Year 10 Knowledge Organisers

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

2023

SPRING TERM

Name:

Tutor Group: 10

Own Notes

JWS
Year 10
Knowledge Organisers
Contents

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

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

Year 10 Subjects

Art & Design: Fine Art

Year 10

1. Proportion in portraiture

Proportion describes the relationship between the dimensions of different elements and an overall composition. Scale refers to an artwork's size and how parts of a composition relate to each other.

[Proportion, balance and composition - Proportion - GCSE Art and Design Revision - BBC Bitesize]

Look on you tube at How to draw a portrait and use the videos to guide you.

2. Graffiti and Street Art

Is there a difference between graffiti and street art?

What are the key differences between street art and graffiti?

Street art and graffiti overlap in many ways, but the key differences between the two lie in technique and intent. In terms of technique, street art tends to be image-based, whereas graffiti is more commonly word-based.

Examples of graffiti include tags whereas street art can be murals which are commissioned.

3. Media

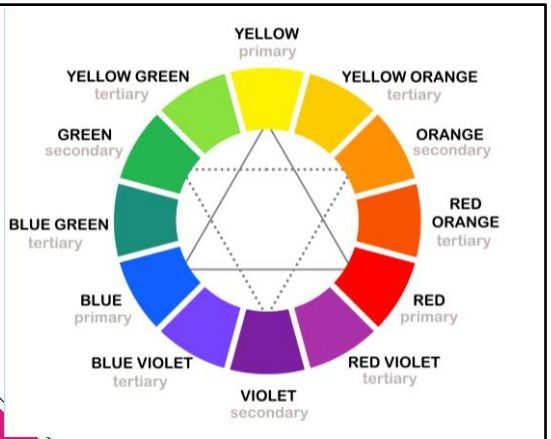
In art media is a word that describes the material you use to create your work.

e.g pen, pencil, crayon, oil pastels, soft pastels, watercolour paint, acrylic paint.

Did you know you can use household items to create art work from?

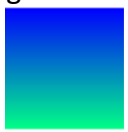
e.g coffee, beetroot vinegar, spices

4. The colour wheel



5. Colour theory

A gradient defined as a gradual blending from one colour to another.



Warms colours are yellows, oranges, reds, pinks etc

Cool colours are yellow green, blues, purples etc

6. The artist Ant Carver

Ant Carver is a London based artist working from a studio in Hackney Wick. He combines the influence of street art with more traditional painting techniques and works predominantly in oil and spray paint. His work often incorporates the use of portraiture, created in a bold, graphic style.

KNOW IT

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.

What makes a portrait Urban? Consider the elements/components of an image that make it urban. e.g The location, the accessories that a person wear, the colour palette etc

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 urban 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 portrait of a person in front of you. Practice drawing in proportion considering the rules of proportion. Consider how to make them look urban. e.g glasses, wearing a hat or hoodie etc.

Research an urban artist that inspires you. Create a copy of their work. This will allow you to gain an understanding of the style of the artist.

Research an urban artist and select and image to analyse. Complete a written analysis of their work to show you understanding. When you anaylse the work of an artist you should describe what you see, show understanding of their techniques and processes, explain what the work is about.

Analysing and evaluating - Analysing and evaluating - GCSE Art and Design Revision - BBC Bitesize

Year 10
Art & Design

Urban Portraiture

Business: Influences in Business

Year 10

1.Technology

Technology includes:

Different methods of ICT that can be used.

Ways in which businesses can use e-commerce.

How businesses use digital technologies to communicate with customers, suppliers and stakeholders.

2. Technology within Business

Technology

Technology plays an increasingly important role in the activities of many businesses. This is not only for businesses who sell technology products such as Apple.

Technology includes:

- Different methods of ICT (Information Communication Technology) that can be used.
- Ways in which businesses can use e-commerce.
- How businesses use digital technologies to communicate with customers, suppliers and stakeholders.

3. Selling online

Key terms:

- **Information Communication Technology (ICT) –** the computing and communication systems that a business might use to exchange information with stakeholders.
- **Extranets –** are similar to intranets but can also be access by other organisations such as suppliers.
- **E-commerce –** is the act of buying or selling a product using an electronic system such as the internet.
- **M-Commerce –** mobile commerce where handheld devices such as SMART phones or tablets are used to buy and sell products.
- **Social Media** – online communication using websites and apps. Share information and help develop social and professional contacts.

4. External Enviroment

Legislation

The law is a framework of rules controlling the way in which society is run. Laws affecting employees attempt to balance the needs of the employee and those of employers

5. Online consumer spending

KNOW IT

How Businesses use Technology

The meaning of the following terms
- E-commerce
- M-Commerce
- Social media

To understand the connection between Technology and Business success

The meaning of legislation within Businesses

THINK IT

Explain why Businesses now use more technology

Explain the benefits of each of the following
- E-commerce
- M-Commerce
- Social media

To be able to explain the benefits of Businesses using technology to sell products and market them

Explain the need for legislation to protect consumer

GRASP IT

Analyse why Businesses can be more successful with the use of Technology

Analyse the advantages and disadvantages of each of these
- E-commerce
- M-Commerce
- Social media

Analyse the impact of technology on the retail sector and the effect on high street stores.

Analyse different forms of legislation that effect different sectors

Year 10
Business

Influences in Business

Drama: Devising (Unit 1 &2)

Year 10

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
Style
Genre
Mood
Atmosphere
Intention
Staging
Props
Costume
Lighting / Sound

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)
Diary Entry
Thought Track
Sculpting
Ranking
Angel & Devil
Role on the Wall
Mime
Gestus
Tempo Rhythm
Improvisation

Key words & phrases

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

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?

Your main task this term will be to complete your devised piece. Prepare for this by keeping an accurate and detailed log of your rehearsals and research.

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

<u>Challenge</u>

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

Year 10

Drama

Devising: Units 1 & 2

English: Power & Conflict Poetry

Year 10

1. Language for Comparison

When poems have similarities
Similarly, …
Both poems convey / address…
Both poets explore / present…
This idea is also explored in…
In a similar way, …
Likewise, …
When poems have differences
Although…
Whereas…
Whilst…
In contrast, …
Conversely, …
On the other hand, …
On the contrary, …
Unlike…

2. Language Techniques

Metaphor – comparing one thing to another.
Simile – comparing two things with 'like' or 'as'.
Personification – giving human qualities to the nonhuman.
Imagery – language that makes us imagine a sight (visual), sound (aural), touch (tactile), smell or taste.
Tone – the mood or feeling created in a poem.
Pathetic Fallacy – giving emotion to weather in order to create a mood within a text.
Irony – language that says one thing but implies the opposite eg. sarcasm.
Colloquial Language – informal language, usually creates a conversational tone or authentic voice.
Onomatopoeia – language that sounds like its meaning.
Alliteration – words that are close together start with the same letter or sound.
Sibilance – the repetition of s or sh sounds.
Assonance – the repetition of similar vowel sounds.
Consonance – repetition of consonant sounds.
Plosives – short burst of sound: t, k, p, d, g, or b sound.
Oxymoron – a phrase that contradicts itself.
Repetition – repeated words or phrases.

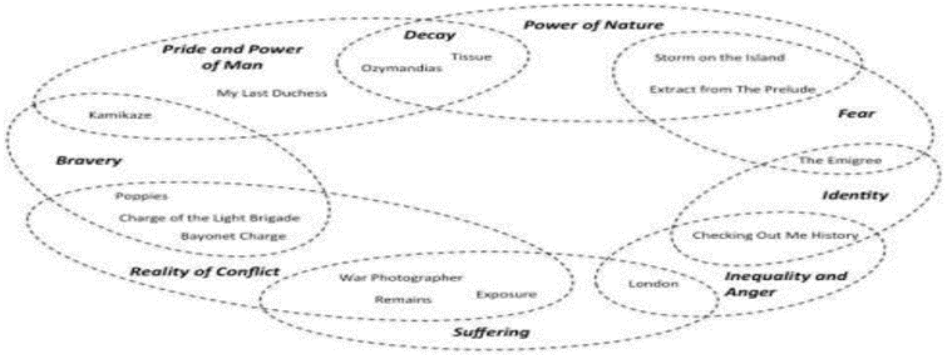
3. Structure Techniques

Stanza – a group of lines in a poem.
Enjambment – a sentence or phrase that runs onto the next line.
Caesura – using punctuation to create pauses or stops.
Contrast – opposite concepts/feelings in a poem.
Juxtaposition – contrasting things placed side by side.
Anaphora – when the first word/phrase of a line is the same across different lines.
Epiphora – when the final word of a stanza is the same across different stanzas.
Volta – a turning point in a poem.

