Harrow Way Community School
Learning for life, success for all

Year 10 Knowledge Organiser

Spring Term

How do I complete Knowledge Organiser Homework?

Link to self-quiz video: https://youtu.be/cFUuhtPIMPU

Step 1

Check on:
ShowMyHomework for what words / definitions / facts you have been asked to learn.

Step 2

Write today's date and the title from your Knowledge Organiser in your self-quizzing book.

Step 3

Read the section of the Knowledge Organiser that you are studying. Read it slowly, you can read it aloud and with a ruler if this helps.

Step 4

Cover up the section and try to write out the information exactly as it is written on the Knowledge Organiser in your self-quizzing book.

DO NOT PEEK!

Step 5

Uncover the section and compare it to what you have written. If you have made mistakes or missed parts out, add them in using a pencil or a different colour.

Step 6

Repeat steps 3-5 again until you are confident.
You will need to bring your self-quizzing book in every day and your teacher will check your work.
You will be tested in class.

Knowledge Organiser - YEAR 10 - SPRING TERM

Contents

GCSE Assessment objective 1 Part 1: MIND MAPPING

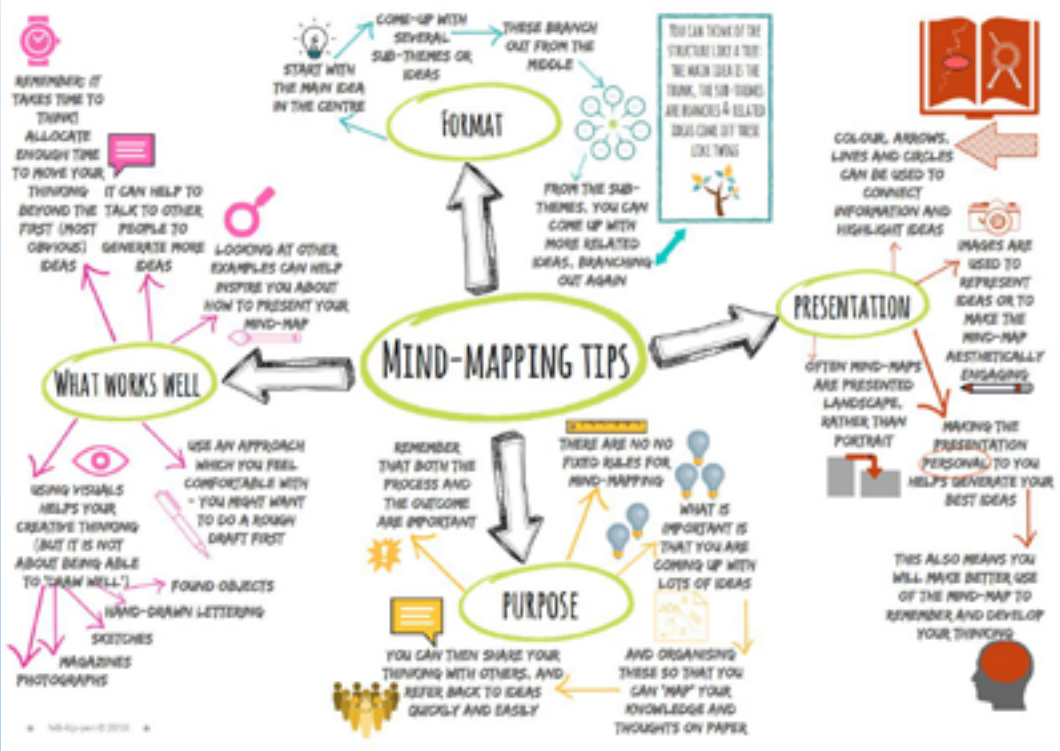
DEVELOP ideas through investigations, demonstrating critical understanding of sources.

AO1

Showing your ideas

Central idea = Starting point

Must be clear and central



Key words = key idea

One word per branch which will spark a number of associations

Colour coding = clarity

This links the visual with the logical and helps your brain to create mental shortcuts. The code allows you to categorise, highlight and analyse information. Colours also make images more appealing and engaging

Branches = key themes

You can explore each theme or main branch in greater depth by adding smaller branches

What to include

IDEAS exploring the starting point: notes, phrases, drawings, images.

Images = powerful message

Visuals can convey much more info than a word or sentence. They are processed instantly by the brain and act as visual stimuli to recall info

Art - Assessment Objective 1.2

GCSE Assessment objective 1 Part 2: MOOD BOARD
DEVELOP ideas through investigations, demonstrating critical understanding of sources.

AO1

Gathering resources

Consider your theme
Do you want it quite narrow or are you happy to collect a wider range of ideas?

Use a range of sources
Internet images, photographs, magazine cuttings, drawings etc

Don't limit yourself
Even if it doesn't directly link to your starting point it may relate to the theme. Consider colours and words to help you.

What to include
IMAGES of the work of artists, designers, craftspeople, art movements, song lyrics
Quotes from poetry, literature, film etc.

Apply your ideas
Your moodboard will directly link to the development of your project. If there is empty space fill it with sketches or annotations

Pick a style
Pulling it all together with a colour theme or visual style will make your page work together as a whole

Art - Assessment Objective 1.3

GCSE Assessment objective 1 Part 3: Artist Research
DEVELOP ideas through investigations, demonstrating critical understanding of sources.

AO1

Showing your understanding of an artists work or style

Biographical information
Birth, death, style, education, important works

Social, historical and economic influences
What was happening at the time? Were they responding to anything that was happening around them?

Collected images
Select images that are relevant and that appeal to you, make comments about why you like them

Technical information
How was their work produced? What methods and materials did they use?

Artistic influences
Who influenced their work? Did their work influence anyone else?

What to include
IMAGES of the work of one artists, designer or craftsperson that inspires you
ANNOTATION (see separate knowledge organiser)
ARTIST RESPONSE (to demonstrate your understanding of the style

Art - Assessment Objective 1.4

GCSE Assessment objective 1 Part 4: Art analysis

AO1

Analysing artwork

CONTENT 1.
Looking at the subject of the work

- What is it?
- What exactly can you see?
- What is happening?
- What does the work represent?
- What does the artist call the work?
- Does the title change the way we see the work?
- What I the theme of the work?
- Landscape, portrait, journey, moment, memory, event, surreal, fantasy, abstract, message

FORM Looking at the formal elements 2.

- What colours does the artist use and why? How is the colour organised?
- What kind of shapes can you see?
- What kind of lines and marks does the artist use?
- What is the surface like?
- What textures can you see?
- What patterns can you see?
- How big is the work?
- Light, delicate, layered, strong, rough, dark, peaceful, dripped, textured, scale, vivid, bright

PROCESS 3.
How the work has been developed and made

- What materials and tools have been used?
- What is the evidence for how it has been made?
- Painted, drawn, woven, printed, cast, stitched, constructed, collaged

Technical information 4.

- How was their work produced?
- What methods and materials did they use?

Artistic influences 5.

- Who influenced their work?
- Did their work influence anyone else?

Write in note form and discuss with your teacher

Sentence starters

6.

Looking at artwork **OBJECTIVELY**.
What are the facts? Don't guess

Use these sentence starters to direct your research:

I particularly like…(title of the work you have chosen to talk about)
It is a… (painting, sculpture, textile etc)
It has been created by… (what materials and techniques did the artist use?)
The subject of this piece is… (what is in the work? If there are people in it what are they doing? If there are objects in it, what are they and where are they placed?) Describe it in detail.
The composition is inviting because…
This artwork is unique because…

7.

Look at the work **SUBJECTIVELY** (your opinions & thoughts)
Use these sentence starters to direct your research:

This artwork reminds me of…because…
This artwork makes me think of…because…
Through speculation I have come to the conclusion that…
(what do you think is happening in the artwork, how is it different or strange?
I believe the artist has created this kind of work because…
On closer inspection I notice that…
(what have you noticed since you started looking more carefully at the artwork OR by reading about it)
This piece is exciting because
(Why were you drawn to this piece of artwork? Is it the colours? How it makes you feel? How the artist has arranged the objects? Because it draws the eye in a certain direction? Look carefully and explain what is going through your mind.
I appreciate the way the artist has…
This work is similar to … (another work you have looked at) because…
This work is in contrast to … (another work you have looked at) because…
I prefer this work to… (another work you have looked at) because… (mention the differences and similarities of the two artworks)
I am interested in this type of work because at this stage I think I might… (what are you going to make or create?)
To develop my ideas I will be experimenting with… (materials/techniques)

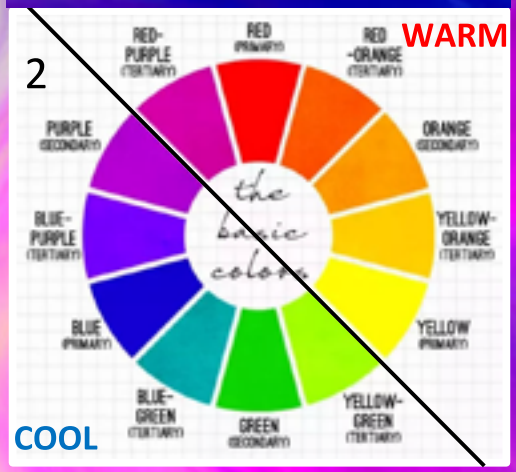
COLOUR

1

Colour plays a vitally **important** role in the world in which we live. **Colour** can sway thinking, change actions, and cause reactions. It can irritate or soothe your eyes, raise your blood pressure or suppress your appetite. As a powerful form of communication, **colour** is irreplaceable.

COLOUR WHEEL

2



Cool colours painting

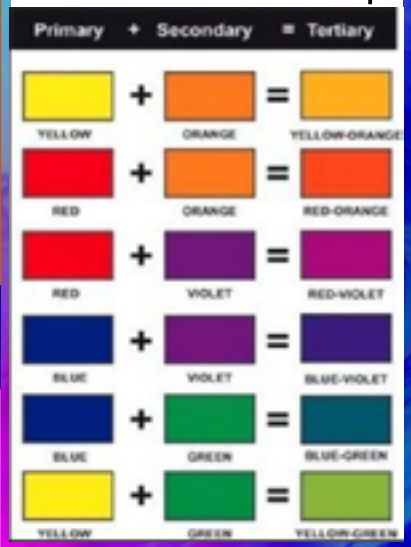
Warm colours painting

ADJECTIVES TO DESCRIBE COLOURS

Light Bright Vivid Glowing Vibrant Brilliant Intense Dazzling Subdued Diluted Gloomy Depressing Pale Dull Murky Muted Monotonous Fluorescent Saturated Opaque Transparent

3

4



TINT
is adding white to a colour

5

TONE
is adding grey to a colour

SHADE
is adding black to a colour

COLOUR SCHEMES

6

PRIMARY

Uses the primary colours: Red, Yellow & Blue. They can not be made by mixing other colours.

COMPLEMENTARY

Uses a pair of colours that are opposite each other on the colour wheel. The pairs are: Green/Red; Blue/Orange; Yellow/Purple.

SECONDARY

Uses the secondary colours: Orange, Green & Purple. Each secondary colour is made by mixing two primary colours.

HARMONIOUS

Uses three or four colours (primary, secondary and tertiary) that are next to each other on the colour wheel.

TERTIARY

Uses the tertiary colours. They are made by mixing a primary and a secondary colour next to each other on the colour wheel.

MONOCHROMATIC

Uses Tints, Tones & Shades of one colour. The word MONO means ONE and the word CHROMA means INTENSITY OF COLOUR.

DRAWING

The **basic craft of drawing** is about two things: **1. To control your hand** and **2. Learn to see.**

Line drawing

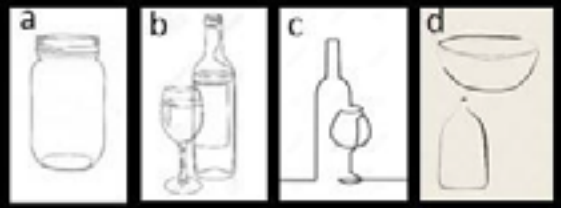
1 ELLIPSES:
The circle found at the top and the base of a cylindrical object; i.e. bottle, cylinder, etc. Ellipse can also occur when the sides of the bottle change direction, i.e. get narrow or wide.

2 CENTRE LINE: Divides the object vertically in two equal parts.
LINE OF SYMMETRY: the line at which the bottle is symmetrical.
Mirror image symmetry: exactly matching opposite sides

3 POSITIVE SPACE: (*Object in white*)
The space occupied by the object/s.

NEGATIVE SPACE: (*All in black*)
The rest of the space around or in between the object/s.

4 LINEAR DRAWING
A drawing using line only to:
a) outline the shape of the object;
b) to add detail;
c) using continuous line (without lifting your pencil of the paper from start to finish.
d) Minimalist drawing



Tonal drawing

5 FLAT TONE:
A solid block of tone, see Tonal Ladder. It has no outlines. Different flat tones next to each other define shapes.

6 SHADING:
When the tone gradually changes from dark to light. It can appear a) smooth or b) rough by using lines called **Hatching** or **Cross Hatching**.

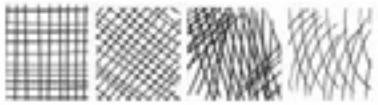
SHADING (light from the side):
On the outside of the object the tone changes gradually from one side to the other. Light and dark areas swap direction on the inside opening of the object like in this cup.

SHADING (light from the centre):
The tone is dark on both sides and smoothly gets light in the middle. It gives a 3D effect and looks very realistic.

7 TEXTURE and MARK-MAKING:
Texture is the **surface quality** of something. Artists use mark-making techniques to represent different textures.

8 Hatching

Cross- Hatching in 2,3 or more directions



Other elements of drawing

9 PERSPECTIVE:

the art of representing three-dimensional objects on a two-dimensional surface so as to give the right impression of their height, width, depth and position in relation to each other.

10 RANGE OF PENCILS:

11 FOREGROUND: An art term that describes the objects in the scene that are closest to the viewer. It is the part in front of everything else and has the most detail.

MIDDLE GROUND: lies between the foreground and background of a painting. The objects in this area appear smaller. They are usually placed behind the objects in the foreground.

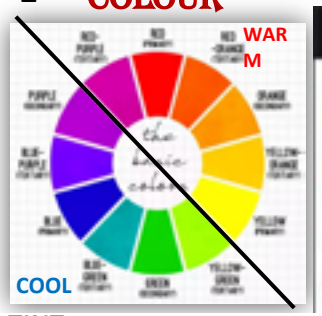
BACKGROUND: is the part of a scene or picture that is farthest from the viewer. It usually has the least detail.

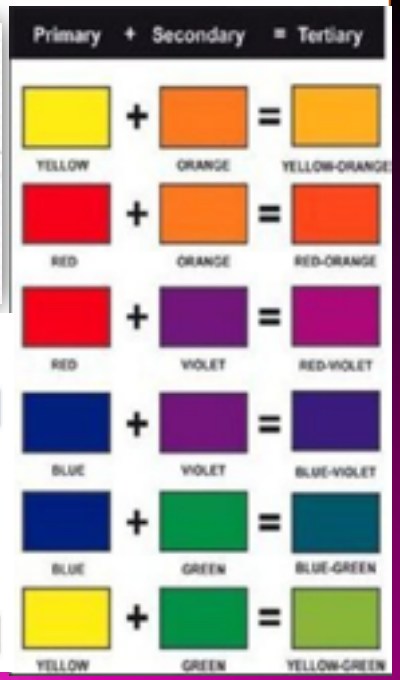
12 COMPOSITION:
Refers to the organisation, arrangement, and combination of objects within the borders of a **drawing** space.
For a great **drawing**, you want to bring the eyes of the viewer toward your centre of interest within an aesthetically pleasing **composition.**

FORMAL ELEMENTS

1 The Formal Elements are: **line, shape, form, tone, texture, pattern and colour**. They are used together to create artwork.

2 COLOUR





TINT
is adding white to a colour

TONE
is adding grey to a colour

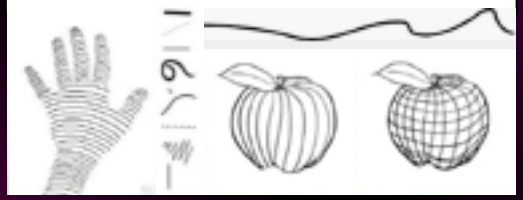
SHADE
is adding black to a colour

3 PATTERN

is a symbol or shape that is repeated. A design that is created by repeating lines, shapes, tones or colours. The design used to create a pattern is often referred to as a **motif**. Motifs can be simple shapes or complex arrangements. Tessellating any image creates a Repetitive pattern.

