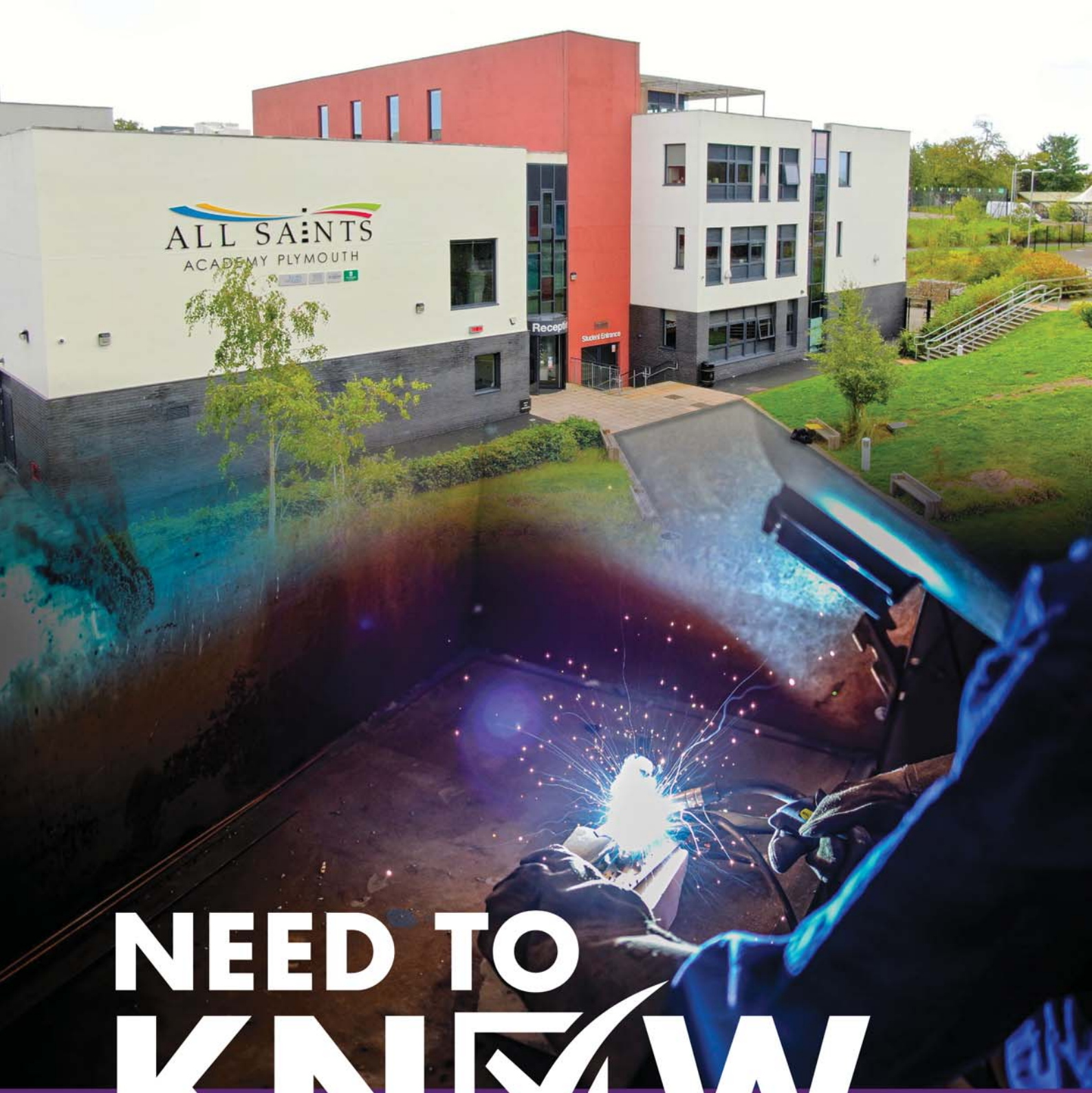

NEED TO KNOW BOOK

Year 10
Autumn Term 2024

ALL SAINTS
ACADEMY PLYMOUTH

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Week A

Period	Monday	Tuesday	Wednesday	Thursday	Friday
Tutor					
1					
2					
3					
4					
5					
6 or Extra Curricular					

Week B

Period	Monday	Tuesday	Wednesday	Thursday	Friday
Tutor					
1					
2					
3					
4					
5					
6 or Extra Curricular					

Homework Expectations

You are expected to compete up to 1hour and 30 minutes of Homework per night. This is split into 3 subjects at 30mins each.

	3 x 30 Minute Sessions		
	Subject 1 30 mins	Subject 2 30 mins	Subject 3 30 mins
Monday	Science	Science	
Tuesday	English	English	French
Wednesday	History/Geography/Travel & Tourism		Maths : Sparx
Thursday	Option A	Option A	Maths : Sparx
Friday	Option B	Option B	Maths : Sparx

Where is my homework?

Maths sparx

You maths homework is found at www.sparxmaths.uk.
You will complete your Compulsory Homework on a Monday.
If you have completed over 80% and are stuck on your last few questions, your teacher will help you on Tuesday.

Science Educake

Your Science homework can be found at www.educake.co.uk. You will answer a series of questions once a week. When it comes to revising, you will have the option of picking a topic, reading an overview, and taking a quiz.

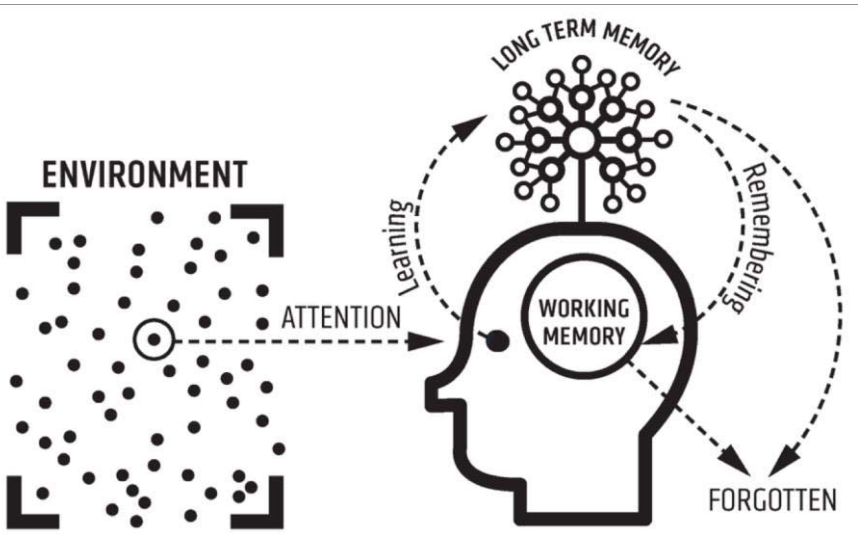
Other Subjects:

Homework for these subjects will be found in your Google Classroom in the form of a quiz. These quizzes are to test that you have learned the knowledge in your Need to Know booklet. We have high expectations of you and expect students to try their best and achieve the best possible marks. We will give rewards for excellent attainment and we will help everyone achieve by using after school interventions to make sure no one falls behind.

At All Saints, we are organised and don't make excuses for ourselves. If we know we have evening plans, we complete our homework the night before to make sure we are free to go to our planned event. We always want the best for ourselves and my teachers want the same.

Memory

Your memory is split into two parts: the working-memory and the long-term memory. Everybody's working-memory is limited, and can therefore become easily overwhelmed. Your long-term memory, on the other hand, is effectively limitless.



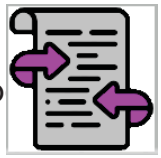
You can support your working memory by storing key facts and processes in long-term memory. These facts and processes can then be **retrieved** to stop your working memory becoming overloaded.

Need to know booklets are a key way to help you learn. Each booklet has the key information that needs to be memorised to help you master your subject and be successful in lessons.

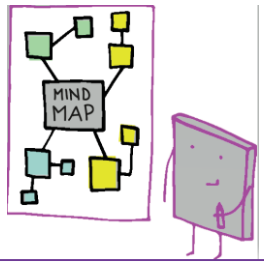
There is strong scientific evidence from cognitive psychology that shows the benefits of **self-quizzing** in promoting **retrieval strength**. This is your ability to quickly recall key facts related to your subject or topic

How should I self-quiz and how often?

There are lots of different ways to learn the material in your need to know b

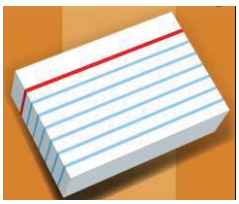


You could:



Draw a mind map, jotting down everything that you can remember from the need to know booklet.

Cover up one section of the need to know booklet and try and write out as much as you can from memory.



Make flash cards based on the need to know booklet and ask someone to quiz you.

SENTENCES.
HAND
ARTICULATE.
PROJECT
Eye contact

Make up mnemonics to help you remember key facts, then write these out from memory.

Making revision notes and self-quizzing will help you be a more successful learner.

Post 16 pathways of Plymouth — Sixth forms — Apprenticeships — Employment — Resources

Support — Opportunities — Choosing a career — Parents guide —Writing a CV— Employability skills

Year 10: Pop Culture

AQA Assessment Objective Checklist

AO1 Ideas & Artist Research

Develop ideas through investigations, demonstrating critical understanding of sources.

- I have researched **a wide range** of artists' craftsmen and designers.
- I have worked **in the style** of the artists using my own photographs.
- I have written about the artist and how they have informed and influenced my practice.

AO2 Experimenting with materials

Refine work by exploring ideas, selecting and experimenting with appropriate media, materials, techniques and processes.

- I have experimented with a wide range **of relevant media** and techniques.
- All my work has been refined.
- I have pushed ideas to their full limitations to show the process and development of my ideas.

AO3 Recordings and drawings

Record ideas, observations and insights relevant to intentions as work progresses.

- I have **drawn from observation** using a range of different media.
- I have worked from my **own photographs**.
- I have used **annotation to explain the development** of my research and ideas.

AO4 Personal response/final piece

Present a personal and meaningful response that realises intentions and demonstrates understanding of visual language.

- I have produced **my own** imaginative outcomes.
- My work shows **a clear connection** and a journey throughout my project.
- I have thought carefully about the **selection and presentation** of my work.

The Formal Elements:

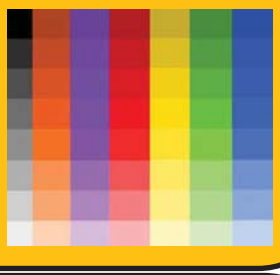
The Formal Elements of Art are the parts used to make a piece of art work. It is impossible to create a piece of art, even if it is only a doodle, without using some or all of them. The art elements are Line, shape, form, tone, texture, pattern, colour and composition. They are often used together and how they are organised in a piece of art determines what the finished piece

Line

A line is a path, left by a moving point. E.G. a pencil, or a paintbrush dipped in paint. A line can take on many forms. E.g. Horizontal, diagonal or curved. A line can be used

Tone

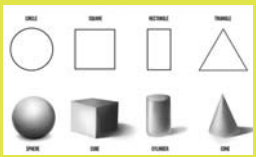
Tone means the lightness and darkness of something. This could be a shape and/or how dark or light a colour appears.



Shape & Form

A shape is an area enclosed by a line. It could be just an outline or it could be shaded in.

Form is a three dimensional shape such as a sphere, a cube or a cone.



Texture

Texture is the surface quality of something, the way something feels or looks like it feels. There are two types of texture, actual texture and visual texture.

Actual Texture: really exists so you can feel it or touch it.

Visual Texture: Created by using different marks to create the impression

Colour

There are three primary colours:

Red, Yellow, Blue

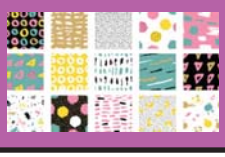
By mixing any two primary colours together, you get secondary colours.

Orange, Green and

Pattern

Pattern is a design that is create by repeating lines, shapes and tones or colours.

Patterns can be manmade such as a design on fabric or natural like the print on animal fur.

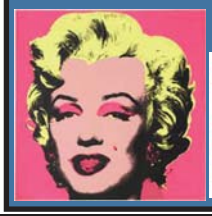


Art & Design

Andy Warhol

August 6, 1928 – February 22, 1987

An American artist, film director, and producer who was a leading figure in the visual art movement known as pop art. His works explores the relationship between artistic expression, advertising, and celebrity culture that flourished by the 1960s, and span a variety of media, including painting, silkscreen printing, photography, film, and sculpture.



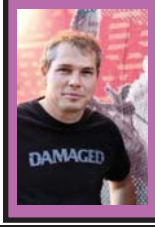
ROY LICHENSTEIN

October 27, 1923 – September 29, 1997

Roy Fox Lichtenstein was an American Pop Artist during the 1960s, along with Andy Warhol. Inspired by the comic strip, Lichtenstein produced precise compositions that documented while they parodied, often in a tongue-in-cheek manner. His work was influenced by popular advertising and the comic book style.

Shepard Fairey

Frank Shepard Fairey is an American contemporary street artist, graphic designer, activist, illustrator, and founder of OBEY Clothing who emerged from the skateboarding scene. He became widely known during the 2008 U.S. Presidential election for his Barack Obama "Hope" Poster. The institute of Contemporary Art in Boston has described him as one of the best known and most influential street artists.



Keywords & Vocabulary:

Composition	The position and layout of shapes on the paper
Line	Defines shape, the outer edges of something.
Tone	How dark or light a shape is.
Shape	The outline of objects.
Form	Appearing three-dimensional.
Controversial	Describes something that is likely to create disagreement.
Ben-day dots	A printing and photoengraving technique for producing areas of grey or various colours
Pop Art	An art movement that emerged in the mid- to late-1950s. The movement presented a challenge to traditions of fine art by including imagery from popular and mass culture,
Illustrator	An illustrator is an artist who creates two-dimensional images for companies/industries, such as fashion, children's books, magazines, web sites, and advertising.
Pop Culture	Refers to cultural products such as music, art, literature, fashion, dance, film, cyber culture, TV and radio that are consumed by the majority of a society's population. Popular culture is those types of media that have mass accessibility and appeal.
Mixed media	Artwork made up of a mixture of art materials.
Mass Media	Refers to a diverse array of media technologies that reach a large audience via mass communication.
Art Movement	A tendency or a style of art with a particularly specified objective and philosophy that is adopted and followed by a group of artists during a specific period that may span from a
Advertising	The activity or profession of producing advertisements for commercial products or services.

1.1– Reasons why accidents happen	
The environment	Children will experience minor accidents. - More children on a nursery setting can result in more accidents - Children have more space for physical play - Children have access to more large play equipment, than at home (e.g. climbing frame) - Children are learning new skills and their motor skills and coordination are developing - Children have access to more liquids (e.g. pouring drinks and water play) this can lead to spillages
Lack of supervision	In nurseries there are a higher number of children compared to adults. <u>Staffing ratios for 3-5 year olds are 1 to 8 children</u> Accidents may occur if: - insufficient (lack of) number of staff - poor time management (rushing packing away) - staff are not effectively deployed - staff are not adequately trained (for the age group or environment) - untrained or new staff are not closely monitored
Untrained staff	Staff must be trained on how to follow the rules and risk assessments.
Failure to use safety equipment	Equipment should be used, checked and adjusted to meet the needs of the child (e.g. safety straps on a highchair are adjusted to each child which sits in it)

Common Types of Childhood Accidents		
Type of Accident	How it might happen?	How it could be prevented?
Choking	- Laughing or gasping when eating - Trying to swallow a piece of food that is too large - Eating when lying down	- Keep small objects out of reach - Separate toys for older and younger children - Check age recommendations on toys - Ensure children sit up when eating, food pieces are small and they chew well
Suffocation	- If a child puts their head in a plastic bag - Something heavy falls on their chest - An item (e.g. blind cord/scarf) gets caught around their neck	- Avoid garments or objects which could catch around a child's neck - Keep plastic bags well out of reach - Follow safe sleeping guidelines
Burns	- Hot water - Fire - Electricity - Hot objects	- Keep dangerous objects out of reach
Falls	- Lack of balance, experience and coordination - Tripping or falling	
Electric Shocks	- Poking fingers or objects into plug sockets	
Drowning	- Areas with water	
Poisoning	- If poisons are swallowed, inhaled or come into contact with	
Cuts and grazes	- Tripping and falling when learning to walk - Tripping and falling when running, jumping, climbing, sliding, riding a bike	
Trapped Fingers	30,000 children trap their fingers each year. Caused by self-shutting fire safety doors, car doors and hinges.	

Topic Area 1– Create a safe environment in a childcare setting

Appropriate Safety Equipment

Cupboard lock– can prevent poisoning by preventing children picking up harmful substances. Can prevent cuts by preventing children picking up objects that can cause harm (e.g. knives).

Plug socket cover– Can prevent electric shocks by preventing children sticking objects or fingers into electric sockets.

Safety gates– Can prevent numerous accidents by preventing children having access to places they shouldn't when unsupervised (e.g. stairs,

Corner protector– Can reduce the risk of cuts and bruises if children were to bump or fall into the corner of tables.

Window lock– Prevents children from falling or climbing out of windows as the windows do not open fully.

Window safety film– Protects against glass shattering.

Wall bracket- can prevent children from pulling equipment onto themselves (e.g. cupboard drawers) this prevents risks of being crushed.

Non-slip flooring/Safety mats- can prevent the risk of slipping or falling as floor is secured or heavily weighted to prevent it moving. Additional accidents such as cuts, grazes or bruising

Creating a plan to prevent accidents in a childcare setting	
Different areas in nursery setting	A nursery setting is split into areas or zones. These include: - Sleep areas - Food preparation area - Book corner - Outside large equipment area - Mealtime and snack areas - Toilet and changing - Imaginary area - Play areas (indoor and outdoors)
Appropriate safety equipment	See images on this page. Consider what would be used in different areas above.
Placement of equipment	Some items need to be placed on a flat surface, with safety mats or away from harmful areas (e.g. walls, windows, other equipment).
Supervision	Ensuring adequate ratios of staff to children: (under two = 1 adult to 3 children // aged two = 1 adult to 4 children // children between 3 and 7 years = 1 adult to 8 children)
Educating children	Children learn through repetition. Helping them to understand rules by continually enforcing them and explaining how they help to keep people safe. (e.g. only four children on the climbing frame at once)
Risk Assessments	Staff should complete these before conducting activities, visits or change of layouts.

R093—Exam Content—Creative iMedia in the Media Industry

Studying this unit will enable you to learn about the different media sectors, products and the job roles within the media industry. You will learn that media products are designed for specific target audiences and that these audiences can be categorised.

Topic of Learning	I will need to know:	So that I can:
Media industry sectors	That there are two types of media –traditional media and new media. How has new media evolved? How has the Internet had an impact on how media products are created, viewed, used? Traditional media refers to media products such as film, television, radio and print publishing. New media refers to computer games, interactive media, the internet and digital publishing.	Explain in detail the different media sectors and how they have developed.
Media industry products	There are a vast range of media products that can be produced by and used in, different sectors. These media products can include– video, audio, music, animation, special effects (SFX, VFX) digital imaging and graphics, social media platforms and apps, digital games, comics and graphic novels, websites, multimedia, eBooks, augmented reality and virtual reality.	Explain using relevant examples the different media products and how they are used by different sectors.
Job roles in the media industry	The job roles within the media can fall into three categories—creative, technical and senior. How do these job roles work together to produce a media product? What are some of the responsibilities of each role? Some job roles are specific to pre-production, production and post-production. Depending on the size and scale of a product being produced, some job roles span multiple production phases. Creative: animator, graphic designer, illustrator, web designer. Technical: camera operator, web developer, sound editor, games developer. Senior: director, editor, creative director, production manager.	Identify the key job roles for a media design project and explain how their role contributes to the production of media products.
Purposes of media products	That media products are created for specific purposes. These include to advertise/promote, to educate, to entertain, to inform and to influence. The product style, content and layout are specifically planned to ensure that the final product meets the required purpose. That style, content and layout will include the use of colour, formal/informal language, positioning of elements, conventions of genre, tome of language, style of audio/visual representation.	Identify the different purposes of media products and explain how specific products meet their intended purpose.
Categories of audience segmentation	There are different categories of audience segmentation—these are age, gender, occupation, income, education, location, interests and lifestyle. How audience characteristics can influence the design and production of media products along with the reasons for and benefits of, audience segmentation.	Explain in detail the different audience categories and how a product would need to be designed to meet their requirements.