4. Form Techniques

Speaker – the narrator, or person in the poem.
Free verse – poetry that doesn't rhyme.
Blank verse – poem in iambic pentameter, but with no rhyme.
Sonnet – poem of 14 lines with clear rhyme scheme.
Rhyming couplet – a pair of rhyming lines next to each other.
Meter – arrangement of stressed/unstressed syllables.

5. Themes & Connections



6. Five Step Method to Analysis – Three Paragraph Essay

Paragraph 1
•Explore the first two or three lines and infer the poet's purpose from this.
•Look at the title of the poem and see how this fits with what you think about the purpose.
Paragraph 2
•Identify figurative language techniques that stand out to you and interpret what it suggests about the meaning.
Paragraph 3
•Look at the structure of the poem and think about what this can add to the poet's purpose.
•Explore the last few words/last line of the poem and see how the purpose/meaning has changed.

KNOW IT

1.Give a definition of each language technique.
2.Give a definition of each structure technique.
3.Give a definition of each form technique.
4.Who is the narrator of each poem?
5.What is the tone of each poem?
6.Can you summarise each poem in 20 words?
7.Can you list the most important points in the narration of each poem?
8.Which 5 words would you use to describe the meaning of each poem?
9.What are the main themes in each poem?
10.What are the social and historical links to each poem?
11.What are the names of the critical theories that can be applied to your analysis?

THINK IT

1.Why is the context of a text important?
2.How do the main themes link to each text?
3.Can you explain what each critical theory is about?
4.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 each text?
3.Why are the key themes important for the reader/audience to understand?
4.How does critical theory relate to this text?
5.Why might a modern-day audience or contemporary reader criticise the author's intended message?

Year 10
English

Power & Conflict Anthology

French: Holidays

Year 10

1. Holidays in 3 tenses

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

2. Transactional Language

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

3. Star words

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

4. PALMO

How to describe a photo

P eople
A ction
L ocation
M ood
O pinion

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

5. BORDUM

Normalement je vais en Espagne

J'adore Espagne parce qu' il fait du soleil.

Je pense que c'est très animé,

Je reste dans un hôtel pour me relaxer.

6. Saying 'in,at,to'

au + masc country	au Portugal
en + fem country	en Angleterre
aux + plural country	aux Etats-Unis
à + city	à Paris
dans + building	dans un hôtel

L'année dernière je suis allé **à** Paris **en** France.

Normalement je vais **aux** Etats-Unis où je reste **dans** un hôtel luxueux.

L'année prochaine je vais aller **au** Portugal et je vais rester **dans** un camping.

KNOW IT

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

THINK IT

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

GRASP IT

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

Year 10

French

Holidays

Year 10

Geography: The Challenge of Resource Management

1. Food in the UK

1. Food in the UK is imported all year .
2. More disposable income and increased demand for greater choice of foods
3. The UK cannot grow all the food needed to feed the people in the UK.
4. Food imported from LICs can help provide Jobs and wages for those in LICs, more tax income leads to a better quality of life
5. The distance food travels to arrive in the UK is called **food miles.** This causes large amounts of carbon to be emitted into the atmosphere.

2. Water in the UK

The average water used per household has risen by 70%. This growing demand is predicted to increase by 5% by 2020.

This is due to:

1. A growing UK population.
2. Water-intensive appliances.
3. Showers and baths taken.
4. Industrial and leisure use.
5. Watering greenhouses.

The north and west have a water surplus (more water than is required). The south and east have a water deficit (more water needed than is available).

3. Energy in the UK

The UK consumes less energy than compared to the 1970s despite having a higher population. This is due to the decline of industry. The UK government is investing more into low carbon alternatives. The UK government aims to meet targets for reducing emissions. Renewable sources include wind, solar and tidal energy. Although infinite, renewables are still expensive to install. Shale gas deposits may be exploited in the near future . Although the process of **fracking** is a highly controversial issue.

4. Water Insecurity

Pollution caused from human and industrial waste being dumped into people's water sources. Poverty prevents low-income families affording access to clean water. Limited infrastructure such as a lack of water pipes and sewers affects LICs. Over-abstraction from underwater **aquifers** is when more water is pumped out than be replaced. This is often an issue in large cities

5. The impacts of water security

1. **Food production** -The less water available for irrigating crops the less food that will be produced. This could lead to starvation and famines.
2. **Inadequate sanitation** systems pollutes drinking water causing diseases such as cholera and typhoid.
3. **Manufacturing** industries depend heavily on water. A severe lack of water can impact economic output

6. Water Management

Water diversion - Involves diverting water to be stored for longer periods. Often water is pumped underground to prevent evaporation.

Dams and Reservoirs - Dams control flow and storage of water. Water is released during times of water deficit.

Water transfer – includes schemes to move water from areas of surplus to areas of deficit.

Desalination – Involves the extraction of salt from sea water to produce fresh drinking water.

KNOW IT

1. What does the term 'deficit' mean ?
2. What does the term 'surplus' mean ?
3. What does the term 'insecurity' mean ?
4. What does the term 'food miles' mean ?
5. What is an aquifer ?
6. What is fracking ?
7. Name two water borne diseases.
8. Name the three fossil fuels
9. Name three types of renewable energy used in the UK ?
10. What is an import / export ?

THINK IT

1. Why does the south of England have a water deficit ?
2. What happens if people over abstract water from aquifers ?
3. How do desalinization plants work ?
4. Why does the UK import so much food ?
5. Why doesn't the UK convert all its energy to renewable power ?

GRASP IT

1. Explain the impacts of water insecurity for people in LICs
2. Evaluate the costs and benefits of large water transfer schemes to
3. Explain how the UKs demand is changing
4. Assess the costs / benefits of importing food from LICs
5. Explain how household water consumption can be reduced.

Year 10

Geography

The Challenge of Resource Management

History: Germany and the Depression

Year 10

1. Impact of the Depression

Economic:
German factories shut down and millions lost their jobs. German banks tried to reclaim money from German businesses, many went bankrupt.
Political:
People started to listen to extreme, political parties that promised radical solutions to Germany's problems and ways of improving their lives.
Social:
Many people were soon living on the streets and were angry at the leaders.

2. The Growth of the Nazi Party

1. The Nazi's promised to create jobs, solving the mass unemployment in Germany.
2. The appeal of Hitler and his powerful speeches filled his audiences with hope and their support.
3. Discontent with the Weimar government meant that many Germans did not think the current system was working.
4. Fear of communism such as the Spartacists, alarmed the middle class and wealthy Germans who didn't want to lose their power.
5. Hitler changed his tactics after the Munich Putsch and took part in rallies and propaganda.

3. Key Events

Bruning is Chancellor	Sept - 1930
Franz von Papen is Chancellor	July - 1932
Von Schliecher is Chancellor	Nov - 1932
Hitler is Chancellor	Jan - 1933
Reichstag Fire	Feb - 1933
Enabling Act	Mar - 1933
Trade Unions banned	Mar - 1933
Night of the Long Knives	Jun - 1934
Hindenburg dies	Aug - 1934
Hitler is Fuhrer	Aug - 1934

4. Who voted for the Nazis?

Chancellor: a senior state or legal official of Germany.
Enabling Act: a statute empowering a person to take certain action, especially to make regulations, rules, or orders.
Communism: a system of social organization in which all property is owned by the community and each person contributes and receives according to their ability and needs.

5. Elimination of Opposition

Hitler eliminated political opposition through the following steps:

- Used control of the police to beat up opponents
- Blamed Reichstag Fire on the Communists
- Passed the 'Protection Law' giving Hitler more power
- Passed the 'Enabling Act' allowing Hitler to pass laws without approval from the Reichstag.
- Gestapo and concentration camps formed
- Night of the Long Knives

KNOW IT

1. What is an economic impact of the Great Depression?
2. How were people affected by the Great Depression socially?
3. Why did extreme parties become more popular?
4. How did the Nazi's promise to fix unemployment?
5. Who was afraid of the communists and why?
6. How did Hitler change his tactics after the Munich Putsch?

THINK IT

Give at least one example of how each of the following factors allowed Hitler to tighten his grip on power between January 1933 and August 1934:

- The use of law
- Political scheming
- Bullying and aggression
- Chance and opportunism

GRASP IT

Describe two reasons why the Nazi Party became popular. 4 marks.

In what ways were the lives of Hitler's opponents affected by his moves to become dictator of Germany? 8 marks.

Year 10
History

Germany and the Depression

Year 10

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.

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

Hospitality and Catering: Health and Safety

Year 10

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.

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 bolognaise

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 media Industry

Year 10

1. Research Methods, Sources and types of data

Primary research methods - focus groups - interviews - online surveys - questionnaires.
Secondary research sources - books and journals - internet sites/research - magazines and newspapers - television - Research data - qualitative information - quantitative information
Quantitative data is data that can be measured (think quantity) for example: 93% of customers are happy; The average number of goals in a game was 3.18

Qualitative data describes the quality of something
for example: Many customers were unhappy with the quality of food saying it seemed bland, tasteless and underwhelming. Customers loved the new ride calling it incredible, scary and a real rush.

