died on the cross.

"The word became flesh and made his dwelling among us"



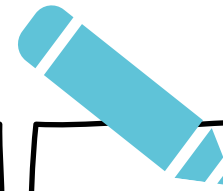
KNOW IT

1. What is the Holy trinity ?
2. Who ordered the crucifixion of Jesus ?
3. Why is the Crucifixion an important belief in Christianity ?
4. When did the resurrection of Jesus happen ?
5. Why is the resurrection story important to Christians ?
6. What is the significance of the birth of Jesus Christ?
7. What is the role of the Bible in Christian faith?
8. What are the sacraments observed in many Christian denominations?
9. How do Christians believe one can attain salvation?
10. What is the significance of prayer in the Christian faith?



THINK IT

1. Use the Wow Words to describe Christian's beliefs in God.
2. Explain how the story of Adam and Eve shows 'original sin'.
3. Explain the importance of the incarnation to Christians.
4. In what ways does the Incarnation demonstrate God's love for humanity?
5. What is the significance of the Holy Trinity in Christian worship and prayer?



GRASP IT

1. **'God cannot be benevolent because he sacrificed his own son'.** Do you agree ?
2. **'The resurrection of the dead is the most important Christian belief.'** How far do you agree with this statement?
3. Explain the concept of the Holy Trinity in Christianity and its significance for believers.

Year 10

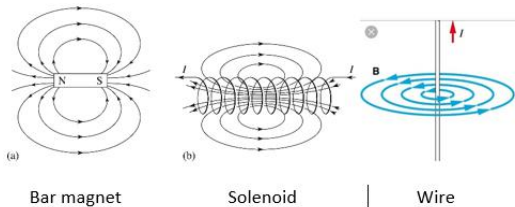
Religious Education

Christain Beliefs

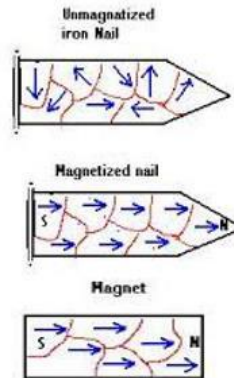
Science: Physics: Magnetism

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

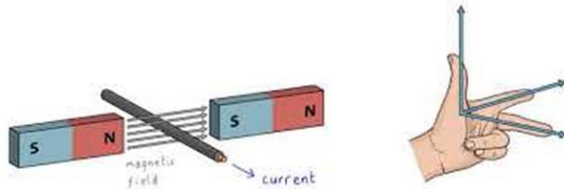


Permanent magnets are made from hard magnetic materials. The domains are lined up and it is difficult to undo this (unless you use heat or a lot of force). Soft magnetic materials have domains that line up when they are in a magnetic field but quickly move back to their original state once they are removed 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

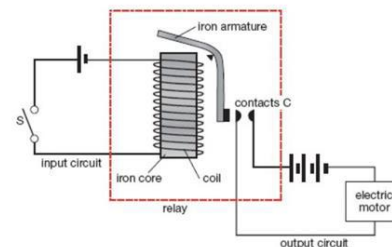


A wire that has a current flowing through it produces its own magnetic field. When this wire interacts with another magnetic field (e.g. from permanent magnets) the wire will move. We can use Fleming's left hand rule to find out which way it will move

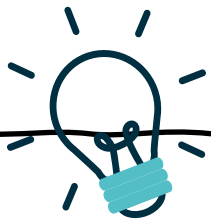
(first finger = field, second finger = current, thumb = motion).

4. Using electromagnets

Relay switch

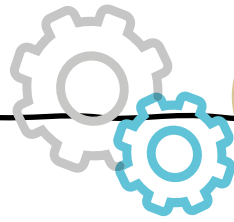


Electromagnets have many uses. This simple relay switch allows us to switch on a high voltage circuit (such as in a car engine) using a low voltage circuit (when you put the key in the ignition). This makes it safer.



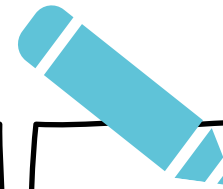
KNOW IT

- 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

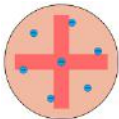
Science: Physics

Magnetism

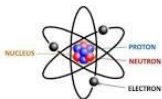
Science: Atomic Structure

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.

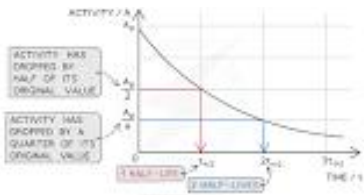


Nuclear model

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)

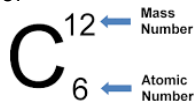


Isotopes

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 suns 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.

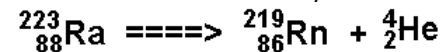
They are moderately ionising

Gamma rays are electromagnetic waves.

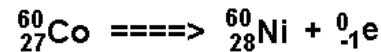
They travel long distances in air and are stopped by thick lead or metres of concrete. They are weakly ionising.