R093—Exam Content—Creative iMedia in the Media Industry

Studying this unit will enable you to learn about the different media sectors, products and the job roles within the media industry. You will learn that media products are designed for specific target audiences and that these audiences can be categorised.

Topic of Learning	I will need to know:	So that I can:
Client requirements and how they are defined	How to recognise keywords and information in client briefs. The requirements in client briefs that inform product planning eg type of product, purpose, target audience, content, genre, theme, timescales, client ethos, style. Why requirements in client briefs can constrain planning and production of digital products. How to interpret requirements in client briefs to generate ideas and plan. Know the different ways that client briefs are communicated such as; formal, commission, informal, meeting, written, negotiated.	Interpret a given client brief and understand all of the requirements in order to be able to effectively plan, design and create a digital product.
Planning documentation used to generate ideas	Concept sketches and visualisation diagrams can be used to develop ideas for a media product. Visualisation diagrams can be used to show design, layouts, colours, white space, placement of text and images and annotations can be included to further explain design ideas. Mind maps and mood boards. Both can be digital or hand drawn.	Sketch a detailed visualisation diagram which clearly shows the design of a media product that all members of a design team can follow.
Research methods, sources and types of data	The reasons for, and benefits of, conducting research. There are two types of research—primary and secondary research. Examples of primary research methods—focus groups, interviews, online surveys, questionnaires. Examples of secondary research methods—books, journals, internet sites, research, magazines, newspapers, television. Research data can be qualitative or quantitative information.	Identify the most appropriate method of research for a specific project and be able to explain the advantages/ disadvantages of each method of research.
Documents used to design and plan media products	The purpose of each planning document including, asset log, flow chart, script, storyboard and visualisation diagram, wire frames. The components and conventions of each document and the hardware and software used to create each one. What makes each document effective and selecting which document is appropriate for use. How to improve the effectiveness of documents for users in given contexts.	Identify the most appropriate document for the product being designed and to explain the key content required for each.
Components of work plans	The purpose of work planning and the components and role of a work plan. Components of a work plan include: tasks, activities, work flow, timescales, milestones, contingencies, resources such as hardware, software and people. The advantages of using work plans when planning a digital media product and how they can be used to manage time, tasks, activities and resources for individuals and large teams.	Create an effective work plan that includes all of the required content and can demonstrate how they can be used to

R093—Exam Content—Creative iMedia in the Media Industry

Studying this unit will enable you to learn about the different media sectors, products and the job roles within the media industry. You will learn that media products are designed for specific target audiences and that these audiences can be categorised.

Topic of Learning	I will need to know:	So that I can:
Legal issues that affect media	The legislation that relates to the creation of media products including, intellectual property rights to protect copyright, ideas, patents and trademarks. The purpose of, and reasons for, legislation to protect intellectual property. Data protection to protect the rights of data subjects in the collection, use and storage of personal data. Defamation: libel and slander. Privacy and permissions relating to the rights for recording images/taking photos in public places and the commercial use of images and invasion of privacy. Using copyrighted material: watermarks, symbols and creative commons licences.	Explain the key legislation relating to the creation of media products using relevant examples.
Media codes used to convey meaning, create impact, engage audiences	Media codes can be technical, symbolic or written. Ways that meaning and/or engagement are created using animation, audio eg dialogue, music genre, silence, sound effects, vocal intonation. Use of camera techniques eg angles, shots and movement. The use of colour, graphics, interactivity, lighting, mise-en-scene, movement, transitions and typography to help convey meaning, create impact and engage audiences.	Explain how the combination of content and codes work together to convey meaning, create impact and engagement.
Health and safety issues when creating digital media products	The health and safety risks/hazards in all phases of production, risk assessments and location recces. The purpose of risk assessments and location recces. The common risks and hazards in media production and what media producers can do to reduce these risks and hazards.	Identify and explain the commons risks/hazards in media production and how these can be reduced.
Media distribution platforms to reach audiences	The different platforms used to distribute media to audiences. Online: apps, multimedia, web. Physical platforms: computer, interactive tv, kiosks, mobile devices. Physical media: CD/DVD, memory stick, paper based.	Explain the characteristics of the different platforms and the advantages/disadvantages of each along with how their characteristics affect the selection of final product file format.
Properties and formats of media files	Image files: DPI/PPI resolution, pixel dimension, raster, bitmap, vector, compressed and uncompressed. Audio files: bit depth, sample rate, compressed, uncompressed. Moving image files: frame rate, resolution, SD, HD, 4K, 8K, animation, video, uncompressed, compressed. File compression: lossy/lossless compression.	Explain the properties of each media format to determine the most appropriate format and their limitations.

Week	I will need to know:	So that I can:
1 Design strategies	It is important that a designer will design products that will be successful, sell in the volume required, perform their function effectively, be friendly to the environment (sustainable) and appeal to customers. Therefore designers will follow a strategy that will help them to achieve this. These strategies include linear design, iterative design, inclusive design, user-centred design and sustainable design. Following one of these will help to ensure the designing stays on track.	Respond to a design brief effectively to produce an effective product.
2 Linear design Iterative design	Linear design is where a designer will follow a fairly rigid step by step process when designing. This starts with the design brief, research, design specification, designing, prototyping, testing/evaluating and manufacture. Iterative design is a more flexible approach to linear design. The designer has more flexibility to jump from one stage forwards or backwards, for example conducting further research at a later stage and usually spending a lot more time in the prototyping phase making many varying iterations (examples) of prototypes.	Follow a design process to create successful products as a result.
3 Inclusive design User-centred design	Inclusive design is where the aim is to design a product that anyone can use without excluding any type of user. For example a tin opener that can be used in the right or left hand, a TV remote that can be easily used by someone suffering from arthritis in their hands, a cash machine that can be used by users who are blind. User centred design involves carefully studying the needs and requirements of the user, often with lots of user observations and testing of prototypes with potential users.	Design products that can be used by anybody effectively.
4 Sustainable design	Products that are better for the environment are called sustainable products. So sustainable design means that environmental impact is the key consideration in the designing stage. A product can be sustainable in many ways. A re-usable plastic bottle will prevent hundreds of disposable plastic bottles being needed. An electric vehicle will produce less harmful emissions and use less fossil fuels. Products which have spare parts available can be repaired and made to last longer therefore not needing to be replaced. Some products are made to be ***biodegradable***.	Be responsible and protect our planet through my design decisions.
5 Product Analysis ACCESSFM part 1	Designers will investigate similar or competitor products to ensure that the product they design will be competitive and to learn from all the design decisions that have taken place in the design of the product. Often ***ACCESSFM*** is used, this is where the designer will analyse a product in terms of Aesthetics, Customer, Cost, Environment, Size, Safety, Function, Materials and Manufacture.	Create products that are effective and competitive.
6 Product Analysis ACCESSFM part 2	**Aesthetics** (The way the product looks and visually appeals), **Customer** (Who is the target market and how is the product catering for their needs and wants), **Cost** (What is the budget for the designing and development? What is to be the end price?), **Environment** (Where will the product be used and what does this mean the product needs to be like? Also what is the environmental impact of the product?), **Size** (How big is the product? Why is this? Have anthropometrics been considered or size of anything else), **Safety** (How safe is the product? Are there any safety symbols? Has it passed and safety/quality tests such as CE, BSI or WEE), **Function** (What is the function? Are there any other functions, how effectively and reliably does it perform?), **Materials** (What is the product made from? Why is this? Are these the most suited materials? How has it been manufactured?)	Know how to effectively analyse products and evaluate the success of prototypes.
7 The 6 Rs	Considered when designing any product and will help the designer create a ***more sustainable product***. Remember this means an environmentally friendly product. **Recycle** (can materials be recycled?), **Re-use** (can parts be used again?), **Reduce** (can less material or energy be used?), **Re-think** (can the design be changed? Can we step back to the original problem and find a radically new way to solve it with less environmental impact?), **Refuse** (refuse to use harmful materials or processes), **Repair** (make spare parts available and make it easy to repair and maintain so its life will be longer and not need replacing so quickly.)	Be responsible and protect our planet through my design decisions.
8 Market pull and technology push	Many factors will lead to the development of a product or the creation of a completely new product. These include ***technology push*** and ***market pull***. ***Technology push*** is where an opportunity for product development occurs because of a new technology or material. This new technology makes the possibility of a new invention possible. ***Market pull*** is where the customer's opinion will lead to developments in a design, where the demand for a new feature is the driving force behind the development.	Understand the reasons that products are developed.

A Christmas Carol

Prepared Introduction:

Dickens presents [focus] to criticise misanthropy in Victorian London. As a philanthropist, Dickens uses his didactic allegorical novella to show the need for social reform. Dickens crafts this through Scrooge's redemption arc as he progresses from a 'covetous old sinner' to being 'quite a baby' symbolising his redirth.

Key Quotations:

1	'**solitary** as an **oyster**'	'his own **heart** laughed'
2	'I wear the **chain** I **forged** in life'	'light as a **feather**'
3	'decrease the **surplus** population'	'If these **shadows** remain unaltered by the Future, the child will **die**.'
4	'Another **idol** has displaced me ... a **golden** one'	'as good as **gold**'
5	'biting weather' 'freezing fog'	'**Golden** sunlight; **Heavenly** sky'
6	'**gruff** old bell was always peeping **slily** down at Scrooge'	'**merry** bells'
7	'are there no **prisons**?'	'**Ignorance**' & '**Want**' 'Beware ... on his brow ... **Doom**'
8	'**Father** is so much kinder than he used to be, that home's like **Heaven**!'	'to Tiny Tim, who did not die, he was a second **father**'
9	'**edge** his way along the **crowded** paths of life'	'open their shut-up **hearts** freely ... as if they really were fellow-passengers to the **grave**'

'a strange figure—like a **child**: yet not so like a child as like an **old man**'	'a **jolly Giant**, glorious to see; who bore a glowing torch...Girded round its middle was an antique scabbard; but no sword was in it'	'a solemn **Phantom**, draped and hooded, coming, like a mist along the ground, towards him.'

A Christmas Carol

Philanthropy: the desire to help others.

Malthusian: reflecting Thomas Malthus' theories.

Exploit: make use of someone in an unfair way.

Avarice: extreme greed for wealth/material gain.

Ignorance: lacking knowledge, often deliberately.

Misanthropic: showing a dislike of other people.

Didactic: a story with a moral instruction or message.

Redemption: being saved from sin or wrongdoing.

Miser: someone who hoards wealth and spends little.

Foil – a character create to be another's opposite, with the purpose of exaggerating viewpoints through contrast.

Idol: something that is admired in a godlike fashion.

Solitary: existing alone.

Melancholy: sadness without having a particular cause.

Context: Victorian England
The Victorian Era of Britain saw a lot of changes in society. Industry took over and with it came a **wider class divide than before**. There was a **huge divide between rich and poor.**

Context: The role of the church
Religion was important during the Victorian era. Most people believed in **heaven as a reward for good behaviour and hell (or purgatory) as a punishment.**

Context: Ghost Stories
Ghost stories were hugely popular during the Victorian era. **Dickens wrote a ghost story, aimed at upper class readers, as he knew it would sell well.**

Context: Thomas Malthus and Malthusian economics
Malthus was an economist who believed that **if the population grew too large, there would be a crisis around food supply**. Malthus believed that to **help society and the population, some had to die.** Malthus' theory implied that this should be those least important to society (the working class!)

Context: Poor Law
In Victorian times, those is poverty were not viewed kindly. If someone was poor or in debt, they were sent to debtors jail or a workhouse. **This meant that poverty was seen as a crime and the working class, criminals.**

Key Themes:

Redemption	Supernatural
Social justice	Kindness
Exploitation	Greed

An Inspector Calls

Prepared Introduction

Priestley presents **[THEME]** to **criticise capitalist culture** within Edwardian England. As a socialist, Priestley wanted his audience to 'learn [the] lesson' that 'we are all responsible for each other'. Priestley crafts the cyclical structure to subvert the murder mystery genre so that we gradually realise that everyone must 'share our guilt'.

	Key Quotations	
1.	'**Burnt** her inside out'	'**Fire** and blood and anguish'
2.	'**unsinkable**, absolutely **unsinkable**'	'we're all in it – up to the **neck**'
3.	'obscene fat **carcass**'	'We are members of one **body**'
4.	'A **chain** of events'	'He's giving us the **rope** - so that we'll hang ourselves'
5.	'I'd give **thousands** - yes, **thousands**'	'**Millions** and **millions** and **millions** of Eva Smiths'
6.	'**Mummy**'	'**Mother** - stop - stop!'
7.	'(with sharp **sarcasm**)...You were the **wonderful Fairy Prince**.'	'young and **fresh** and charming''
8.	'Girls of that **class**-'	'You mustn't try to build up a kind of **wall** between us and that girl'
9.	'she was **pretty** and a good **sport**'	'Just **used** her...as if she was an **animal**, a **thing**, not a person'
10.	'Lower **costs** and higher prices'	'A man has to mind his own business and **look after his own.**'

Stage Directions:

'The lighting should be pink and intimate until the Inspector arrives and then it should be brighter and harder.'
' Arthur Birling.... Rather provincial in his speech. His wife is.... Her husband's social superior.'
'The general effect is substantial and heavily comfortable but not cosy and homelike.'

An Inspector Calls

Hindsight – to understand a situation only after it has happened.

Mouthpiece – a dramatic device where a character speaks for the author, communicating their point of view within the play.

Dramatic irony – when the audience has knowledge of the significance of some information that the characters lack.

Naïve – lacking in wisdom or judgement.

Remorseless – without regret or guilt.

Nomenclature – the selection process of naming things.

Microcosm/microsociety – literally 'small world'. A system that represents the larger word, usually through the use of symbolism and allegory.

Callous – cold-hearted and uncaring

Materialistic – excessively concerned by what one owns or money.

Omniscient - all knowing.

Allegory - a story with a hidden meaning

Cyclical structure - a story that begins and ends in the same way (In AIC, the doorbell being rung)

Objectification - referring to something as an object, rather than a human being.

Context: Priestley and Socialism
Priestley was born in **Bradford, Yorkshire.** He believed in the political idea of **Socialism.** A **Socialist society** would be one that shared wealth and created less of a divide between the rich and poor.

Context: Capitalism
A political idea whereby people keep as much as they earn. This creates a **divide in society** between those who are rich and those who are poor. **Priestley disagreed with Capitalism.**

Context: Hindsight
The play was written in 1947 but set in 1912. This means, as a writer, Priestley had experienced two world wars and the suffragette movement but this had yet to happen in the play.

Context: Suffragette Movement
The **suffragette movement began in the 1920's and gave women a voice** to create change in society. Sheila, as a character, is presented as a future suffragette. Before this, **women were seen as housewives and their value was mostly based on their appearance. This is seen thr9ugh the repeated use of the word 'pretty' to describe Eva Smith throughout the play.**

Context: Play Form
An Inspector Calls is a play which is designed to be performed on stage. A director of a play considers**: props, setting, costumes, lighting and staging.**

Key Themes:

Responsibility	Role of women
Social Justice	Greed
Equality	Reform

Macbeth

Prepared Introduction:

Shakespeare presents [focus] to criticise Machiavellian immorality in the Jacobean era. As a humanist, Shakespeare wanted to explore the extent to which Macbeth's hamartia or supernatural forces dictate his downfall. Shakespeare crafts this through the tragic arc of Macbeth from the almost deified start as 'Bellona's bridegroom' to the ignominious and hellish end of this 'dead butcher and his fiend-like queen'.

Key Quotations:

1	**'Fair** is **foul**, and **foul** is **fair'**	'the **equivocation** of the fiend That **lies** like **truth'**
2	**'Stars**, hide your **fires**, Let not **light** see my **black** and deep **desires**.'	**'Vaulting ambition'**
3	'look like the innocent **flower**, But be the **serpent** under't.'	'We have scotch'd the **snake**, not kill'd it: She'll close and be herself'
4	**'unsex** me here'	**'dash'd** the brains out'
5	'A **dagger** of the mind, a false creation'	'O, full of **scorpions** is my mind, dear wife!'
6	'Macbeth does murder **sleep"**	'To **bed**, to **bed**, to **bed**!'
7	'mine eternal **jewel** Given to the common enemy of man,'	**'Seyton**!--I am sick at heart'
8	'I shame to wear a heart so **white'**	'Out, damned **spot**!'
9	**'Neptune's ocean'**	'gash'd stabs look'd like a **breach in nature'**
10	'What **beast** was't then ... When you durst do it, then you were a **man'**	'Too full o'the milk of human kindness''

Prophecies:

beware **Macduff**	none of **woman born** Shall harm Macbeth.	Macbeth shall never vanquish'd be until Great **Birnam wood** to high Dunsinane hill Shall come against him.

Macbeth

Hamartia – tragic flaw

Ambition – desire to achieve success

Tragic hero – from Greek tragic theatre

Treachery – betraying trust

Regicide - the crime of killing the king

Divinely appointed – chosen by God

Paranoia – suspicion without true cause

Masculinity - typical behaviours associated with men and boys (such as violent, powerful etc)

Supernatural – things that cannot be explained (such as visions, hallucinations of ghosts)

Tyrant - to rule through fear and violence

Fate - decisions and futures predetermined

Free will - making our own choices to determine our future

Insanity -- to no longer think clearly/ the brain loses its ability

Context: Jacobean Era
Shakespeare wrote Macbeth during the Jacobean era. The king was King James I. King James was obsessed and terrified of witches. He wrote a book called Daemonologie to help identify witches. During his reign, witchcraft became illegal causing thousands to die.

Context: Shakespeare and money
In order to be successful and make money, Shakespeare needed King James to like his plays. As such, Shakespeare wrote Macbeth to impress King James by vilifying witches and traitors.

Context: Chain of Being
The Chain of Being was a belief of the Jacobean people there was a natural hierarchy (decided by God) in society. God and the king were at the top and most powerful, with dirt at the bottom. **If the Chain was broken this was considered a sin and an act against God, disrupting nature.**

Context: Divine Right of Kings
The belief that God chooses the king. If anything were to happen to the king, this would be an act against God and a sin.

Context: Gunpowder Plot
James was an unpopular king having brought his Protestant views from Scotland into England. A group of Catholic men, including Guy Fawkes, attempted to blow up the House of Parliament and murder him. They failed – but the country, and James, was shaken by this political turmoil.

Context: Women
Women were expected to be housewives and mothers.

Key Themes:

Violence	Insanity
Masculinity	Leadership
Supernatural	Relationships

Me, My Family and Friends Knowledge Organiser

(Theme 1: Unit 1)

Types of families	
la famille homoparentale	single-sex family
la famille nucléaire	nuclear family
la famille nombreuse	large family
la famille monoparentale	single-parent family
la famille d'accueil	foster family

	my	your	his/her
m	mon	ton	son
f	ma	ta	sa
pl	mes	tes	ses

Key words	
et	and
aussi	also
mais	but
très	very
assez	quite
toujours	always
quelquefois	sometimes
souvent	often
à l'avenir	in the future

Adjectives placed before the noun	
petit(e)	small/short
jeune	young
grand(e)	big/tall
beau/belle	handsome/ beautiful
joli(e)	pretty
nouveau/nouvelle	new
vieux/vieille	old

Family members	
la mère	mother
le père	father
la maman	mum
le papa	dad
la belle-mère	stepmother/ mother-in-law
le beau-père	stepfather/ father-in-law
la mère de la famille d'accueil	foster mother
le père de la famille d'accueil	foster father
les parents	parents
la sœur	sister
le frère	brother
la grande sœur	big sister
le grand frère	big brother
la petite sœur	little sister
le petit frère	little brother
la demi-sœur	half sister/step sister
le demi-frère	half brother/ step brother
la sœur adoptive	foster sister
le frère adoptif	foster brother
la grand-mère	grandmother
le grand-père	grandfather
les grand-parents	grandparents
la tante	aunt
l'oncle	uncle
le cousin/la cousine	cousin (boy/girl)
les cousins	cousins
la fille	daughter
le fils	son
le fils unique/la fille unique	only child (son/daughter)

Friends and partners	
l'ami(e)	friend
le copain/la copine	
le petit ami	boyfriend
le petit copain	
la petite amie	girlfriend
la petite copine	
la femme	wife/woman
l'homme	man
le mari	husband
le fiancé/la fiancée	fiancé(e)

Relationships with family and friends	
je m'entends bien avec...	I get on well with...
je ne m'entends pas bien avec...	I don't get on well with...
il/elle m'énerve	he/she gets on my nerves
je ne peux pas supporter	I can't stand
nous nous disputons	we argue
il/elle me fait rire	he/she makes me laugh

être (to be)	
je suis	I am
tu es	you are
il/elle est	he/she is
nous sommes	we are
vous êtes	you are
ils/elles sont	they are

Adjectives placed after the noun	
généreux/généreuse	generous
gentil(le)	kind
intelligent(e)	intelligent
jaloux/jalouse	jealous
méchant(e)	naughty/nasty
mignon(ne)	cute
paresseux/paresseuse	lazy
sympa	nice
timide	shy
casse-pieds	annoying
divorcé(e)	divorced
amusant(e) drôle	funny
désagréable	unpleasant
difficile	difficult
égoïste	selfish
célibataire	single
heureux/heureuse	happy
religieux/religieuse	religious
séparé(e)	separated
traditionnel(le)	traditional
charmant(e)	charming
fidèle	faithful
travailleur/travailleuse	hardworking
compréhensif/ve	understanding
égal(e)	equal
sévère	strict

Pets	
un chat	cat
un chien	dog
un hamster	hamster
un poisson rouge	goldfish
je n'ai pas d'animal	I don't have any pets

Superlatives (most)	
Le/la/les + plus + adjective	
Elle est la plus intelligente	She is the most intelligent
Il est the plus religieux	He is the most religious
Je suis la plus grand(e)	I am the tallest
Irregular- 'meilleur(e)(s)' (best)	
Elle est ma meilleure amie	She is my best friend

avoir (to have)	
j'ai	I have
tu as	you have
il/elle a	he/she has
nous avons	we have
vous avez	you have
ils/elles ont	they have

Comparatives (more/less/as)	
Plus/moins/aussi + adjective + que	
Elle est plus intelligente que moi	She is more intelligent than me
Il est moins religieux que Lucas	He is less religious than Lucas
Je suis aussi grand(e) que ma mère	I am as tall as my mother
Irregular- 'mieux' (better)	
Il travaille mieux que moi	He works better than me

Je voudrais... I would like	
avoir des enfants	to have children
me marier	to get married
avoir de l'humour	to have a sense of humour
adopter un enfant	to adopt a child
habiter avec...	to live with...