4 LINE

is the path left by a moving point, i.e. a pencil or a brush.
A line can take many forms. It can be horizontal, diagonal or curved. Line can be used to show: contours (the shape and form of something); movements, feelings or expressions (a short, hard line gives a different feeling to a more flowing one).

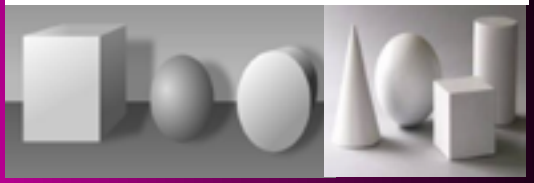


5 SHAPE

is an area enclosed by a line. It could be just an outline or it could be shaded in. When drawing shapes, you must consider the size and position as well as the shape of the area around it. The shapes created in the spaces between shapes are referred to as **negative space**.

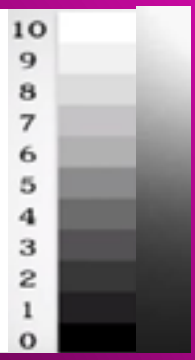
6 FORM

is a three dimensional shape (3D), such as a cube, sphere or cylinder. Sculpture and 3D design are about creating forms. In 2D artworks, lines, tones and perspective can be used to create an illusion of form. The three dimensions of form are width, length and depth.



7 TONE

is the lightness or darkness of an object. This could be a shade or how dark or light a colour appears. Tones are created by the way light falls on a 3D object. In every 3D object there are minimum of 3 tones; light, mid-tone and dark. Tone can be flat or it can vary from dark to light.

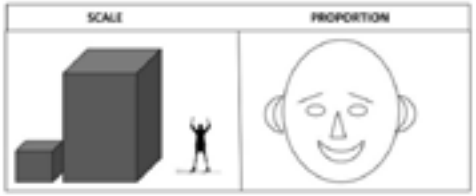


8 TEXTURE

is the **surface quality** of something, the way something feels or looks like it feels. **Actual texture** really exists, so you can feel it or touch it. You can create actual texture in an artwork by changing the surface, such as sticking different fabrics onto a canvas.
Visual texture is created using marks to represent actual texture. It gives the illusion of a texture or surface. You can create visual texture by using different lines, shapes, colours or tones.

9 SCALE

is the size of one object in relation to the other objects in a design or **artwork**.



10 PROPORTION

refers to the relationship of the sizes of two or more subjects or elements.

PAINTING

1. The act of **painting**, using a brush, palette knife, sponge, or airbrush to apply the paint; 2. The result of the action – the **actual picture**.

1 Watercolour brushes:
Are specially made to allow the artist to control the flow of the colour from the **brush** onto the paper. A watercolour brush should hold a fine point when wet and spring back into shape after each stroke. It should carry the colour allowing the artist to:
a) lay it down on the paper evenly 2) consistency.

2 WATERCOLOUR:
a) Paints that are made of pigments suspended in a water-based solution (binder).

b) The art of painting with watercolours, especially using a technique of producing paler colours by diluting rather than by adding white.

WATERCOLOUR PAPER:
Best watercolour papers are made from **cotton fibres.** There are three types of w/c paper.

HP- Hot Press. Smooth surface for detailed work
CP (NOT) – Cold press. Slightly textured for most types of work
Rough – Heavily textured paper enhances the final piece of work.

3 WATERCOLOUR TECHNIQUES:
a) Wash: When watercolour mixture is gradually diluted with water.

b) Blending: When two colours seamlessly merge into one another.

c) Wet –on – Wet: Water is applied onto the paper and then paint is applied onto it.

d) Masking Fluid
It is a rubber type product that prevents the paint from reaching the paper and is peeled off to expose the whitepaper left untouched.

4 ROUND BRUSHES:
Good for sketching, outlining, detailed work, controlled washes, filling in small areas.

FLAT BRUSHES: Good for bold strokes, washes, filling wide spaces, impasto. Edge can be used for fine lines, straight edges and stripes.

5 ACRYLIC PAINT: Opaque and semi-opaque fast-drying paint made of pigment and acrylic polymer emulsion dilutable with water.

ACRYLIC PAINTING SURFACES:
Canvas, paper, wood, or anything which is neither greasy nor too glossy.

ACRYLIC PAINTING BRUSHES:
A good selection of round and flat stiff synthetic brushes. Palette knives.

6 ACRYLIC PAINTINGS TECHNIQUES:
UNDERPAINTING: A layer of paint applied first to a canvas or board.

a) Tonal Grounds Under Painting
This type of painting has the entire canvas covered in a single transparent colour. This layer will create backlighting shadows that will tone the entire painting and provide contrast.

b) A Tonal Under-Painting
A layer of paint applied first that acts as a foundation for the painting with some **built in contrast** and **tonal values.**

IMPASTO: A technique used in **painting,** where paint is laid on in very thick layers that the brush or **palette**-knife strokes are visible. Paint can also be mixed right on the canvas. When dry, impasto provides texture; the paint appears to be coming out of the canvas.

7 POSTERPAINT:
A semi-opaque paint with a water-soluble binder, used mainly in schools.

8 OIL PAINTS: is a type of slow-drying **paint** that consists of pigment suspended in a drying **oil,** commonly linseed **oil.** Not used in schools.

9 MIXED MEDIA:
A Technique that uses more than one medium or material. Assemblages and collages are two common examples of art using different media that will make use of different materials including cloth, paper, wood and found objects.

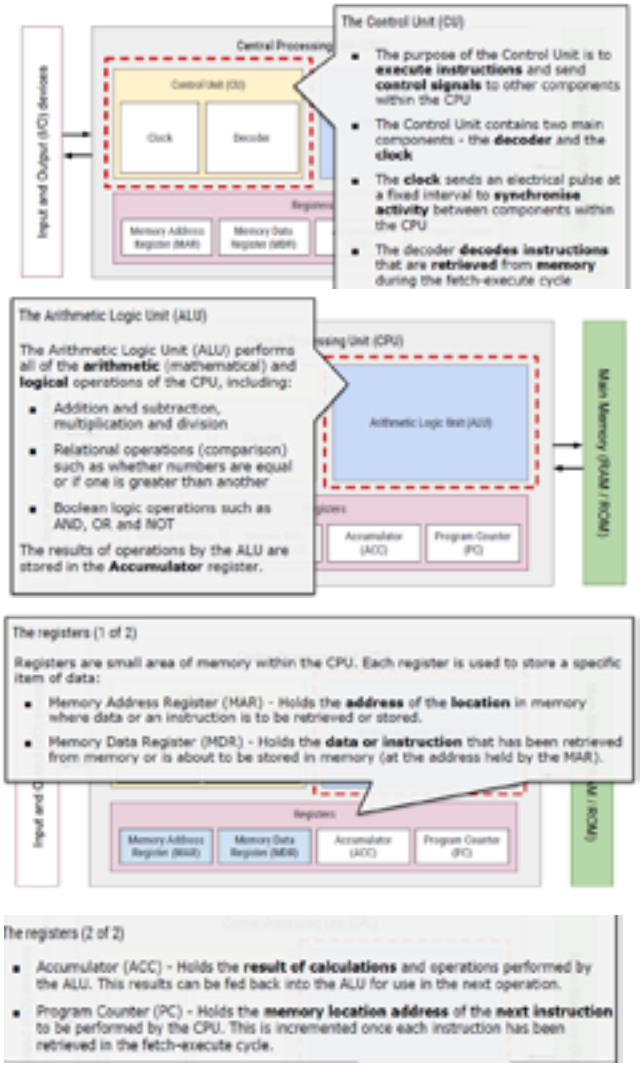
ASSEMBLAGE:
The making of 3D art, often involves using found objects.

MIXED MEDIA COLLAGE:
This is an art form which involves combining different materials with paint to create a whole New artwork.

10 SGRAFFITO TECHNIQUE:
Used in **painting,** pottery, and glass. Consists of putting down a preliminary surface, covering it with another, and then scratching the top layer. The pattern or shape that emerges is of the colour below.

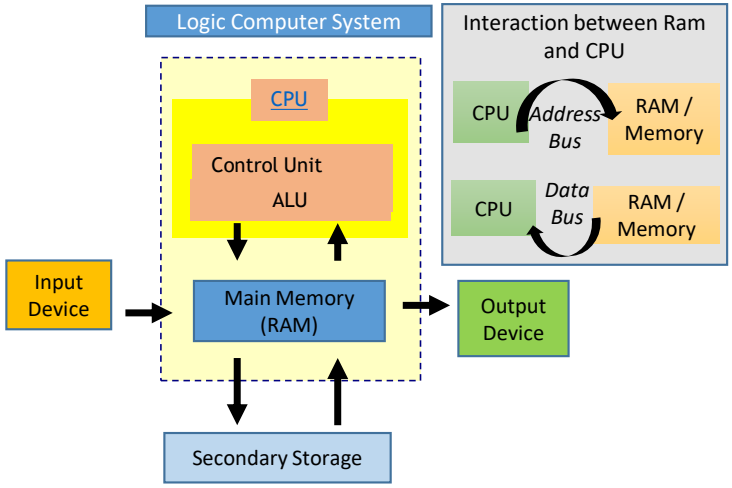
Year 10 Computer Science 1.1

The Von Neumann CPU architecture



What is a computer system? Input ⇨ Process ⇨ Output

Computer systems include the computer along with any software and peripheral devices (hardware) that are necessary to make the computer function. It will receive inputs, process the data it receives and then produce an output.



The Fetch-Execute Cycle (FCE)

Fetch
- The address of the next instruction to be processed is copied from the Program Counter (PC) to the Memory Address Register (MAR)
- The PC is incremented to point to the next instruction that will be needed when the cycle starts again
- The instruction stored at the location held by the MAR is copied to the MDR

Execute
- The operation indicated by the instruction is performed by the appropriate component, for example:
- The Arithmetic Logic Unit (ALU) performs the operation given by the Control Unit
- The value of stored by the Program Counter or Memory Address Register might be changed

Decode
- The Control Unit decodes the instruction and sends control signals to the component within or outside the CPU that needs to act

An **EMBEDDED SYSTEM** is a combination of hardware and software, designed for a specific function within a larger **system**. (Washing machine, Microwave, Dishwasher.)

Key Words	
BIOS	Basic Input Output System. A small program stored on the ROM chip to load the OS from storage.
CPU	Central Processing Unit. Used to control and execute commands within the computer. Measured in GHz,(the number of processes executed in 1sec)
Motherboard	Used to connect all components to each other for them to communication.
RAM	Random Access Memory. A temporary store of data and instructions which are currently in use.
Hardware	The physical parts / components of a computer
Peripheral	Any auxiliary device such as a computer mouse or printer that connects to and works with the computer in some way.
Input Device	A peripheral which converts data from a human to the computer system.EG Mouse.
Output Device	A peripheral used to bring data from the computer into a human form EG A monitor .
Clock Speed	Measured in Hertz. It is the frequency at which the internal clock generates pulses. The faster the pulse rate, the faster the CPU and the quicker the computer works.
Cache Size	Fast memory between the CPU and RAM. It stores recent / common programs taking advantage of the short FDE cycle. The more cache the more data can be stored without having to go back to slower RAM, speeding up processing. Having 3 levels level 1 smallest quickest and nearest to the CPU Level 3 Slowest biggest and closer to the RAM.
Cores	A multi-core processor is a single component with two or more independent CPUs, each responsibly for a FDE cycle. Allowing computers to do more than 1 thing at a time.

Year 10 Computer Science 1.2

Key Words	
Primary Storage	A device's internal memory, includes RAM, ROM and Cache memory. Used to store data and instructions that are required by the CPU.
RAM	Random Access Memory. Volatile memory used to store data and instructions which are currently in use and needed by the CPU. Also known as main memory.
ROM	Read-Only-Memory. Internal memory that cannot be changed, stores the boot sequence for the device. This memory is non- volatile.
Secondary Storage	Long term storage, can be internal (hard-disk drive) or external (USB Drive/DVD-ROM/SD Card)
Hard Disk Drive	Uses magnetic storage to store data long term. Most computers have a built in hard drive
Magnetic Storage	A storage device that saves data using strong magnetic fields to record, change or delete data
Optical Storage	A storage device that uses laser light to retrieve data from the surface of optical media such as CDs & DVDs
Solid State Storage	Uses flash memory to store data long term. It has no moving parts. Normally an SSD, memory stick or SD card. An SSD can replace a HDD inside a computer.
Volatile	Data is lost when the device is switched off
Non Volatile	Data is not lost when the device is switched off.
CPU	Central Processing Unit – processes all the data and instructions in a computer

Memory - stores program operations and data while a program is being executed. There are several types of memory, including: registers, cache, RAM, ROM and virtual memory.

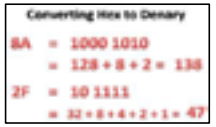
Storage - stores programs and files long term, even when they are not in use. Devices such as hard drives, USB memory sticks or SD cards.

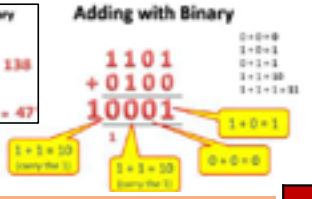
Digital Sound Sampling – The more samples taken means the improved quality of the digital signal, so becomes closer to the original analogue one:
Sample Rate - Increase how often the sample is taken Increase the number of bits per sample allowing for a more precise recording to be taken – eg. have a range between 0 and 255 (8 bits) rather than 0 – 31 (5 bits)

Virtual Memory
When RAM is full, a section of the hard drive can be used to store programs and instructions.

Compression – Reduces the size of a file to enable it to be stored / sent easier.
Lossy – Compressed losing some quality. Normally done by reducing the colour depth. JPEG is a lossy file compression type.
Lossless – Compressed by sending the file reducing the memory example: red, red, red, blue, blue, red, red, red reduce to:3 x red, 2 x blue, 3 x red

Binary	Denary	Hex
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	10	A
1011	11	B
1100	12	C
1101	13	D





Character Sets – A set of letters/number or symbols.
ASCII - "American Standard Code for Information Interchange". Is used to represent letters and symbols as numbers. Standard ASCII uses 7 bits to encode characters. Extended ASCII uses 8 bits
Unicode uses 16 or 32 bits and is shown in hexadecimal (FFFF). The larger character set

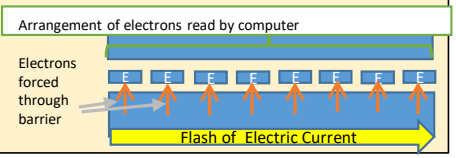
RAM	ROM
Volatile memory	Non-volatile memory
Stores open programs including the operating	Store the BIOS (bootstrap Loader)
Memory can be written to or read from.	Memory can only be read from and not written to.

Storage Media

Storage Characteristics

Capacity - how much data can it store?
Speed - how fast can it access the data?
Portability - how easy is it to move it from one place to another
Durability - how well does it last e.g. if it is dropped
Reliability - how consistently does it perform
Cost - how much does it cost per KB, MB or GB?

Flash Memory - Electrons are forced into a layer between two barriers which hold the charge by using a high electric current. Used in ROM and Solid State Storage



Size	Name
1 Bit = 0 or 1	Bit
8 Bits	Byte
1024 Bytes	Kilobyte
1024 Kilobytes	Megabyte
1024 Megabytes	Gigabyte

Cache memory is extremely fast memory that acts as a buffer between RAM and the CPU. It holds frequently requested data and instructions so they are immediately available to the CPU. Cache memory is used to reduce

Year 10 Computer Science 1.3

A NETWORK - 2 or more computers connected together using wired or wireless media to share resources, files, programs and to communicate.

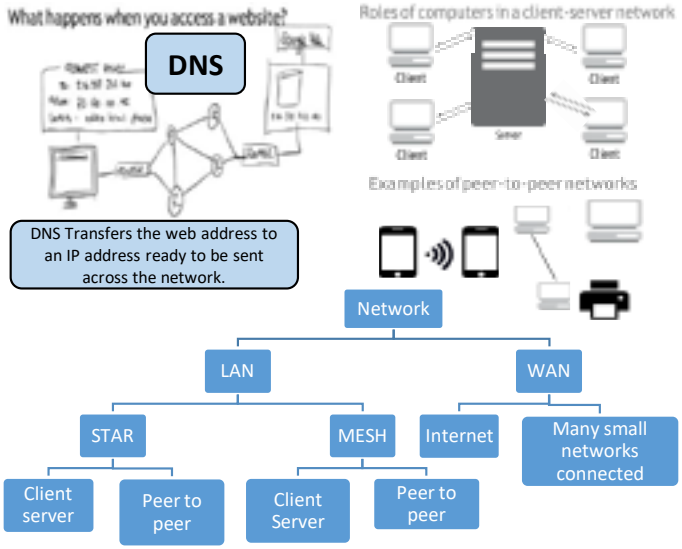
Factors that affect network performance include:
Number of devices and users - The bandwidth is shared between all devices, so the more devices, the less everyone gets to use
Transmission media - Using Wi-Fi will result in slower data transfer speeds and a greater number of lost or corrupted data packets.
Interference - Wireless transmission are prone to electromagnetic interference that can corrupt data as it travels
Obstacles - Physical obstacles can prevent radio waves from travelling
Bandwidth – The amount of data that can be carried at a time
Latency –Is the time delay between the moment the first data packet of a communication starts and when it is received at its destination
Collisions and errors - Errors and high network traffic may result in data collisions between packets making them corrupted or lost.