2. Media Codes

Symbolic codes are not a part of the media product itself, but are part of our culture and experience. E.g rings are used in the image below to indicate that the image refers to a wedding.
Technical codes within film and television include lighting, camera movement, tra nsitions and sound.
Written codes apply to written text or dialogue in a script. Handwritten font could be used to show writing by a child or a more rustic feel.

3. What does a workplan contain?

Workflow – this is the order in which tasks are carried out – they can be indicated by an arrow

Resources – Tasks will always need resources. Resources can be either people, hardware or software. It is possible for two tasks to be done at once if there is more than one person and enough equipment.

Contingencies – If something goes wrong then there needs to be a way to fix the problem. A workplan will contain either extra time or alternatives in case of a problem, such as bad weather.

4. Workplan terms

Tasks - the main parts of a project that need to be completed

Activities – These are what needs to be done to complete a task – they are also known as sub-tasks

Durations – how long a task or activity will take to complete

Timescales – How long a project will take to complete

Milestones – A significant achievement in a project – these take no time to complete but are achieved when other activities or tasks have been completed

5. Mise-en-scène

Mise-en-scène comes from the French meaning 'setting on the stage'. It covers anything the camera sees to create an overall feel, such as:
The arrangement of the set and props
Framing of the scene in the camera, lighting and colour
Costumes and position (blocking)

KNOW IT

Know the reasons for, and benefits of, conducting research

Know the advantages and disadvantages of primary and secondary research and data
How research is carried out using different methods and/or sources

The advantages and disadvantages of each primary research method and secondary research source

The differences between qualitative and quantitative data/information.

THINK IT

Understand the different technical, symbolic and written codes used to convey meaning, create impact and/ or engage audiences

How codes are used to convey meaning, create impact and/or engage audiences

How the codes used relate to audience, purpose and context

How the combination of content and codes work together to convey meaning, create impact and engagement

GRASP IT

Apply the research necessary for the brief

Apply the components and conventions of each type of research

Use mind-maps and mood-boards as part of grasping the understand of the brief

What makes the mind map and mood board effective.

How to improve the effectiveness of the documents for users in given contexts

Year 10
iMedia

iMedia- The Media Industry

Year 10

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

4.Hypodermic Needle Theory

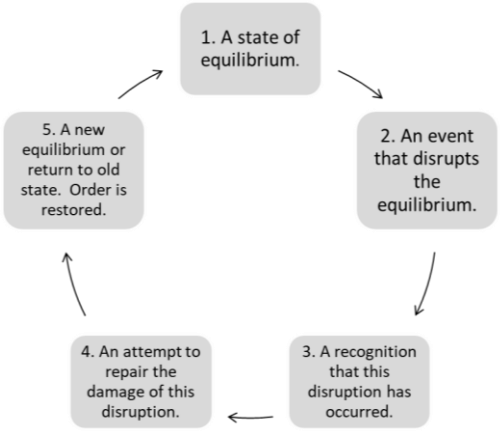
The media injects ideas and views into the brains of the audience therefore controlling the way that people think and behave. People are often seen as passive.

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



3. WOW WORDS

Denotations = what you can see

Connotations = What is suggested or implied

Representation = People, Places & Idea

Intertexuality = 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 ReceptionTheory

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

1. What are the pleasures and rewards for music video audiences? (Gratification Theory)
2. How has technology enabled self-production of music?
3. Explain how camerawork, sound and editing make meanings in the extract from His Dark Materials, The City of Magpies.
4. 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)*

Year 10
Media Studies

Audiences

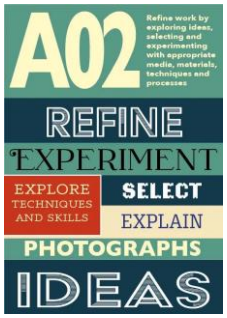
Year 10

Photography: NEA

1: Develop ideas through investigations

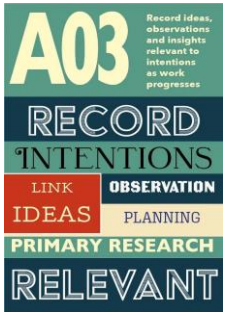
Photographer / Artist research pages.
- Visits to exhibitions and galleries.
- Your own responses in the style of the artist.
- Interviews with artists/ photographers.
- Annotate and analyse what you have found out.

2. Refine work by exploring ideas and selecting and experimenting with appropriate techniques



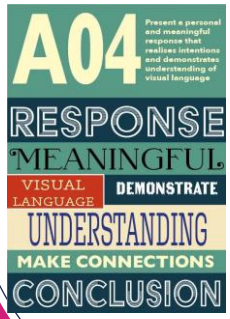
Experimenting with a range of different materials and techniques.
- Photo-shoots exploring different techniques.
- Selecting best photographs from Photo-shoots.
- Using Photoshop to edit photographs further in a creative way.
- Creating hand edits
- Create photograms/ cyanotypes/ Double exposures.

3. Record ideas, observations and insights relevant to their intentions in visual and/or other forms.



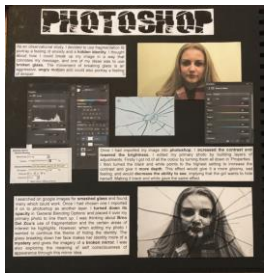
- Title page
- Mind Map.
- Mood-boards.
- Planning Photo-shoots.
- Photographs.
- Contact sheets of Photoshoots.

4. Present a personal, informed and meaningful response. Completing a relevant and intentional final piece.



- Plans and drawings of final piece ideas.
- Mini mock-ups and experiments for final piece.
- Creating an original final piece, that is clearly inspired by your research and creative journey.
- Evaluation of final piece (how does your piece link to the project theme?).

5. Photoshop



Photoshop: Used to enhance and creatively edit digital photographs. - Always take screenshots using the “Snipping Tool” to evidence what you have done while editing.
Only use specific features and effects if there is a link to research. Not every Photograph needs to be edited.

6. Helpful Websites

https://digital-photography-school.com/digital-photography-tips-for-beginners/
Really informative website with lots of easy to follow tutorials for beginners in photography.

https://www.tate.org.uk/
The Tate website is a fantastic resource for finding out about exhibitions you could visit for primary research (AO1).

Year 10

KNOW IT

Pattern - Pattern photography utilizes elements that are repeated. The repetition of lines, shapes, tones or colour can create interesting images.
Composition - Composition is the manner in which elements are positioned within a photo
Juxtaposition – Juxtaposition is where the photographer puts two objects close to each other and tries to attract the viewer's attention to their differences
Brightness - Brightness refers to the overall lightness or darkness of the image.
Contrast - Contrast defines the range of tonal difference between the shadows and lights of an image.
Hue - Photographers generally think of hue as referring simply to a specific colour.
Saturation - Saturation refers to the colour intensity of an image.
Monochrome – In monochrome photography, tones of a single colour are used to represent all the different colours within an image, usually tones of grey.
Leading Lines - Leading lines are lines that appear in a photograph that have been framed and positioned by the photographer to draw the viewer's eye towards a specific point of interest.

THINK IT

1. Can you provide background information to the photographer's work?
2. What do you see, what is the style, what is in the image? Can you describe the photograph?
3. What does it make you think of, feel or realise?
4. What do you think the photographer is trying to communicate?
5. How does the image communicate this message?
6. What emotions are represented?
7. What would you like to know about the photograph?
8. What do you like and dislike about the photograph and why?
9. How do you think the photograph has been created?
10. What ideas can you take from the photograph? Which ideas can you use in your own work?

GRASP IT

1. Select one of your own photographs and use the following visual language to talk about your photograph.

10 things to talk about.