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.

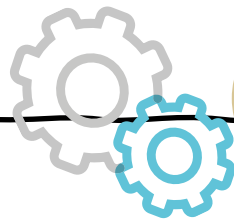


There are no changes to the nucleus when gamma rays are emitted.



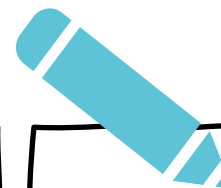
KNOW IT

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

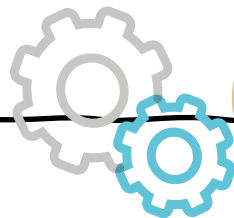
Oxidation and reduction

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



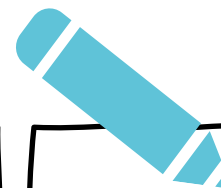
KNOW IT

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.

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

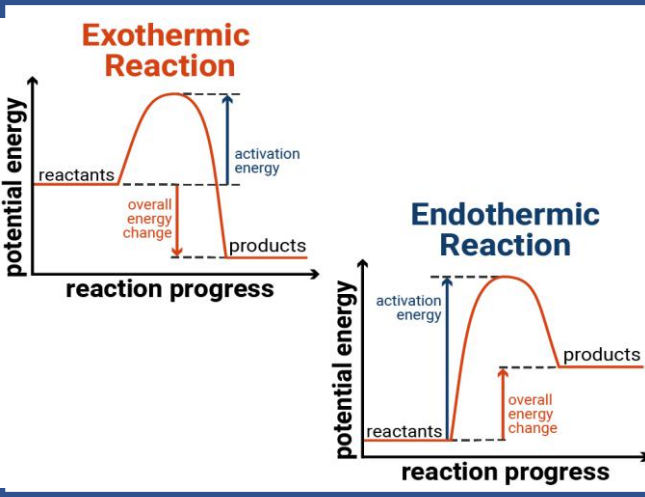
Endothermic reaction- Releases energy to its surroundings. The temperature goes up.

 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.

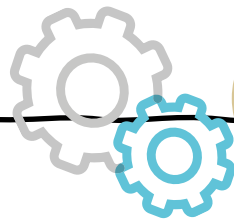
Bond energies

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.**



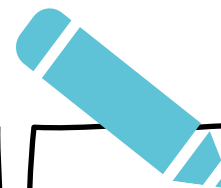
KNOW IT

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

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, protest, 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 writing notes.

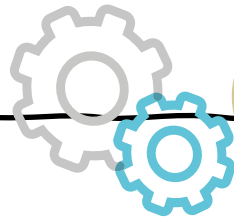
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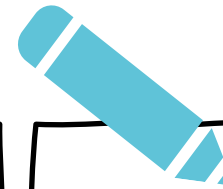
KNOW IT

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

Sports Studies

Unit R187

Topic Area 1

Types of provision for outdoor and adventurous activities include:

Local Providers

- Go ape

National Sports centres

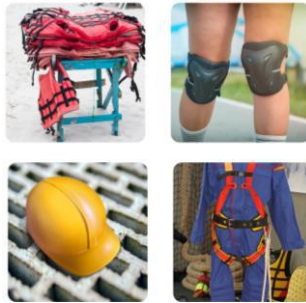
- Holme Pierrepont,
- Tollymore,
- Plas y Brenin

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

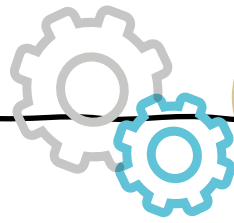
Considerations when creating a risk assessment:





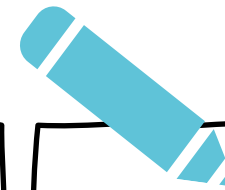
KNOW IT

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.

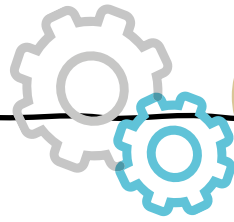
Maths and design and technology:

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.

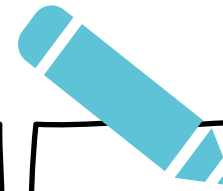
Give an example of a modern material.

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.

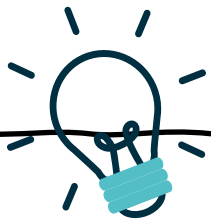
Laminating: thin sheets of wood can be pressed together in a mould to form a three-dimensional structure.

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.

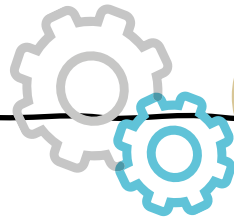
Hardwoods: beech, oak, mahogany, balsa and jelutong.

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.

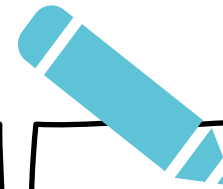
Explain the process of getting a timber from source to sale.

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