A LAN - A collection of computers connected together over a small geographic area found in homes and single-site companies. The hardware is owned and maintained by the organisation that uses it.
A WAN - A collection of computers that are connected over a large geographic area. The hardware required is often owned and maintained by large telecommunication companies. They are used by companies that have office locations in countries throughout the world that need to be connected together. The Internet is the largest WAN in the world.

Hardware to connect to a network
- Network Interface Card (NIC) – Built into the motherboard it contains a MAC address that allows the computer to communicate on a network
- Router – Connects the network to an external source and transfers data to their intended destination. Routing data onto the Internet.
- Wireless Access Point – Allows wireless access to the internet
- Switch - Connects computers together on a network reducing collisions
- Transmission media – The physical connection to transmit the data. Fibre optic, Coaxial, Satellite, Wi-Fi, Bluetooth

The Cloud – storage, services and applications that exist on the Internet rather than a local device such as your PC.

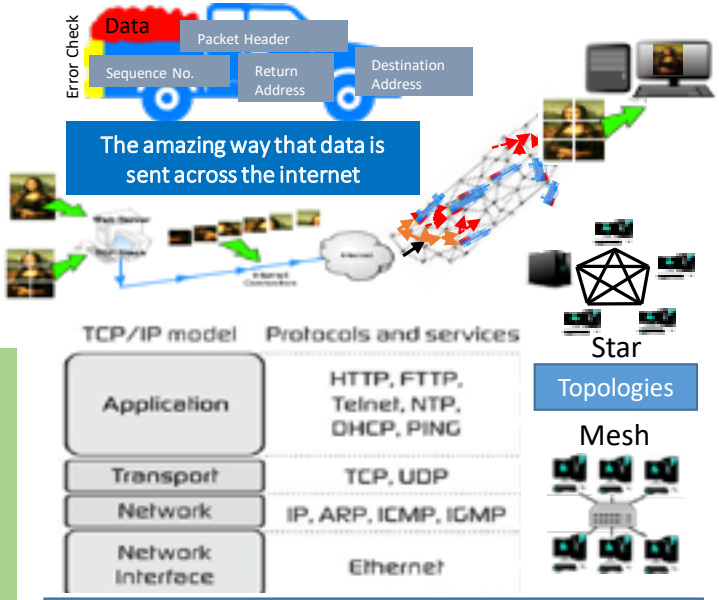
A Virtual Network is a type of network that uses software to connect users.



The Internet
The Internet is a **worldwide collection of computer networks**
The set of rules **Internet Protocol** (IP) ensure that devices work together on the Internet. Every computer on the Internet has an **IP address** that is used to send data from one device to another.
Routers are essential to the Internet as they pass data packets between the interconnected networks that form the Internet via a process called **Packet Switching**.
The internet is like a major road network connecting places together. Different vehicles can use the road network to send things from one location to another. These vehicles represent the various **applications** that make use of the Internet, such as the World Wide Web (WWW), email, multiplayer games and video streaming services.

Client Server Network - Computers take the role of either a central server or a client. The server provides services to clients such as storing files and emails. There are different types of server: printer servers provide access to printers, file servers host files. The server allows the computers to have a central backup, communicate, share files and monitor and maintain everything from a central point. They are available 24/7

Peer to Peer Network - is connected directly together - NO central server - easy to set up . Each user has the responsibility of its own hardware and software and can then share resources, files and communicate with others on the network but only when they are connected.



Topologies
Star – All computers connect to a central switch. The switch routes the traffic to the correct computer. The switch is the main cost of the network.
Mesh – All computers connect to each other via a dedicated link. Cost of cables is expensive. Used mainly in wireless topologies.

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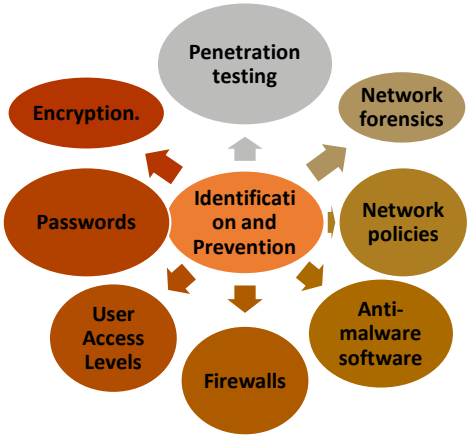
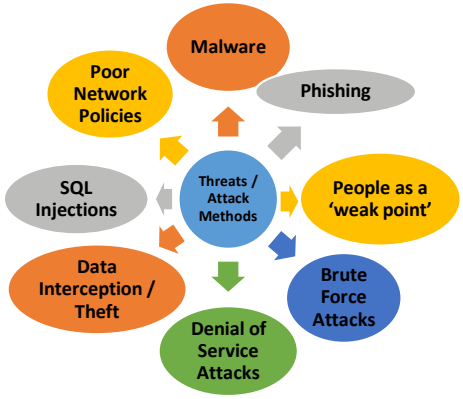
Identification and prevention	
Penetration testing	A company invites / employs experts to simulate network attacks such as DOS and SQL injections. They try and find weaknesses in the system and tell the company so they can make improvements to their system security.
Network Forensics	Network Forensics are used to monitor and find out how an attack was carried out and by whom on a network.
Network Policies	A set of rules which explains how employees must secure their passwords and conduct business online.
Anti Virus Software	Dedicated to finding / destroying viruses on a computer. They have to be up-to-date for them to work.
Firewalls	Monitors the data which flows in and out of the network. Having ports closed protects the computer from hackers, and it monitors and detects hacker activity.
User Access Levels	Different access is given to files and data meaning employees cannot view sensitive company information and cannot sabotage vital system data.
Passwords	Strong passwords reduce networks unauthorised access.
Encryption	Data is scrambled using a set of "keys" before being sent across a network so that it is unreadable if intercepted.





Threats and Attack Methods	
Social engineering	The act of manipulating people to force them to make mistakes which can compromise a network's security.
Phishing	Using Email and phone calls criminals impersonate companies like banks requesting your personal information: usernames, and bank details etc.
Brute Force	Criminals repeatedly try to 'login' with one password after another to hack an account
DOS	This can bring down websites. Using multiple computers (often with malware) they repeatedly access a website. The traffic increase overloads the server's CPU/memory, crashing it.
Data inception and theft	Hackers use 'packet sniffers' to sniff out and intercept data packets. Then decode and steal the information.
SQK injection	SQL injections 'bolts on' some SQL to the end of your password. This will then alter the statement and allow you to access the accounts of other users.
Poor Network policy	Network policies should be in place. These are a set of rules to keep the network safe from Threats. They include passwords and user levels.

Malware	
Standard Virus	Hide in files / programs and replicate themselves in order to spread into other programs / files. Their aim is to delete or damage data.
Worms Virus	These don't damage data, they replicate themselves, taking up more of the computer's resources, slowing down your computer and making it useless.
Trojan Virus	These are programs you can use. But in the background will cause harm, like deleting files, making annoying changes to your computer setup or creating a portal for other users to use to gain access to your system.
Spyware	This is used to spy on the user and send back as much information about them as possible (passwords, usernames, websites they visit, purchases they have made). A common piece of spyware is a key logger which runs in the background recording every key you hit. It collects data to steal your identification or sell your information to third parties.
Adware	Its aim is to download and display unwanted adverts and collect marketing information about your online habits. It will often also try to direct you to unwanted websites by changing your default homepage
Pharming	This malware tries to change the IP address stored in the DNS to another IP address so that the user is sent to a phoney website instead of the one they intended.
Scareware	Often comes in the form of a pop up telling you that you have a virus. The pop up will them advertise purchasable software hoping that you will pass over your money.
Ransomware	This will seek to lock your computer making it useless. It will then demand that you pay a sum of money in order for you to get your computer working again.
Rootkits	These pieces of malware contain a set of tools, which once installed, allow a criminal to access your computer at an administrator level, allowing them to do what they like.

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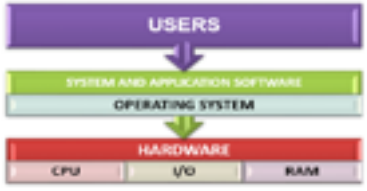
Key Words	
Application Software	Software installed to perform a specific task such as creating documents or spreadsheets
Operating System	Comes installed on your computer and is used to control the workings of a computer.
Utilities Software:	These carry out specific tasks which help the computer system run efficiently such as virus checking and Winzip.

Application Software

The processes that are carried out by end-users (people working on a computer system) are commonly done using application software. These are run and managed by the operating software. Applications come in a very broad variety and cover features like creating documents, editing images, performing calculations and browsing websites.

Application software

Programs that do specific tasks, such as write a letter (word processor) or edit a video.



Utility Software

Utility Software is the name given to the software tools that are designed to manage and optimise the performance of a computer system. There are a variety of functions that it performs.

Compression

Lossy Compression	Lossless Compression
This format can compress files to a much smaller size, but will lose some of the data from the files which cannot be recovered	This compresses the files to a slightly reduced size. All of the data can be recovered when uncompressing

Incremental Backup	Full Back up
This a process where only files that have been altered are selected for backup. It is much less time consuming than a full backup and less of a drain on the computers processing speed	This is a full back up of all of the files and data on a network. This can take some time. It is an effective way of ensuring all of the information is safe

Utility Software

Encryption	Antivirus software	Compression	Back up	Defragmentation	Disk checkers / cleaners
Protects the system by scrambling data so it cannot be accessed by unauthorised users	This prevents the system from becoming infected with malware	An algorithm reduces the space required to represent a file or its content. There are 2 types Lossy and Lossless	Makes copies of the data that are restored in the event of data loss There are 2 types Full and Incremental	Organises the data on an HDD into clusters so its easily accessible.. This improves the speed the system can operate.	These scan the hard drive and find files that are not used or are unnecessary.

Graphical User Interface (GUI) - Uses WIMP – Windows Icons Menus/Mouse and pointers. Found on most modern operating systems.
Command Line - Line by line code like Python
Language interface - Uses natural language like SIRI
Menu Interface - Uses lists to choose from like ATM or Sky TV.

Operating System (OS)

User Interface Manager
Provides the user interface that allows users to control the computer.

Device Manager
Allocates resources to external hardware devices and allows them to be used by applications.

Memory Manager
Controls the allocation of memory between applications.

User Manager
Authenticates and separates users of the computer.

Process Manager
Controls the allocation of CPU cycles to multiple running applications.

File Manager
Controls the opening, reading and writing of files to storage and determines whether files are documents or executable programs.

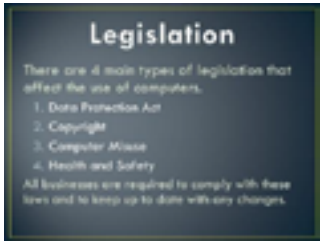
Operating Systems Functions	
Device management	Controlling hardware components and managing peripherals
platform for software to	Allows software and applications to run
Providing a user interface	A way the user is able to interact with the software. These can be Graphical user interface (GUI), Command line Interface, Natural Language Interface and Menu Interface.
Multitasking facilities	Allows for many programs and software to operate at the same time.
Memory Management	Looking after where data is stored in the computer's memory
File Management	Naming, Allocating to folders, Moving files, Naming and Saving files
Managing users details	Allocation of an account, Access rights, Security, File management, and the key features, e.g.: § Not required û Understanding of paging or segmentation
Providing utility software	software tools that are designed to manage and optimise the performance of a computer system

Year 10 Computer Science 1.6

Stakeholders
This term refers to all the people that have an interest in an organization, or issue. For example a the stakeholders in a school are the students, parents or guardians, teachers and local community. In terms of computing technology the global community are stakeholders and the developments in this area have an impact, to some degree, on everyone. This section will examine the impact technology has on different groups within society.

Stakeholders Rights and Responsibilities
All people have the right to access technology and are allowed to use computer systems. This includes being **allowed to use computer systems** and to **access internet services**. These must be legally acquired, which usually means through payment. With the rights of access come **responsibilities**, these include using computers **ethically** and disposing of old equipment in an **environmentally friendly** way.

The 8 principles of the Data Protection Act
1. Data must be used and processed in a fair and lawful way
2. Data must only be used for the stated purpose
3. Data should be adequate, relevant and not excessive for the use
4. Data must be accurate and kept up-to-date
5. Data should not be kept longer than necessary
6. Data should only be used according to the rights of the data subject
7. Data should be kept safe and secure
8. Data must not be transferred to organisations within other countries that do not offer a similar level of protection



Proprietary Software
This is software that you pay for, you can not access the source code and is owned by a company.

Open Source Software
This is software that is free, the source code is open and everyone can access it.

Factors Affecting the Digital Divide
Access – Not all areas in the UK have access to high speed internet as the map shows. The government has been driving forward an initiative to improve this balance, but there remains large areas where access to the internet is limited.

Economic – The cost of broadband internet access and computer systems is too expensive for some people in society and this means they are part of the divide between the **'haves and have nots'**

IT Literacy – Although IT is part of the school's curriculum there are still large numbers of people in society, especially among the older community, who are not able to use computers.

There are laws that control the use of Computer Systems. You are required to know the principles of these laws.

Data Protection Act – This law governs the information that is held on computer systems about people. According to this law the users must: **Keep information Secure, only use necessary info, Only Keep for as long as necessary , keep the information accurate and up to date, not use the information for any other purpose without permission.**

Computer Misuse Act – This law restricts how computers can be accessed and used. It is principally designed to stop hacking. It states there should be **no unauthorised access, unauthorised modification,** and **no accessed with intent to damaged**

Copyright Designs and Patents Act – This law is designed to **protect the work and content of individuals** from being **used or shared without permission**.

Freedom of Information Act – This law protects **people's rights to access information** that should be available to the public **including services such as Government, Health, Schools, Police and Courts**. Information from these organization can be accessed on request

Creative Commons Licensing – This law gives people the right to share and use information in certain formats: **Public Domain** (No restrictions); **Attribution Commercially** (Work used with the creator given credit) ; **Attribution Non-Commercially** (Work shared, but not sold on, with the creator given credit)

Digital Divide
This term refers to all the people that have an interest in an organization, or issue. For example a the stakeholders in a school are the students, parents or guardians, teachers and local community. In terms of computing technology the global community are stakeholders and the developments in this area have an impact, to some degree, on everyone. This section will examine the impact technology has on different groups within society.

Energy Consumption – Lots of energy is required for the production and assembly of computer equipment. Energy is also required to run computers and to maintain online storage systems. To reduce the demands on energy manufacturers have developed smarter technologies which require less energy to run systems and smaller more efficient devices.

E Waste – Old computers contain some parts that can be recycled and some metals that are valuable such as gold and aluminium. Other parts that cannot be recycled form waste which accounts for millions of tonnes that is dumped into landfills.

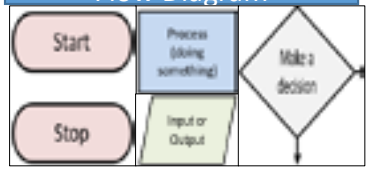
Sustainability – Computer systems have some positive impacts. The use of paperless communication (email, social media) had reduced the need for paper production, and computers are used to develop and produce sustainable technology. Although much of the material used in making computer systems relies on non renewable resources (metals) there are an increasing number of components that can be renewed for future uses.

Recycling – There are legal guidelines for the disposal of computer systems and there are companies that deconstruct the machines and extract all of the valuable materials for recycling. It is also possible to extend the life of a computer system by donating them through charities. This process can help bridge the gap in the digital divide.

Year 9 Computer Science 2 . 1

Computational thinking:
The use of computers to solve problems.
Development of algorithms to solve problems.
Uses the 4 steps below to do this.
Decomposition – breaking down a large problem into smaller sub-problems.
Abstraction – representing 'real world' problems in a computer removing unnecessary elements from the problem.
Pattern Recognition – Finds any patterns in the problem/solution.
Algorithmic Thinking - identifying the steps involved in solving a problem.

Flow Diagram



Flow diagrams visually represent the steps that make an algorithm. A standard set of shapes are used to represent different types of step, such as running a sub-process. The arrows in a flow diagram represent the flow of control through the algorithm.