Depth
Colour
Composition
Contrast
Perspective
Light
Line
Movement
Space
Colour

Colour	Composition	Feeling	Style	Light
Blend	Background	Alive	Abstract	Artificial
Bright	Blurred	Atmospheric	Derivative	Dark
Clashing	Complex	Delicate	Distorted	Evening
Cold	Confused	Depressing	Emotional	Fierce
Deep	Distance	Dignified	Exaggerated	Gentle
Dull	Eye line	Disturbing	Exterior	Harsh
Glowing	Focus	Fresh	Fake	Hazy
Harmonious	Foreground	Expressive	Fantasy	Intense
Intense	Form	Humorous	Figurative	Natural
Luminous	Middle	Imposing	Impressionistic	Shady
Mixed	ground	Nostalgic	Religion	Shadowy
Opaque	Near	Sad	Representation	Warm
Pale	Perspective	Landscape	al	
Pastel	Proportion	Sentimental	Still life	
Pure	Scale		Sketch	
Secondary	Shape		Surreal	
Translucent	Symmetry		Symbolic	
Transparent				
Vibrant				
Warm				

Year 10 Photography

NEA

Year 10

Physical Education: Coordination activities

1. Table tennis

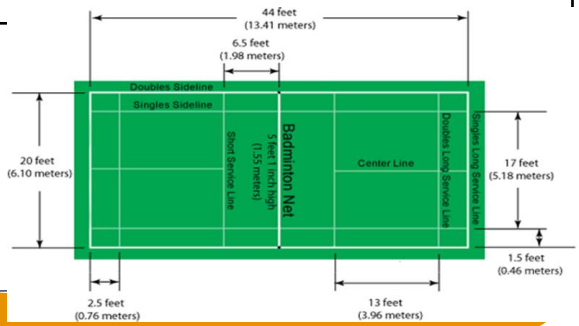
- To start a point, the server must stand at the back of the table and can serve either forehand or backhand. The ball must be thrown up either equal to or above the height of the net before striking the ball and the ball must be thrown from an open palm to stop finger spin.
- If the ball hits the net on a serve but continues over the other side then a 'let' is played.
- Players are allowed to hit the ball around the side of the net.
- The ball must bounce on a player's side of the table before playing their shot.
- During play, competitors are not allowed to touch the table with their non-bat hand. If they do, the point is conceded.
- Players must swap ends at the end of a game, and in the final match players will switch ends after five points.

2. Volleyball

- To start a point, the server can serve from anywhere behind the end line, hitting into the opposing team's side of the court.
- Each team is allowed a maximum of three touches on their side of the court before sending the ball back over the net after the serve.
- 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 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 one place clockwise so that everyone gets a turn to serve

3. Badminton

- There are two forms of badminton, singles and doubles (it's also possible to play mixed doubles).
- Each player can only hit the shuttlecock once.
- A game always starts at love all (0-0)
- A game is played up to 21 points; the game must be won by two clear points
- A game always starts with a serve from the right hand box.
- All serves must be hit into the diagonal service box.
- Odd numbers from the left, even numbers to the right.
- The serve must land beyond your opponents service line
- Whoever wins the point serves next.
- You cannot hit the net with your racket or body, if you do this is automatic loss of the point.



KNOW IT

1. Identify the different types of serve you can play.
2. State two attacking shots you can play in order to win a point.
3. What spaces on court should you look to hit shots into?
4. Which components of fitness apply to these sports?
5. What are the 4 stages of a warm-up?

THINK IT

1. After playing a shot on court where should you look to return to?
2. Describe the trajectory and target area for each type of serve.
3. Describe the difference between both attacking shots including trajectory and targeted landing area.
4. Why do we need to attack space?
5. What happens at each stage of a warm-up?

GRASP IT

1. Explain what shot could you play after each type of serve to attack space on court and why.?
2. Explain when you should perform each type of attacking shot and why?
3. Explain why it is important to not return the shuttle/ball if it is heading off the court.
4. Explain how we can link shots together to attack space at the front and back of the court.
5. Provide 3 specific drill rehearsal practices

Year 10

Physical Education

Coordination activities

Year 10

GCSE Physical Education: Paper Two

1. 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

2. Social groups & engagement factors

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

3. Health, fitness & well-being

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

Endomorph

4.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.

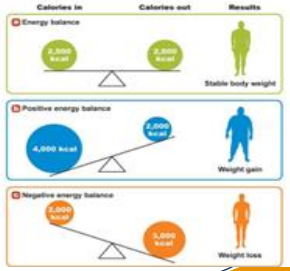
5. Performance Enhancing Drugs, Player & Spectator Conduct

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

6. Energy, Diet, Nutrition & Hydration

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

The Concept of Energy Balance



KNOW IT

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

THINK IT

1.Pick a skill and place it on a continuum to cover all factors.

2.Explain each stage of the information processing model.

3.How can a coach use mechanical guidance in swimming?

4.Explain the best type of feedback for a beginner.

5.What factors can be measured in an invasion game?

6.Describe one disability for which sport is adapted.

7.How is blood doping carried out?

8.Explain one negative lifestyle factor.

GRASP IT

1.On a continuum describe where a rugby conversion would sit, give reasons for your answer.

2.Using a sport of your choice give an example of what Input might be during a competitive match.

3.Evaluate the use of guidance for an elite performer.

4.Explain the difference between health, fitness & well-being

Year 10

GCSE Physical Education

Paper Two

Religious Education: Islamic beliefs

Year 10

1. The nature of Allah

TAWHID is arguably the most important belief in Islam. This is the belief in Islam that there is only one God and this God has no equal, partner or children (e.g. a 'son', as Christians believe). He created everything. Only he should be worshipped; worshipping other gods is a major sin called **shirk**. It is a shared belief between all Muslims. It is demonstrated in the wording of the **Shadahah**, the declaration of faith:

"There is no God but Allah and Muhammad is his messenger".

2. The Sunni-Shi'a divide

After the Prophet Muhammad died there was conflict over who should succeed him as the leader of Islam. Essentially from this disagreement, the divide between Sunni and Shi'a Islam formed.

Sunni	Shi'a
Believe that the first four caliphs were "rightly guided"	Believe that Ali, the Prophets Son-in-law should have succeeded Muhammad.
Believe that Muslim rulers should follow the Sunna or The Prophet Muhammad's example	Believe that all Muslim rulers should be descendants of the Prophet Muhammad.
Claim that the Shi'a have distorted many the meaning of passages of the Qur'an.	Claim the Sunni have distorted the meaning of many passages of the Qur'an

3. The six articles of faith

In Sunni Islam, there are six main articles of faith:

1. **Tawhid**: means having absolute faith in the oneness of God.
2. **Malaikah**: Muslims believe that God passed messages on to humans via malaikah, angels.
3. **Kutub**: The holy books of Islam should be respected. Especially the Qur'an, which is the direct and unchanged word of God.
4. **Nubuwwah**: Muslims believe the prophets should be respected but never worshipped.
5. **Akirah**: All Muslims believe that when they die, they will be judged by God and sent to either Jannah or Jahannam.
6. **Al-Qadr**: Muslims believe that everything in the universe is following a divine masterplan and Allah knows or decides everything that will happen.

4. The five roots of Usul ad-Din

In Shi'a Islam, there are five key beliefs, known as the 'foundation of faith' or the 5 roots...

1. **Tawhid**: Oneness of God
2. **Adl/Adalah:** Justice of God
3. **Nubuwwah**: Prophethood
4. **Imamat**: Leadership
5. **Qayamat**: Resurrection

5. Risalah (Prophethood)

Muslims believe that there have been 124,000 prophets (messengers) sent by Allah to humankind (25 are named in the Qur'an). The first of these messengers was Adam, and the last was Muhammad (The seal of the Prophets). In Muslim belief, every Islamic prophet preached Islam. The beliefs of charity, prayer, pilgrimage, worship of God and fasting are believed to have been taught by every prophet who has ever lived.

6.WOW WORDS

Allah: the Arabic language equivalent to the English word "God" with a capital "G". The word "Allah" cannot be made plural, a fact which goes hand-in-hand with the Islamic concept of God.

Shi'a: A Muslim denomination totaling approx. 11% of Muslims

Sunni: A Muslim denomination totaling approx. 85% of Muslims

KNOW IT

1. What Muslims believe in the 6 articles of faith?
2. What is **Tawhid** ?
3. What is **Malaikah**
4. What is **Kutub**
5. What is **Nubuwwah** ?
6. What is **Akirah** ?
7. What is **Al Qadr** ?
8. What are the 5 roots of (Usul ad-Din) Shi'a Islam ?
9. What is most important belief for all Muslims?
10. Sunni Muslims make up around what percentage of Muslims from around the world.?
11. What is the key difference between Sunni and Shi'a Muslims?

THINK IT

1. Muslims belief that God is omnipotent. What does this mean ?
2. What are the five roots in Usul ad-Din in Shi'a Islam ?
3. What are the six articles of faith in Suni Islam ?
4. How does the belief in Kutub (Holy Books) affect Muslims today?
5. Explain the importance of the six articles of faith to Sunni Muslims.

GRASP IT

1. Evaluate why Tawhid is believed to be the most important of all beliefs within Islam?
2. How does the belief in Akirah affect how a Muslim lives their life today?
3. Write a report outlining the importance of the Prophet Muhammad to Muslims.

Year 10

Religious Education

Islamic beliefs

Year 10

Science: Biology – Homeostasis

1. Homeostasis

Homeostasis is the fancy word for keeping conditions in your body and cells at the right level. This is really important because your cells need the right conditions to work properly - this includes having the right conditions for enzymes to work.