French

TOPIC 1: Me, my family and friends

Je m'appelle Emilie et *j'ai* quatorze *ans*	I'm called Emilie and *I'm* 14 *years old*
J'aurai 15 ans dans trois mois	I will be 15 years old in three months
Je pense que je suis *assez* typique	I think that I am *quite* normal
Quand j'étais petit, j'étais *un peu* pénible	When I was little I was *a bit* annoying
mais plus maintenant car *j'ai grandi*	but not anymore because *I've grown up*
Tout le monde dit que je suis sociable	Everyone says that I am sociable
et que j'aime m'amuser	and that I like to have fun
Il y a cinq personnes *dans ma famille*	There are five people *in my family*
Mes parents sont mariés depuis 2001	My parents have been married since 2001
Ma mère qui s'appelle Ellie est généreuse	My mum who is called Ellie is generous
mais mon père, Albert, est *très* sévère	but my dad, Albert, is *very* strict
Je m'entends bien avec ma soeur Aline	I get on well with my sister Aline
J'ai de la chance de *l'*avoir	I'm lucky to have *her*
Ma grand-mère est morte *il y a* cinq ans	My grandmother died five years *ago*
Elle était sympa et elle *me* manque	She was nice and *I* miss her
Je pouvais *parler de tout* avec elle	I could *talk about everything* with her
Hier je suis allée en ville avec mon ami	Yesterday I went into town with my friend
car il y avait le marché de Noël	because there was the Christmas market
Nous avons acheté des cadeaux pour...	We bought presents for...
Ensuite nous sommes allés *voir* un film	Next we went *to see* a film
À l'avenir je voudrais *me marier*	In the future I would like *to marry*
Mon mari/femme idéale serait...	My ideal husband/wife would be...
J'aurai un *grand* mariage romantique	I will have a *large* and romantic wedding
Bien que *j'aie* une grande famille	Although *I have* (subjunctive) a large family
je ne voudrais pas avoir des enfants	I wouldn't like to have children

Technology in Everyday Life Knowledge Organiser

(Theme 1: Unit 2)

Adjectives placed before the noun	
dernier/dernière	latest
vieux/vieille	old
nouveau/nouvelle	new

Adjectives placed after the noun	
chèr(e)	expensive
virtuel(le)	virtual
lent(e)	slow
pratique	practical
rapide	fast
super	great/super
accro	hooked
dégoûtant(e)	disgusting
dépendant(e)	dependent
gratuit(e)	free
isolé(e)	isolated
anonyme	anonymous
déçu(e)	disappointed

Avec/sans	
avec	with
e.g. je tchatte avec mes amis	I chat with my friends
avec moi	with me
avec toi	with you
avec lui	with him
avec elle	with her
sans	without
e.g. je déteste être sans ma tablette	I hate being without my tablet
sans moi	without me
sans toi	without you
sans lui	without him
sans elle	without her

Devices	
le portable	phone
le gadget	gadget
le lecteur MP3	MP3 player
l'ordinateur	computer
l'ordinateur portable	laptop
la souris	mouse
la tablette	tablet
le GPS	satnav
le smartphone	smartphone

Time phrases	
toujours	always
souvent	often
généralement	generally
normalement	normally
quelquefois	sometimes
rarement	rarely

Regular 'er' verbs	
Remover 'er' then add the appropriate ending (look at who is doing the action)	
je	-e
tu	-es
il/elle/on	-e
nous	-ons
vous	-ez
ils/elles	-ent

je voudrais (+ full verb) = I would like to
e.g. je voudrais me faire des amis virtuels

Aller (to go) + full verb	
je vais	I'm going to
tu vas	you're going to
il/elle va	he/she is going to
nous allons	we are going to
vous allez	you are going to
ils/elles vont	they are going to

Se server de (to use)	
je me sers de	I use
tu te sers de	you use
il/elle se sert de	he/she uses
nous nous servons de	we use
vous vous servez de	you use
ils/elles se servent	they use

Faire (to do/make)	
je fais	I do
tu fais	you do
il/elle fait	he/she does
nous faisons	we do
vous faites	you do
ils/elles font	they do

Justify your opinions!
'...parce que c'est/ce n'est pas'

What/which

Interrogative adjectives are usually used in questions and mean 'which' or 'what'. Like adjectives, they need to agree with the noun.

Quel (masculine singular)	e.g. Quel portable as-tu?	Which mobile have you got?
Quelle (feminine singular)	e.g. Quelle tablette est la meilleure?	Which tablet is the best?
Quels (masculine plural)	e.g. Tu te sers de quels réseaux sociaux?	Which social media do you use?
Quelles (feminine plural)	e.g. Quelles applications préfères-tu?	Which apps do you prefer?

Grâce à (thanks to)

When it is followed by a masculine singular noun, it becomes 'grâce au'
When it is followed by a feminine singular noun, it stays the same (grâce à la)
When it is followed by a masculine plural noun it becomes 'grâce aux'

Grâce au portable, on peut rester en contact avec ses copains.	Thanks to the mobile phone, we can keep in touch with our friends.
Grâce à la tablette, on peut regarder des vidéos dans la voiture.	Thanks to the tablet, we can watch videos in the car.
Grâce aux réseaux sociaux, on peut communiquer avec beaucoup de gens.	Thanks to social networks, we can communicate with lots of people.

Opinions on social media

(opinion + full verb)		
J'adore	regarder des vidéos sur TikTok	to watch videos on TikTok
	tchatter avec mes copains sur WhatsApp	to chat with my friends on WhatsApp
J'aime beaucoup	partager mes photos sur Instagram	to share photos on Instagram
	communiquer avec mes amis	to communicate with my friends
J'aime	partager des selfies sur Snapchat	to share selfies on Snapchat
	passer beaucoup de temps en ligne	to spend lots of time online
J'aime assez	faire partie d'un groupe sur Facebook	to belong to a group on Facebook
	regarder des clips video sur YouTube	to watch videos on YouTube
Je préfère	envoyer des emails	to send emails
	participer à un forum de discussion	to take part in an internet forum
Je n'aime pas	passer/poster des commentaires sur les photos	to leave comments on photos
Je déteste	me faire des amis virtuels sur les réseaux sociaux	to make virtual friends on social media

TOPIC 2: Technology in everyday life

Je me sers de mon portable *pour tchatter*	I use my phone *(for) to chat*
Je l'utilise aussi pour surfer sur internet	I also use it to surf the internet
Je ne m'en sers pas pour faire mes devoirs	I don't use it to do my homework
car l'écran est trop petit	because the screen is too small
J'aime écouter de la musique	I like to listen to music
et faire des recherches sur internet	and do research on the internet
Hier soir j'ai téléchargé des films	Last night I downloaded some movies
Puis je suis allée sur les réseaux sociaux	Next, I went on social media
et j'ai actualisé ma page personnelle	and I updated my homepage
Avant de *me déconnecter*	Before *switching off*
j'ai partagé un photo sur Instagram	I shared a photo on Instagram
Selon moi l'internet peut être dangereux	According to me the internet can be dangerous
Il est important de sécuriser son mot de passe	It's important to secure (y)our password
Il faut faire attention quand on est *en ligne*	You must pay attention when you're *online*
Et il ne faut pas *ajouter en ami*	And you must not *add as a friend*
les gens qu'on ne connaît pas	people that you don't know
D'autre part, *ce n'est pas* dangereux	On the other hand, *it's not* dangerous
Dans le passé les portables étaient *lents*	In the past phones were *slow*
Il était difficile de communiquer	It was difficult to communicate
Les ordinateurs étaient grands et *chers*	Computers were large and *expensive*
et la connexion n'était pas fiable	and the connection was not reliable
À l'avenir il y aura des robots	In the future there will be robots
et des voitures sans conducteur	and cars without drivers
La technologie sera plus avancée	Technology will be more advanced
et plus rapide dans vingt ans	and faster in twenty years

Commodities: Fruits and vegetables

Organic foods

Organic: production of food without fertilisers, herbicides or pesticides. The foods are free from trans-fats, GM food and most additives. Advantages: less ethical concerns, lower environmental impact, more sustainable & many people feel the food tastes better and is higher quality.
Disadvantages: that it has a lower yield and higher labour and so is more expensive to buy.

Growth & Process

Processed fruit and vegetables are useful alternatives to fresh. They can be; pre-prepared, canned, frozen, dried or juiced. This could be for convenience, to increase shelf life or allow availability all year round. All fruits and Vegetables need to be washed to remove insecticides, dirt, soil or insects before cooking or eating. This needs to be done in cold water. Any peeling needed should be done as thinly as possible.

Nutrient Value

Fruits and Vegetables contain a wide variety of nutrients including; carbohydrate (energy), Vitamins A (for vision) C (antioxidant, healing tissues, and iron absorption), B, E & K, Calcium, Folate (healthy blood cells & nervous system), Potassium (blood pressure and nervous function), Magnesium (teeth and bone health) Iron as well as fibre (gut health).

Classification

Fruit and Vegetables are classified according to the part of the plant they come from. Fruits are the part of the plant that carries the seeds, they can be; stoned, citrus, hard, soft berry or currants. Vegetables in the soil are; roots, tubers & bulbs. Vegetables above ground are; leaves, flowerheads, stems, fungi, seeds and pods. Vegetables in water are sea vegetables.

Storage

Ideally they should be consumed within a few days of purchase as this is when they will be at their most flavoursome and nutritious. All vegetables should be stored in a cool dry and dark place. Leaves such as spinach, cabbage, spring greens and broccoli should be kept in the salad drawer in a fridge. Root vegetables, bulbs and tubers will keep for several months in a dark dry place.

Commodities: Cereals

GM crops

Genetically modified foods (GMF) are developed to produce a product at a lower price and have greater benefit (durability and/or nutritional value). GM foods currently available have passed safety assessments and are not likely to pose a threat to human health. Future developments may alter nutrient content, reduce allergic potential or improve efficiency of production.

Growth & Process

Wheat is one of the main cereal crops grown in the UK. It will grow in a variety of soils. Tractors and ploughs are used to turn the soil in a field before seeds are planted in the Autumn or Spring. Crops are harvested in the Autumn. Wheat undergoes a primary processing of milling to grind wheat into flour. Flour can then be bleached (made white) and fortified with Vitamins and minerals.

Classification

Cereals are edible grasses which are grown and harvested for their grain. The endosperm, the germ and the bran are of particular importance. The most popular cereals are; wheat, rice, oats, maize and barley. Cereals are described as a staple food are starchy foods which can be consumed all year.

Nutrient Value

When cereal is in its natural form (whole grain) it is a rich source of nutrients, mainly starchy carbohydrates and protein. Fat is also found in the whole grain, as are Vitamins B and E. Fibre is also in the bran. Nutritional content of cereals may change as the grain is processed.

Diet

Carbohydrates should make up 1/3 of your daily diet, to supply energy, essential vitamins and minerals and dietary fibre.
Grains are an essential element of a healthy diet and eating high fibre whole grains may help reduce the risk of heart disease and type 2 diabetes and control blood cholesterol.
Secondary processing of wheat turns it into items such as pizza, cake, bread and pies.

Food science

Coagulation; heat causes the protein present to set.
Gelatinisation; mixing starch and water forms a suspension, adding heat causes the starch granules to absorb the moisture and swell. This thickens the liquid making a gel.
Dextrinisation; exposing starch to dry heat colours it brown.
Retrogradation; chilling and freezing can cause wheat thickened sauces to 'weep'.

Storage

Cereal crops should be stored in a cool dry environment to reduce the likelihood of yeasts, moulds and fungi contaminating the crop. They should also be kept clean and free from rodents, birds and insects or pests. Fungi can produce mycotoxins, birds and rodents can transfer disease, mites can carry fungal spores and bacteria.

Scenario prep

As the body ages, metabolism slows down and their may be a tendency to loose muscle mass and gain weight. Older people tend to eat less food, but still need to eat a balanced diet with all the essential vitamins and minerals. Especially Vitamin D and Calcium to maintain bone health.
Coeliac disease is triggered by gluten and causes the body's own immune system to attack its tissues. Gluten free products carry a symbol.

Commodities: Dairy

Food wastage

Food sustainability looks at the impact of food production on the worlds economy. Sustainable food should be produced, processed, bought, sold and eaten with consideration to; being waste free, buying locally and seasonally, eating healthily, choosing fair-trade, fishing sustainably, balancing diet and growing own produce. It is estimated that food production will need to increase by 60% by 2050 to feed the global population.

Growth & Process

The source of all dairy foods is milk which comes from female mammals for feeding their young. Milk is a 'complete food' as it contains all the indispensable amino acids and many of the essential nutrients needed for bone health. Dairy cows need to of given birth before they produce milk. They are milked twice a day. Cows tend to be productive for 3 years. Milk is collected and held in storage tanks before processing. This is primary processing.

Classification

All milk in the UK must be heat treated @75°C for 25 secs to destroy pathogenic bacteria (pasteurisation). Milk can then be; **Homogenised** (using a fine mesh under pressure to evenly distribute fat), **Sterilised** (heat treated at 50°C, homogenised, bottled and then steamed @110°C for 10-30 mins**), Ultra heat treated** (UHT- heated to 135°C for 1 sec) **Evaporated** (50% of water removed), **Condensed** (heated @110°C and sweetened) or **Dried**.

Nutrient Value

Cows are the primary source of milk in the UK. Its flavour and fat content are determined by; the breed of cow, season its produced, type of feed, the age and health of the cow. Milk is 85% water, the rest is made up of HBV protein (3.5%) , Fat (3.5-5%), Carbohydrate (4.8%), Vits B, A, D,C. Minerals; Phosphorous, Sodium, Iron, Calcium.

Diet

Lactose intolerance is when a person cannot digest lactose (natural sugar) in cows milk. Bacteria in the gut then feed on this sugar and produce abdominal symptoms. There are alternative milks such as sheep, goat or nut milks. A small number of people can be allergic to milk proteins, and will need to avoid dairy products. This is called CMPA- Cows milk protein allergy. Foods containing milk must have milk listed as an allergen on the packaging.

Food science

Milk is a emulsion meaning it has tiny globules of fat floating in water. Emulsions are colloides. The fat content of milk determines the type of milk (whole- 3.9%, Semi skimmed-1.7%, Skimmed-0.5%). The fat component of cheese melts at 65°C making it spreadable/stringy or dissolved in hot foods. Too high a heat causes the protein (caseinogen) and fat to burn.

Food science

Yoghurts is made from different types of milk. A bacterial starter culture is added to ferment the lactose into lactic acid this allows the proteins to coagulate and produce a sharp, tangy natural yoghurt. Sugar/ sweetener can be added as well as fruit. Yoghurt can be 'live' (harmless bacteria present), Probiotic (beneficial gut bacteria present) or Bio.

making cheese

A starter culture is added to pasteurised milk. The culture ripens the milk by fermenting the lactose into lactic acid. Once enough Lactic acid is produced rennet is added to coagulate into curds and whey. The Whey is drained from the curds. Curds are then 'scalded' to encourage 'syneresis'. It is then pressed to remove more whey and shaped.

Storage

Fresh milk should be stored at 5°C with a tight fitting lid away from strong smelling foods. Sterilised and UHT milk can be stored unopened at room temperature. Evaporated and condensed milk have long shelf lives and an be kept in a cupboard. Evaporated should be stored in the fridge once opened.

Year 10 - Geography- Cycle 1

Key vocabulary

Natural Hazard: Natural hazards are extreme natural events that can cause loss of life, extreme damage to property and disrupt human activities.

Volcano: An opening in the Earth's crust through which lava, ash, and gases erupt. The term also includes the cone-shaped landform built by repeated eruptions over time.

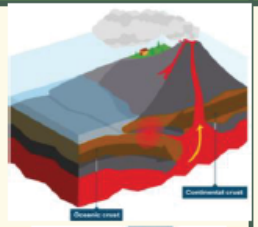
Responses: how countries react to a natural hazard. They can be categorised as: Short-term or immediate.

Frequency: the rate at which something occurs over a particular period of time

Distribution: the way something is spread out or arranged over a geographic area.

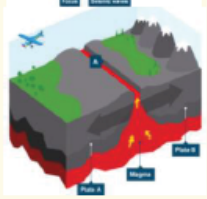
Week 1 – Plate Boundaries

Plate boundaries



Destructive- When the denser plate subducts beneath the other, friction causes it to **melt and become molten magma.** The magma forces its ways up to the surface to form a volcano. This margin is also responsible for **devastating earthquakes.**

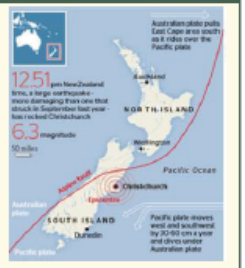
Constructive - Here two plates are moving apart causing new magma to reach the surface through the gap. Volcanoes formed along this crack cause a submarine mountain range such as those in the Mid Atlantic Ridge.



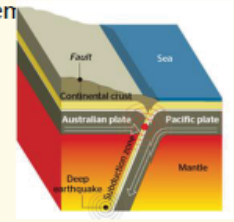
Conservative - occurs where plates slide past each other in opposite directions, or in the same direction but at different speeds. This is responsible for earthquakes such as the ones happening along the San Andreas Fault, USA.

Week 2 – New Zealand Earthquake (HIC)

New Zealand Earthquake
GNI per Capita: US$ 42,710



- 6.3 on Richter Scale
- 22nd February 2011
- 10km west of Christchurch
- Killed 185 people. 3,129 injured
- Shallow Focus 5km deep
- Cost $40bn in damages
- 100,000 building damaged and 10,000 needed demolishing
- Around $6-7 min of international aid provided
- 30,000 residents provided with chem
- Temporary houses provided by the government



Week 3 – Haiti Earthquake (LIC)

New Zealand Earthquake
Haiti GNI per Capita: US$ 1,360

- 7 on Richter Scale
- 12th January 2010
- Epicentre 26km from Port-au-Prince
- Killed 250,00 people. 300,000 injured
- Shallow Focus 10km deep
- Cost $8.5bn in damages
- 300,000 homes damaged/destroyed
- 2 million people left without food and water
- Many dead bodies left in rubble – disease spread.
- Collapsed government buildings
- Help didn't reach many places for days or weeks
- $100 million provided in Aid by the world bank
- After 1 year there was still 1,300 temporary camps

Week 4 – Hazard Management & Risk

Hazard Management

Prediction: involves using seismometers to monitor earth tremors. Experts know where earthquakes are likely to happen. However, it is very difficult to predict when they will happen. Even looking at the timescale between earthquakes doesn't seem to work.