Pseudocode is fake code. Between code and written English

```
x = 0
while x != 100:
    x = int(input("Please type in a number"))
print("Loop has ended")
```

```
for counter in range(3,20,2):
    print(counter)
```

```
name=input("Please type in your name")
print("hello ",name)
Age=int(input("How old are you?"))
```

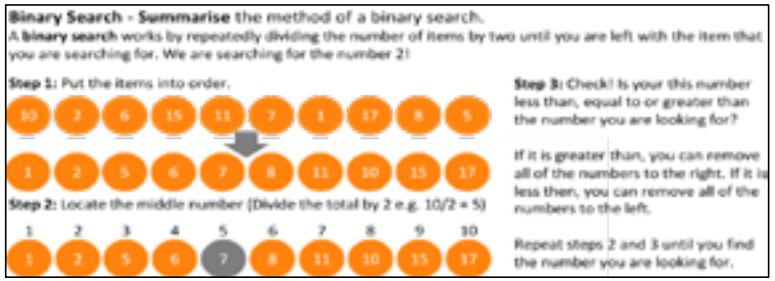
Merge Sort The list is repeatedly divided into two until the elements are separated individually. Pairs of elements are then compared, placed into order and combined. The process is then repeated until the list is whole again.

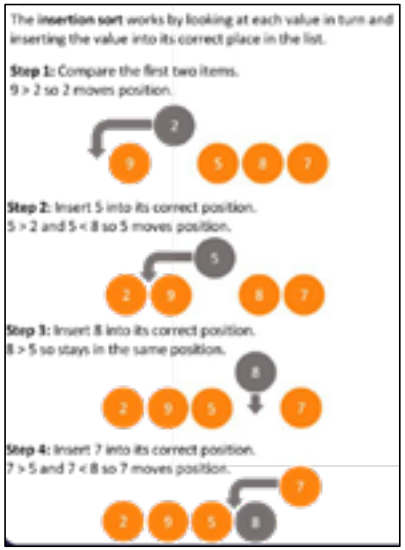
Bubble Sort: Each item is compared with the one on its right, and swapped if it is larger At the end of the first pass the largest item bubbles through to the end of the list (Mauve indicates sorted items)

9	5	4	15	3	8	11	2
5	9	4	15	3	8	11	2
5	4	9	15	3	8	11	2
5	4	9	15	3	8	11	2
5	4	9	3	15	8	11	2
5	4	9	3	8	15	11	2
5	4	9	3	8	11	15	2
5	4	9	3	8	11	2	15

Linear Search: This involves searching through a set of data, one item after the other, until the item we are looking for is found. Searching for the number 36.

INDEX	0	1	2	3	4	5	6
Item	23	25	26	34	36	45	47





Types of Errors

Syntax errors - Variables not declare correctly or Variable names spelt incorrectly
Logic errors - Conditions that can not be met such as Infinite loops or Missing brackets
Run time errors - Programs that do not complete or where the memory is too full to continue

Low Level Language

Machine code - Not understood by humans, only by computers. The instructions are fetched from RAM, decoded by the CPU and then executed one after the other.

Assembly language – It uses Binary and short acronyms, like commands JMP 1024 (jump to instruction 1024) An assembler translates the code into machine code so the processor can deal with the code

A high level language

uses human words which a CPU does not understand. A computer uses a translator to change the code so it can understand it. There are 2 ways to translate - **Complier** coverts the code into machine code before running it or **Interpreter** which coverts the code one instruction at a time running each instruction before translating the next.

Year 9 Computer Science 2 . 2

Data types – How the data will be stored

Integer – Whole Number - 23
Real - Any number with a decimal – 2.223
Character - 1 single letter - A
String - A mix of letters, numbers and symbols - A546TH
Boolean - Has 2 states - TRUE or FALSE. 1 or 0

Casting This is the process of **converting data** from one type to another. For example str(age 13) converts the integer to a string. This may be required for a program to process information for a different outcome.

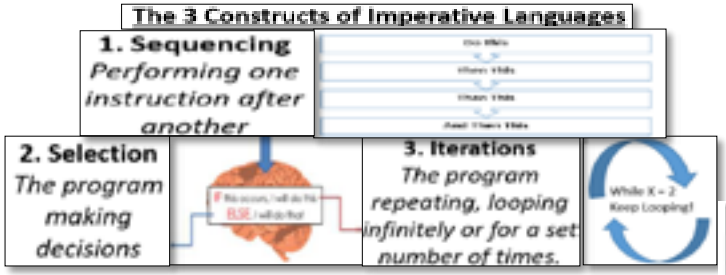
Variables - Are used to store values in a program. Variables can be changed. For example a variable might allows a name or age to be entered to a program. Or change a score when you get something correct.
Example – Name=Input ("What is your name?")

Constants - **A**re used to store values in a program. It is a part of a program that cannot be changed. For example a constant could be the use of Pi.

Types of sub Programs
A Function – Returns a value to the main program
A Procedure – Carries out a task, does not return a value to the main program
A Parameter – A value passed to the main program

Maths Operators For Pseudocode

+	Addition	3+3=6
-	Subtraction	3-3=0
*	Multiplication	3*3=9
/	Division	3/3=1e
Mod	**Modulus Division** - Returns the remainder after division	17/3=6R2 Remaindr No. **Mod 2**
Div	**Quotient Division** - Returns the quotient or the lowest integer	11/4=2 Complete **Div=2**
^	Exponential Powers of	3^3=27



Iteration – For and While Loops

```
x = 0
while x != 100:
    x = int(input("Please type in a number"))
print("Loop has ended")
```

```
for counter in range(3,20,2):
    print(counter)
```

Sub Program – This is a self contained sequence of instructions within a program. These are also known as subroutines and can be called on for a single specific function within a program.
Benefits to the use of subroutines - Reduce the amount of code - Make programs easier to read and test - Give code better structure

Maths Operations

For multiple maths operations this is the order that needs to be followed
Brackets 3^2*12/(3*2)+6-6
Brackets (3*2)=6
Indices of Power Index 3^2 =3x3=9
Division Divide 12÷ 6 = 2
Multiplication Multiply 9*2 = 18
Addition Add 18+ 6 = 24
Subtraction Subtract 24- 6 = 18

Data types

Integer e.g. 23
Real e.g. 23.7
Character e.g. A or 5
String e.g. A546TH
Boolean e.g. TRUE or FALSE.

Python -> English	
`print('hello!')`	Prints a value on screen (in this case, hello!)
`input('')`	Inputs a value into the computer.
`x=input('')`	Inputs a value and stores it into the variable x.
`x=int(input(''))`	Inputs a value into x, whilst also making it into an integer.
`print(str(x))`	Prints the variable x, but converts it into a string first.
`if name == "Fred":`	Decides whether the variable 'name' ha a value which is equal to 'Fred'.
`else:`	The other option if the conditions for an if statement are not met (eg. name = 'Bob' when it should be Fred)
`elif name == "Tim"`	elif (short for else if) is for when the first if condition is not met, but you want to specify another option.
`#`	# is used to make comments in code – any line which starts with a # will be ignored when the program runs.

Year 9 Computer Science 2 . 3

Defensive design: - Programs need to be designed to cope with bad entries made by users. This will will:

- Minimise bugs or issues
- Program works regardless of user actions
- Errors are identified on entry

Contingencies (all possibilities) need to be considered at the planning stage for programs. This should consider possible user inputs and how to manage these.

Authentication

Identifies a user

Normally requires a combination entry (username and password)

Authentication checks against pre-set entries

- **Validation** is a method of checks an entry to ensure it is valid for the purpose that it is being used. There are some ways that code can be set up to validate inputs
- **Length Check** – Checks the number of characters in an inputs
- **Range Check** – Checks to ensure that an input falls between a set range of values
- **Presence Check** – Ensures that a field cannot be left blank

Defensive design considerations:

Sub Program – This is a self contained sequence of instructions within a program. These are also known as subroutines and can be called on for a single specific function within a program.

Types of sub Programs
A Function – Returns a value to the main program
A Procedure – Carries out a task, does not return a value to the main program
A Parameter – A value passed to the main program

Indentation – used to highlight the blocks of code. If a block has to be more deeply nested, it is simply indented further to the right.

```
database={'name': '1234', 'name2': '5678', 'name3': '9012'}
name = input('Enter username: ')
ask = input('Enter pin: ')
if ask == database[name]:
    print ("Welcome", name)
else:
    print ("Invalid code")
```

TESTING –

ITERATIVE TESTING - Tests carried out during development.
FINAL TESTING – Test once a program has been completed.
ALPHA TESTS - final testing carried out by a programmer
BETA TESTS – Final testing carried out by users

Suitable Test Data - There are three methods to test a program.

NORMAL TESTS uses a check with a program that is expected to work.
BOUNDARY TESTS (or extreme tests) will check the program limits, with the highest and lowest numbers in a range that should work.
ERRONEOUS TESTS uses data that is not expected to work to check if the program rejects this information.

Syntax and Logical Errors –

SYNTAX errors - Grammar, spelling and character mistakes in code
LOGIC errors occur when an incorrect operand has been used, like an AND instead of an OR. These errors may allow a code to operate, but work incorrectly

Commenting - Comments are the useful information that developers provide to make the reader understand the source code. They are usually helpful to someone maintaining or enhancing the code when the programmer is not around to answer questions about it.

```
# This is a comment
# Print "GeeksforGeeks !" to console
print("GeeksforGeeks")
```

```
a, b = 1, 3 # Declaring two integers
sum = a + b # adding two integers
print(sum) # displaying the output
```

Year 9 Computer Science 2 . 4

LOGIC GATES AND TRUTH TABLES

Computational logic has only two outcomes: true or false. This is represented in binary with 1 and 0. **Boolean logic** reduces all values to the these two states. Computer processors contain 1 billion **TRANSISTORS** and these transmit current (on-true) or don't (off – false).

AND GATES
With "AND" logic there are two inputs and one output.
If both of the inputs are positive then the output will be positive.
OR GATES
With "OR" logic there are two inputs and one output.
If either of the inputs is positive or if both of the inputs are positive then the output will be positive.
With "NOT" logic there is just one input and one output.
It changes the input to the opposite value.

Truth Tables

AND			OR			NOT	
A	B	A AND B	A	B	A OR B	A	NOT A
0	0	0	0	0	0	0	1
0	1	0	0	1	1	1	0
1	0	0	1	0	1		
1	1	1	1	1	1		

Boolean Operators	Logic Gate Symbol
AND *(Conjunction)*	
OR *(Disjunction)*	
NOT *(Negation)*	

Binary Logic Gate Diagrams

NOT

A	Out
0	1
1	0

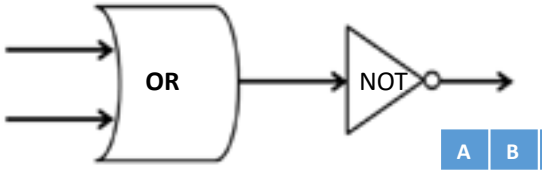
AND

A	B	Out
0	0	0
0	1	0
1	0	0
1	1	1

OR

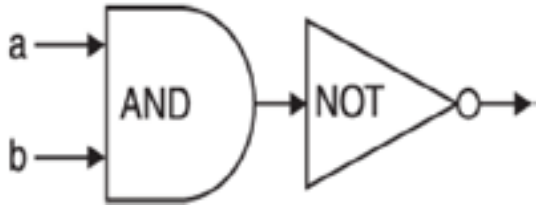
A	B	Out
0	0	0
0	1	1
1	0	1
1	1	1

Input (A)	Input (B)	Q = A OR B	Not Q
0	0	0	1
0	1	1	0
1	0	1	0
1	1	1	0



NOT (a AND b)

A	B	NOT (a AND b)
0	0	1
0	1	1
1	0	1
1	1	0

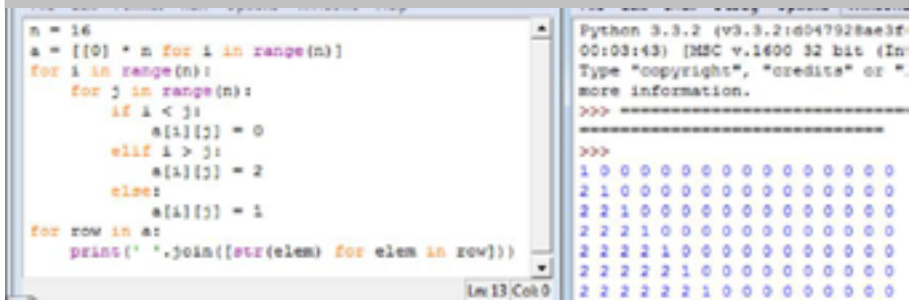


LOGIC GATES use transistors to carry out all calculations and run program instructions in the processor. These are represented by the symbols below. **A TRUTH TABLE** is used to show how a "logic gate" works in an easy to read format.

Year 9 Computer Science 2 . 5

Translators: For assembly and high level languages to be understood systems require **TRANSLATORS** to interpret them.
Compilers: Translate the source code into machine code
Interpreters: Translates code in a line by line process
Assemblers: Translate the mnemonics of the language

An **Integrated Development Environment (IDE)** is an application software that allows programmers to develop code and test operations with a variety of facilities . An example is Python IDLE



Common IDE Tools
Editor to enable program code to be entered/edited
Error diagnostics / debugging to display information about errors (syntax / run time) / location of errors and suggest solutions
Run-time environment to enable to the program to be run and check for run time errors / test the program
Translator / compiler / interpreter to convert the high level code into machine code / low level code / binary AND to enable to code to be executed / run
Breakpoint to stop/pause program execution at a specific point
Watch window to check contents of variables
Syntax completion suggests/corrects code
Keyword highlighting / colour coding keywords / pretty printing colours command words / variables
Best to memorise three for the exam

Python IDLE contains a variety of features that support the development of code including
- **Syntax Highlighting** – coloured illustration of coded elements
- **Auto indentation** – keeping subroutines in proper locations
- **Bracket Matching** – Indicating matching sets of delimiters
- **Auto complete** – finding key words from dictionaries to aid with code entry
- **Syntax error checking** – Illustrating the lines within the code that contain errors

Computer Languages

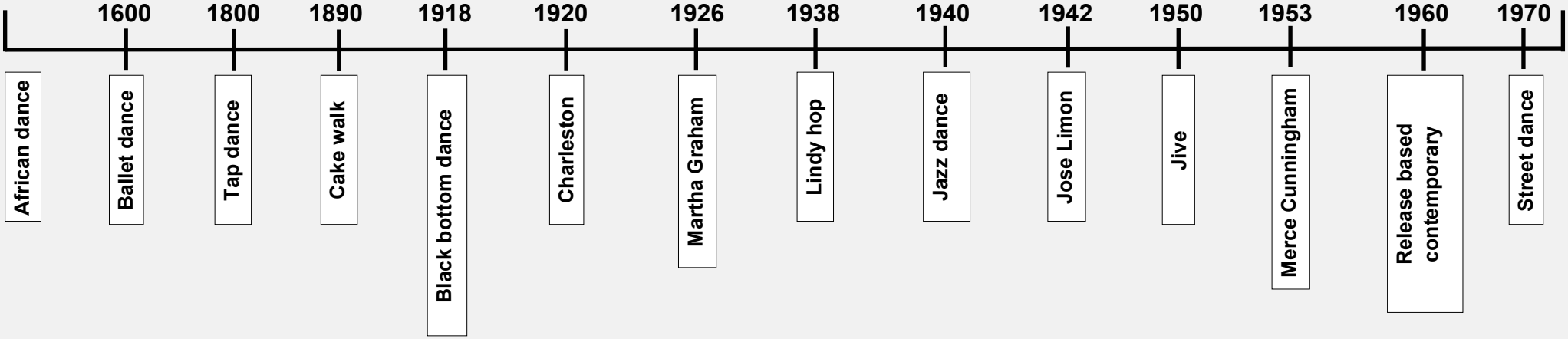
Computer instructions can be written in a variety of different programming languages which need to be translated into machine code for computers to understand them. Languages exist at low and high levels

Assembly Language	Machine Code
LOAD 3	0011 0011
STORE 12	0100 1100
ADD 3	0110 0011
ADD # 7	0111 0111
SUB 5	1000 0101
SUB # 10	1001 1010
HALT	1110 0000

Low Level Language		High Level Language
Machine Language Processors only understand language in binary format 1s and 0s	Assembly Language contains instructions that are directly equivalent to machine language. Mnemonics are used to replace the commands in the code	Java and Python are examples of High level languages and these use terms that are clear like 'print'. Most software programs are written in high level language.
Used in: embedded systems (in tv's, microwave ovens, etc.) **Used for:** Device drivers, real time systems Assembly languages are machine specific and cannot be transferred to different devices		**Used in** most software apps Portable between devices Used on different computing systems

Year 10 - Knowledge Organiser - Dance

Dance styles chronology



Tier 3 vocabulary

Key features - the main movements used/ what does it look like.