You have loads of control systems in your body that keep conditions in your body steady such as **body temperature**, **blood glucose level** and **water level.** They can control conditions in the body using the **nervous system** or **hormones**.

Control systems are made up of three parts: **receptors**; **coordination centres** (including the brain, spinal cord and pancreas) and **effectors.**

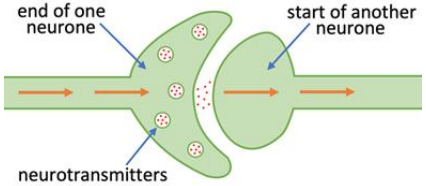
2. The Nervous System

Organisms need to respond to **stimuli** (changes in the environment) in order to survive. The nervous system means that humans can react to their surroundings and coordinate their behaviour. The nervous system is made up of different parts: **central nervous system**; **sensory neurones**; **motor neurones** and **effectors** (see figure 1)

The central nervous system (CNS) is a coordination centre. It receives information from the receptors, which are cells that detect stimuli. Sensory neurones carry the information to the CNS which coordinates a response (decides what to do about it). The CNS sends information along motor neurones to the effector which carries out a response. The effector can be a muscle or a gland.

3. Synapses and Reflexes

The connection between two neurones is called a **synapse.** The nerve signal is transferred by chemicals which diffuse across the gap. These chemicals then set off a new electrical signal in the next neurone.



Reflexes are rapid, automatic responses to certain stimuli that reduce the chances of being injured. The passage of information in a reflex (from receptor to effector) is called a reflex arc. (see figure 2) The neurones in reflex arcs go through the spinal cord or unconscious part of the brain.

4. The Endocrine System

Hormones are chemical molecules released directly into the blood. They are carried in the blood to target organs and control things in organs and cells that need constant adjustment.

Hormones are produced and secreted by various glands, called **endocrine glands.** These glands make up your endocrine system (see figure 3) Hormones and nerve have differences .

Nervous System	Hormonal System
Short term	Long term
Very fast response	Slower response
Electrical impulses via neurones	Chemical messengers via blood

5. Controlling Blood Glucose

Blood glucose is controlled as part of homeostasis – **insulin** is an important hormone in this. Changes in blood glucose concentration are monitored and controlled by the **pancreas**.

1. Eating carbohydrates puts glucose into the blood
2. If glucose concentration gets too high, the pancreas releases the hormone insulin
3. Insulin causes glucose to move into cells (so it removes glucose from the blood)
4. Glucose is converted to **glycogen** in liver and muscle cells

6. Puberty and Menstrual Cycle

At puberty, your body starts releasing sex hormones that trigger off secondary sexual characteristics. In men the main reproductive hormone is **testosterone** which is produced by the testes and stimulates sperm production.

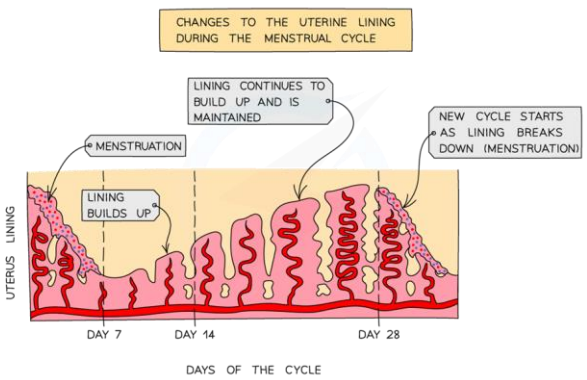
In women, the main reproductive hormone is **oestrogen**, which is produced by the ovaries and brings about physical changes such as breast growth and it is also involved in the menstrual cycle.

The menstrual cycle has four stages which is controlled by the hormones **oestrogen, progesterone, FSH and LH**.

Year 10

Science: Biology - Homeostasis

7. The Menstrual Cycle -continued

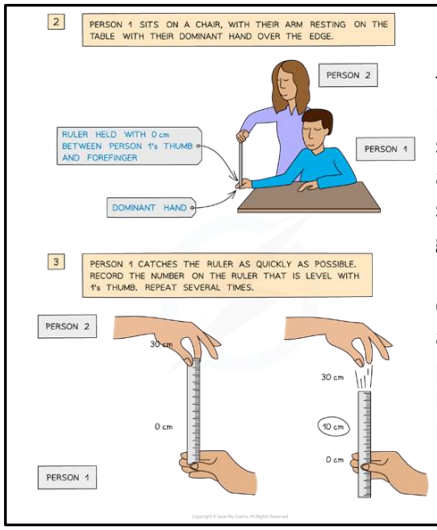


8. Controlling Fertility

Hormones can be used to reduce fertility. Oestrogen can be used to prevent the release of an egg so it can be used as a method of hormonal contraception. Progesterone also reduces fertility by stimulating the production of thick mucus which prevents any sperm getting through and reaching the egg. The pill is an oral contraceptive containing oestrogen and progesterone which is 99% effective as preventing pregnancy but can cause side effects and doesn't protect against STDs.

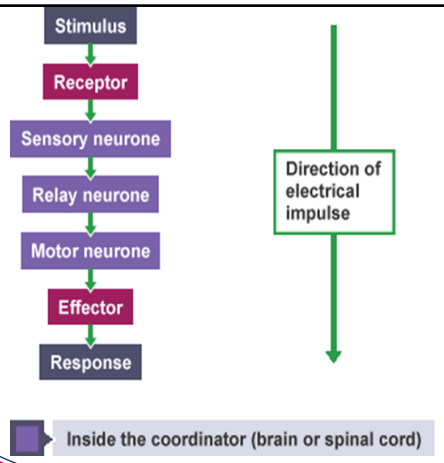
Hormones can also be used to increase fertility. The hormones FSH and LH can be given to women in a fertility drug to stimulate ovulation. Fertility drugs can also be used in **IVF** which involves collecting the eggs from a woman and fertilising them in a lab, growing them into embryos and then transferring them to the woman's uterus.

9. Required Practical: Ruler Drop

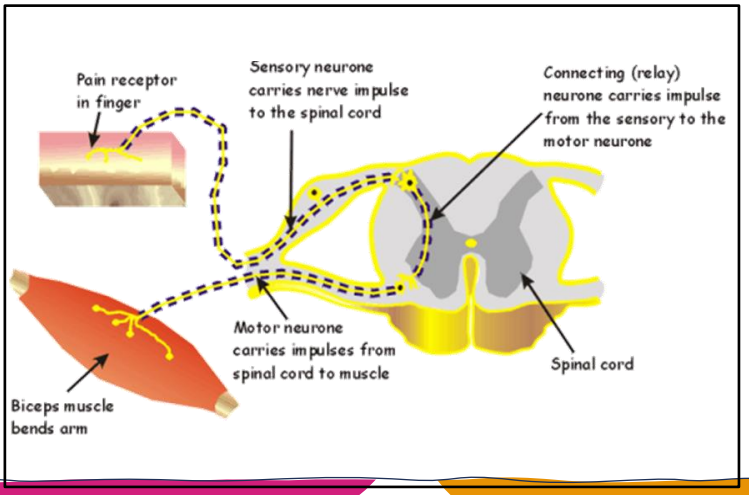


Reaction time is the time it takes to respond to a stimulus. It can be affected by factors such as age, gender and drugs. In this experiment, control variables are: same person; same hand; and same height.

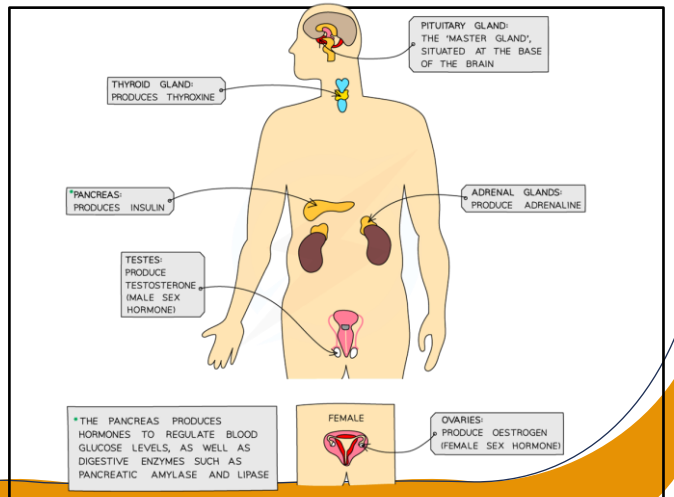
10. Figure 1 – Nervous System



11. Figure 2 – Reflex Arc



12. Figure 3 – Endocrine System



KNOW IT

1. What is homeostasis
2. What is the role of the nervous system?
3. What is a synapse?
4. What are hormones?
5. What hormones controls blood glucose levels?
6. What are the sex hormones?
7. What hormones can be used to control fertility?
8. What is IVF?
9. What is the aim of the ruler drop test