Protection: involves constructing buildings so that they are safe to live in and will not collapse.

Preparation: In earthquake-prone countries, hospitals, emergency services and residents practise for an earthquake. They have drills in all public buildings so that people know what to do in the event of an earthquake. This helps to reduce the impact and increases their chance of survival.

Week 5 – Formation of Tropical Storms

Formation of Tropical Storms

A tropical storm occurs when tropical warm air rises to create an area of intense low pressure. As the warm, moist air reaches high altitudes, powerful winds spiral around the calm central point, creating the 'eye of the storm', and the warm air cools and condenses into heavy rainfall,

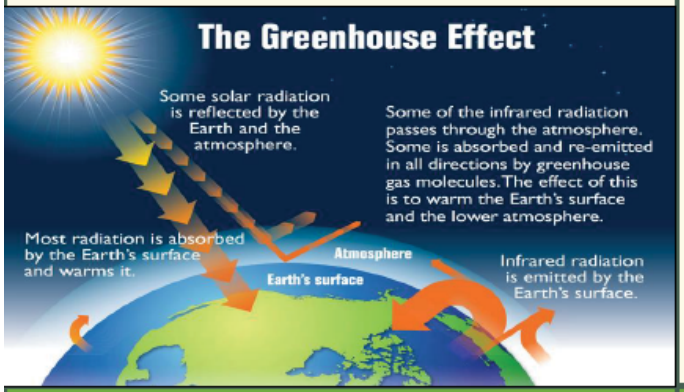
CONDITIONS WHICH CAUSE TROPICAL STORMS	WHY DOES THIS CONTRIBUTE TO THEIR FORMATION?
Low latitude Between 5-30 degrees north and south of the Equator	Temperatures are higher here than at the Poles so the sea and air are heated more quickly, to higher temperatures. Air pressure is low, and air rises.
Originate in oceans with temperatures above 26.5°C to a depth of 60-70m	Provides heat and moisture so warm air rises rapidly.
Between summer and autumn	Typically the warmest seasons to encourage warmer air to rise rapidly, on account of low pressure.
Low wind shear	Wind is constant and doesn't vary so clouds rise to high altitudes without being torn apart.

Climate Change

Climate change: a long-term change in the Earth's climate, especially a change due to an increase in the average atmospheric temperature.

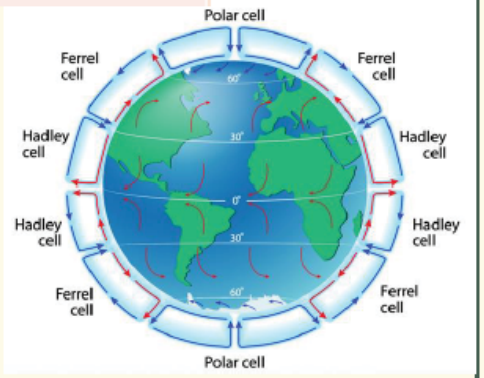
Scientists believe that climate change is having an impact on the frequency and strength of tropical storms. This may be due to an increase in ocean temperatures.

Greenhouse Effect: Natural warming of the atmosphere as heat given off from the Earth is absorbed by liquids and gases, such as carbon dioxide.



Week 6 – Global patterns of Air Circulation

Hadley cell	Largest cell which extends from the **Equator** to between **30° to 40° north & south.**
Ferrel cell	Middle cell where air flows **poleward** between **60° & 70°** latitude.
Polar cell	**Smallest & weakness** cell that occurs from the poles to the Ferrel cell.



Week 7 –Typhoon Haiyan (LIC)

Typhoon Haiyan- Philippines: Population: 108 million, GDP per Capita: $3,500 (LIC) 27% of Population live in poverty.

Primary effects:
- 50% of houses destroyed
- Damage cost $12 billion
- 1.1 million tonnes of crops were destroyed

Secondary effects
- Eight deaths in a stampede as survivors fought for rice supplies.
- Fishing industry was disrupted as the leaked oil from the grounded barge contaminated fishing water.
- Ten hectares of mangroves (saltwater-adapted trees or shrubs) were contaminated by the oil barge leak.

Immediate Responses
- Authorities evacuated 800 000 people. Many went to Tacloban Indoor Stadium, which had a reinforced roof to withstand typhoon winds, however, it flooded.

Long-term Responses
- Thirty-three countries and international organisations pledged help. More than $1.5billion US dollars was pledged in foreign aid.

Week 8 – Somerset Level Floods (UK)

Somerset Level Floods 2013/14

The Somerset Levels are an area of **low-lying** coastal plains and wetlands located in the **south-west of the UK** in the county of Somerset. Several rivers flow through the Somerset Levels and drain into the Bristol channel, notably the **River Tone and River Parrett.** The low-lying nature of the area makes it prone to flooding. **Causes:**

Rain – January 2014 wettest on record with 350mm rain.

High tides - Hightides and storm surges prevented freshwater from draining.

Dredging - rivers full of sediment, not dredged for 20 years.

Social	Economic	Environmental
• Over 600 homes flooded.	• Cost of damage estimated to be over £10 million according to Somerset County Council.	• Sewage, chemicals like pesticides and oil contaminated the floodwater, which spread to other areas.
A home in Muchelney. (Source: Matt Cardy/Getty Images)	*A damaged home in Thorney.* (Source Matt Cardy/Getty)	*A crane foraging during floods.* (Source: ITV West Country)
• Residents were evacuated into temporary accommodation, for months in some cases.	• Agricultural land flooded - over 14,000 ha of agricultural land was underwater for 3-4 weeks.	• Flooding destroyed ecosystems and limited food supplies for animals
• 16 farms had to be evacuated.		

Week 9 – Causes of Climate Change

Natural causes of climate change

Milankovitch cycles: Sometimes the Earth's orbit is more elliptical than circular, the Earth's tilt on its axis changes or the Earth wobbles on its axis, all influencing its global temperature.

Sunspots: The sun's output is not constant. Temperatures are greatest when there are more sunspots radiating more heat.

Volcanic eruptions: Eruptions produce ash and sulphur dioxide which can enter the upper atmosphere. Sunlight can be reflected off this blanket of ash and gas, cooling the planet.

Human Causes of Climate Change

Gases such as chlorofluorocarbons (CFCs) and hydrofluorocarbons (HFCs) are human-made. Human activity is increasing the natural levels of these gases and making the greenhouse 'blanket' thicker. As the world's **population has grown** and countries have developed, they need energy to fuel industry, transport and cities. Power stations, factories, homes and cars **burn fossil fuels** such as oil or gas. These have to be extracted, or mined, from the ground, releasing carbon dioxide into our atmosphere. The world's forests naturally absorb greenhouse gases, but people are **cutting down forests** and often burning them, which releases further C02.

Week 10 – Responses to Climate Change

Climate Change responses

Mitigation: Reducing emissions of and stabilising the levels of heat-trapping greenhouse gases in the atmosphere.

Adaptation: Adapting to the climate change already in the pipeline; adjusting to actual or expected future climate.

International agreements: Paris agreement in 2015, first legally-binding agreement signed by 190 parties. Goal to keep an increase in global average temperature below 2°C. **Carbon capture:** removal of CO_2 from power stations and storing it underground. **Water supply:** water transfer schemes could be used to take water from an area of surplus to an area of shortage. **Reducing risk from sea level rise:** areas at risk may need sea defences to protect valuable land from increased coastal erosion. **Renewable Energy:** Using sustainable resources and reducing reliance on fossil fuels.

Hair And Beauty

Introduction to course- **This qualification is designed to use the context of hairdressing and beauty therapy as a vehicle to support learners to develop broad and comprehensive understanding of the sector and related industries but, more importantly, of core academic knowledge and study skills that will support progression into post-16 and higher education. Specifically the qualification will prepare learners to progress onto qualifications related to the hair and beauty sector, such as the T Level in Hair, Beauty and Aesthetics; however, learners may also progress onto broader areas of study. It is a vocational qualification equivalent to GCSE grades 9-1.**

Business and entrepreneurship in the hair and beauty sector- Understand the structure and concept of hair and beauty businesses

Definition of a business – A business is an organisation which produces and sells goods, or which provides a service. Purpose of a business – producing goods, supplying services, distributing products.
Reasons for starting a business – fulfilling a business opportunity, providing goods and/or services, personal aims and objectives

Manufacturer- Manufactures produce goods.
Goods may include:
- **Hair and beauty products**
- **Food**
- **Clothing**

Distributor- Distributors sell the goods that the manufacturers produce.
Distributors may include:
- **Retailers to the general public**
- **Wholesalers to service providers, such as hairdressing Salons, Barbershops, Beauty Salons.**

Service Provider- Services are intangible, something that cannot be held or touched.
Examples may include:
Hairdressing, beauty, make-up and nail services
Hotel and leisure services

Employed- Working for someone, for example within a Company
Self-Employed- Working for yourself, for example having your own business
Partnership- A business who has more than two owners. Public Limited Company (PLC)- Is a company structure available in the UK, where it can sell shares to the public. Private Limited Company (Ltd)- A private limited company can be a small or large business. A private limited company has limited liability and often these types of business have 'Ltd' after the business name.
Franchise- A franchise is a business that gives the right to another person or business to sell goods or services using its name. Buying into a franchise is an alternative to setting up a new business. Instead, individuals can buy into an already successful business.

Hair And Beauty

Hair and beauty businesses – beauty salons, hair salons, barbershops, spas, nail bars, brow bars, complementary therapy centres, freelance hairdressers/barbers/beauty therapists, aesthetic clinics

Career pathways and progression opportunities available in the hair and beauty sector

Career/training pathways – T Level, apprenticeship, further education, private training, higher education. **Career opportunities** – hairdresser, barber, colour technician, beauty therapist, spa therapist, massage therapist, nail technician, make-up artist, educator, product sales consultant.
Career progression levels – junior therapist/stylist, senior therapist/stylist, consultant, salon/barbershop manager, salon/barbershop owner • Type of employment – employed , self-employed

The common hair and beauty services and treatments

Hairdressing – shampooing, cutting, colouring, perming, relaxing, styling, thermal styling, extensions, wrapping, braiding. **Barbering –** shampooing, cutting, fading, patterns, beard shaping and trimming, shaving, colouring, styling. **Beauty therapy –** facials, eye treatments, hair removal, tanning, make-up. **Spa therapy –** massage therapies, body wraps, hydrotherapy.
Nails – manicure, pedicure, gel polish, nail enhancements, nail art.
Make-up artistry – fashion and photographic make-up, camouflage make-up, occasion/bridal makeup, theatrical and media make-up, prosthetics

Shampooing & Conditioning–
Shampoo specifically formulated for the hair type, and hair or scalp condition
Suface conditioner specifically formulated for the hair type,
Scalp treatments specifically formulated for the scalp condition,
Penetrating treatments specifically formulated for dry and damaged hair.

Condistionerhelps to close the cuticle of the hair, allowing the hair to shine and be more mana geable.

Cutting- Club cutting – creates a blunt end, precision cut.

Texturising – Softens edges, removes bulk and breaks up any hard lines

Razoring – removes length and bulk, creates soft edges and provides texture, removes weight and increases curl

Thinning – removes hair bulk

Restyling – changing the length and shape

Semi-permanent colour – these last 6-8 shampoos

Quasi-permanent colour – these last 12 to 24 shampoos

Hair And Beauty

Permanent colour – these are permanent and grow out

Styling- Styling, dressing and finishing techniques are used to create a variety of finished looks, this can be as the end treatment following a colour or cutting service or as a sta ndalone service for a special occasion. Blow-drying ,Finger-drying, Finger waving, Pin curling and Scalp plaiting

Perming-
Small even sections of hair are wound around a curling rod and perm lotion is applied to hair. A neutralising agent is then applied which sets the hair in its new permanently changed shape

Barbering Club cutting – creates a blunt end, precision cut.

Texturising – Softens edges, removes bulk and breaks up any hard lines

Razoring – removes length and bulk, creates soft edges and provides texture, removes weight and increases curl

Thinning – removes hair bulk

Restyling – changing the length and shape

Scissor/clipper over comb – Cuts hair into the nape and head shape for short styles

Beauty Therapy facials- Maintain and improve facial skin condition. **Eye treatments-**
Eye cream – Specialist product designed to minimise the appearance of fine lines **Eye gel** – Cools the under-eye area and minimises the appearance of dark circles and puffiness.

Waxing- Hot wax is most suitable for strong hairs, such as the bikini line.

Spa Therapy Massage therapies –
aromatherapy massage, stone therapy massage, Swedish massage
Body wraps, exfoliation treatments, mud and algae applications.
Hydrotherapy, wet floatation, dry floatation

Nail treatments-
buffing paste, cuticle remover, hand and nail soak, hand masks, paraffin wax, nail varnish re mover, base-coat, top-coat, coloured nail polish, cuticle oil—
Pedicure-
Foot soak, exfoliator, cuticle cream, cuticle remover, foot masks, paraffin wax, nail polish rem over, base-coat, top-coat, coloured nail polish .

Nail Enhancements- Liquid and powder – acrylic powder and liquid monomer .

R033- Supporting individuals through life events

Task 1- Growth and Development (PIES)

Physical

Weight, health, body, hormones, Illnesses, injuries, appearances, growth, fine and gross motor skills

Intellectual

Cognitive skills, problem solving skills, learning, qualifications

Emotional

Mental health, depression, happiness, self-esteem, confidence, bonds, attachments

Social

Social isolation, friendship groups, social networks, social skills, behaviours, manners

Factors affecting growth and development (emotional, social, physical)

Emotional

Grief, anxiety, fear, attachments, happiness

Social

Bullying, friendship groups, clubs, sports clubs, discrimination, social opportunities

Physical

Puberty, exercise, health, illness, diet and nutrition, disabilities, lifestyle choices

Cambridge National Health and Social Care - Year 10

Needs of the individual

Base these on the specific impacts mentioned in the earlier task..

Example…

Support for weight loss..GP or Slimming World

Support for Mental Health…Counsellor, therapist

Task 2b- Research and recommend support to meet individual needs

Formal

Structured/organised support e.g. GP or Physiotherapist

Informal

Family and Friends support

Charities

Non-profit organisations e.g. British Heart Foundation

Task 2a- Impact of life events on individuals

Examples of life events…

- Puberty
- Parental separation
- Bereavement
- Injury
- Ill-health
- Accident
- Starting school

Impacts of these life events

Physical

Weight loss/gain, mobility, appearance, health, tiredness

Intellectual

Learning impairment, learning new skills, success, qualifications

Emotional

Mental health, confidence, anxiety, sadness, happiness

Social

Lifestyle choices, friends, family, social circles, social skills

Financial

Independence, ability to purchase

HISTORY OF MEDICINE

MEDIEVAL 1250-1500

Cause of disease (what they believed made people sick)

People in Medieval England believed that God controlled everything that happened around them. Therefore, they believed that God must send disease as a punishment for sin. People also believed that God sent "miasma", bad smells that caused disease. God was also responsible for the movement of the planets and the stars in the sky, therefore medieval people believed that if God put the planets in a certain alignment, it could cause disease in certain people. Medieval people did not know about germs and microbes because they didn't have microscopes to see them with. Another theory had been passed down from Roman times by physicians: The Theory of the Four Humours. This theory suggested that disease was caused by an imbalance of the four substances that made up the body (blood, phlegm, black bile and yellow bile).

Treatment of disease (how they tried to cure people and make them better)

Some Medieval treatments were based on the Four Humours, these involved bleeding or purging the patient to balance the humours. These treatments would be given at the correct time according to the patient's birthday and star sign. There were also supernatural cures if you couldn't afford to see a physician. Sick people would often visit monasteries and churches to pray to be healed. People would also go on a pilgrimage to touch one of the holy objects (relics) that were believed to cure diseases. Home remedies using herbs may also be given to the sick to help cure them. Potions (theriaca) made by Apothecaries would only work by chance or coincidence but some of the mixtures passed down by monasteries and families sometimes had ingredients, such as honey, that worked (although they didn't know why they worked at the time).

Prevention of disease (stopping people getting sick in the first place)

In Medieval England the prevention of disease was based on their ideas about the causes of illness. This meant that miasma could be prevented by getting rid of anything that made bad smells. Town councils would try to keep the streets clean, provide public toilets and water supplies. However, due to the animals that roamed the streets and the lack of money available to the councils, these public health measures were often very poor and ineffective. Because people believed God sent disease to punish the wicked, a way of preventing disease was to be good. People could pray, go to church, go on a pilgrimage or even punish themselves (during the Black Death) to avoid God's anger. Medieval people would try to stay clean and healthy but often this was only possible for the rich who could afford a good diet and a bath. The Regimen Sanitatis provided advice on healthy living from physicians, this was only for the rich and it was based on the Four Humours because they believed that what you ate made the humours e.g. "black bile".

KEYWORDS

Flagellants = people that whipped themselves
Humours = body fluids made from digesting food
Miasma = bad smells believed to cause disease
Theriaca = potion made by an apothecary or physician

IMPORTANT DATES

1123 = St Bartholomew's Hospital opened in London
1167 = Oxford University opened
1348 = Black Death arrives in England

RENAISSANCE 1500-1700

Cause of disease (what they believed made people sick)

The Renaissance was a time when people began to challenge and question established ideas. The Church lost some of its power due to the Reformation and science was beginning to test theories via experiments. In 1676 a book by Sydenham called Observationes Medicae suggested that illness was caused by external factors and not by the Four Humours. Microscopes allowed scientists to see microbes and physicians such as Vesalius were dissecting the human body to learn more about anatomy and prove Galen wrong. The Royal Society was set up in England to test new theories and to advance science; it led to Harvey's discovery of the blood circulatory system. However, despite all of these new ideas, the majority of people still believed in the Four Humours, miasma and religious causes when people got sick. This is because there wasn't a proven alternative theory yet.

Treatment of disease (how they tried to cure people and make them better)

Most treatments remained the same from the medieval period: praying, bleeding, purging, charms and potions (theriacas). However, there were new ingredients available in the Renaissance thanks to exploration and trade in America and Asia. Chocolate and coffee was added to treatments and new metal elements were used in the new science of medical chemistry. Unfortunately, none of these new treatments were proven to work and very few were successful. Another new theory in treatments was "transference" the idea that a disease could be taken out of a sick person and transferred into an object or an animal. This led to many treatments involving amulets and goats but of course these didn't help cure the patients. Vesalius' book on anatomy in 1543 helped surgeons locate organs more effectively. Bleeding was made more effective by Harvey's discovery of the circulatory system in 1628.

Prevention of disease (stopping people getting sick in the first place)

Prevention of disease was still based on avoiding bad smells. Methods involved fines for not keeping the street clean outside your property and if that failed people would move away from smelly areas. There was still an interest in keeping clean but bathing had become less popular after syphilis seemed to increase around bath houses. People in the Renaissance tended to use linen cloths to wipe themselves down and change their clothes regularly rather than take baths. People would also stay healthy by avoiding too much of a certain type of food and drink and by avoiding bad weather. Mostly the prevention of disease was based on avoiding bad smells and extremes of diet and weather.

KEYWORDS

Anatomy = study of the human body
Padua = university in Italy
Reformation = Christianity split into Catholic and Protestant
Transference = illness moved from a person into an object

IMPORTANT DATES

1543 = Vesalius published his anatomy book
1628 = Harvey identified the blood circulation system
1676 = Sydenham published his book of diseases

HISTORY OF MEDICINE

INDUSTRIAL 1700-1900

Cause of disease (what they believed made people sick)

In 1700 people still believed in the old ideas of the Four Humours and miasma as the cause of disease, but scientists now had better microscopes and could see microbes and so they came up with the theory of spontaneous generation – that decay created microbes. In 1861 that all changed when Pasteur published his Germ Theory that said microbes caused decay. Later, in 1875, Koch linked microbes to disease and called them "pathogens". Once identified, these pathogens could be targeted. They didn't know why some babies were born with diseases or how conditions were passed from parent to offspring, but they did now know that microbes caused disease, and thanks to Lister in 1867, also caused infection too. Some individuals such as Dr. Bastion argued against Germ Theory as they believed microbes must be harmless as they were found inside the body of healthy people too; especially in the gut.