Historical context - when in history the dance form emerged.

Social context - what was happening in society when the dance form emerged.

Personal aims - what you want to achieve as a dancer.

Theme - the subject or topic that the dance will explore.

Collaboration - working with other people to produce something.

Narrative - telling a story by playing a character.

Reflecting - Structure for success

WHAT is the skill?

HOW do you know it is a strength/weakness?

WHY is this skill important for a dancer to have?

IMPACT that the skill has on the audience?

IMPROVEMENT - strategy to improve

Dance - Dance Styles 2

Jazz dance

Jazz dance uses extensions and foot positions from ballet, but aims to have a freer feel to the movement by using contractions and arches in the back and a variety of floor work.	**Key people**	**Key movements**		
	Bob Fosse	Leaps	Drags	Jazz pirouette
	Jack Cole	Kicks	Contractions	Pas de bourree

Contemporary dance

Martha Graham		Jose Limon		Merce Cunningham	
	Martha Graham technique focuses on the idea of contraction and release in the torso and also explores twists in the spine. It uses weight and gravity as a dramatic tool whilst falling to the floor.		Limon technique focuses on fall and recovery, suspension and momentum and rebound. Sequences will often move in and out of the floor in an effortless manner.		Cunningham technique focuses on the 5 movements of the back; tilt, twist, curve, arch and straight. He also invented chance choreography which used random methods to determine the movements, staging and music.

Street dance

Street dance has many sub-styles like hip hop, popping and locking and breaking. These are normally up-beat and energetic movements that suit the style of the current music trend.	**Key people**	**Key movements**		
	Rock steady crew	Top rocks	Body ripples	Slides
	New York City Breakers	Up rocks	Tutting	Tricks
	Diversity	Freezes	Isolations	Breaking

Vocal Skills

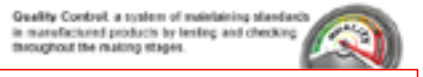
Definition	Term	⇩⇩ Cover & Test ⇩⇩
How clearly the audience can hear your voice.	**Vocal Clarity**	
How loud your voice is. An ingredient of Vocal Clarity.	**Volume / Projection**	
How quickly or slowly you speak. An ingredient of Vocal Clarity.	**Vocal Pace**	
How clearly you pronounce your words. If you have poor diction then you mumble which affects your Vocal Clarity.	**Articulation / Diction**	
The way your voice communicates what you are thinking or feeling.	**Vocal Expression**	
The way you change the pitch, rhythm or inflection of a word. An ingredient of Vocal Expression.	**Vocal Play**	
The emotion or attitude we can hear in your voice. An ingredient of Vocal Expression.	**Tone of Voice**	
Pausing during lines to add emphasis, to show a struggle or to create tension. An ingredient of Vocal Expression.	**Pause**	
The keywords you emphasise in a sentence to help communicate what you are thinking or feeling. An ingredient of Vocal Expression	**Inflection**	

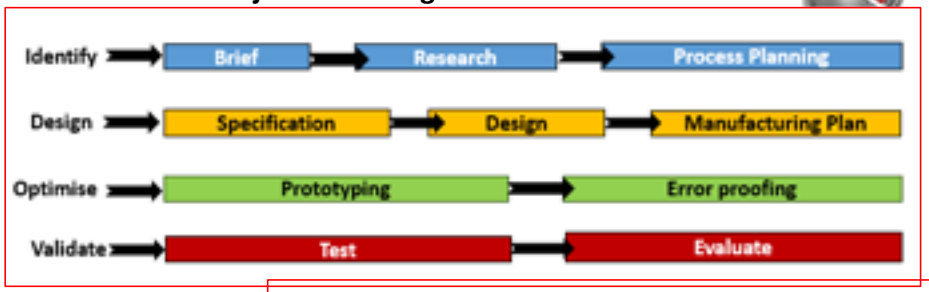
Physical Skills

Definition	Term	⇩⇩ Cover & Test ⇩⇩
The way a character moves. This communicates their personality or mood.	**Physicality**	
Having physical control, not fidgeting or making any movements that are not part of your characterisation.	**Focus**	
An expressive movement of the body to show a feeling or characteristic. e.g. Fiddling with fingers = nervous. Punching fist into hand = aggressive.	**Gesture**	
A gesture your character does a lot. e.g. Pushing hair behind ear = self-conscious. Jiggling leg = on edge.	**Character Habit**	
Acting when you are not speaking. Reacting to what other characters are saying or doing. e.g. a look to another character, a shrug when you are asked a question or rolling your eyes in response to a silly comment.	**Reacting**	

D&T - Engineering Design 1

R105: OCR Engineering design Examination Subject Knowledge



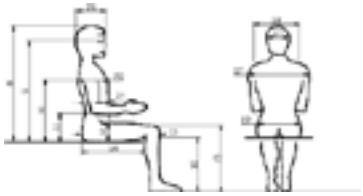


- A **Design Brief** is a ***statement of how you are going to solve the Design Problem***.
- Research findings and Client feedback can be used to create a **Process Plan.**
- A **Design Specification** is a ***list of requirements your product has to meet in order to be successful.***
- After a Specification has been developed, the **designing** of the product will begin.
- Once the final design has been chosen, a **Manufacturing Plan** is then created.
- **Prototyping** is the creation of a **model or "mock-up"** of a product after the Design Process
- **Error Proofing** is ensuring that the product cannot be assembled or used in an incorrect way
- **Testing** and **Evaluation** happens because designers need to ensure the product is successful before being released, and is competitive with the market.

Specification Points	Meaning
Aesthetics	What the product will look like, style, colour, etc.
Customer	Who the **Target Market** is, how it will appeal to them, what **Anthropometrics** and **Ergonomics** will be used, etc.
Cost	Cost to make, as well as cost to sell
Environment	Where it will be used
Safety	How it will be safe to use, what standards and regulations it will have to meet
Size	What dimensions it will be, as well as components and parts
Function	What the purpose of the product will be, and what **Features** it will have
Materials	What is will be made from
Manufacture	How it will be be made

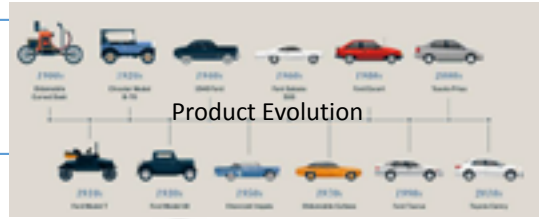
Product requirements are what a product has to meet/ must do.
Common requirements are:

- Features – *what makes a product unique and sellable*
- Performance – *how well it completes its function*
- Target Market – *how it appeals to its customers*
- Working Environment – *how it is suitable for where it will be used*
- Constraints – *what is must do or must not do*
- Ergonomics – *how its comfortable and safe to use*
- Lifecycle – *what environmental impact it makes (and how that can be reduced)*



Anthropometrics is the ***study of measurements of the human body***
Ergonomics is the ***application of anthropometrics in order to make products and places efficient, comfortable and safe to use***

Technology Push is when *new developments in materials and technologies improve existing products/ create new ones*
Market Pull is when consumers demand improvements/new products. Often found by conducting market research



Sales and Supply of Goods Act 1994	All Products have to be of a "satisfactory quality. They have to be safe, fit intended purpose, not be faulty
Trade Descriptions Act	False or misleading information must not be given out about products. E.g. accurate information must be given out who made the product
Consumer Protection Act 1987	The right to claim compensation if a defective product causes death, damage or injury
The Waste Electrical and Electronic Equipment Regulations 2013	The government regulate the amount of electronics going to landfill as the chemicals and electronics can harm the environment and wildlife Companies must provide electronic disposal for their products

One-off Production
This is the manufacture of **one item**
This item can be custom made/ designed (bespoke manufacture)

Batch Production
This is where small quantities of identical items are made (10s-1000s)
To ensure all items are identical, jigs, moulds and templates to aid workers

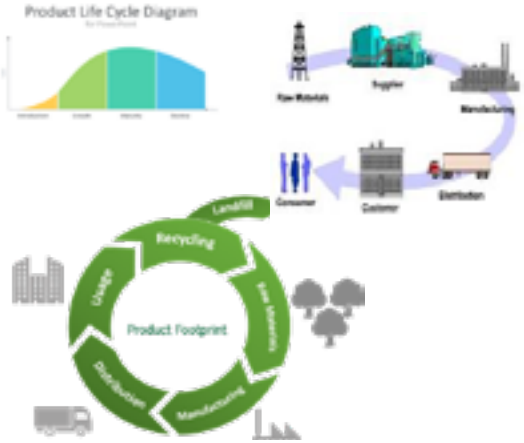
Mass Production (High-Volume Production)
This is where large quantities of products are made (10,000s-100,000s)
There are often assembly lines (for the main product) and sub-assembly (for small pieces and components)

Continuous Production
This is when large quantities of products is produced (100,000s +)
However, unlike Mass Production this is **never ending** production e.g. power plants

Just-in-time production (JIT)
This is when products made to order, but can be used in conjunction with any other scale of production

D&T - Engineering Design 2

R106: OCR Engineering design
Product Analysis and Disassembly

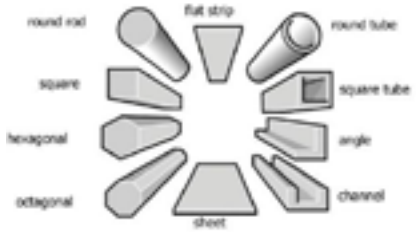


A **stock form** is when a raw material has been machined/processed into a stock/standard size, shape or form. This can be easily used during manufacturing on a production line.
Like standard components, buying in these stock forms is often easier and cheaper that companies trying to create their own and are internationally recognised

When manufacturing a product, there are several considerations that need to be planned for. These considerations often include:

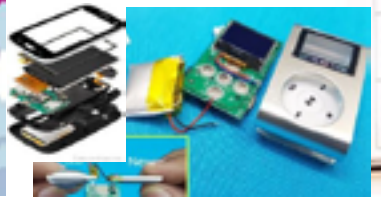
- Standard Components
- Stock Forms
- Supply Chains
- Durability and Maintenance
- Product Safety
- Costs and Budget

A **standard component** is usually an individual part or component, manufactured in thousands or millions, to the same specification. These are often bought in bulk and saves companies money, rather than them trying to make their own.
The sizes of standard components are often internationally recognised, making manufacturing easier to communicate



Disassembly may refer to any of the following:

1. When referring to hardware, **disassemble** is the process of breaking down a device into separate parts. A device may be disassembled to help determine a problem, to replace a part take the parts and use them in another device or sell them individually. For example, if a computer has a bad processor, may need to open the computer case, disassemble the heat and processor, and manually replace it.



Specification Points	Meaning
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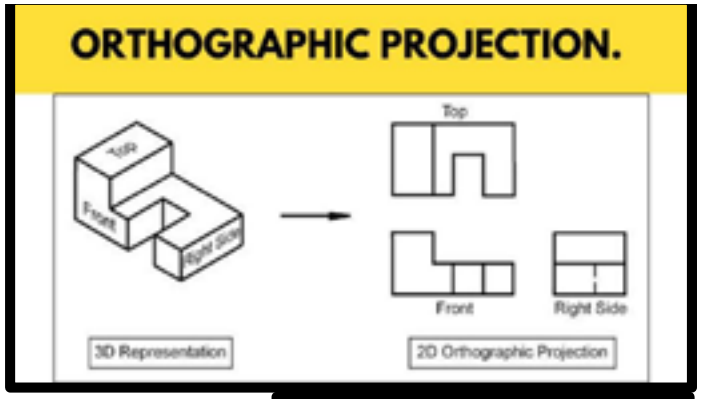
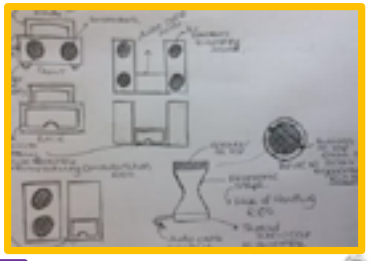
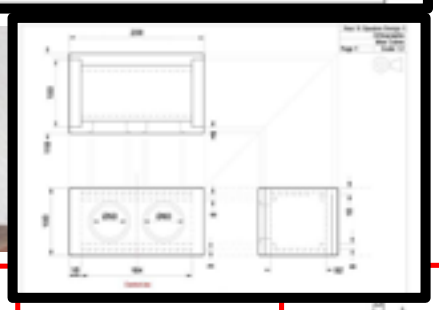
Customer	Who the **Target Market** is, how it will appeal to them, what **Anthropometrics** and **Ergonomics** will be used, etc.
Cost	Cost to make, as well as cost to sell
Environment	Where it will be used
Safety	How it will be safe to use, what standards and regulations it will have to meet
Size	What dimensions it will be, as well as components and parts
Function	What the purpose of the product will be, and what **Features** it will have
Materials	What is will be made from
Manufacture	How it will be be made

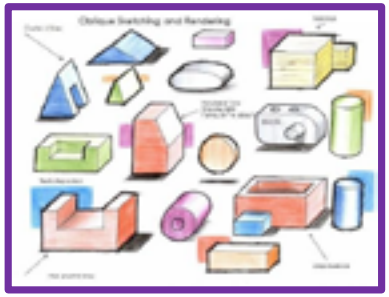
D&T - Engineering Design 3

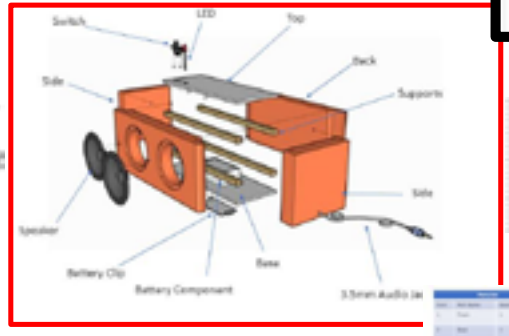
R107: OCR Engineering design
Designing and developing Ideas

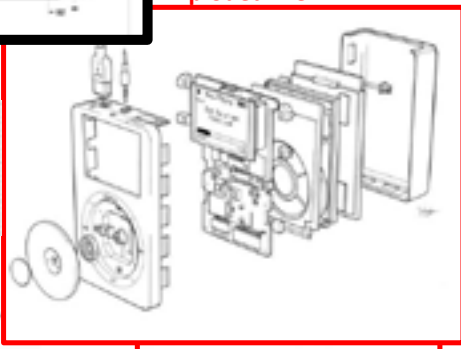


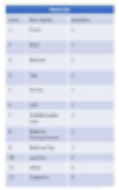


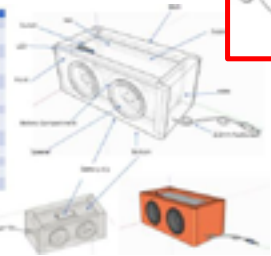


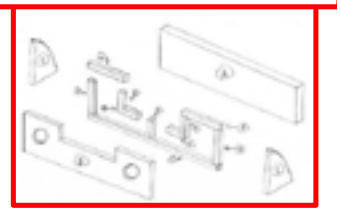




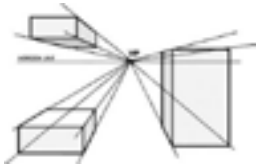




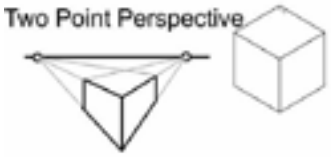




One Point Perspective



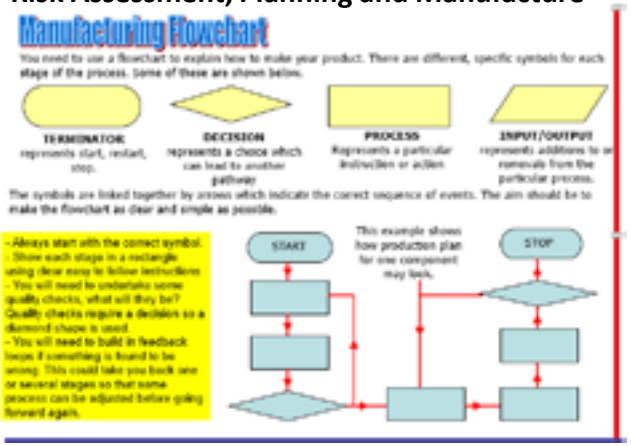
Two Point Perspective

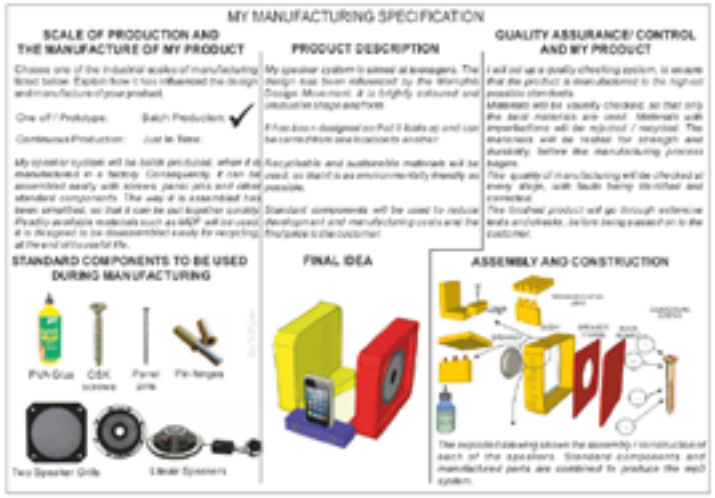


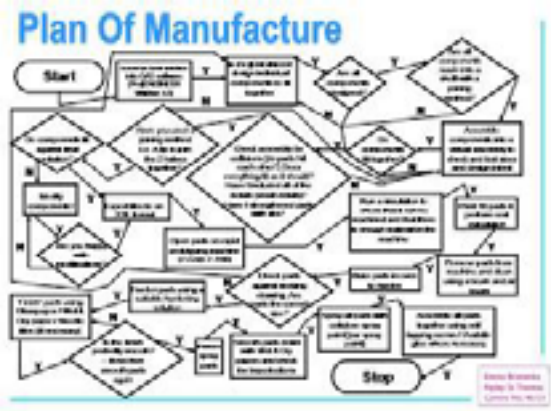
Key Words:
Thumbnail sketch
Initial idea
Developed idea
Working drawing
Dimension
CAD
Standardised
Component
Oblique
One Point Perspective
Two point perspective
Orographic Projection
Freehand
Thick and Thin lines
Rendering
Annotation
Two Dimensions
Three Dimensions
Exploded View