THINK IT

1. Describe two examples of homeostatic control mechanisms
2. What parts make up the nervous system
3. Describe what happens at the synapse
4. Describe the role of the endocrine system
5. What gland produces the hormone that controls blood glucose levels
6. What is the function of the sex hormones in both males and females?
7. Compare a barrier method and hormonal method of contraception
8. Explain the first stage of IVF
9. Write a short method for the ruler drop test

GRASP IT

1. Explain why homeostasis is important
2. Describe the function of the different parts that make up the nervous system
3. Explain how the reflex arc works
4. Describe the functions of the glands that make up the endocrine system
5. Describe how our body responds to an increase in blood glucose levels
6. What are the hormones that control the menstrual cycle and what is their function?
7. Explain how hormonal drugs can be used to prevent conception
8. Describe the IVF process
9. What is the independent, dependent and control variables in the ruler drop test

Year 10

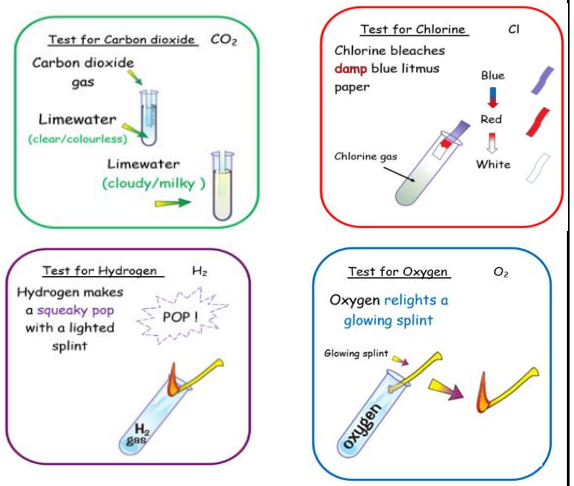
Science: Biology

Homeostasis

Year 10

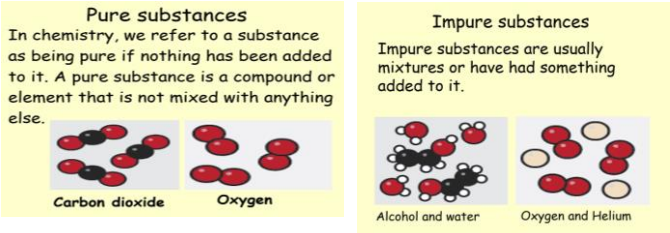
Science: Chemistry – Chemical Analysis

1. Testing for gases



2. Purity and Formulations

A **pure substance** is something that only contains one compound or element throughout – not mixed with anything else



Formulations are useful mixtures with a precise purpose that are made by following a formula. Each component in a formulation is present in measured quantity and contributes to the properties of the formulation so that it meets its required function e.g. formulations are important in the pharmaceutical industry when altering the formulation of a pill/drug

3. Wow Words

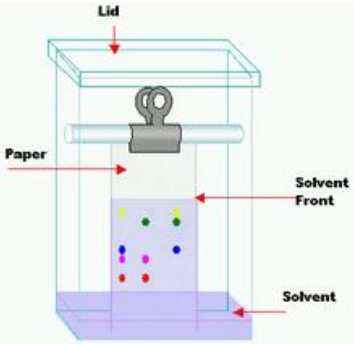
***Chromatography**– An analytic method to separate a mixture that has different colours.
***Chromatogram** – shows the results of a chromatography experiment.
***Stationary phase** - A phase in chromatography where the molecules can't move
***Mobile phase** - A phase in chromatography where the molecules can move
***Solute** – a substance dissolved in a solvent to make a solution
***Solvent** – a liquid in which another substance (solute) can be dissolved
***Solvent front** – the point the solvent has reached up the filter paper
* **Rf value** – the ratio between the distance travelled by a dissolved substance and the distance travelled by a solvent

4. Chromatography

Chromatography is an analytical method used to separate the substances in a mixture. In paper chromatography, the **stationary phase** is the chromatography paper and the **mobile phase** is the **solvent** (ethanol or water). In an experiment, the mobile phase moves through the stationary phase. How quickly it moves depends on how **soluble** the molecules are in the solvent, and how attracted they are to the paper.

Molecules with higher solubility and which are less attracted to the paper will be carried further up the paper.

5. Chromatography Required Practical



The result of chromatography analysis is called a **chromatogram.**

An **Rf value** is the ratio between the distance travelled by the dissolved substance (solute) and the distance travelled by the solvent.

You calculate Rf values using the formula:

$$Rf = \frac{\text{Distance travelled by substance}}{\text{Distance travelled by solvent}}$$

6. Rf Values

The further through the stationary phase a substance moves, the larger the Rf value.

Chromatography is often carried out to see if a certain substance is present in a mixture. To do this, you run a pure sample of that substance (a reference) alongside the unknown mixture. If the Rf values of the reference and one of the spots in the mixture match, the substance may be present.

The Rf value of a substance is dependent on the solvent you use - if you change the solvent the Rf value for the substance will change.

Year 10

Science: Chemistry – Chemical Analysis

7. Testing for anions

Tests for **anions** often give precipitates.

You can test for carbonate ions by adding a few drops of dilute acid. If carbonate ions are present, this will release carbon dioxide which will turn limewater cloudy.

You can test for sulfate ions by adding a couple of drops of dilute HCl followed by a couple of drops of barium chloride solution. If sulfate ions are present, a white precipitate of barium sulfate will form.

You can test for halide ions by adding a couple of drops of dilute nitric acid followed by a couple of drops of silver nitrate solution.

8. Testing for cations

Compounds of some metals produce a characteristic colour when heated in a flame so you can test for various metal ions by heating your substance and seeing whether the flame turns a distinctive colour.

Element	Ion	Flame test colour
Lithium	Li^+	Crimson
Sodium	Na^+	Yellow
Potassium	K^+	Lilac
Calcium	Ca^{2+}	Orange-red
Copper	Cu^{2+}	Green

9. Flame Emission Spectroscopy

During **flame emission spectroscopy** a sample is placed in a flame. As the ions heat up, their electrons become excited (they move to higher energy levels). When the electrons drop back to their original energy levels, they release energy as light.

The light passes through a spectroscope which can detect different wavelengths of light to produce a line spectrum. A line spectrum for an ion could look like this:

The combination of wavelengths emitted by an ion depends on its charge and its electronic arrangement. Since no two ions have the same charge and the same electron arrangement, different ions emit different wavelengths, and has a different line spectrum. The intensity of the spectrum indicates the concentration of that ion in solution so line spectra can be used to identify ions in a solution and calculate their concentrations.

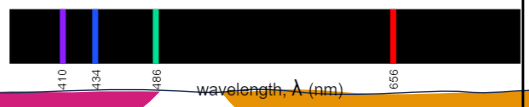
10. Flame Emission Spectroscopy

Flame emission spectroscopy can also be used to identify different ions in mixtures. This makes it more useful than flame tests, which only work for substances that contain a single metal ion.

Machines can analyse unknown substances. Chemists often use instrumental analysis (tests that use machines) such as flame emission spectroscopy, instead of conducting manual tests.
Advantages of using machines:

- very sensitive
- Very fast and tests can be automated
- Very accurate

Hydrogen Emission Spectrum



11. Wow Words

***Diatomic –** molecules that are found in pairs.
***Properties.** Describes how a substance behaves or what it looks like.
***Ion –** a charged particle formed when one of more electrons are lost or gained from an atom or molecule
***Cation** – positive ion.
***Anion** – negative ion.
***Precipitate –** a solid that is formed in a solution during a chemical reaction
***Flame emission spectroscopy -** an analytical technique which can be used to identify and find the concentration of metal ions in a solution

12. Testing metals with NAOH

Metal Cation	Effect of adding NaOH
Aluminium (Al^{3+})	White precipitate, dissolves in excess NaOH to form a colourless solution
Magnesium (Mg^{2+})	White precipitate, incoluble so remains in excess NaOH
Calcium (Ca^{2+})	White precipitate, insoluble so remains in excess NaOH
Copper (II) (Cu^{2+})	Light blue precipitate, insoluble in excess
Iron (II) (Fe^{2+})	Green precipitate, insoluble in excess
Iron (III) (Fe^{3+})	Red–brown precipitate, insoluble in excess

KNOW IT

1. Write a definition for a pure substance.
2. Write a definition a definition for an impure substance.
3. Write a definition for a formulation.
4. List 3 examples of a pure substance.
5. List 3 examples of impure substances.
6. List 3 examples of what a formulation is.
7. Identify the gas if lime water turns cloudy.
8. Identify the gas if damp litmus paper turns whit.
9. Give the name of two solvents.
10. Identify the gas if a glowing splint relights?