Treatment of disease (how they tried to cure people and make them better)

Between 1700 and 1900 surgical treatments made a lot of progress. Thanks to Simpson's work in 1847, British surgeons had an effective anaesthetic called chloroform that knocked patients out. With the added safety of Snow's inhaler, this meant surgery could be done on areas of the body such as the stomach and the head without any pain. Surgery was safer still after 1867 when Lister introduced the first antiseptic called carbolic acid, that prevented infection during and after surgery. By 1890 most surgery was being done in antiseptic conditions. Blood loss during surgery was still a problem however and there were still no proven cures for illnesses despite Germ Theory. Many herbal remedies continued to be used right up to 1900. These improvements in treatments were helped by improvements in hospital care and nursing thanks to the work of Florence Nightingale. Nightingale published two books on nursing and hospitals in 1859 and set up a nursing training school in 1860. Nursing became more professional, and hospitals were made more hygienic.

Prevention of disease (stopping people getting sick in the first place)

The best way to stay alive was to avoid diseases in the first place and that became much more effective by 1900. Firstly, the British government started look after their population's health. The fear of cholera, the work of Snow and Chadwick and finally Germ Theory proved the connection between dirt and disease – the government had to provide clean water and sewage systems and stop their laissez faire attitudes. Jenner's work on smallpox created the world's first vaccination, but only in the 1870s was the science behind immunisation understood by Pasteur and Koch. In the 1880s and 1890s vaccinations were developed but only the smallpox vaccine was supported by a government campaign in the 1870s.

KEYWORDS

Anaesthetic= a chemical that removes pain
Immune system= the body's defence against diseases
Laissez-faire= leave people to look after themselves
Pathogens= microbes that cause disease

IMPORTANT DATES

1798 = Jenner discovers vaccination
1861 = Pasteur links germs to decay
1875 = Koch links germs to disease

MODERN 1900-NOW

Cause of disease (what they believed made people sick)

Pathogens (microbes) are believed to be the main cause of disease and research continues to identify new vaccinations for any dangerous outbreaks of disease (such as Ebola). This work has become easier thanks to the growth of the pharmaceutical industry which funds research grants for universities. More powerful microscopes and electron microscopes as well as the pioneering work of Watson and Crick in 1953 allowed the discovery of DNA. The Human Genome Project mapped the entire DNA sequence for humans by the year 2000. Conditions such as haemophilia that are passed from parent to child are now understood to be genetic disorders rather than pathogen based. The work on genetics has also explained how viruses work and how people can be more vulnerable to heart disease and cancer.

Treatment of disease (how they tried to cure people and make them better)

The first chemical cure was developed by Ehrlich in 1909 to treat syphilis and this began research into a host of medicines that target specific microbes and cells in the human body; the modern version of which is chemotherapy for cancer sufferers. The discovery of penicillin in 1928 and its production as a drug in the 1940s introduced antibiotics to the world and defeated most bacterial infections. Viruses and cancers still remain difficult to cure but genetic and stem cell research continues to develop new treatments all the time. Surgery has become aseptic (germ-free) and blood loss is no longer a problem since blood groups were discovered in 1901 by Landsteiner and transfusions were developed during the First World War. Technology has improved diagnosis of diseases to improve treatments – machines such as the MRI scanner, blood tests and ultrasounds allow doctors to identify exactly what is wrong in order to target a cure.

Prevention of disease (stopping people getting sick in the first place)

Vaccination campaigns have been introduced and enforced by the national government ever since the first national campaign against diphtheria in 1942. People still have the right to refuse the vaccination (due to a lack of trust in the medical services) but diseases such as polio and Rubella are almost wiped out in Britain thanks to vaccination campaigns. The government also prevents illnesses by maintaining healthy living conditions such as the Clean Air Acts of 1956 and 1968, the ban on smoking in public areas and food standards. Healthy lifestyles are also promoted by national campaigns such as the "Five a Day" message and "Sugar Smart" adverts. The government also prevents advertising of negative lifestyle choices such as smoking and drinking alcohol, whilst also taxing these products to deter customers and maintaining a tax income to fund the NHS which deals with the consequences of such products.

KEYWORDS

Carcinogenic= something that causes cancer cells to form
Genetic= anything to do with DNA
Lifestyle= how someone lives (diet, hobbies, fitness, habits)
Welfare State= free services for tax payers e.g. education

IMPORTANT DATES

1909 = Salvarsan 606 discovered by Ehrlich
1944 = Penicillin made by Fleming, Florey & Chain
1960 = Lung cancer linked to smoking

MEDICINE IN BRITAIN: THE HISTORIC ENVIRONMENT

The British Sector of the Western Front

CONTEMPORARY SOURCES: Army statistics, Government reports on aspects of the war, Hospital records Medical articles by doctors and nurses in the war, National army records for individual soldiers, National newspaper reports, Personal accounts of medical treatments by the people involved, and Photographs

Evacuation route:

1. Stretcher bearers

16 per battalion of a 1000 soldiers. Their job was to carry the wounded (often while being shot at) to where they could receive medical attention.

2. Regimental Aid Post (RAP)

At the RAP was a medical officer who decided if a patient was seriously injured (and sent to get treatment elsewhere) or was lightly injured (and could be bandaged quickly and sent back into the fighting).

3. Field Ambulance and Dressing Stations

These were about a quarter of a mile away from the front line, they had a staff of nurses and medical officers, and they checked and re-dressed patients' wounds.

4. Casualty Clearing Station (CCS)

These were well-equipped medical centres often in tents or huts, staffed with approximately 7 doctors. Patients could receive X rays and surgery at the CCS. They were at least 7 miles from the frontline trenches.

5. Base Hospital

These were well equipped hospitals that were in original hospital buildings from before the war, or in refitted buildings e.g. schools. They were far away from the fighting and some specialised in certain types of injuries e.g. head wounds. If soldiers were too badly injured to be sent back to the frontline, they were sent back to Britain from the base hospital.

Timeline of events:

August 1914 ⬅	The Great War begins
August-September 1914 ⬅	Trenches dug along the front
October-November 1914 ⬅	First Battle of Ypres
April-May 1915 ⬅	Second Battle of Ypres
August 1915 ⬅	Gallipoli Landings
February-December 1916 ⬅	Battle of Verdun
July-November 1916 ⬅	Battle of the Somme
April-May 1917 ⬅	Battle of Arras
April 1917 ⬅	USA enters the war
July-November 1917 ⬅	Third Battle of Ypres
November-December 1917 ⬅	Battle of Cambrai
October 1917 ⬅	Russia leaves the war
March1918 ⬅	German Spring Offensive
Summer and Autumn 1918 ⬅	Allied attacks, Germany gives up

New methods:

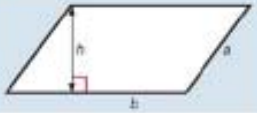
* Blood banks - for transfusions (for the Battle of Cambrai in 1917)
* Brain surgery developed - for head wounds
* Carrel-Dakin solution - clean out wounds to prevent infection
* Mobile x-ray machines - to find metal in wounds (Britain had 6)
* Plastic surgery - to rebuild faces (a specialist hospital at Sidcup)
* Psychiatric medicine - to treat shell shock
* Thomas splint - to hold shattered bones in place

1. Create an evacuation route diagram and label it using the information on the left hand side.
2. Create a timeline for the First World War
3. Explain the strengths and weaknesses of each of the contemporary sources at the top of the page.

Areas

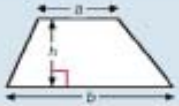
Rectangle = $l \times w$

Parallelogram = $b \times h$



Triangle = $\frac{1}{2} \times b \times h$

Trapezium = $\frac{1}{2}(a+b)h$



Circles

Circumference =

$\pi \times diameter = \pi d$

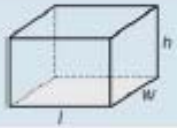
$2 \times \pi \times radius = 2\pi r$

Area of a circle =

$\pi \times radius\ squared = \pi r^2$

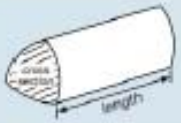
Volumes

Cuboid = $l \times w \times h$



Prism =

$area\ of\ cross\ section \times length$



Cylinder = $\pi r^2 h$

Compound measures

Speed

speed = $\frac{distance}{time}$

Density

density = $\frac{mass}{volume}$

Pressure

pressure = $\frac{force}{area}$

Constructing Pie Charts

The angle to draw for each sector is

$$\text{Angle} = \frac{\text{frequency}}{\text{total}} \times 360°$$

Angles in Polygons

Sum of Interior Angles $= (n-2) \times 180°$

Where n is the number of sides of the shape

Exterior Angles add up to 360°

One exterior angle in a REGULAR polygon $= \frac{360°}{n}$

$Interior + Exterior = 180°$

Other useful formulae

$gradient = \frac{change\ in\ y}{change\ in\ x}$

$\%\ change = \frac{difference}{original} \times 100$

Types of numbers

SQUARE NUMBERS

→ 1, 4, 9, 16, 25, 36, 49, 64, 81, 100 etc

(1x1) (2x2) (3x3) (4x4) (5x5) (6x6) (7x7) (8x8) (9x9) (10x10)

CUBE NUMBERS

→ 1, 8, 27, 64, 125 etc

(1x1x1) (2x2x2) (3x3x3) (4x4x4) (5x5x5)

PRIME NUMBERS

→ 2, 3, 5, 7, 11, 13, 17, 19, 23, 29 etc

Right-angled triangles

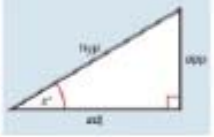
Pythagoras' Theorem

For a right-angled triangle,

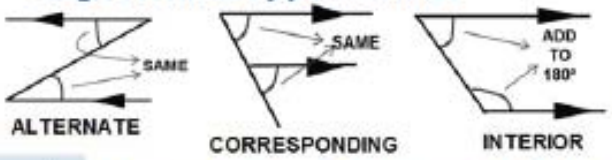
$a^2 + b^2 = c^2$

Trigonometric ratios (*new to F*)

$\sin x° = \frac{opp}{hyp}$, $\cos x° = \frac{adj}{hyp}$, $\tan x° = \frac{opp}{adj}$



Angles formed by parallel lines

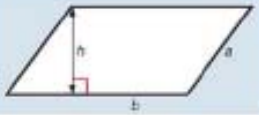


Foundation Formula Quiz

Areas

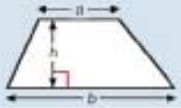
Rectangle =

Parallelogram =



Triangle =

Trapezium =



Circles

Circumference =

Area of a circle =

Right-angled triangles

Pythagoras' Theorem

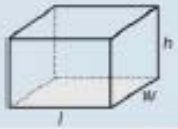
For a right-angled triangle,

Trigonometric ratios (*new to F*)

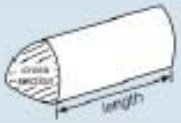
sin x^o = cos x^o = tan x^o =

Volumes

Cuboid =



Prism =



Cylinder =

Compound measures

Speed

speed =

Density

density =

Pressure

pressure =

Angles formed by parallel lines

Constructing Pie Charts

The angle to draw for each sector is

Angle =

Angles in Polygons

Sum of Interior Angles =

Where *n* is the number of sides of the shape

Exterior Angles add up to

One exterior angle in a REGULAR polygon =

$Interior + Exterior =$

Other useful formu-

$gradient =$

$\%\ change =$

Types of numbers

SQUARE NUMBERS

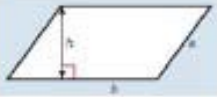
CUBE NUMBERS

PRIME NUMBERS

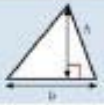
Foundation Formula Quiz

Areas

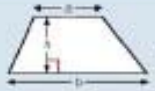
Parallelogram = $b \times h$



Triangle = $\frac{1}{2} \times b \times h$



Trapezium = $\frac{1}{2}(a+b)h$



Circles

Circumference =

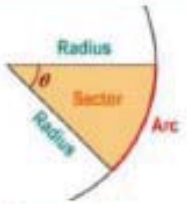
$\pi \times diameter = \pi d$

OR

$2 \times \pi \times radius = 2\pi r$

Area of a circle =

$\pi \times radius\ squared = \pi r^2$



Area of a Sector

$A = \frac{\theta}{360^\circ} \times \pi r^2$

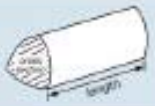
Length of an Arc

$A = \frac{\theta}{360^\circ} \times \pi d$

Volumes

Prism =

$area\ of\ cross\ section \times length$



Cylinder = $\pi r^2 h$

Volume of pyramid =

$\frac{1}{3} \times area\ of\ base \times h$

Angles in Polygons

Sum of Interior Angles $= (n-2) \times 180^\circ$

Where n is the number of sides of the shape

Exterior Angles add up to 360°

One exterior angle in a REGULAR polygon $= \frac{360^\circ}{n}$

$Interior + Exterior = 180^\circ$

Compound measures

Speed

speed = $\frac{distance}{time}$

Density

density = $\frac{mass}{volume}$

Pressure

pressure = $\frac{force}{area}$

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Pythagoras' Theorem

For a right-angled triangle,

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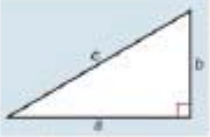


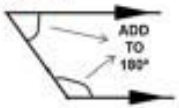
Trigonometric ratios (*new to F*)

$\sin x^\circ = \frac{opp}{hyp}$, $\cos x^\circ = \frac{adj}{hyp}$, $\tan x^\circ = \frac{opp}{adj}$

Angles formed by parallel lines

ALTERNATE

CORRESPONDING



INTERIOR

Quadratic equations

The Quadratic Equation

To solve a quadratic equation in the form:

$ax^2 + bx + c = 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Indices and surds

$a^0 = 1$ $\quad a^{\frac{1}{2}} = \sqrt{a}$

$a^{-n} = \frac{1}{a^n}$ $\quad a^{\frac{1}{n}} = \sqrt[n]{a}$

$\sqrt{a \times b} = \sqrt{a} \times \sqrt{b}$

$\sqrt{\frac{a}{b}} = \frac{\sqrt{a}}{\sqrt{b}}$

Straight lines

$gradient = \frac{change\ in\ y}{change\ in\ x}$

Given a gradient of a line m, the gradient of the line perpendicular to it is: $-\frac{1}{m}$

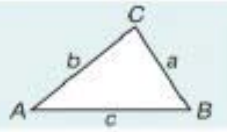
Perpendicular gradients multiply to give −1.

Trigonometric formulae

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

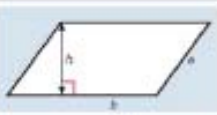
Area of triangle $= \frac{1}{2} ab \sin C$



x	0°	30°	45°	60°	90°
$\sin x$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos x$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan x$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Undefined (asymptote)

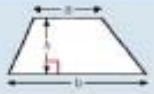
Areas

Parallelogram =



Triangle =

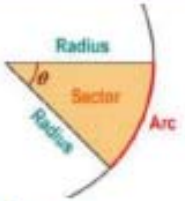
Trapezium =



Circles

Circumference =

Area of a circle =



Area of a Sector

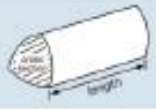
$A =$

Length of an Arc

$A =$

Volumes

Prism =



Cylinder =

Volume of pyramid =

Angles in Polygons

Sum of Interior Angles =

Where n is the number of sides of the shape

Exterior Angles add up to

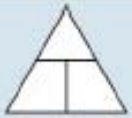
One exterior angle in a REGULAR polygon =

$Interior + Exterior =$

Compound measures

Speed

speed =



Density

density =

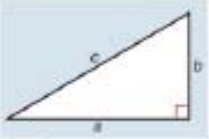
Pressure

pressure =

Right-angled triangles

Pythagoras' Theorem

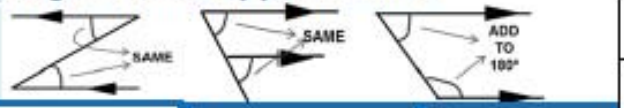
For a right-angled triangle,



Trigonometric ratios (*new to F*)

$\sin x^\circ =$ $\cos x^\circ =$ $\tan x^\circ =$

Angles formed by parallel lines



Quadratic equations

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Given a gradient of a line m, the gradient of the line perpendicular to it is:

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Trigonometric formulae

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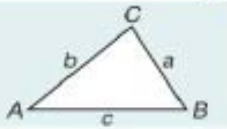
Cosine Rule

Area of triangle =



x	0°	30°	45°	60°	90°
$\sin x$					
$\cos x$					
$\tan x$					

Week 1: The Nature of God (part 1)

Christians believe God is:

- ⇒ Immanent (present in earth and involved with humanity)
- ⇒ Transcendent (outside life and beyond understanding)
- ⇒ Omnipotent (all-powerful)
- ⇒ Omnibenevolent (all-loving and all-good)
- ⇒ Merciful (compassionate and forgiving)
- ⇒ Just (fair and judges humans actions)

'God so loved the world that he gave his one and only Son'. John 3:16
'Nothing is impossible with God'. Luke 1:37

Enquiry task: Explain two beliefs about the nature of God . Refer to religious scripture in your answer. [5]

Week 1: Evil and Suffering (part 2)

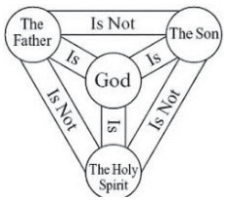
Various types of **evil** and **suffering** are evident in the world. This can cause problems for many Christians, as they believe in a loving, powerful and all-knowing God.

Moral evil and suffering – this is suffering caused by the actions of humans. E.g. Murder.
Natural evil and suffering – this is suffering that is caused by nature and has nothing to do with the actions of humans. E.g. earthquakes.

A theodicy is a defence of God's goodness and omnipotence in view of the existence of evil. St Irenaeus argued that by creating imperfect humans, individuals are given the chance to develop and grow through a soul-making process into children of God.

Enquiry Task: Explain why some people use the existence of evil to disprove the existence of God

Week 2: The Trinity



The concept of the trinity is that there are three 'persons' all of which are God.

- ⇒ There is only one God
- ⇒ Each person of the Trinity is fully God
- ⇒ The persons of the trinity are not the same
- ⇒ **The first person of the trinity is the Father:** God the Father is believed to be the creator of earth and all living things on it. As the creator, he acts as a good father would towards his children. He is believed to be omnipotent, omnibenevolent and omniscient.
- ⇒ **The Son:** The second person of the trinity is referred to as the Son of God. The Son became incarnate on earth through Jesus. Christians believe Jesus was both fully human whilst on earth but also fully God as well.
- ⇒ **The Holy Spirit:** The third person of the trinity is the Holy Spirit. Christians believe when Jesus left the earth, God sent the Holy Spirit. The Holy Spirit is there to influence, guide and sustain the earth and all life on it. The Holy Spirit is believed to be the unseen power of God at work in the world.

Enquiry Task: Draw a diagram like the one above to illustrate the complex nature of the trinity

Week 3: Creation

Genesis:

Christians believe God created the earth and all living things. The story gives an account of how the universe was created, how the earth was made fit for life and finally how God created life including humans. It is believed to have happened in six days after which God rested. For Christians the most important part of the story is the fact that everything was created 'good.'

Literal Interpretation of creation:

- ⇒ They believe it is literally true. Everything that is in the story is the word of God and happened exactly as it is told.

⇒

Inspired by the world:

- ⇒ They believe that the story should not be taken as truth but is to show that God created the world and the Bible is to show them the message that God has to send us.

Enquiry Task:

Explain Christian beliefs about the creation of world [4]

Week 4: The Incarnation

Incarnation means becoming flesh, taking a human form. It refers to the act of when God became human in the form of Jesus. Christians believe that Jesus was both fully human and fully God during his time on earth.

Enquiry Task: Explain how Christians celebrate the birth of Jesus [4]

Week 5: The Crucifixion

⇒ Jesus was sentenced to death by crucifixion (where criminals are nailed to a cross and lifted).

⇒ Christians believe that even though Jesus was the Son of God, it does not mean he was spared the pain and horror of his death.

⇒ Jesus forgave those who crucified him they did not realise the significance on what was happening.

⇒ The crucifixion gives Christians confidence that if they accept Jesus' sacrifice, sin can no longer destroy their lives as God forgives those who faithfully ask for it.

⇒ It helps them to understand that suffering is a part of life, just as it was for Jesus and God understand what the sufferer is going through.

'Jesus called out with a loud voice, 'Father, into your hands I coming my spirit.' When he has said this, he breathed his last'. Luke 23:46

Enquiry Task: Explain the significance of the crucifixion to Christians [4]

Week 6: The Resurrection and Ascension

⇒ According to accounts Jesus was placed in the tomb late on Friday afternoon. All accounts make it clear that Jesus' body was nowhere to be found

⇒ Each story mentions the women meeting men (who may have been angels) who told them that Jesus had risen and to spread the message. The belief that Jesus rose from the dead is called the resurrection and is a key teaching of Christianity.