D&T - Engineering Design 4

R108: OCR Engineering design
Risk Assessment, Planning and Manufacture







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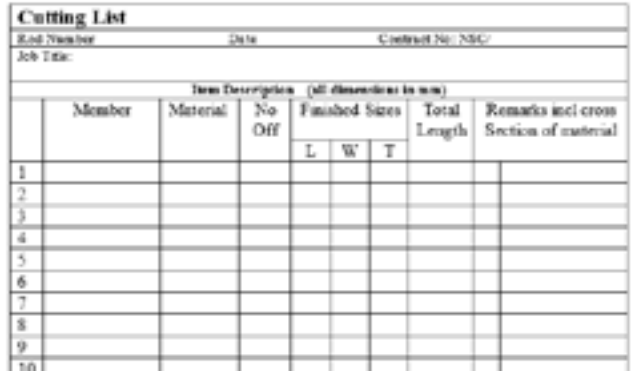
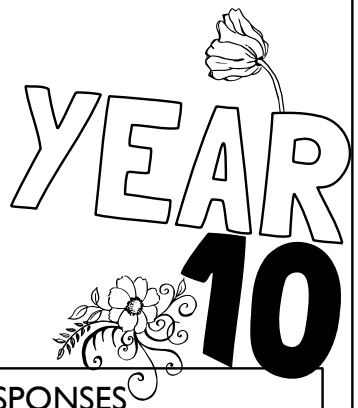


Planning Steps/ Flow diagram
Manufacturing Specification
Risk assessment
Making Diary
Modelling, testing and Developing
Cutting list
Final Product- Range of manufacturing skill

HWCS English Department

Spring Term



THE PORTFOLIO

Over the course of your GCSE studies, you will be creating a **portfolio** of work. You will be familiar with the portfolio system from previous years; however, the Year 10 and 11 portfolio is a much more extensive project, over which you have a higher degree of control and creative freedom.

WHY DO YOU HAVE TO CREATE A PORTFOLIO?

The portfolio allows you to present a clear, visible pathway to success from initial planning and drafting to final pieces of work. It is a self-curated working record of the evolution of your learning across a range of forms and skill areas. So the portfolio helps you to reflect on your own learning, and to see how you have made progress. 'Self-curated' means that *you are in charge*. Because of this, the portfolio also allows you to develop vital skills of organization and self-management.

WHAT WILL GO IN THE PORTFOLIO?

You will produce a range of essays and analytical responses for *Othello, Blood Brothers* and poetry. You will have the opportunity to set your own questions for some of these tasks. In addition to the literature work, you will also produce a piece of creative prose writing.

You will also need to produce 'supporting work' for your written pieces. This will include annotated extracts, annotated poems, plans, research and rough drafts. You can choose to include as much supporting work as you like.

HOW IS THE PORTFOLIO ASSESSED?

At the end of the portfolio process in Year 11, you will have a 10-minute spoken assessment with a Harrow Way English teacher. This is called the **viva assessment.** Before the viva, you will have organized and indexed your portfolio, and had time to prepare what you want to say. During the viva, you will present and discuss some of the key pieces of work in your portfolio and the teacher will ask you questions about the work you have produced. *During the viva, your speaking and listening skills are also assessed as part of the English Language GCSE.*

DISCOURSE MARKERS

Discourse markers are words or phrases that help us to link ideas and organize our meanings within a piece of writing. Here are some useful ones:

Always preceded by a semicolon if used as a conjunction ('joining word')

;however,	Consequently,
Following this,	On the other hand,
In contrast to this,	In addition to this,
The fact that…	Perhaps,
Given that _____, I think…	Arguably,
Despite _____, I think…	It could be argued that…

WORD TYPES

NOUN – A 'thing', i.e. an object, place, person or concept, e.g. 'school'.

ADJECTIVE – A word that describes a noun e.g. 'wonderful'.

VERB – A word that describes an action, e.g. 'learn'.

ADVERB – A word that elaborates on a verb, showing *how* the action was done, e.g. 'successfully'.

PRONOUN – A word that stands in place of a noun, e.g. 'she', 'he', 'they', 'it', 'us'.

PREPOSITION – A word that signals the relationship between two nouns in a sentence, usually to do with time or location, e.g. 'above', 'below', 'after', 'before', 'beside'.

ANALYTICAL RESPONSES

An analytical response, when linked to play or novel, is sometimes called an 'extract response'; when linked to a poem, we sometimes call it a 'Question A response' after the part of the GCSE exam that requires this form of writing.

So, is an analytical response just a short version of an essay? Well, not exactly. Whilst you will be using many of the same skills, the key difference is in the 'posture' you take towards the text. With an essay, we tend to take a 'zoomed out', evaluative perspective, taking into account the *whole text*, considering themes, messages and 'covering the story'. With an analysis response, we take more of a 'zoomed in' perspective, examining *a single poem or a short extract* from a longer text in *close detail*. In an analytical response, we should concern ourselves more with word- and sentence-level analysis. Here are some tips for writing successful analytical responses:

READ AND ANNOTATE THE TEXT – Done well, annotation is a form of planning. Spend time identifying key examples of language and note down why they are effective. Gathering your thoughts in this way will make the writing process easier.

START WITH AN OVERVIEW – Briefly sum up what is happening in the part of the text, or the poem, that you are analysing. Indicate clearly that you have read and understood it.

ANSWER THE QUESTION – Like essays, an analytical response always has a question. Give a simple answer to the question at the beginning, and then elaborate on this later.

NARROW DOWN THE FOCUS – These are meant to be quite short pieces of writing, so you need to be smart about the examples you choose to analyse. Pick enough examples so that you can clearly answer the question, but don't try to analyse every line!

COVER THE TEXT – Make sure your examples span the length of the extract or poem. So make sure to say something about the beginning, middle, and end of the text.

DISCUSSION TIPS

Discussion is a vital part of literature study. Here are some tips to help you have better discussions.

THINK 'DIALOGUE' – Dialogue is the basis for all effective discussion. It is a constructive process: the idea is that, by **listening carefully** and **building on each other's contributions**, we create a shared understanding and help each other learn.

ASK QUESTIONS AS WELL AS GIVING ANSWERS – Did you know that the questions we ask can say more about how much we have learned than the answers we give? Asking an interesting question can take a discussion into exciting new territory.

RE-WORD OTHERS' RESPONSES – A really effective way of absorbing someone else's idea is to say it back to them in your own words.

LISTEN – Perhaps the most important discussion skill of all. Really *listen* to what someone is saying, especially if you disagree with them! You cannot even begin to argue with someone unless you fully understand their point of view.

BE OPEN-MINDED – When you are in any kind of discussion, you should think to yourself, 'What can I learn from this person/these people?' Expect to have your beliefs challenged. Be interested in other people's perspectives.

DISAGREE GRACIOUSLY – Sometimes you will come up against ideas or viewpoints that you do not agree with. This is a good thing! Resist the urge to attack the views of others, and avoid 'talking past' them. You still need to listen. In all likelihood, your opponent feels just as strongly that they are *right* as you do that they are *wrong*!

KEY LITERATURE TERMS

MOOD AND ATMOSPHERE – The 'feeling' or emotion that a text imparts. Created largely through a writer's language choices.

SEMANTIC FIELD – A set of words linked to a certain topic.

IMAGERY – Descriptive language that activates readers' visual imagination.

STANZA – A section of a poem; a verse.

THEME – A key idea that recurs throughout a text.

CONTEXT – 'Background information' that helps us appreciate the meaning of a text.

NARRATIVE – The 'story' of a text.

VERB INFINITIVES

1-ETRE = to be
2- AVOIR = to have
3- FAIRE = to do
4- ALLER = to go
5- JOUER = to play
6- REGARDER = to watch
7- ECOUTER = to listen
8- AIMER = to like
9- MANGER = to eat
10- BOIRE = to drink
11- TRAVAILLER = to work
12- HABITER = to live
13- VISITER = to visit
14- SORTIR = to go out
15- PRENDRE = to take
16- ACHETER = to buy

PRESENT TENSE VERBS WITH "JE"

1- je suis = I am
2- j'ai = I have
3- Je fais = I do
4- je vais = I go
5- je joue = I play
6- je regarde = I watch
7- j'écoute = I listen
8- j'aime = I like
9- je mange = I eat
10- je bois = I drink
11- je travaille= I work
12- j'habite = I live
13- je visite = I visit
14- je sors = I go out
15- je prends = I take
16- j'achète = I buy

PAST TENSE VERBS WITH "JE"

1- j'étais = I was
2- j'avais = I had
3- j'ai fait = I did
4- je suis allé(e) = I went
5- j'ai joué = I played
6- j'ai regardé = I watched
7- j'ai écouté = I listened
8- j'ai aimé = I liked
9- j'ai mangé = I ate
10 – j'ai bu = I drank
11- j'ai travaillé = I worked
12- J'ai habité = I lived
13- j'ai visité = I visited
14- je suis sorti(e) = I went out
15- j'ai pris = I took
16- j'ai acheté = I bought

FUTURE TENSE VERBS WITH "JE"

1- je serai = I will be
2- j'aurai = I will have
3- je vais faire = I will do
4- je vais aller = I will go
5- je vais jouer = I will play
6- je vais regarder = I will watch
7- je vais écouter = I will listen
8- je vais aimer = I will like
9- je vais manger = I will eat
10- je vais boire = I will drink
11- je vais travailler = I will work
12- je vais habiter = I will live
13- je vais visiter = I will visit
14- je vais sortir = I will go out
15- je vais prendre = I will take
16- je vais acheter = I will buy

French GCSE Foundation

Core Language

KnowIT

TIME MARKERS

PAST
1- hier = yesterday
2- l'année dernière = last year
3- la semaine dernière = last week
4- le mois dernier = last month
5- avant = before
6- Il y a 3 ans = 3 years ago
FUTURE
1- demain = tomorrow
2- l'année prochaine = next year
3- la semaine prochaine = next year

1- Aujourd'hui = today
2- maintenant = now
3- quelquefois = sometimes
4- tous les jours = everyday
5- une fois par semaine = once a week
6- toujours = always
7- souvent = often
8- l'été = summer
9- l'automne = autumn
10- l'hiver = winter
11- le printemps = spring
12- soir = evening
13- matin = morning
14 – d'habitude = usually

OTHER VERY IMPORTANT PHRASES

1- je peux +inf = I can
2- je veux +inf = I want
3- je voudrais / j'aimerais = I would like
4- on peut = we can
5- on doit / il faut = you have to
6- depuis = for / since
7- il y a = there is
8- plus…. que = more…. than
9- moins que = less…. than
10- qui = who
11- où = where
12- dans = in
13- devant = in front of
14- derrière = behind
15- ne….pas = not
16 – ne……plus = not anymore
17- ne…. Jamais = never

CONNECTIVES AND INTENSIFIERS

1- d'abord = first
2- puis / ensuite = then
3- enfin = finally
4- et = and / ou = or
5- mais = but
6- cependant = however
7- si = if
8- quand = when
9- même si = even if
10- par contre = on the other hand

1- trop = too
2- très = very
3- assez = quite
4- un peu = a little
5- vraiment = really

OPINIONS

1- à mon avis / selon moi = in my opinion
2- je pense que / je trouve que = I think that
3- c'est = it is
4- c'était = it was
5- ce sera = it will be
6- parce-que / car= because

génial / chouette = great
Intéressant = interesting
marrant / drôle = fun
ennuyeux / barbant = boring
pénible = annoying
nul / horrible = rubbish

French Higher - Core Language

IMPERFECT

1- je faisais = I used to do
2- nous faisions = we used to do
3- je jouais = I used to play
4- nous jouions = we used to play
5- j'allais = I used to go
6- nous allions = we used to go
7- je regardais = I used to watch
8- nous regardions = we used to watch

CONDITIONAL

1- j'aurais = I would have
2- je serais = I would be
3- je ferais = I would do
4- nous ferions = we would do
5- je jouerais = I would play
6- je regarderais = I would watch
7- nous regarderions = we would watch
8- j'écouterais = I would listen

FUTURE

1- j'aurai = I will have
2- je serai = I will be
3- je ferai = I will do
4- nous ferons = we will do
5- je jouerai = I will play
6- je regarderai = I will watch
7- nous regarderons = we will watch
8- j'écouterai = I will listen

EXPRESSIONS WITH MULTIPLE VERBS

1- après avoir (+ fait / regardé/ joué/ visité/ écouté etc) = after (+doing / watching / playing / visiting / listening etc)
2- après être allé(s) = after going
3- j'espère pouvoir (+ aller / regarder / jouer etc) = I hope I will be able to (+go / watch / play etc)
4- j'aurais dû (+ aller / regarder / jouer etc) = I should have (+ gone / watched / played etc)
5- j'aurais voulu (+ aller / regarder / jouer etc) = I would have liked to (+go / watch/ play etc)
6- j'ai toujours rêvé de (+ aller / regarder / jouer etc) = I have always wanted to (go / watch / play etc)

French GCSE Higher

Core language!

Use It!

EXPRESSIONS THAT MAKE YOU SOUND GREAT (IDIOMS)!

1- c'est un perte de temps = it's a waste of time
2- quel dommage = what a shame
3- quel gaspillage = what a waste
4- quelle honte = how shameful
5- c'est le pied = it's awesome
6- ce n'est pas grave = it's not a big deal
7- j'en ai marre de (+ inf) = I'm fed up of…
8- ça vaut le coup = it is worth it
9- cela n'a pas de sens = it doesn't make sense
10- j'ai envie de (+inf) = I feel like (+ -ing)
11- ca m'est égal = I don't mind
12- j'ai horreur de (+inF) = I really hate..
13- ca me donne envie de (+inf) = it makes me want to ….
14- au lieu de (+inf), on devrait (+inf) = instead of (-ing) , we should …
15- il faut regarder le bon côté des choses = we have to look at the bright side

SUBJUNCTIVE

1- il faut que je fasse = I have to do
2- il faut que je sois = I have to be
3- bien que ce soit = although it is
4- il est possible que ce soit (vrai) = it's possible that it is (true)

OPINION – SYNONYMS!