THINK IT

1. Write a method to carry out the required practical for chromatography.
2. Describe a method for testing for hydrogen.
3. Describe a method for testing for oxygen.
4. Describe a method for testing carbon dioxide.
5. What is the difference between the mobile phase and the stationary phase during chromatography.
6. What effect will impurities have on the melting point of a substance.
7. What conditions affect how long molecules are in the mobile phase.
8. If you were testing the same substance with different solvents, what would happen?
9. Calculate the rf value when the spot sample travelled 3.5 and the solvent line travelled 8.3.
10. Compare the difference in gradients for a pure and impure substance.

GRASP IT

1. Describe how you would can determine if a substance is pure.
2. How can you tell if a substance was impure by analysing a chromatogram.
3. Calculate the distance travelled by a substance if it has a rf value of 1.6 and the solvent travelled 8.3 cm .
4. thermal decomposition of calcium carbonate forms CO_2 and calcium oxide. Describe how you could test that this reaction is occurring.
5. During electrolysis, chlorine gas and oxygen gas is formed at the electrodes. How could you test this?
6. **Chem Only:** What colour flames are produced when compounds containing metal ions, copper, potassium and sodium are held in a Bunsen burner.
7. **Chem Only:** Describe a test to determine if it is iron (II) chloride?
8. **Chem Only:** Explain the advantages between flame tests and flame emission spectroscopy
9. **Chem Only:** Draw a flow chart to carry out a flame test.
10. **Chem Only:** In the test for halide ions, why is nitric acid added before silver nitrate is added.

Year 10

Science: Chemistry

Chemical Analysis

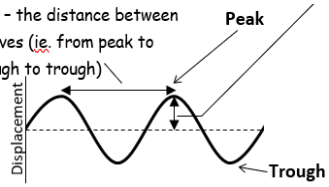
Year 10

Science: Waves

1. Waves

Waves travel through a medium (substance). The particles oscillate (vibrate) and transfer energy. The particles stay in the same place.

Wavelength - the distance between adjacent waves (ie. from peak to peak or trough to trough)



Amplitude - the maximum displacement from a waves undisturbed position (the horizontal mid-line)

Frequency - the number of complete waves that pass a point every second. 1 wave per second has a frequency of 1Hz (hertz).

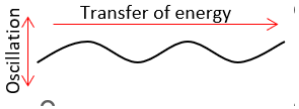
Time period - the time for a complete cycle of a wave: $T = \frac{1}{f}$

2.Transverse and Longitudinal

Transverse Waves The **oscillations** (vibrations causing the wave) are **perpendicular** (90°) to the direction of **energy transfer**.

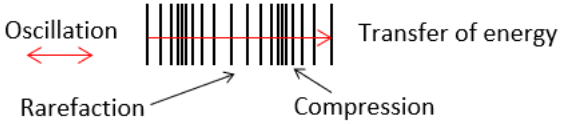
Examples are:

- All EM waves
- Waves on water
- A wave on a string



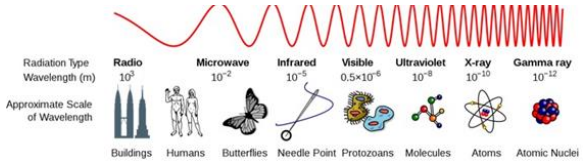
Longitudinal Waves

The **oscillations** are **parallel** to the direction of **energy transfer**. **Sound** waves travel as a longitudinal wave in air.



3. Electromagnetic Spectrum

EM waves such as light can be absorbed, transmitted or reflected by different surfaces. In a plane mirror the angle of incidence = angle of reflection



You need to know the properties, uses and dangers of EM waves.

4. Wave experiments

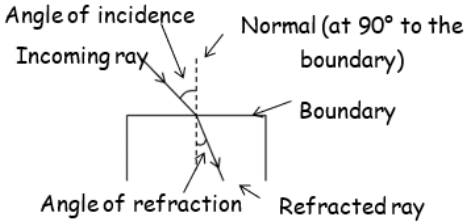
To measure the speed of sound two microphones held by a speaker (plugged into to a signal generator) can be connected to an oscilloscope. One microphone is moved away from the speaker until the waves line up on the oscilloscope. The distance between the microphones is the wavelength. Use $V = f\lambda$ to find the speed of sound (f = whatever frequency the signal generator is set to). ***The speed of sound in air is 330 m/s.***

The speed of water ripples and waves on a string can also be investigated and calculated using the waves speed equation.

5. Refraction (HT only)

Waves change speed when they cross a boundary between two materials of different density. If the wave enters a medium of higher **density** at an **angle** the ray bends towards the normal (diagram to left).

If it enters a medium **along the normal** then the wave does not change direction but the **wavelength** and **speed decrease**.

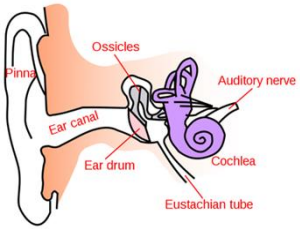


6.

Sound waves can travel through solids causing vibrations in the solid.

Within the ear, sound waves cause the ear drum and other parts to vibrate which causes the sensation of sound.

The conversion of sound waves to vibrations of works over a limited frequency range. This restricts the limits of human hearing to between20Hz and 20kHz

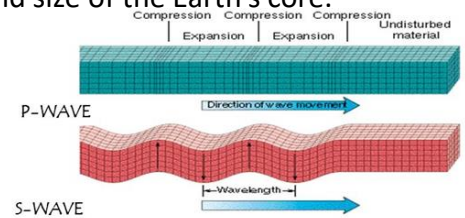


Year 10

Science: Waves

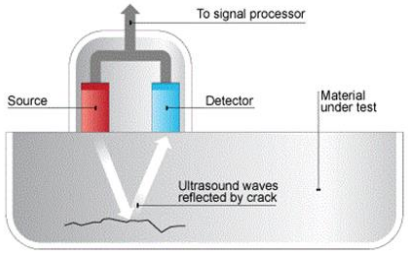
1. Seismic (Physics only)

Seismic waves are produced by earthquakes. P-waves are longitudinal seismic waves that travel at different speeds
through solids and liquids. S-waves are transverse, seismic waves that cannot travel through a liquid. P-waves and S-waves provide evidence for the structure and size of the Earth's core.



2. Ultrasound (Physics only)

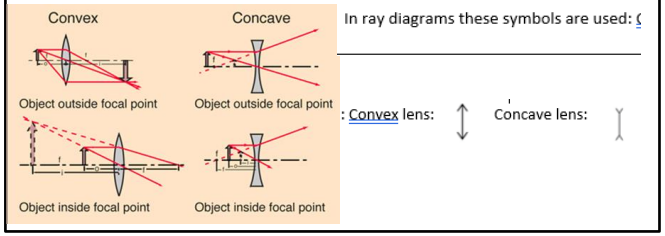
Ultrasound waves have a frequency higher than the upper limit of hearing for humans. They are partially reflected when they meet a boundary between two different media. The time taken for the reflections to reach a detector can be used to determine how far away the boundary is (because distance = speed x time). This allows ultrasound waves to be used for both medical and industrial imaging. Echo sounding (which is used to detect objects in deep water and measure water depth) works in a similar way.



3. Lenses (Physics only)

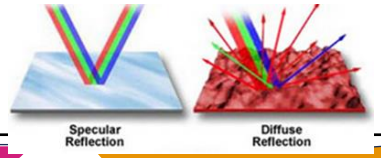
Lens forms an image by refracting light.
In a convex lens, parallel rays of light are brought to a focus at the principal focus. The distance from the lens to the principal focus is called the focal length.
The image produced by a convex lens can be either real or virtual.
The image produced by a concave lens is always virtual.

magnification = image height / object height



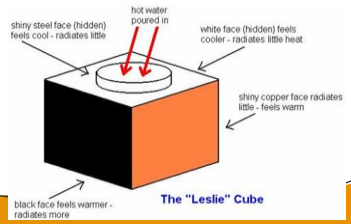
4. Visible light (physics only)

White light is a mixture of different colours (red, orange, yellow, green, blue, indigo and violet) with slightly different wavelengths and frequencies.
Reflection from a smooth surface in a single direction is called specular reflection.
Reflection from a rough surface causes scattering: this is called diffuse reflection.
Colour filters work by absorbing certain wavelengths (and colour) and transmitting other wavelengths (and colour).
If all wavelengths are reflected equally the object appears white. If all wavelengths are absorbed the objects appears black. Objects that transmit light are either transparent or translucent



5. Black body radiation (Physics only)

All bodies (objects) emit and absorb IR radiation. The hotter the body, the more IR radiation it radiates in a given time.
A perfect black body is an object that absorbs all of the radiation incident on it. A black body does not reflect or transmit any
radiation. Since a good absorber is also a good emitter, a perfect black body would be the best possible emitter.