⇒ Christians believe by accepting Jesus they can also be resurrection in some way. It assures them that God will forgive their sins if they follow the teachings of Christianity.

⇒ After meeting his disciples and asking them to carry on his good work, Jesus left them for the last time and ascended to heaven.

'While he was blessing them, he left them and was taken up into heaven'. Luke 24:51

Enquiry Task: If no one saw Jesus ascend to heaven would they still think he was the Son of God? Give reasons for your answer

Week 7: Life after death; Heaven and Hell

Judgement:

Christians believe it is God who judges the fate of those who die. He will take into account the life of the person and the extent to which they have tried to get close to him. Christians believe that simply treating other people well and in accordance with Christian morality is not enough to guarantee a good afterlife. They believe that Jesus is the Son of God and in order to gain a good afterlife you have to have faith in him and following his teaching.

Heaven:

⇒ It is seen as a place of peace, joy and freedom from pain. Some Christians believe that only those who believe in Jesus will be allowed in to heaven. Other Christians believe that heaven is reserved for Christians and followers of other faiths who have lived good lives.

⇒ Other Christians believe that heaven is for those who call themselves Christian regardless of how they have lived their life. Simply being baptised guarantees you a place.

Hell:

⇒ Often seen as the opposite of heaven. Christians understand it to be a state of existence without God. It is often depicted as a place of eternal suffering, terror, fire and torture ruled by the devil.

Enquiry Task: Explain Christian beliefs about the afterlife [4]

Week 8: Sin and Salvation

Sin is any thought or action which separates humans from God.

Some Christians believe in the idea of **original sin**. This is the idea that humans are born with an inbuilt tendency to do wrong. The idea is introduced in the story of Adam and Eve where they ate the forbidden fruit and were banished from the Garden of Eden.

Christians believe there are two main ways to get salvation:

⇒ **Salvation through good works:** the Old Testament makes it clear that a person achieves salvation through faith in God and by obeying God's law e.g. the Ten Commandments.

⇒ **Salvation through grace:** salvation is given by God through faith in Jesus

Enquiry Task: Why do some people disagree with the concept of original sin?

Week 9: Christian Worship

Worship: is the way in which Christians show their deep love, respect for God and forgiveness of sin or to seek Gods help for themselves or others who may be suffering. Christians may worship alone or with others, in a special building like a Church, In people's homes or any appropriate place. Worship may involve; Bible readings, singing hymns, preaching, sharing food, pilgrimage, festivals, art, music or drama. Christians can worship any time but Christians weekly public worship takes place on Sunday.

⇒ **Liturgical: a church service that follows a set structure or ritual**
⇒ **Non-Liturgical: a service that does not follow a set text or ritual**

The Lord's Prayer: gives individual Christians a pattern for how to pray and reminds Christians that God is the Father of the whole community. The prayer is use often in Christian worship and is said out loud by all members of the congregation together

Enquiry Task: Explain two types of worship [4]

Week 10: Baptism (part 1)

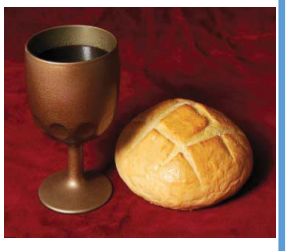
⇒ Is the ritual through which a person becomes a member of the Church and their sins are forgiven and he or she enters a new life with Jesus. As Christians believe everyone is a descendent from Adam and Eve who committed the first sin.
⇒ Rites vary but the priest or minister will say; 'I baptise you in the name of the father and of the son and the Holy Spirit' while pouring blessed water over the head of the baby. God parents and parents promise to raise the baby in the Christian faith. The child will be dressed in white and a Paschal candle.

A believer's baptism involves full immersion in a pool, symbolising the cleansing from sin and the rising up to new life with Christ. Each person will read a Bible passage and give a brief testimony of their faith.

Enquiry Task: Why do some people favor a believers baptism over an infant baptism?

Week 10: Eucharist (part 2)

⇒ Is the sacrament that uses bread and wine to celebrate the sacrifice of Jesus and his resurrection.
⇒ Also known as the **Eucharist.**
⇒ Many Christians consider it to be the most important act of worship as it recalls the Last Supper of Jesus. **<u>(Matthew 26:17-30)</u>**
⇒ When they celebrate Communion they give thanks to God for his great love in sending Jesus to save people from sin.



Holy Communion is at the centre of their lives and worship. It reminds Christians that whilst they break bread together there are many in the world who are starving.

It encourages them to work for equality and justice for all people. They collect money during the service to support work being done in developing countries, the elderly, prisoners and the homeless.

Enquiry Task: Why is important for Christians to remember and rein act the Last Supper?

Week 11: Pilgrimage

Pilgrimage is a journey made for religious reasons, alone or with other Christians, to a sacred place. They make a physical journey and a spiritual journey towards God.
Importance of pilgrimage: Grow closer to God and strengthen faith**;** Expresses sorrow for sin and be forgiven**;** Reflect on their lives**;** Pray for something special or thank God for a blessing

Lourdes:
⇒ In the south-west if France. Dedicated to Mary, the mother of Jesus.
⇒ In 1858 a young girl had visions of Mary in a cave near the river. Mary told the girl to dig for a spring of water, which was discovered to have healing properties.

Iona:
⇒ An island off the west coast of Scotland.
⇒ In the 6th century and Irish missionary who brought Christianity to Scotland established a small monastic community there. It is the home of the Iona Community and a place of Christian pilgrimage dedicated to the Virgin Mary.
⇒ People believe it is a place where the veil between the spiritual place and physical place is thin.

Enquiry Task: Explain two Christian beliefs about the importance of pilgrimage [4]

Week 12: Christian Festivals

Christmas:

⇒ Commemorates the incarnation of Jesus.

⇒ The celebrations last 12 days ending with the feast of Epiphany.

⇒ Homes are decorated with lights to symbolise Jesus being the light of the world. Many churches hold carol services with reading from the Bible.

⇒ Celebrates Jesus rising from the dead.

⇒ During the week leading up to Easter, Christians remember the events that lead to Jesus' death.

⇒ Special services are held on the Friday to remember Jesus' crucifixion. On Easter Sunday, churches are filled with flowers and special hymns are sung celebrating the resurrection.

Enquiry task: Describe how Christians celebrate Easter [4]

Week 13: The Church in action (part 1)

Christians believe that it is part of their **duty to act in a moral way and this involves helping others around them.**

The Church can play a vital role in Christians helping others as they provide: **food banks** a place where people living in poverty can go and collect some food.

Some Christians volunteer as **street pastors**, going out onto the streets at night to care for those in need.

- Flip-flops
- Water
- Lollipops
- Blankets
- Support the emergency services
- Clear/clean the streets

Enquiry Task:

Explain how the Church supports the local community [4]

Week 13: The place of Mission and Evangelism (part 2)

⇒ The Church has a mission to spread the good news to non-believers that Jesus is the Son of God and came to the world to be its saviour.

⇒ Christians are called not only to know Jesus in their lives but also to make him known to others as Jesus instructed.

⇒ Christians have the responsibility to tell others of their faith. This may be spreading the word to people they meet in everyday life or, for some, through organised events or preaching.

⇒ Others feel called to go to other countries and become **missionaries,** which involves evangelism and in some cases humanitarian work.

⇒ The main aim is to persuade people to accept Jesus as their Saviour and to extend the Church to every nation of the world.

'Therefore go and make disciples of all nations' Matthew 28:1

Enquiry Task: What does humanitarian work involve?

Week 14: The Churches Response to World Poverty (part 2)

Many Christian charities follow the teachings of Jesus in working to relieve poverty.

Parable of Rich Man and Lazarus (Luke 16:19-31).
When Jesus told a rich man to sell everything to give to the poor (Mark 10:21).
The Parable of the Good Samaritan (Luke 10:25-37).

Christians believe they should present Jesus to the world through helping the disadvantaged.

christian aid

Enquiry Task: Retell the parable of the Rich Man and Lazarus

Week 14: Christian Persecution (part 1)

⇒ The international society for human rights, claims that 80 percent of all acts of religious discrimination in the world today are directed at Christians.

⇒ The persecution ranges from forcing Christians to pay an extra tax, not allowing them to have good jobs or build churches, attacks on their homes and family and sometimes murder.

⇒ It 2015 it was reported that the ten countries where the most serious persecution was taking place are: North Korea, Somalia, Iraq, Syria, Afghanistan, Sudan, Iran, Pakistan, Eritrea and Nigeria.

'Do not be overcome by evil, but overcome evil with good'. Romans 12:21

If someone slaps you on the right cheek, turn to them the other cheek also'. Matthew 5:39

Enquiry Task: Why do you think Christian persecution is highest in the countries listed?

1

Relative Formula Mass (M_r)

Calculating the relative formula mass is straightforward. Compounds have a relative formula mass. If you have a compound like $MgCl_2$ then it has a relative formula mass, M_r. This is just the relative atomic mass of all of the atoms in the molecular formula added together.

Remember:

A_r = Relative atomic mass (this can be found on the periodic table)

M_r = Relative formula mass (it is the combined relative atomic masses of all of th elements present in the compound).

Example: Find the relative atomic mass of $MgCl_2$:

1. Look up the relative atomic masses (A_r) of all the elements in the compound on the periodic table:

   A_r of Mg = 24 and the A_r of Cl = 35.5

2. Add up all of the relative atomic masses (A_r) of the atoms in the compound:

   Mg + (2 x Cl) = 24 + (2 x 35.5) = 95

   So the M_r of $MgCl_2$ = 95

Enquiry Task:

Calculate the Mr of the following compounds:

H_2O CO_2 H_2O_2 $NaHCO_3$

% Mass

2

This is really simple, if you learn this formula:

$$\text{\% mass of an element in a compound} = \frac{A_r \times \text{number of atoms in that element}}{M_r \text{ of the compound}} \times 100$$

Example: Find the % mass of sodium in sodium carbonate, $NaCO_3$

A_r of sodium = 23, A_r of carbon = 12, A_r of oxygen = 16

M_r of Na_2CO_3 = (2x23) + 12 + (3x16) = 106

$$\text{\% mass of sodium} = \frac{23 \times 2}{106} \times 100 = 43\%$$

Enquiry Task:

1. Find the % mass of hydrogen in H_20
2. Find the % mass of oxygen in CO_2
3. Find the % mass of carbon in $NaHCO_3$

A more complicated example:

A mixture contains 20% iron ions by mass. What mass of iron chloride ($FeCl_2$) would you need to provide the iron ions in 50g of the mixture? A_r of Fe = 56, A_r of Cl = 35.5.

Enquiry Task:

1. Find the mass of iron in the mixture.
   The mixture contains 20% iron by mass, so in 50g there will be 50 x 20 ÷ 100 = 10g of iron.
2. Calculate the % mass of iron in iron chloride
   = *Percentage mass of iron = A_r X number of atoms of that element ÷ M_r of the com pound X 100*

   Therefore, 56 ÷ 56 + (2 x 35.5) X 100 = 44.09...%
3. Calculate the mass of iron chloride that contains 10g of iron. *Iron chloride contains 44.09% iron by mass, so there will be 10g of iron in 10 ÷ (44.09 ÷ 100) = 23g. So you need 23g of iron chloride to provide the iron in 50g of the mixture.*

The Mole

3

The Mole is simply the name given to an amount of a substance. Chemical amounts are measured in moles. The symbol for the unit mole is mol. The mass of one mole of a substance in grams is numerically equal to its relative formula mass. One mole of a substance contains the same number of the stated particles, atoms, molecules or ions as one mole of any other substance.

The number of atoms, molecules or ions in a mole of a given substance is the Avogadro constant. **Remember this:** the value of the Avogadro constant is 6.02×10^{23} per mole.

We can find out missing information by using the equation:

$$\text{Number of moles} = \frac{\text{mass (g)}}{A_r} \text{ or } \frac{\text{mass (g)}}{M_r}$$

Or by rearranging to :

$$\text{Mass (g)} = \text{number of moles} \times A_r$$
or number of moles $\times M_r$

Worked example 1:

How many moles of sulfuric acid molecules are there in 4.7g of sulfuric acid (H_2SO_4)? Give your answer to 1 significant figure.

Mass = 4.7g **so** $\frac{m}{M_r}$ **then** $\frac{4.7}{98}$ = **0.05 mol**

M_r of H_2SO_4 = 98

Worked example 2:

What is the mass of 7.2×10^{-3} moles of aluminium sulfate ($Al_2(SO_4)_3$)? Give your answer to 1 decimal place.

mol = 7.2×10^{-3} **so** $7.2 \times 10^{-3} \times 342$ = **2.5 g**

M_r of $Al_2(SO_4)_3$ = 342

Enquiry Task:

1. How many moles of helium atoms are there in 0.04g of helium?
2. What is the mass of 20 moles of calcium carbonate $CaCO_3$? Answer in kg.
3. Calcium carbonate decomposes to calcium oxide in a kiln in the following reaction: $CaCO_3 = CaO + CO_2$

   Calculate the mass of calcium oxide that can be produced when 300 tonnes of calcium carbonate is heated.
4. 0.10g of hydrogen reacts with 3.55g of chlorine to produce 3.65g of hydrogen chloride. Use this information to work out the balancing numbers for hydrogen chloride.

$H_2 + Cl_2 =$ ___HCl

Conservation of Mass

4

The law of conservation states that no atoms are lost or made during a chemical reaction so the mass of the product equals the mass of the reactants.

Chemical reactions can be represented by symbol equations which are balanced in terms of the numbers of atoms of each element involved on both sides of the equation.

State symbols **s, l, g** and **aq** are used in symbol equations.

When hydrogen molecules react with chlorine molecules, they make hydrogen chloride molecules:

$H_2 + Cl_2 = HCl$

This equation shows the reactants and products, but it is not balanced.

$H_2 + Cl_2 = 2HCl$

This balanced equation shows that **one** hydrogen molecules reacts with **one** chlorine molecule to form **two** molecules of hydrochloric acid.

Enquiry Task:

1. What is the law of conservation of mass?
2. Why might some reactions appear to show a change in mass?
3. Give two examples of a reaction where a change in mass may appear to take place.

Limiting Reactants

5

In a chemical reaction involving two reactants, it is common to use an excess of one of the reactants to ensure that all the reactant is used up. The reactant that is completely used up is called the **limiting reactant** because it limits the amount of products.

Worked example:

4.8g of magnesium ribbon reacts with 7.3g of HCl.

Which is the limiting reactant?

$Mg(s) + 2HCl(aq) = MgCl_2(aq) + H_2(g)$

Remember: Number of moles = $\frac{\text{mass (g)}}{A_r}$ or $\frac{\text{mass (g)}}{M_r}$

A_r: Mg (24) and A_r: Cl (35.5)

4.8g of Mg = 4.8/24 moles = 0.2 mol

7.3g of HCl = 7.3/36.5 moles = 0.2 mol

From the balanced equation: **1 mole of Mg reacts with 2 moles of HCl**, this is the ratio, therefore **0.2 mol of Mg will need 0.4 mol of HCl** to react completely, there is only 0.2 mol of HCl, so the HCl is the limiting reactant.

Sometimes it is easier to draw a table to help control the information:

Balanced equation	**Mg(s) +**	**2HCl(aq)**	**=**	**$MgCl_2(aq)$**	**+ $H_2(g)$**
Ratio	1	2		1	1
Mass (g)	4.8	7.3			
mol	0.2	0.4			
M_r or A_r	24	35.5			

Enquiry Task:

1. What is meant by the term 'limiting reactant'?

2. If 4.95 g of ethene (C_2H_4) are combusted with 3.25 g of oxygen, what is the limiting reactant?

$C_2H_4 + 3O_2 = 2CO_2 + 2H_2O$

Concentrations of Solutions

6

Chemists quote the amount of substance (solute) dissolved in a certain volume of the solution. The units used to express the concentration can be grams per decimetre cubed **(g/dm^3)**. **A decimetre ($1dm^3$) cubed is equal to $1000cm^3$.**

The blackcurrant juice is getting more concentrated – the darker colour indicates more squash is in the same volume of its solution.

If you know the mass of the solute dissolved in a certain volume of solution, you can work out the concentration using the equation:

Concentration (g/dm^3) = $\frac{\text{amount of solute (g)}}{\text{Volume of solution } (dm^3)}$

Remember: if you are using cm^3 to multiply the volume by 1000 to covert to dm^3

Worked example:

50g of sodium hydroxide is dissolved in water to make up $200cm^3$. What is the concentration in dm^3?

Concentration (g/dm^3) = $\frac{50\ g}{200\ cm^3}$ = $0.25g/cm^3$

then convert to dm^3 = $0.25g/cm^3 \times 1000$ = $250g/\mathbf{dm^3}$

Enquiry Task:

1. Calculate the concentration in g/dm3 for 50g of sodium chloride in 2.5 dm3 of water.
2. Calculate the concentration in g/dm3 of 1.4g of potassium carbonate in 855cm3 of water.
3. A teacher has a solution of lithium fluoride with a concentration of 72.6g/dm3. Calculate the mass of lithium fluoride dissolved in 25.0cm3 of solution.

Communicable Diseases

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

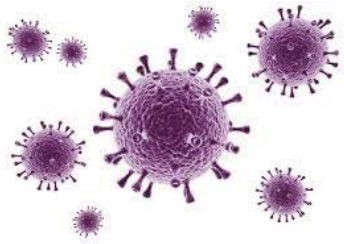
Bacteria are small cells that can reproduce quickly in the body, they produce toxins that make you feel ill, damaging your cells and tissues.

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

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

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

Viral Diseases



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

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

Tobacco mosaic virus affects plants, parts of the leaves become discoloured. This means plants can't carry out photosynthesis; this will affect the plant growth.

Fungal & Protist Diseases

Fungal Rose black spot shows as black spots on leaves of a plant, this means less photosynthesis occurs. As a result the plat doesn't grow as well. It is spread by the wind or water. Plants can be treated using fungicides and takin the leaves off infected plants (burning affected leaves not composting so infectious spores are destroyed).

Protist Malaria is caused by a protist, mosquitoes are the vectors. They become infected when they feed on an infected animal. The protists is 'injected ' when the mosquito feeds.

Bacterial Diseases

Salmonella bacteria causes food poisoning. Symptoms include fever, stomach cramps, vomiting and diarrhoea. The symptoms are caused by the toxins produced by the bacteria. Food contaminated with salmonella can give you food poisoning, most poultry in the UK would have been vaccinated against salmonella. In the right conditions bacteria reproduce rapidly.

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

Enquiry Task

The graph shows the number of confirmed cases of salmonella food poisoning in the UK during one year. Suggest reasons for the high number of cases of salmonella food poisoning in the summer.

_____

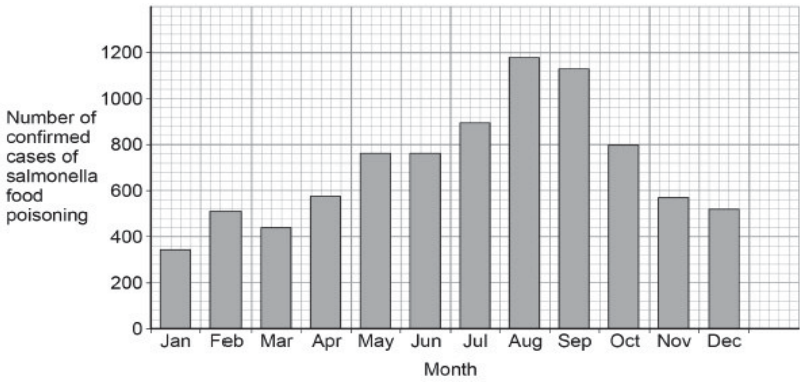
_____

_____

_____

_____

_____



Produce a leaflet or poster in your KO book to educate people on how to reduce the risk of food poisoning in the summer months, think about the activities we tend to do more of in the summer.

Fighting Diseases

Our body has an amazing defence system. The skin acts as a barrier to pathogens, hairs and mucus in your nose trap particles, the trachea and bronchi secrete mucus to trap pathogens, they also have cilia which move backwards and forwards to transport the mucus towards the throat. This traps any pathogens and the mucus is usually swallowed. The stomach contains hydrochloric acid to kill any pathogens that enter.