1- génial = épatant, extra, top, sensass, formidable, splendide, merveilleux, inoubliable
2- intéressant = captivant, fascinant
3- nul = épouvantable, lamentable, affreux, horrible, désastreux
4- ennuyeux = barbant, monotone, razoir
5- stupide = ridicule, idiot, bête
6- pénible = agaçant, casse-pieds, énervant
7- triste => déprimant

Les vacances - Holidays

En vacances	On holiday
Normalement, je passe mes vacances en/au/à l'/aux …	Normally, I spend my holidays in …
Je vais au bord de la mer/à la campagne/à la montagne.	I go to the seaside/the countryside/the mountains.
Je voyage en train/avion/ferry/voiture.	I go by train/plane/ferry/car.
Je fais du camping.	I go camping.
Je vais à la plage.	I go to the beach.
Je me baigne dans la mer.	I bathe/swim in the sea.
Je me promène.	I go for a walk.
Je rentre à l'hôtel.	I go back to the hotel.
Je sors au restaurant.	I go out to a restaurant.
On peut …	You can …
faire une visite de Paris	visit Paris
faire de l'escalade	go climbing
visiter les musées/monuments	visit museums/monuments
aller à la pêche/à la plage	go fishing/to the beach
jouer à la pétanque	play petanque, boules

Les vacances passées et futures	Holidays past and future
Tous les ans/Normalement/Tous les étés, …	Every year/Normally/Every summer, …
j'achète/je fais/je vais …	I buy/do/go …
Hier/L'année dernière/Le week-end dernier, …	Yesterday/Last year/Last weekend, …
j'ai vu/visité/acheté …	I saw/visited/bought …
je suis allé(e) à …	I went to …
L'année prochaine/Le week-end prochain/Demain, …	Next year/Next weekend/Tomorrow, …
je vais faire/prendre/aller/visiter …	I'm going to do/take/go/visit …

À l'hôtel	At the hotel
Je voudrais une chambre …	I would like a room …
pour une personne	for one person
pour deux personnes	for two people
avec un lit simple	with a single bed
avec un grand lit	with a double bed
avec une salle de bains	with a bathroom
avec une douche	with a shower
avec une vue sur la mer	with a sea view
la climatisation	air conditioning
Nous avons aussi …	We also have …
une aire de jeux	a games area
un parking	a car park
une piscine	a swimming pool
un restaurant	a restaurant
le Wi-Fi	Wi-Fi
Nos chambres sont bien équipées.	Our rooms are well equipped.
Le petit-déjeuner est inclus/compris.	Breakfast is included.
Notre hôtel est situé/se trouve …	Our hotel is located …

Au restaurant	At the restaurant
Voici la carte.	Here is the menu.
Le plat du jour, c'est …	The daily special is …
Vous avez fait votre choix?	Have you made your choice?
Pour commencer, je vais prendre …	To start, I am going to have …
Comme plat principal, je voudrais …	As a main course, I would like …
Je vais prendre le menu (à 30 euros).	I am going to have the (30 euro) set menu.
Et comme boisson?	And to drink?
Qu'est-ce que vous avez comme desserts?	What desserts do you have?
Vous avez besoin d'autre chose?	Do you need anything else?
On a besoin de l'addition.	We need the bill.
J'ai faim.	I am hungry.
J'ai soif.	I am thirsty.
J'ai envie d'un dessert.	I want a dessert.
L'accueil était très chaleureux.	The welcome was very warm.
un couteau	a knife
une cuillère	a spoon
une fourchette	a fork
une serviette	a napkin

En route!	On the road!
Si j'avais le choix, pour aller …	If I had the choice, to go …
en Inde/Russie/Chine	to India/Russia/China
au Sénégal/Vietnam/Brésil	to Senegal/Vietnam/Brazil
… je voyagerais …	… I would travel …
en car/train/avion	by coach/train/plane
à moto	by motorbike
… car c'est/ce n'est pas …	… because it is (not) …
rapide/confortable/pratique	quick/comfortable/practical
un billet	a ticket
un aller simple	a single
un aller-retour	a return
en première classe	in first class
en deuxième classe	in second class
les horaires	travel time(s)
le guichet	ticket office
le quai	platform
la salle d'attente	waiting room

Des vacances catastrophiques	Catastrophic holidays
J'ai oublié mon passeport.	I forgot my passport.
J'ai pris un coup de soleil.	I got sunburnt.
J'ai cassé mon appareil photo.	I broke my camera.
J'ai été malade.	I got sick.
On m'a volé mon sac.	Someone stole my handbag.
Il a plu tous les jours.	It rained every day.
J'ai raté l'avion.	I missed the plane.
J'ai dû aller chez le médecin.	I had to go to the doctor.
J'ai perdu mes photos.	I lost my photos.
J'ai vomi.	I vomited.
J'ai dû aller au commissariat.	I had to go to the police station.
Il n'y avait rien à faire.	There was nothing to do.

Des vacances de rêve	*Dream holidays*
Je logerais …	*I would stay …*
dans un gîte à la campagne	*in a holiday cottage in the countryside*
dans un hôtel 4 étoiles	*in a 4-star hotel*
dans une auberge de jeunesse	*in a youth hostel*
dans une caravane	*in a caravan*
dans une chambre d'hôte	*in a bed and breakfast*
dans une tente, sur une île déserte	*in a tent on a desert island*
sur un bateau	*on a boat*
Je voyagerais …	*I would travel …*
avec mes copains/copines	*with my friends*
avec ma famille	*with my family*
Ce serait …	*It would be …*
formidable	*tremendous*
luxueux	*luxury*
merveilleux	*wonderful*
passionnant	*exciting*
pittoresque	*picturesque*
reposant	*restful*
tranquille	*quiet*

Geography - Sustaining Ecosystems 1

What is an Ecosystem?

An ecosystem is a system in which organisms interact with each other and with their environment.

Ecosystem's Components

Abiotic	These are non-living, such as air, water, heat, rock.
Biotic	These are living, such as plants, insects, and animals.
Flora	is plant life occurring in a particular region or time.
Fauna	is all animal life of any particular region or time.

Food Chains

Food chains are useful in explaining the basic principles behind ecosystems. They show only one species at a particular level from where energy is transferred up to the next.

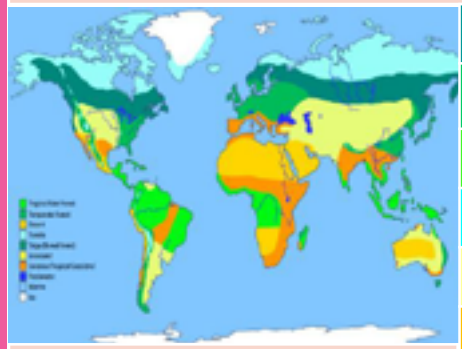
Nutrient cycle

Plants take in those nutrients where they are built into new organic matter. Nutrients are taken up when animals eat plants and then returned to the soil when animals die and the body is broken down by decomposers.

Litter	This is the surface layer of vegetation, which over time breaks down to become humus.
Biomass	The total mass of living organisms per unit area.

Biomes

A biome is a large geographical area of distinctive plant and animal groups, which are adapted to that particular environment. The climate and geography of a region determines what type of biome can exist in that region.



Coniferous forest
Deciduous forest
Tropical rainforests
Tundra
Temperate grasslands
Tropical grasslands
Hot deserts.

The most productive biomes – which have the greatest biomass- grow in climates that are hot and wet.

Tropical Rainforest Biome

Distribution of Tropical Rainforests

Tropical rainforests are centred along the Equator between the Tropic of Cancer and Capricorn. Rainforests can be found in South America, central Africa and South-East Asia. The Amazon is the world's largest rainforest and takes up the majority of northern South America, encompassing countries such as Brazil and Peru.

Convectional rainfall

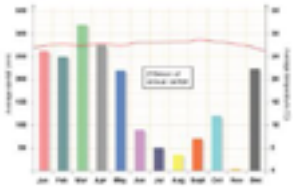
1. The roots of plants take up water from the ground and the rain is **intercepted** as it falls.
2. As the rainforest heats up, the water evaporates into the atmosphere.
3. Finally, the water condenses and forms clouds to make the next day's rain.

Rainforest nutrient cycle

The hot, damp conditions on the forest floor allow for the rapid decomposition of dead plant material. This provides plentiful nutrients that are easily absorbed by plant roots. However, as these nutrients are in high demand from the many fast-growing plants, they do not remain in the soil for long and stay close to the surface. If vegetation is removed, the soils quickly become infertile

Climate of Tropical Rainforests

- Evening temperatures rarely fall below 22°C
- Due to the presence of clouds, temperatures rarely rise above 32°C
- Most afternoons have heavy showers
- At night with no clouds insulating temperature drops



Topic 4

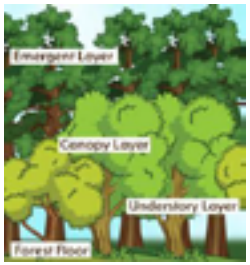
Sustaining Ecosystems

Interdependence in the rainforest

A rainforest works through interdependence. This is where the plants and animals depend on each other for survival.

Layers of the Rainforest

Emergent	Highest layer with tree reaching 50 metres.
Canopy	Most life is found here as It receives 70% of the sunlight and 80% of the light.
U-Canopy	Consists of trees that reach 20 metres high.
Shrub Layer	Lowest layer with small trees that have adapted to living in the shade.



Rainforest soil profile

Leaf Litter	Thin litter layer rapidly decomposes in heat.
Top Soil	Shallow topsoil is a mixture of decomposed organic matter and minerals.
Sub Soil	The sub-soil is deep due to weathering of rocks below.
Rock	Underlying rock weathers quickly at high temperatures to form sub-soil.

Biome's climate and plants

Biome	Location	Temperature	Rainfall	Flora	Fauna
Topical rainforest	Centred along the Equator.	Hot all year (25-30°C)	Very high (over 200mm/year)	Tall trees forming a canopy; wide variety of species.	Greatest range of different animal species. Most live in canopy layer
Tropical grasslands	Between latitudes 5°- 30° north & south of Equator.	Warm all year (20-30°C)	Wet + dry season (500-1500mm/year)	Grasslands with widely spaced trees.	Large hoofed herbivores and carnivores dominate.
Hot desert	Found along the tropics of Cancer and Capricorn.	Hot by day (over 30°C) Cold by night	Very low (below 300mm/year)	Lack of plants and few species; adapted to drought.	Many animals are small and nocturnal: except for the camel.
Temperate forest	Between latitudes 40°-60° north of Equator.	Warm summers + mild winters (5-20°C)	Variable rainfall (500-1500m /year)	Mainly deciduous trees; a variety of species.	Animals adapt to colder and warmer climates. Some migrate.
Tundra	Far Latitudes of 65° north and south of Equator	Cold winter + cool summers (below 10°C)	Low rainfall (below 500mm/ year)	Small plants grow close to the ground and only in summer.	Low number of species. Most animals found along coast.
Coral Reefs	Found within 30° north – south of Equator in tropical waters.	Warm water all year round with temperatures of 18°C	Wet + dry seasons. Rainfall varies greatly due to location.	Small range of plant life which includes algae and sea grasses that shelters reef animals.	Dominated by polyps and a diverse range of fish species.

Geography - Sustaining Ecosystems 2

Tropical Rainforest Biome

Adaptations to the rainforest

Sloths	Are camouflaged to forest environment.
Buttress Roots	Support tall trees & absorb nutrients.
Drip Tips	Allows heavy rain to run off leaves easily
Lianas & Vines	Climbs trees to reach sunlight at canopy.

Rainforest inhabitants

Many tribes have developed sustainable ways of survival, such as shifting cultivation.
The forest provides inhabitants with…

- Food through hunting and gathering.
- Natural medicines from forest plants.
- Homes and boats from forest wood.

Effects of Human Activity on the Rainforest

Logging

- Most widely reported cause of destructions to biodiversity.
- Timber is harvested to create commercial items such as furniture and paper.
- Has lead to violent confrontation between indigenous tribes and logging companies.

Agriculture

- Large scale 'slash and burn' of land for ranches and palm oil.
- Increases carbon emission.
- River saltation and soil erosion increasing due to the large areas of exposed land
- Increase in palm oil is making the soil infertile.

Mineral Extraction

- Precious metals are found in the rainforest.
- Areas mined can experience soil and water contamination.
- Indigenous people are becoming displaced from their land due to roads being built to transport products.

Tourism

- Mass tourism is resulting in the building of hotels in extremely vulnerable areas.
- Lead to negative relationship between the government and indigenous tribes
- Tourism has effected wildlife (apes) by exposing them to human diseases.

Benefits of the rainforest

Raw Materials	Commonly used materials such as timber and rubber are found here.
Water	Controls the flow of water to prevent floods/droughts regions..
Food	Important foods such as Bananas, pineapples and coffee are grown there.
Health	25% of modern medicines are sourced from rainforest ingredients.
Energy	Large dams generate 2/3 of Brazil's energy needs.
Climate	Acts as carbon sinks by storing 15% of carbon emissions.

Case Study: Sustainable Rainforest Management in Costa Rica

Location & Background

Costa Rica is a small country in Central America.
It is home to 6% of the world's biodiversity.
The country attracts 6 million tourists a year.

Ecotourism

Ecotourism is tourism that is directed towards the natural environments & conversation. Monteverde is a popular ecotourism destination in the country.

Advantages

- 80 new businesses have open in Monteverde.
- 400 full-time and 140 part-time jobs directly related to tourism in Monteverde.

Disadvantages

- Land prices have increased.
- Deforestation to clear areas for tourism industry.

Threats to the Costa Rican Rainforest

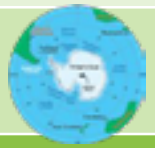
- Cattle Ranching and agricultural development by clearing land through slash & burn methods.
- Gold and other metal mining meant large scale soil and rock removing. This meant areas were deforested and chemicals entered water systems.
- By 1990, 32,000 hectors of forest were cut down each year – devastating the fragile ecosystem.

Rainforest Management

- Government created 28 National Parks with 24% of the country's land protect.
- Laws and enforcement meant that differentiation had fallen from 1.8 to almost zero by 2005.
- Agroforestry encourages growing trees and crops together to create better farming conditions.
- Afforestation has led to the replanting of trees to replace original forest that have been lost.

Polar/Tundra Regions Biome

Distribution of Polar Regions

Arctic	Antarctic
Is the region north of latitude 60°N around the North Pole.	**A continent south of latitude 60°S around the South Pole.**
	

Climate

Polar areas are very cold with temperatures rarely reaching above 0 °C. Winters average below -40 °C with summers a maximum of only 10 °C. Rainfall is low throughout the year.

Land & Sea Features

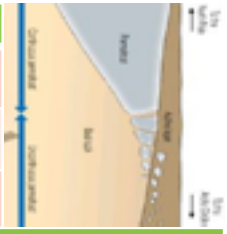
Arctic	Antarctic
Large areas are permafrost. At sea, most of the region is frozen over.	Large and thick ice sheets. A mountain range crosses the continent.
Flora (Plants)	**Fauna (Animals)**
There are very few plants in polar areas – some lichens, mosses and grasses along the coastal areas.	Relatively few species of animals. Polar Bears, Penguins and marine mammals like whales, seals and walrus are examples.

Climate Change on Polar Regions

Scientific reports outline the effect global warming is having on these regions. Ice sheets and glaciers are melting at an alarming rate leading to fears of rising sea levels. Thawing of permafrost is increasing methane emissions and the decline of arctic ice is creating waves that are capable of causing unseen coastal erosion.

Arctic soil profile

Active Layer	Thaws in the summer. Becomes deeper towards pole.
Permafrost	Permanently frozen all year. Layer Increases further north.
Bed Rock	Low temperatures weathers rock slowly = less nutrients.



Effects of Human Activity in Polar Regions

Oil & Gas exploration

- Arctic holds a large amount of untapped oil and gas.
- Oil spills would threaten ecosystems as clean up operations would be slow.

Whaling

- Hunting of whales is a major industry – this led to a rapid decline in whale populations.
- Many countries have banned whaling, but some still continue

Fishing

- Has made area possible to fish large untapped stocks.
- The polar areas are difficult to police due to harsh conditions.
- Collapse of the fish stocks there might damage ecosystems.

Tourism

- The tourism industry is steadily growing within polar regions.
- Travel by tourist increase emissions further.
- Wildlife may become disturbed by tourists getting up close.

Case Study: Small Scale Sustainable Management: Clyde River, Canada Sustainable Whaling

Location & Background

By the 1960s whale numbers were rapidly declining due to hunting

Features and Activities

- In 1986 the international whaling committee (IWC) banned whaling and numbers rose rapidly
- Inuit's can still hunt one whale a year to keep traditions alive.

Sustainable Management

- Inuit's can still hunt one whale a year to keep traditions alive.
- It has been very successful.
- Japan were still killing whales for 'scientific research' and in 2019 said they were going to ignore the ban.

Case Study: Global Scale Sustainable Management: The Antarctic Treaty System

Background

Signed by 50 nations in 1961, the Treaty sets aside Antarctica as a scientific preserve, establishes freedom of scientific investigation and bans military activity.

Basic Principles of the Antarctic Treaty

- Bans mining and resource extraction.
- Prevents territorial disputes of the continent.
- Promotes scientific research and co-operation.
- Protects the fragile environments and its wildlife by preventing and managing waste/pollution.