KNOW IT

1. Define the term Wave?
2. Draw a wave a label it?
3. Describe the difference between frequency and period
4. Describe the difference between transverse and longitudinal waves?
5. What is reflection?
6. Describe the laws of reflection
7. What is the electromagnetic spectrum made up of
8. Describe the order of the waves on the EMS
9. Describe a use of radio waves, x-rays and microwaves
10. Describe the difference between reflection and refraction

THINK IT

1. Draw and label a wave describe the structures of a wave?
2. Explain the difference between a longitudinal wave and a transverse wave?
3. Explain the difference between reflection and refraction?
4. Describe the two equations for calculating speed of a wave?
5. Explain how light waves are different to sound waves?
6. Draw a wave with a large amplitude and short wavelength?
7. A seismic wave is detected 100m away, 5s after an explosion. Calculate the wave speed
8. Explain the difference between specular reflection and diffuse scattering
9. Give 1 similarity and 1 difference between gamma rays and visible light.
10. Explain a use and a danger of infrared waves?

GRASP IT

1. Explain the difference between S waves and P waves?
2. Describe some uses of ultrasound?
3. Compare the advantages and disadvantages of using ultrasound?
4. Explain what Sonar is and how it is used?
5. A ship detects a sonar pulse 3 seconds after it was emitted. The speed of the sound in the sea water is 1500 m/s.
   How far has the sound wave travelled
   How deep is the water
6. Explain why we can't hear sound in space?
7. Explain in terms of properties how a gamma ray is different to a infrared wave?
8. Explain the difference between emitters and absorbers of infrared radiation?
9. Compare the dangers and the uses of a x-ray and radio wave?
10. Explain why Earthquakes happen?

Year 10 Science: Waves

Spanish: Holidays

Year 10

1. Holidays in 3 tenses

Voy	I go
Viajo en	I travel by
Me quedo /me alojo en	I stay in
Fui	I went
Viajé	I travelled by
Me quedé/ me alojé en	I stayed
Iba	I used to go
Viajaba	I used to travel by
Me quedaba	I used to stay
Voy a ir	I'm going to go
Voy a viajar	I'm going to travel by
Voy a quedarme	I'm going to stay in

2. Transactional Language

¿Hay?	Is there?
Quisiera…	I would like
Para …. día(s)/noche(s)	For …. day(s) / night(s)
Para …. semana(s)	For …. week(s)
¿Cuáántas personas?	How many people?
He perdido….	I've lost…
Me han volado…	Someone has stolen…
¿Qué hora	What time….
¿Dónde está …?	Where is….?
¿Por dónde se va a……	How do I get to….?
¿C'uánto es?	How much is it?
¿Es posible recomendar…?	Can you recommend?
¿El tren / avion / bus sale/ llega a qué hora?	What time does the train/plane/bus leave/arrive?
¿En qué andén?	What platform?

3. Star words

Hoy	Today
Ahora	Now
Mañana	Tomorrow
Hace + time	….ago
Ayer	Yesterday
En el pasado	In the past
Por la mañana	In the morning
Por la tarde	In the afternoon
Por la noche	In the evening
Los lunes	On Mondays
Hasta	Until
Durante	During
Primero	First
Ahora mismo	Straight away
Antes	Before
Después	After

4. PALMO

How to describe a photo

P eople
A ction
L ocation
M ood
O pinion

En la foto hay ……. personas
Está/ están habl**ando/** com**iendo**
La escena toma lugar en ……
Parece(n)…….
Me chifla/ odio que …..

5. BORDUM

Normalment voy a España

JMe encanta España porque hace sol

Creo que es muy animado

Me quedo en un hotel lujoso para descansar

6. Using Uncommon Language

- Lo + adjective: lo bueno / lo malo / lo mejor / lo peor / lo fascinante
- Comparative: … es más interesante que … / es menos interesante que…
- Superlative: …es el más interesante / es la más interesante
- Using para (in order to) + infinitive: me encanta ir al cine para ver películas
- Negatives: No / nunca / nada / nadie

KNOW IT

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

THINK IT

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

GRASP IT

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

Year 10

Spanish

Holidays

Sports Studies

R185- Performance & Leadership in sport activities

Year 10

1. Topic Area 1: Key components of performance

- Performance and techniques of skills
- Appropriate use of tactics / strategies / compositional idea
- Decision making during performance
- Ability to manage / maintain own performance
- Awareness of role and contribution to the team

2. Topic Area 2: Applying practice methods to support improvement in a sporting activity

- Key components for assessing strengths and weaknesses in an activity
- Different types of practice and progressive drills
- Altering the context of performance
- Use of tools to aid evaluation

3. Topic Area 3: Organising and planning a sports activity session

- Appropriate venues
- Equipment
- Timing
- Supervision
- Contingency plan
- Introduction and conclusion
- Basic warm up and cool down
- Skill and technique development

4. Topic Area 4: Delivering a sports activity session

- Safe practice
- Timing
- Adaptability
- Reliability
- Leading a sports activity

5. Topic Area 5: Reviewing your own performance in planning and leading a sports activity session

- Planning
- Leading
- Improvements that could be made
- Opportunities to develop leadership skills for the future

KNOW IT

1)What are your two selected sporting activities?
2) What is a skill?
3) Name a skill used in each activity?
4) What is a technique?
5) Name a technique used in each activity?
6) What is a strategy?
7) What is a tactic?
8) What is arousal?
9) What is mental rehearsal?
10) How can you adapt to different roles?

THINK IT

1)What are your strengths in an individual sport?
2) What are your strengths in a team sport?
3)What are your weaknesses in an individual sport?
4)What are your weaknesses in a team sport?
5) What different practices can you use to help you improve?
6)How might changing the setting of your practice help?

GRASP IT

1)What methods of feedback tell you this is a strength of yours?
2)What feedback methods allow you to know this is an area of development?
3)How can your understanding of strategies and tactics improve your performances?
4)How can you manage arousal levels during a practice situation?
5)How can playing in different positions help improve your game understanding?
6)How can you vary practice for more experienced players?
7)What tools can you use to analyse performance?

Design & Technology Core Technical Principles

Year 10

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

Year 10

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.

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.

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.

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.

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**.

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 axel 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

Year 10

Mathematics

Hegarty Maths Home Support Guide

Homework Guidance

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

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

Student expectations:

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

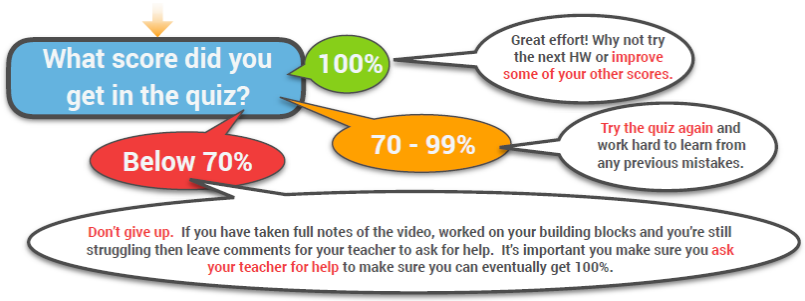
Learning maths is like learning anything. You need to practise and always put in effort. Trying your best and always putting in effort is crucial to the process. HegartyMaths is totally committed to helping students improve at maths.

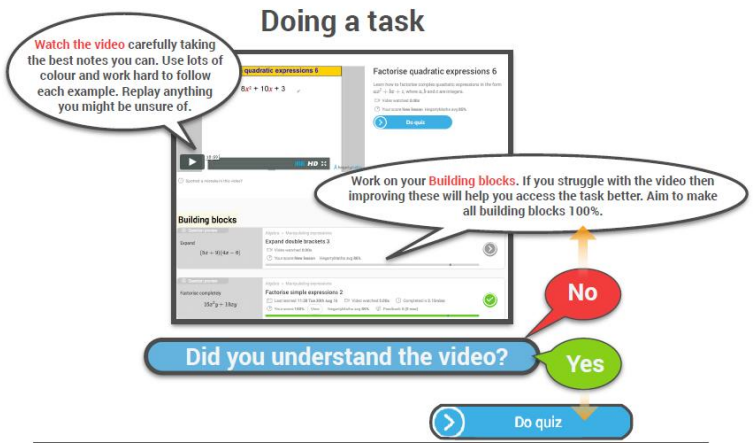
I was in the bottom set in maths in my school. I started doing lots of HegartyMaths and got better at maths. My teacher saw my progress in HegartyMaths and combined with my end of term assessment I was moved up two sets!

Happy Student @ Heston Community School

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

Happy Student @ Harris Academy Morden





Please refer to your student Planner for additional Maths resources.