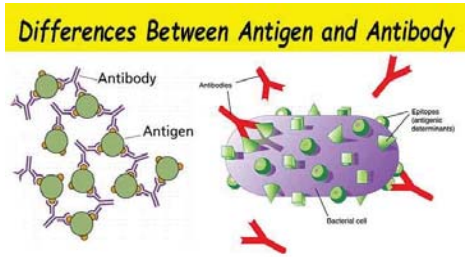
Cilliated cells reduce the amount of mucus and pathogens entering the lungs

The Immune System

The immune system responds to and tries to kill any pathogens that enter the body.

White blood cells:

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



Vaccinations

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

Pros	Cons
Helps to control communicable diseases that used to be very common.	They don't always work.
Epidemics can be prevented.	Some people can have a bad reaction to a vaccine, however, this is very rare.

Drugs

Painkillers relieve the pain and symptoms but do not tackle the cause. Antibiotics kills the bacteria causing the problem, but do not work on viruses. Viruses are very difficult to kill as they live inside the body's cells.

Enquiry Task

White blood cells protect the body against pathogens such as bacteria and viruses. Pathogens make us feel ill.
Give **one** reason why.

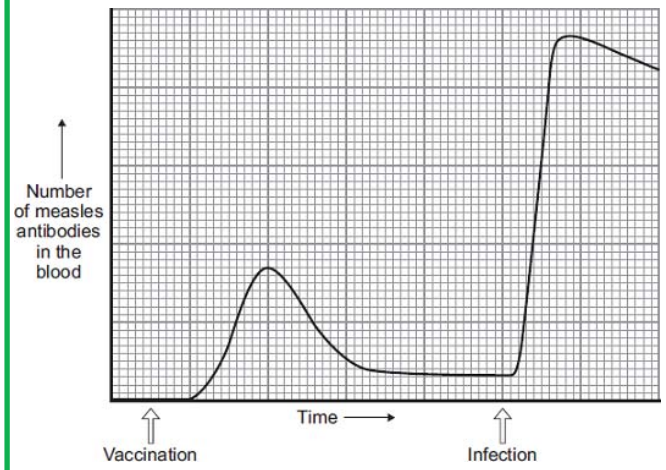
_____
_____

White blood cells produce antibodies. This is one way white blood cells protect us against pathogens.
Give **two** other ways that white blood cells protect us against pathogens.
1. _____
_____
2. _____
_____

Vaccination can protect us from the diseases pathogens cause. One type of virus causes measles. A doctor vaccinates a child against measles.
What does the doctor inject into the child to make the child immune to measles?

_____
_____
_____
_____

A few weeks after the vaccination, the child becomes infected with measles viruses from another person.
The graph shows the number of measles antibodies in the child's blood from before the vaccination until after the infection.



More measles antibodies are produced after the infection than after the vaccination.
Describe other differences in antibody production after infection compared with after vaccination.

_____
_____
_____
_____
_____

What is the advantage of vaccinating a large proportion of the population against measles?

_____
_____

Metals react with oxygen to produce **metal oxides**. The reactions are **oxidation** reactions because the metals **gain oxygen**. **Reduction** involves the **loss of oxygen.**

When metals react with other substances the metal atoms form **positive ions**. The reactivity of a metal is related to its tendency to form positive ions. Metals can be arranged in order of their reactivity in a reactivity series. The metals potassium, sodium, lithium, calcium, magnesium, zinc, iron and copper can be put in order of their reactivity from their reactions with water and dilute acids.

The table below shows the reactions of these metals with water and acid. You may have seen the reactions with water for the group 1 metals at the beginning of year 9 and you can see the reactivity series on the pillar in the science breakout.

Metal	Observations with water	Name of product	Order of reactivity	Observations with acid (HCl)
Lithium	Fairly vigourous fizzing, lithium slowly dissolves, purple solution with universal indicator	Lithium hydroxide, hydrogen	3	Explode
Sodium	Vigourous fizzing, sodium moves around on the surface, quickly dissolves, purple solution with universal indicator	Sodium hydroxide, hydrogen	2	Explode
Potassium	Very vigourouus fizzing, potassium moves around on the surface, catches fire very quickly dissolves, purple solution with universal indicator	Potassium hydroxide, hydrogen	1	Explode
Calcium	Gentle fizzing, calcium slowly dissolves, purple solution with universal indicator	Calcium hydroxide, hydrogen	4	Fizzing, gives off hydrogen gas, forms a salt
magnesium	A few bubbles, very slow reaction	Magnesium hydroxide, hydrogen	5	Fizzing, gives off hydrogen gas, forms a salt
zinc	No reaction	No reaction	6=	Fizzing, gives off hydrogen gas, forms a salt
iron	No reaction	No reaction	6=	Fizzing, gives off hydrogen gas, forms a salt
copper	No reaction	No reaction	6=	No reaction

Enquiry task

1

1. Following the addition of universal indicator state what the observations tell you about the type of solution formed when a metal reacts with water. (2 marks)
2. What gas is always produced if the metal reacts with water? (1 mark)
3. Describe how you could test for the gas produced when calcium reacts with water. (1 mark)
4. Write a **word** equation for the reactions seen with water and the reactions with acid. **Challenge: Try to write the symbol equations as well.** (5 or 12 marks)

The non-metals hydrogen and carbon are in the reactivity series because they use **displacement** reactions. You can think of the metal plus acid reactions as displacement of hydrogen ions from the solution. Copper cannot displace the hydrogen from an acid, whereas lead can. So hydrogen is positioned between copper and lead. Carbon can be used in the extraction of metals from their oxides. However, it can only do this for metals below aluminium in the reactivity series. It does not displace aluminium from aluminium oxide but can displace zinc from zinc oxide. So carbon is placed between aluminium and zinc in the series. A more reactive metal can displace a less reactive metal from a compound. You may have carried out an Investigation by putting a metal strip into a solution containing another metal compound. The more reactive metal can displace the less reactive metal from its compound. The table below shows the results from this investigation.

	Magnesium sulphate	Zinc sulphate	Iron sulphate	Copper sulphate
magnesium	No reaction	Dark crystals on magnesium strip	Dark crystals on magnesium strip	Brown solid, blue colour fades
zinc	No reaction	No reaction	Dark crystals on zinc metal	Brown solid, blue colour fades
iron	No reaction	No reaction	No reaction	Brown solid, blue colour fades
copper	No reaction	No reaction	No reaction	No reaction

2

Enquiry Task

1. Which metal reacted with the most metal sulfate solutions? This is the most reactive metal. (1 mark)
2. Which metal reacted with least metal sulfate solutions? This is the least reactive metal. (1 mark)
3. Put the metals in order from the most reactive to the least reactive. This is a reactivity series. Explain why you put the metals in this order. (2 marks)
4. Write word equations for each of the reactions seen. (6 marks)
5. Write balanced symbol equations including state symbols for each reaction. ***(Higher tier only (see below) – Write ionic and half equations for these reactions)*** (6 marks)
6. When a sample of aluminium reacts with a solution of copper sulfate, the blue solution gradually turns colourless and a brown solid appears. Explain these observation in terms of the reactivity series. And write the word equation for the reaction. (4 marks)

Higher tier only Oxidation Is Loss Reduction Is Gain **OIL RIG!**

2

From the information you have been given so far, oxidation is the gain of oxygen whereas reduction is the removal of oxygen. A wider definition involves the transfer of electrons rather than oxygen atoms. Oxidation is the loss of electrons. Reduction is the gain of electrons. You can apply this to displacement reactions in solution. The **ionic equation** for this reaction is:

$$Fe(s) + Cu^{2+}(aq) \longrightarrow Fe^{2+}(aq) + Cu(s)$$

You can then use **half equations** to show what happens to each part of the reactant.

$$Fe(s) \longrightarrow Fe^{2+}(aq) + 2e^{-}$$

Can you identify which species are oxidised and which are reduced?

Unreactive metals such as gold are found in the Earth as the metal itself but most metals are found as compounds that require chemical reactions to extract the metal. Metals less reactive than carbon can be extracted from their oxides by reduction with carbon. The metals that are more reactive than carbon are not extracted from the ores by reduction with carbon. Instead, they are extracted by electrolysis of the molten metal compound. Tungsten uses hydrogen not carbon, as the carbon forms the compound, tungsten carbide.

Enquiry Task

3

1. For the reaction between copper oxide and carbon, state what has been oxidised in this reaction. Explain your answer. (2 marks)
2. Write a word equation and a balanced symbol equation for the reaction. (2 marks)

Acids react with some metals to produce salts and hydrogen. All acids contain hydrogen, which is released as hydrogen ions when the acid is dissolved in water. When a reaction takes place between a metal and an acid, a salt is formed. A salt is the general name for a compound formed when the hydrogen in an acid is wholly, or partially, replaced by the metal ions. **Acids** are **neutralised** by **alkalis** (eg soluble metal hydroxides) and **bases** (eg insoluble metal hydroxides and metal oxides) to produce salts and water, and by metal carbonates to produce salts, water and carbon dioxide.

If the metal is more reactive than hydrogen you can make assault by reacting the acid directly with the metal. Listed below are some generic reactions forming salts:

Metal + Acid	→	Metal salt + Hydrogen
Metal oxide + Acid	→	Metal salt + Water
Metal hydroxide + Acid	→	Metal salt + Water
Metal carbonate + Acid	→	Metal salt + Carbon dioxide + Water

4

It is important to remember that the metal used, will name the same metal salt, for example **magnesium** will make a **magnesium** salt.

The acid used provides the negative ions present in all the salts:

- The salts formed when you react a metal with hydrochloric acid are always chlorides (containing Cl^- ions)
- Sulphuric acid makes sulphates (containing SO_4^{2-} ions)
- Nitric acid always makes nitrates (containing NO_3^- ions)

Enquiry Task

Zinc reacts with a sulfuric acid to produce a solution of zinc sulfate and hydrogen gas. The water can be evaporated from the solution to produce a crystalline sample of the salt.

1. Write the word equation for the reaction between zinc and sulfuric acid. (1 mark)
2. Explain what is meant by a salt. (1 mark)
3. Complete the symbol equation for this reaction:

   a. ____ $+H_2SO_4 \rightarrow ZnSO_4 +$_____ (1 mark)
   b. Add state symbols to your equation. (1 marks)
   c. What has been oxidised and what has been reduced. (2 marks)

Higher tier only Oxidation Is Loss Reduction Is Gain **OIL RIG!**

In the reaction between magnesium, and dilute sulphuric acid, hydrogen ions will be displaced from solution by magnesium. This happens because magnesium is more reactive than hydrogen. Magnesium has a stronger tendency to form positive ions than hydrogen has, so the following reaction takes place:

$$Mg(s) + H_2SO_4(aq) \rightarrow MgSO_4(aq) + H_2(g)$$

You can summarise this reaction as an ionic equation:

$$Mg(s) + 2H^+(aq) \rightarrow Mg^{2+}(aq) + H_2(s)$$

Sulphate ions in the solution, $SO_4^{2-}(aq)$, do not change in the reaction, so they are not included in the ionic equation. They are called spectator ions. Using half equations you can now see what happens in more detail in the reaction. The magnesium atoms change into positive magnesium ions.

$$Mg(s) \rightarrow Mg^{2+}(aq) + 2e^-$$

A magnesium atom loses two of its electrons from the outer shell. It gives these electrons to two hydrogen ions from the acidic solution forming two hydrogen atoms, making a molecule of hydrogen gas H_2.

$$2H^+(aq) + 2e^- \rightarrow H_2(g)$$

- The magnesium atoms have lost electrons, so magnesium atoms have been oxidised in the reaction.
- The hydrogen ions have gained electrons, so hydrogen ions have been produced in the reaction.

The reaction of the metal with acid is always a redox reaction because the metal atoms always donate electrons to the hydrogen ions, displacing hydrogen as a gas and leaving the metal ions in the solution.

Enquiry Task - Higher tier only

4

The ionic equation for the reaction between zinc and sulfuric acid is:

$$Zn(s) + 2H^+(aq) \rightarrow Zn^{2+}(aq) + H_2(g)$$

1. Write the ionic equation for the reaction of magnesium with hydrochloric acid. Include state symbols in your equation. (3 marks)
2. Explain in terms of electrons what has been oxidised and what has been reduced. (2 marks)

Soluble salts can be made from acids by reacting them with solid insoluble substances, such as metals, metal oxides, hydroxides or carbonates. Metal oxides and hydroxides react with acids to give the corresponding salt plus water. The solid is added to the acid until no more reacts and the excess solid is filtered off to produce a solution of the salt. Salt solutions can be crystallised to produce solid salts.

Required Practical

You should complete a practical where excess copper (II) oxide (black powder) is added to sulfuric acid. The excess copper oxide is then filtered off. The remaining blue solution is heated to evaporate the water from the solution. Once the volume is reduced by half the remaining solution is left to evaporate more slowly producing a crystalline sample of copper sulfate (bright blue crystals).

HINT: *You might complete other versions of this practical with different chemicals, or be asked about them in your exams but the **processes** and **techniques** used are the same so it is important that you remember.*

Watch a video showing copper sulfate being made from copper oxide and sulfuric acid. It can be found online by searching '*making a salt from an insoluble base*'. The video should show the main practical techniques of **filtration**, **evaporation**, and **crystallisation**.

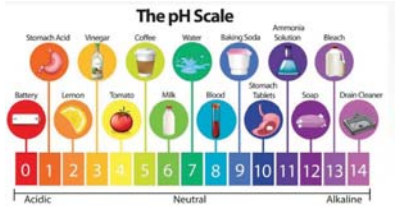
Enquiry Task 5

1. Write the word equation for the reaction between copper (II) oxide and sulfuric acid. (1 mark)
2. Explain what is meant by a base. (1 mark)
3. Write a detailed method for the practical above. (6 marks)
4. Identify the errors that can be made. (3 mark)
5. Explain why the copper (II) oxide added in excess. (1 mark)

When you dissolve a substance in water, you make an aqueous solution.

- Soluble hydroxides are called **alkalis**. Their solutions are alkaline. An example is sodium hydroxide solution.
- **Bases**, which include alkalis, are substances that can neutralise acids. Metal oxides and metal hydroxides are bases. Examples include iron oxide and copper hydroxide which are both insoluble in water
- **Acids** include citric acid, sulphuric acid, and ethanoic acid. All acids tastes sour, although many acids are far too dangerous to taste. Ethanoic acid (in vinegar) and citric acid (in citric fruits) are acids that are weak enough to be edible.
- Pure water is **neutral**: it is neither acid or alkaline

Acids produce hydrogen ions (H+) in aqueous solutions. Aqueous solutions of alkalis contain hydroxide ions (OH–). Indicators are substances which change colour when you add them to acids and alkalis. Litmus paper is a common indicator to show if a substance is an acid or alkali. The pH scale, from 0 to 14, is a more accurate measure of the acidity or alkalinity of a solution. It can be measured using an universal indicator or a pH probe. A solution with pH 7 is neutral. Aqueous solutions of acids have pH values of less than 7 and aqueous solutions of alkalis have pH values greater than 7.



In neutralisation reactions between an acid and an alkali, hydrogen ions react with hydroxide ions to produce water. This reaction can be represented by the equation:

$$H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$$ 6

Enquiry Task

1. Explain what distinguishes alkalis from other bases? (1 mark)
2. Describe the way pH changes when a strong acid is added slowly to a strong alkali. (3 marks)

Higher tier only

It is important to recognise the difference between strong and weak acids compared to concentrated and dilute acids. A **strong** acid is completely ionised in aqueous solution, eg., hydrochloric, nitric and sulfuric acids. A **weak** acid is only partially ionised in aqueous solution, eg., ethanoic, citric and carbonic acids. For a given **concentration** of aqueous solutions, the stronger an acid, the lower the pH. As the pH decreases by one unit, the hydrogen ion concentration of the solution increases by a factor of 10. a concentrated acid is 100% that acid whereas a dilute acid may have a percentage of water added (just like your orange squash may be concentrated in the bottle but diluted with water to drink).

Enquiry Task—Higher tier only 6

1. Explain the terms dilute and concentrated (in terms of amount of substance), and weak and strong (in terms of the degree of ionisation) in relation to acids.

3.1 Key considerations when planning an outdoor activity in a specified location When planning an outdoor activity, focus on the precise activity that you wish to do. The table below can support you with planning.				
Target client	Activity idea	Aims and objectives	Location	Numbers
Who is the activity for?	What do you want to do?	Why do you want to do it?	Where do you want to do it?	What is the ideal size of the group?

STEP 1: Identify potential hazards	**STEP 2:** Who is at risk?	**STEP 3– EXISTING CONTROL MEASURES-** List what could be done to reduce the risk of hazard and any actions needed.	**STEP 4- RISK RATING** Severity x Probability	**STEP 5– PREVENTATIVE MEASURES and RESPONSIBILITIES**
Falling off bike	Instructors and students	Check the route prior to setting off. Check the ability levels of the group in warm up. Correct introduction of activities.	Minor x Likely	Carefully monitor group in open areas (e.g. trees, shrubs and potholes). Spotting of group when riding technical sections. Insist group ride at appropriate pace. Carry first aid kit. **LEADERS**

3.1.1 Key considerations to include	
Health and safety	Needed to protect the group from risk and allow them to learn the activity. The leader needs to consider whether the activity is suitable for the group concerned, whether all risks have been identified and if there is a requirement for a first aider.
Personnel	An appropriate staffing ratio to supervise the activity. National Governing Bodies give guidelines to the appropriate ratio. The qualifications of the instructor should be appropriate and up to date. The instructor should have a knowledge of the local environment which is being used.
Unstable terrain	Leaders should plan to take into account changes in terrain (e.g. rock falls) with a simple 'what to do if' plan.
Inappropriate equipment	The organiser and leader should make sure the correct equipment is available, as poor or inappropriate equipment is hazardous. The equipment should be cleaned and checked before setting out on the activity.
Inappropriate clothing	Participants should be made aware of what is required for them to wear. They should ensure they have appropriate footwear and waterproof or warm clothing where required.
Unforeseen weather conditions	Most OAA activities take place outdoors. The organisers should be prepared for changed in weather conditions and the risks that these present. For example, unexpected rain leading to hypothermia if the temperature drops.
Poor organisation	Failure to check for weather. Losing track of time. Lack of contingency planning in the event of difficult or unforeseen circumstances.
Getting lost	Presence of animals or insect bites

3.3 Emergency Procedure Plan	
An emergency procedure is needed as circumstances can change at any time. The people involved must be prepared and ready to implement the emergency procedure plan if required, in the event of injury or illness which may require first aid or communication/contact in the event of rescue being required. An alternative escape route must be in place.	
First Aid Kit	There must be a first aider available and there must be a suitable first aid kit containing basic items such as plasters, blister dressing, small wound dressings, bandages and painkillers.
Rescue	Mobile phones are useful for calling for help, but signal may be limited. Radios can be useful in these areas. If neither are practical then a usual practice is for the main group to remain with the casualty where two people set off for help to the

3.4 Demonstrate appropriate skills in outdoor activities	
Safe practice	You should ensure that you are listening carefully to instructions. Make sue you have the correct clothing and equipment . Be aware of emergency procedures.
Communication skills	Demonstrate verbal communication appropriate for the situation. Use non-verbal communication when needed. Use appropriate language and ensure that specific terminology is understood.
Decision making skills	Make decisions which maintain safety of all participants. Consider any solutions to maximise efficiency. Weigh up the strengths and weaknesses of ideas.
Problem solving skills	Prioritise problems and aim to solve them. Consider previous experiences.
Identify and clarify issues	There will be situations where you need to identify problems.
Teamworking skills	Demonstrate a number of key skills such as reliability, active listening, active participation, working well with others.

4.1 Evaluate participation in an outdoor activity	
What aspects went well?	What was successful? What did you enjoy? Would you like to do the activity again? Why?
What aspects could be improved?	What did not go so well? What aspects did you not enjoy? If you were completing the activity again, what would you change? Why?

4.2 Evaluate the value of participating in OAA			
Physical Benefits	**Social Benefits**	**Emotional Benefits**	**Intellectual Benefits**
Increased fitness. Burningcalories. Improve muscle tone, strength. Reduce risk of obesity, diabetes, cancer and heart attacks.	Working with others. Socialising. Trusting others.	Improving confidence and self-esteem. Making new friends. Fresh air and exercise stimulate oxygen intake and releasing chemicals from the brain.	Development of decision making and problem solving skills. Planning and organisation skills.

Need to Know Dictionary: English –Poetry and Language Paper 1

Word	Definition
Rhyme	The repetition of syllables, typically at the end of a verse line.
Rhythm	The beat and pace of a poem.
Stanza	Stanzas separate poems into groups of lines.
Juxtaposition	A literary technique in which two or more ideas, places, characters and their actions are placed side by side in a narrative or a poem for the purpose of developing comparisons and contrasts.
Metaphor	A metaphor is a word or a phrase used to describe something as if it were something else.
Atmosphere	The pervading tone or mood of a place, situation, or creative work.
Intentions	The writer's intentions are the ideas he/she wants to convey/express to the reader.
Imaginative	Having or showing creativity or inventiveness.
Interpretation	How you, as a reader, respond to a text.
Implies	To imply is to indicate or suggest something without actually stating it.

Need to Know Dictionary: Maths – Transformations and Vectors

Word	Definition
Translation	Moving a shape left, right, up or down without rotating, enlarging or reflecting.
Rotation	Turning around a centre.
Reflection	A shape or image as it would be seen in a mirror.
Enlarge	Changing the size of a shape by a scale factor.
Scale factor	A ratio between corresponding measurements of an object and a representation of that object.
Invariant	A property that does not change after a transformation.
Vector	An object that has both magnitude and direction.
Magnitude	The size of something.
Scalar	A single number used to multiply vectors.
Multiplier	A number use to multiply another number.

Need to Know Dictionary: Science – Infection & Response, Electrolysis & Atomic Structure

Word	Definition
Pathogen	Microorganisms that cause disease.
Engulf	Engulf is a verb that means being completely surrounded, soaked, or covered. In science we refer to engulfing when discussing phagocytosis, the process by which certain living cells called phagocytes ingest or engulf other cells or particles.
Antibiotic	An antibiotic is a type of antimicrobial substance active against bacteria. It is the most important type of antibacterial agent for fighting bacterial infections, and antibiotic medications are widely used in the treatment and prevention of such infections. They may either kill or inhibit the growth of bacteria.
Electrode	An electrode is a rod where current enters and leaves an electrolyte. When the current leaves the electrodes it is known as the cathode (negative) and when the current enters it is known as the anode (positive). Electrodes are vital components of electrochemical cells.
Electrolyte	A liquid, containing free moving ions, which is broken down by electricity in the process of electrolysis.
Ionic	Ionic things have something to do with ions, or charged molecules. An ion is a charged particle. An ionic bond is the attraction that occurs between ions with opposite charges. When you see the adjective ionic, you'll know the topic is science. There are ionic compounds, which are two or more atoms held together with ionic bonding.
Alpha	Alpha radiation particles each composed of two protons and two neutrons, emitted by an unstable nucleus. Commonly described as a Helium nucleus.
Beta	Beta particles that are high energy electrons created in, and emitted from, unstable nuclei.
Gamma	Electromagnetic radiation emitted from unstable nuclei in radioactive substances, such as the Sun, the Earth core, etc.
Radiation	The emission of energy as electromagnetic waves or as moving subatomic particles, especially high-energy particles which cause ionisation.

Need to Know Dictionary: French

Word	Definition
Verb	A word that shows an action, such as 'jouer', or a state of being such as 'être or 'avoir'.
Adjective	A word that describes a noun.
Adjectival agreement	In French, adjectives must agree with their noun, which means that they have to show whether they are masculine or feminine and singular or plural to match the noun.
First person singular	The pronoun 'Je' is first person singular.
Second person singular	The pronoun 'Tu' is second person singular.
Third person singular	The pronouns 'Il/Elle/On' are third person singular.
Masculine and Feminine	•All French nouns have a grammatical gender - they are either masculine or feminine. EG: - 'le père', •'la mère'.
Present tense	Use the present tense to describe what happens regularly and what is happening now.
Pronoun	Pronouns replace nouns in a sentence.
Liaison	When a word ends in s, x, t or n and the next word starts with a vowel or an h, the s and x will sound like z, and the t and the n will be pronounced. This is called a 'liaison', as the words are linked together. EG: -'C'est très ennuyeux'.
Silent final consonant	•In French, some letters are silent, either at the start or at the end of a word, e.g. 'hôtel, 'chat'.
Phonics	The sounds that make up words.
Accent	Accents placed on words change the sound of a letter, e.g. é as in 'café'.
Question	Questions in French can be formed using 'Est-ce que', or by switching the verb and subject, 'Faites-vous vos devoirs ce soir?'
Modal verbs	EG: - pouvoir (be able to) devoir (have to, must, should) vouloir (want to).
Infinitive	An infinitive is a verb that has not been changed and is in its original form, e.g. ending in –er, -ir, -re meaning 'to...'.

Need to Know Dictionary: Geography – UK Landscapes

Word	Definition
Abrasion	Rocks carried along by the river, wear down the river bed and banks.
Attrition	Rocks being carried by the river smash together and break into smaller, smoother and rounder particles.
Cross profile	The side to side cross-section of a river channel and/or valley.
Dam and reservoir	A barrier (made on earth, concrete or stone) built across a valley to interrupt river flow and create a man-made lake (reservoir) which stores water and controls the discharge of the river.
Discharge	The quantity of water that passes a given point on a stream or river-bank within a given period of time.
Embankments	Raised banks constructed along the river; they effectively make the river deeper so it can hold more water. They are expensive and do not look natural but they do protect the land around them.
Estuary	The tidal mouth of a river where it meets the sea; wide banks of deposited mud are exposed at low tide.
Flood	Occurs when river discharge exceeds river channel capacity and water spills out of the channel onto the floodplain and other areas.
Flood plain	The relatively flat area forming the valley floor on either side of a river channel, which is sometimes flooded.
Flood plain zoning	This attempts to organise the flood defences in such a way that land that is near the river and often floods is not built on. This could be used for pastoral farming, playing fields etc. The areas that rarely get flooded would therefore be used for houses, transport and industry.
Gorge	A narrow, steep sided valley, often formed as a waterfall retreats upstream.
Hard engineering	Involves the building of entirely artificial structures using various materials such as rock, concrete and steel to reduce, disrupt or stop the impact of river processes.

Need to Know Dictionary: History - Medicine

Word	Definition
Because	A useful conjunction used to explain how or why something is the case.
Disease	Illness affecting plants and animals.
Humours	These were four liquids in your body – blood, yellow bile, black bile and phlegm (pronounced 'flem') – which needed to be in balance for you to be healthy. Each liquid gave off vapours, which entered the brain and altered the person.
Inoculation	Putting a low dose of a disease into the body to help it fight against a more serious attack of the disease.
Meant	The past tense of the verb 'to mean' is 'meant' not 'ment'.
Prevention	An action taken to decrease the chance of getting a disease or condition.
Remedy	A medicine, application, or treatment that relieves or cures a disease.
Therefore	An adverb that means 'as a consequence', 'as a result',' or 'hence'.
Treatment	Medical care given to a patient for an illness or injury.
Vaccination	Vaccines allow a dead or altered form of the disease causing pathogens to be introduced into the body, which contain a specific antigen. This causes the immune system, specifically the white blood cells, to produce complementary antibodies, which target and attach to the antigen.

Need to Know Dictionary: Engineering Design

Word	Definition
Prototype	A prototype is a model of a product used to explore design alternatives, test theories, confirm performance and ensure the product is safe and user-friendly. Engineers use prototypes to figure out specific unknowns still present in the design.
Functionality	The quality of being suited to serve a purpose well; practicality.
Injection Moulding	The shaping of rubber or plastic articles by injecting heated material into a mould.
Identify	This phase is about articulating customer needs. The customer's main communication point and desire is identified. Teams and team charters are developed. Roles are designated for team members. milestones and benchmarks are planned.
Design	This phase defines the functional requirements of the process or product, as well as alternate processes that may be required. Concept designs are created, simulations are run and risks assessed. The plans for procurement and manufacturing are made.
Optimise	In this phase, tolerances are assessed, performance is predicted and alternate designs and design elements are tested.
Validate	In this phase, performance is compared to predictions based on previous simulations. Prototypes are tested, assessed and validated. Changes to business processes can be made here.
Ergonomic	Ergonomics is a consideration that leads to a product being designed in a way to make it easy to use.
Anthropometric	Anthropometrics is the practice of taking measurements of the human body and provides categorised data that can be used by designers.
Sustainable	Sustainable engineering is the process of designing or operating systems so that they use energy and resources sustainably, i.e. at a rate that does not damage the natural environment, or the ability of future generations to meet their own needs.

Need to Know Dictionary: Art

Word	Definition
Formal elements	The formal elements are the parts used to make a piece of artwork. The art elements are line, shape, space, form, tone, texture, pattern, colour and composition.
Line	A line is a mark made on a surface that joins different points
Shape	A shape is a two-dimensional area. Shapes have height and width but not depth. A shape might be defined by an outline or through contrast with its surroundings, such as through colour or tone.
Form	Form refers to three dimensional objects. While shapes have two dimensions (height and width), forms have three dimensions (height, width and depth).
Tone	Tone means how light or dark something is. The tones artists and designers use and the contrast between them can create very different moods and visual effects.
Composition	Composition is the arrangement of different elements within an artwork or design.
Popular Culture	In everything from film to food labels, popular culture includes the cultural activities, products, images, and ideas embraced by the broader public, particularly as seen in mass media.
Contrasting	Emphasis through contrast is when artists and designers draw attention to part of a composition by making it different from its surroundings.
Identity	Identity is the way we perceive and express ourselves. Many artists use their work to express, explore, and question ideas about identity.
Anatomical (adjective)	Referring to the structure of an animal or plant, or of any of its parts.
Refine	Refinement is the improvement of the idea. It does not involve radical changes, but is about making small changes which improve the idea in some way.

Need to Know Dictionary: Drama

Word	Definition
Clarity	Projective your voice so that every word can be heard with enough strength and resonance to fill a theatre auditorium.
Articulation	The ability to make every sound and consonant clear, so that individual letters are not lost within words and they are sounded correctly.
Remembering lines	There are different methods of learning lines to make them easier to remember such as line run, listening to a script and drawing pictures.
Movement memory	The body gets used to doing a movement after it has done it any number of times. This helps the mind adapt so that it has to think less in order to perform that function.
Spatial awareness	Spatial awareness is a well-thought-out awareness of things in the space around us, including the awareness of our body's position in space.
Focus	Focus, as an element of drama, refers to the exploration of ways the attention of an audience can be drawn to certain elements of what is happening in a performance space.
Presentation	The appearance of a performance to the audience based on a combination of form and style.
Intention	A consideration of the effect you hope to have on the audience.
Stage presence	A magnetic power to ultimately hold a stage. This could be a combination of self-confidence, spatial awareness and ability.
Commitment	Commitment means learning your lines, showing up on time, sharing generously your work with your cast members, doing your character homework and treating yours and cast members work seriously.

Need to Know Dictionary: Music

Word	Definition
Self-discipline	The ability or will-power to work to improve on whatever it is you are doing.
Development	In music, development is a process by which a musical idea is communicated in the course of a composition.
Composition	Making up your own music is called composition.
Performance	Performance is when all the elements of musical preparation come together to be played for an audience.
Melody	A melody is a linear sequence of notes. It is a combination of pitch and rhythm.
Accompaniment	The musical part which provides the rhythmic and/or harmonic support for the melody or main themes of a song or instrumental piece.
Attack and decay	Attack refers to the beginning build-up of a note. Decay refers to how long sounds remain at their peak loudness until they start to disappear.
Elements	Some of the most important elements of music are dynamics, tempo, pitch, timbre, duration, texture, melody and structure. These elements help us both to describe the music that we hear and to create contrast in our music so that it sounds interesting.
Equipment	The necessary items or objects for a particular musical purpose.
Portfolio	This organises your educational background in music, work experience, performances, and potential.

Need to Know Dictionary: Sports Studies

Word	Definition
Citizenship	An effective citizenship can be defined as someone who gives back or contributes in a meaningful way to their community. This could be someone who volunteers for causes they care about, teaching, coaching or being involved in their community.
Etiquette	Sport has unwritten rules or customs – etiquette – to uphold respect and fairness. These help people to play in the 'spirit of the game'. They often require players to take an active approach to respect and fairness, not just avoid breaking the rules.
Gamesmanship	Without breaking them, players may bend the rules and use questionable methods to gain an advantage.
Infrastructure	Sports infrastructure, such as stadiums, sports halls, swimming pools, fitness facilities, ski resorts, golf courses and other sports infrastructure.
Initiative	An initiative empowers clubs to create opportunities that bring people together and change lives for the better. It is also the ability to assess and initiate things independently.
Inclusion	Making sure that everyone can take part.
Investment	The action or process of investing money for profit.
Legacy	This refers to the planned and unplanned, positive and negative, intangible and tangible effects that are created through an event.
Reputation	Reputation is a concept by which a sports organisation, club or individual tries to create a positive image of itself.
Sportsmanship	Sportsmanship means playing within the rules and understanding and using sports etiquette. It is playing fairly in the spirit of the game, showing respect and fair play to opponents and graciousness in both victory and defeat.

Need to Know Dictionary: Religious Studies

Word	Definition
Akhirah	Akhirah is the word Muslims use to refer to life after death.
JIhad	The Muslim concept of jihad is often confused with the idea of holy war. Jihad means 'to struggle in the way of Allah', and refers at least as much to an inner or personal spiritual struggle as it does to war and fighting.
Predestination	This means that Allah already knows everything that will happen, and nothing happens unless it is according to Allah's will. However, this does not mean that the choices people make are not free choices. Instead, it means that Allah knows what people will chose to do.
Prophet	Prophets are messengers sent from God, or Allah, to help Muslims follow the straight path. Although the names of many prophets are recorded in both the Bible and the Qur'an, the Qur'an records the names of twenty-five prophets.
Revelation	Revelation is when something that was hidden becomes known. For many religious people, revelation comes from God and reveals something about God.
Ummah	The Arabic word for 'nation' or 'community'. It is the world-wide community of followers of Islam.
Supremacy	The state or condition of being superior to all others in authority, power, or status. In Islam, Allah is the name Muslims use for the supreme and unique God, who created and rules everything.
Surah	The Qur'an consists of 114 chapters, or Surahs, which were revealed over a period of 23 years. Surahs are divided into verses or ayat. The Qur'an instructs Muslims on how to behave and sets out what is right and wrong.
Rak'ah	A unit of bodily actions and recitations from the Qur'an said during prayer. Each prayer consists of various numbers of rak'ahs.
Prostration	In Islam, this is the act of kneeling with forehead, hands, knees and feet touching the floor.

Need to Know Dictionary: Hospitality and Catering

Word	Definition
Macronutrients	Macronutrients are nutrients that are needed in large amounts by the body – protein, fat and carbohydrate.
Micronutrients	Micronutrients are vitamins and minerals needed by the body in small amounts.
Nutritional	The nutritional content of food is all the substances that are in it which help you to remain healthy.
Unsatisfactory	Not satisfactory; not good enough; below acceptable standard.
Compare	Estimate, measure, or note the similarity or dissimilarity between.
Analyse	Examine (something) methodically and in detail, typically in order to explain and interpret it.
In-depth	Comprehensive, thorough or detailed.
Explain	Make (an idea or situation) clear to someone by describing it in more detail, giving instruction or stating facts.
Credible	Able to be believed; convincing.
Complex	Complex carbohydrates (also known as starch) are formed of long chains of sugars joined together. They are found in foods like bread, rice, pasta and potatoes.

Need to Know Dictionary: Creative iMedia

Word	Definition
Interactive	A computer or application that responds to the user's input, two way communication between human and device.
Multimedia	Multimedia applications combine elements like text, images, audio and video and require specific considerations in their design.
Digital content	Digital content is any content that exists in the form of digital data. Also known as digital media, digital content is stored on digital or analog storage in specific formats.
Client brief	The client brief, written by a client, explains the ins and outs of a project to the agency who'll be working on it.
Target audience	A particular group at which a product such as a film or advertisement is aimed.
User control	A control created by a developer, usually by combining other controls, often intended for use in a specific application.
Navigation methods	How a user interacts with a site. Navigation can be structured in two types of structure: linear and hierarchical.
Editing	The process of selecting and preparing written, photographic, visual, audible, or cinematic material used by a person or an entity to convey a message or information.
Planning	Preparing and organising your ideas and intentions.
Assets	A media asset is any piece of visual data that is owned or can be controlled to produce something of value. These can come in a few different forms such as: Video Files. Audio Files. Graphics.

Need to Know Dictionary: Health and Social Care

Word	Definition
Service user	This describes anyone who is a patient or user of services.
Consultation	A meeting with an expert, such as a medical doctor, in order to seek advice.
Need to know	If you tell people something on a need-to-know basis, you only tell them the facts they need to know at the time they need to know them, and nothing more.
Values	Values are the beliefs and views that people hold about what is right or wrong. They apply to all aspects of life and influence how a person behaves in different situations.
Rights	For example: - the right to be respected, treated with equality, and fairly, respected as an individual and not discriminated against, privacy, dignity, protection from danger and harm; right to access information relevant to themselves; right to communicate using their preferred methods of communication etc.
Beliefs	A belief is an attitude that something is the case. A belief might be important to an individual and their understanding of the world around them.
Equality	Everyone being treated the same.
Diversity	Recognising people's differences and embracing them.
Discrimination	People who are unfairly treated differently because of their age, race, gender etc.
Confidentiality	Conversations and information that is kept private from people who do not need to know.

Need to Know Dictionary: Business Studies

Word	Definition
Customer profile	Customer profiles are 'customer types', which are generated to represent the typical users of a product or service, and are used to help the project team make customer centred decisions without confusing the scope of the project with personal opinion.
Market segmentation	The process of splitting a business' target market into different groups. Businesses use these groups to make it easier for them to develop products aimed at certain people and to help them target their marketing. Small businesses generally split up their target market based on location, demographics, behaviour, lifestyle, income and age.
Market research	Market research collects information that might help a business to be more successful and spot gaps in the market.
Primary research	Primary market research, also known as field research, is new research that a business undertakes itself. It involves collecting new data and information that has not been collected before. Primary research provides a business with customised research that is specific to its own circumstances. It often uses the business' own customers to find out information.
Secondary research	Also known as desk research, this involves gathering existing data that has already been produced. Secondary research can be collected from both inside (internal) and outside (external) a business.
Quantitative data	●is usually numerical data ●is gathered through the use of closed questions, such as 'yes' or 'no' responses, multiple-choice options or a rating system ●can generally be expressed in a graph or chart It has the benefit of being simple and quick to analyse. It can also be analysed in a way that gives easy-to-understand results. However, quantitative data lacks specific opinions and doesn't always allow a business to see exactly what its customers think.
Qualitative	●is usually expressed as opinions ●includes descriptive information ●is gained using open-ended questions, eg 'What do you like about the product and why?' It provides a business with detailed information that cannot be expressed in a graph or chart. While qualitative data gives detailed information, it can be time consuming and costly to gather and analyse.
Sampling	Sampling is the process of creating a small unbiased population to be used in a test or experiment. The sample removes the impractical idea of surveying everyone in a market or a population.
Niche market	A small section of the market with clearly identifiable needs, but with little competition and therefore high prices can usually be charged.
Justify	Questions that ask you to 'justify' go a step beyond analyse and discuss. They often ask respondents to consider either one or two options and then recommend a course of action for a business to take.

Need to Know Dictionary: Child Development

Word	Definition
Antenatal	Before birth; during or relating to pregnancy.
APGAR Score	A measure of the physical condition of a new-born infant. It is obtained by adding points (2, 1, or 0) for heart rate, respiratory effort, muscle tone, response to stimulation, and skin coloration; a score of ten represents the best possible condition.
Immunity	If you have a high enough antibody level to protect you against a particular infection, you are immune.
Incubator	an enclosed apparatus in which premature or unusually small babies are placed and which provides a controlled and protective environment for their care.
Miscarriage	The spontaneous or unplanned expulsion of a foetus from the womb before it is able to survive independently.
Obstetrician	A doctor with special training in how to care for pregnant women and help in the birth of babies
Ovulation	The release of an egg from an ovary during the menstrual cycle.
Paediatrician	A medical practitioner who specialises in the branch of medical science concerned with children and their diseases.
Pre-eclampsia	Preeclampsia is a pregnancy complication characterised by high blood pressure and signs of damage to another organ system, most often the liver and kidneys. Preeclampsia usually begins after 20 weeks of pregnancy in women whose blood pressure had been normal.
Post-natal	The period of time immediately after childbirth.