Successful?

Stayed in place for 50 years with more countries signing up to enforce strict controls and improve its stability.

Geography - Resource Reliance 1

What is Resource Reliance?

Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

Resource Required

Resources such as food, energy and water are what is needed for basic human development.

FOOD	WATER	ENERGY
Without enough nutritious food, people can become **malnourished**. This can make them ill . This can prevent people working or receiving education.	People need a supply of **clean and safe water** for drinking, cooking and washing. Water is also needed for food, clothes and other products.	A good supply of energy is needed for a basic standard of living. People need **light and heat** for cooking or to stay warm. It is also needed for industry.

Demand outstripping supply

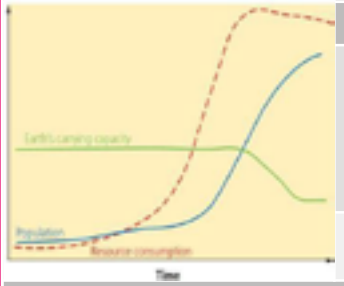
The demand for resources like food, water and energy is rising so quickly that supply cannot always keep up. Importantly, access to these resources vary dramatically in different locations

1. Population Growth

- Currently the global population **is 7.7 billion**.
- Global population has risen **exponentially** this century.
- Global population is expected to reach **9 billion by 2050**.
- With more people, the **demand** for food, water, energy, jobs and space **will increase**.

2. Economic Development

- As **LIDCs** and **EDCs** develop further, they require **more energy** for industry.
- **LIDCs** and **EDCs** want similar lifestyles to **ACs**, therefore they will need to **consume more resources**.
- Development means **more water is required** for food production as diets improve.



Resource Reliance Graph

Consumption – The act of using up resources or purchasing goods and produce.
Carry Capacity – A maximum number of species that can be supported.

Resource consumption exceeds Earth's ability to provide!

3. Changing Technology and Employment

- The demand for resources has driven **the need for new technology** to reach or gain more resources.
- More people in the **secondary and tertiary industry** has increased the **demand for resources** required for electronics and robotics.

Reasons for NOT Meeting Modern Resource Demands.

Climate	• **Global warming** effects cycles and seasons and therefore farming. • **Rainfall patterns** are changing and are becoming unpredictable. This is a problem for farming.
Geology	• Not all countries have **access to fossil fuels** or suitable landscape for renewables. • Many **minerals are finite** and therefore once used will reduce the resources available. • R**ock types** might limit the availability to store water.
Conflict	• **War** can disrupt transport of resources by damaging roads and water pipes.
Poverty	• LIDCs are unable to **afford technology** to effectively exploit the natural resources available.
Natural Hazards	• **Increase in hazard events** due to climate change. • Prime agricultural regions in Asia and Africa and are also in **hazard zones**. • Has the ability to **destroy infrastructure** needed to transport resources.

Topic 8
Resource Reliance

Environment and Food: Fishing and Farming

	Methods	Environmental and Ecosystems
Fishing	**Bigger nets and fishing boats** have allowed for greater catches. **GPS and sonar** has also find the fish easily.	• **Overfishing** of certain fish has caused their decline. • **Dredging** can damage seafloor habitats. • Decline of one species has a **knock on** effect on other marine species.
Farming	**Tractors, computer programming** and **GPS** technology is producing food more effectively and at a larger scale.	• Field sizes have caused **hedgerows to decline** in biodiversity. • **Fertilisers and pesticides** enter water courses and harm or kill organisms. • Heavy machinery can cause **soil erosion**.

Environment and Energy: Deforestation and Mining

	Methods	Environmental and Ecosystems
Deforestation	Logging using **modern machinery** and **transportation** has made deforestation more productive & convenient.	• **2 billion people depend on wood** for fuel, which therefore creates high **CO2 emissions** • Forests provide for **important habitats**. • Clearing of forests leads to **soil erosion**. • Tree intercepts rain and **prevents flooding**.
Mining	Large machines and drill technology can remove and reach through material effectively.	• Mining waste **can pollute soil and contaminate water** supplies. • **Habitats are destroyed** in mining zones. • Fossil fuels burnt **release greenhouse gases**

Environment and Water: Reservoirs and Water Transfer

	Methods	Environmental and Ecosystems
Reservoirs	Increasing **storage to hold more water** and constructing more dams to **control river flow** can provide a reliable source of water.	• Can **flood** a large area of land and damage **habitats** and **natural landscapes**. • Dams can be **a barrier for certain species** to migrate upstream. • Natural flow of sediment is disrupted, which then **reduces fertility of land** further down.
Water Transfer	Constructing pipes and canals to divert water surplus to areas in need of a water supply.	• Large-scale engineering works can **damage ecosystems** along the route. • **Lots of energy** is required to pump water over long distances.

Food Security

'Food Security' is when people at all times need to have physical & economic access to food to meet their dietary needs for an active & healthy life. This is the opposite to **'Food Insecurity'** which is when someone is unsure when they might next eat.

Human

- **Poverty** prevents people affording food and farmers buying modern equipment.
- **Poor infrastructure** makes food difficult to transport fresh food.
- **Conflict** disrupts farming and prevents supplies.
- **Food waste** due to poor transport and storage.
- **Climate Change** is affecting rainfall patterns making food production difficult.

Physical

- **Temperature** needs to be ideal for certain crops to grow.
- The **quality of soil** is important to ensure crops have the necessary nutrients.
- **Water supply** needs to be reliable to allow food to grow.
- **Pest, diseases and parasites** can destroy vast amounts of crops that are necessary to feed large populations.
- **Extreme weather** events can damage crops (i.e. floods).

Malthus and Boserup's Theories about Food Supply

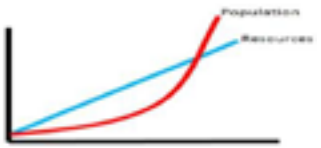
With the population growing very quickly, there are different ideas about whether or not this will lead to a food crisis.

Malthus Theory

- Believed that **population would increase faster than food supply**.
- This would lead to a lack of food being available.
- Malthus believed this would cause **large scale famine, illness** and **war**
- This would occur until population returned to level that can be supported.

Boserup Theory

- Believed that however big the population grew**, people would find ways to manage**.
- If food supplies became limited, **people would find new ways** to increase production.
- These solutions would often involve **creating new technologies**.



Geography - Resource Reliance 2

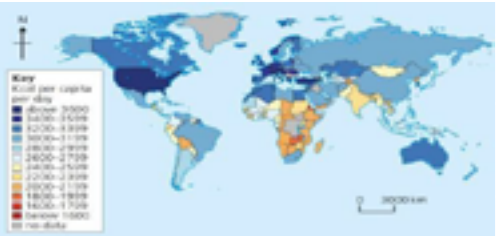
Measuring Food Security

Food security varies around the world. Some people and places are more food secure than others. This can often depend on how much a country can grow and is able to afford.

The Global Hunger Index

- This shows how many people are suffering from **hunger or illness** caused by lack of food.
- The index gives a value for each country from **0** (no hunger) to **100** (extreme hunger).

Daily Calorie Intake



- This shows how many **calories per person** that are consumed on average for each country.
- This can indicate the global distribution of **available food** and **food inequality**,

Case Study: UK Food Security

Food Availability in the UK	Food consumption in the UK
• The UK is ranked **17th out of 109** in Global Food Security Index with a score of **79.1 out of 100.**	Average daily calorie intake in the UK comes in sixth place. People consume an average daily calorie intake of 3,440. 14.3 million people are in poverty in the UK.
Local Scale: Food Banks • Food banks are established by charities (Andover Food Bank, The Trussell Trust) and give three days' worth of food for people and families who cannot feed themselves. • In 2014, 1.1 million people used food banks in the UK.	**Successes** • Raise awareness of hunger and poverty • Signpost to a host of information and services, including money management, family care and nutrition **Limitations/Criticisms** • For some people, this is their main source of food • Sometimes the food is unhealthy and unsuitable
Past Attempt: Genetically Modified Crops • Uses technology to achieve food security by taking DNA from one species and putting it into another. • The Green Revolution in the 1960's cross bred rice and wheat seeds that produced very high yields. However, new strains were suited to intensive farming which needed lots of water, fertilisers and pesticides. This also reduced biodiversity and put farmers at risk of poor crops and debt.	**Successes**: • GM crops engineered to resist drought and frost will grow in places currently not suitable. • Crops can be modified with DNA harmful to pest and insects and reduce the need for pesticides. • Food with other health benefits can be engineered **Limitations/Criticisms:** • GM crops might not be safe to eat. • Pollen spreads and contaminates other plants. • GM seeds are made by TNC's; profit over security?
Present Attempt: Thanet Earth • Large industrial agriculture in Kent, South East England. It is the largest greenhouse complex in the UK, four greenhouses the size of 10 football pitches grow salad vegetables all year round using hydroponics. The development aims to be sustainable as each greenhouses has its own power station to provide heat and lighting. Water supply from rainwater collected from the roofs. Hot air and carbon dioxide from the power stations is pumped back into the greenhouses.	**Successes** • Salad vegetables grown all year round, reducing the need for imports and reducing food miles. • Bees are used for pollination, 500 jobs created. **Limitations /Criticisms** • Natural habitats lost and ecosystems disrupted. • Money generated mostly goes to large investors rather than local communities. • Greenhouses are built on high land and artificially lit - visual and light pollution. • Large amounts of energy are required to power the greenhouses.

Attempts to Achieve Food Security

There are various measures to maintain or even improve our food security. These measures are often taken to be socially, economically, environmentally viable for the longer term.

Social	Economic	Environmental

Ethical Consumerism

This involves buying products that have a positive social, economic and environmental impact today, without compromising future generations.

Fairtrade	• This is a global movement to give farmers a **fairer price for their products**. • The profits benefit the community **with schools and medical facilities**. • Involves using farming methods that **protects rather than destroys environments**.
Food Waste	• One-third of all food gets lost or wasted. • Aim to **eat locally sourced food** to reduce waste through transport. • Eating 'ugly' food despite it not being 'ideal' can prevent waste and **save money**. • Prevents wasted energy for producing food and therefore **reduces CO2 emissions**.

Food Production

This involves producing as much food as possible in as small a space as possible. They often involve using machines and chemicals to gain as much produce as they can.

Intensive Farming	• Makes the most of the land and allows for higher yields. This can make growing food more **productive and therefore cheaper** to produce. • Chemical fertilisers, pesticides and herbicides can **pollute the environment** and **harm people**, animals and insects.
Organic Methods	• This involves the banned use of chemicals and **ensuring animals are raised naturally**. • This can lead to **lower yields of 20%** and products being **more expensive**.

Technological Developments

Through better understanding of science and improved technology, it is now possible to change the food we grow and protect and harvest the crops more effectively.

Genetically modified (GM)	• Involves changing the DNA of foods to enhance their productivity and properties. • Crops can be **better protected from disease and drought**, but also made larger or include more **health benefits**.
Hydroponics	• This is a method of growing plants without soil. Instead they use nutrient solution. • Less water is needed and a **reduced need for pesticides** to be used. • However, this method is **very expensive** so only used for high value crops.

Small Scale 'Bottom Up' Approaches

This involves a small scale production of food and relies on individuals and communities, rather than government or large organisations.

Allotments	• This is an area of land that is divided into plots and rented to **individuals to grow their own fruit and vegetables**. • Allows people in urban areas to produce their **own cheap** & **healthily food** close to home.
Permaculture	• This involves **people growing their own food** and **changing their eating habits**. • This can create **more natural ecosystems** and fewer resources are required.

Health and Social Care Knowledge Organiser: Component 2 Health and Social Care Services and Values

Learning Aim A: Understand the different types of health and social care services and barriers to accessing them

Learning Aim B: Demonstrate care values and review own practice

Providing good health and social care services is very important and a set of 'care values' exist to ensure this happens. Care values are important because they enable people who use health and social care services to get the care they need and to be protected from different sorts of harm.

A1 Health and social care services

1. **Different health care services and how they meet service user needs**
   a. Primary care, e.g. dental care, optometry, community health care
   b. Secondary & tertiary care, e.g. specialist medical care
   c. Allied health professionals, e.g. physiotherapy, occupational therapy, speech and language therapy, dieticians
2. **Different social care services and how they meet service user needs**
   a. Services for children and young people, e.g. foster care, residential care, youth work
   b. Services for adults or children with specific needs (learning disabilities, sensory impairments, long-term health issues) e.g. residential care, respite care, domiciliary care
   c. Services for older adults, e.g. residential care, domiciliary care
   d. Role of informal social care provided by relatives, friends and neighbours

B1 Care values

1. Empowering and promoting independence by involving individuals, where possible, in making choices
2. Respect for the individual by respecting service users' need, beliefs and identity
3. Maintaining confidentiality
4. Preserving the dignity of individuals to help them maintain privacy and self-respect
5. Effective communication that displays empathy and warmth
6. Safeguarding and duty of care
7. Promoting anti-discriminatory practice by being aware of types of unfair discrimination and avoiding discriminatory behaviour

A2 Barriers to accessing services

1. **Types of barriers and how they can be overcome by the service providers and users**
   a. Physical barriers, e.g. issues getting into and around the facilities
   b. Sensory barriers, e.g. hearing and visual difficulties
   c. Social, cultural and psychological barriers, e.g. lack of awareness, differing cultural beliefs, social stigma, fear of loss of independence
   d. Language barriers, e.g. differing first language, language impairments
   e. Geographical barriers, e.g. distance of provider, poor transport links
   f. Intellectual barriers, e.g. learning difficulties
   g. Resource barriers for service provider, e.g. staff shortages, lack of local funding, high local demand
   h. Financial barriers, e.g. charging for services, cost of transport, loss of income while accessing services

B2 Reviewing own application of care values

1. **Key aspects of a review**
   a. Identifying own strengths and areas for improvement against the care values
   b. Receiving feedback from teacher or service user about own performance
   c. Responding to feedback and identifying ways to improve own performance

TOPIC 1: THE ORIGINS OF THE COLD WAR 1941-1956

The conferences 1943 - 45

GRAND ALLIANCE	Russia, USA, Britain	Stalin, Churchill, Roosevelt
TEHRAN	Attended by Stalin, Churchill, Roosevelt	Final plans for D-Day Russia to fight Japan
YALTA	Attended by Stalin, Churchill, Roosevelt	Germany divided 4 Sphere of Influence Free elections
POTSDAM	Stalin, Attlee, Truman	As agreed at Yalta. Truman tested atomic bomb.

The tension builds 1945-49

TRUMAN DOCTRINE	Policy of Containment	USA supply military resources to prevent spread of communism
MARSHALL AID	$17m to European countries to rebuild	Aim to offer funds to prevent spread of communism.
COMINFORM/COMECON	USSR response to USA aid and policies	Information and financial aid to communist countries
TELEGRAMS	Long & Novikov	Accusations of aggression

The Berlin Crisis 1948-49

BIZONIA	USA & Britain merge zones	USSR feel threatened
BLOCKADE	USSR prevent supplies entering Western sectors of Berlin	Aim to force allies to leave Berlin.
AIRLIFT	Allies drop food/supplies into Berlin	Stalin forced to call off the Blockade
TRIZONIA	Allies merge zones	East and West Germany

Changing attitudes 1953 onwards

NATO	North Atlantic Treaty Organisation	West together to prevent spread of communism
DE-STALINISATION	Khrushchev leader	Remove Stalin's ideas
WARSAW PACT	Communist alliance	USSR response to NATO

Hungarian Uprising

RAKOSI	Hungary leader, Stalin's best pupil	Forced from power and replaced with Nagy
NAGY	Reforms for Hungary, desire to leave Warsaw Pact	Khrushchev fears further uprisings in USSR countries
KHRUSHCHEV	Tanks to regain control	Needs to reassert authority
KADAR - new leader	Nagy executed, Communism restored	200k flee to Austria, thousands dead

Key Dates

TEHRAN	1943
YALTA	1945
POTSDAM	1945
LONG TELEGRAM	1946
NOVIKOV TELEGRAM	1946
IRON CURTAIN SPEECH	1946
TRUMAN DOCTRINE	1947
MARSHALL AID	1947
COMINFORM	1947
BERLIN CRISIS	1948
COMECON	1949
NATO	1949
STALIN DIES	1953
WARSAW PACT	1955
HUNGARIAN UPRISING	1956

TOPIC 2: COLD WAR CRISES

Berlin Wall 1958-1961

BRAIN DRAIN	Educated people leaving East Berlin to live in the West.
BERLIN ULTIMATUM	Khrushchev orders the West to leave Berlin within 6 months
PARIS SUMMIT	Discussions about Berlin, US U2 Spy plane shot down 9 days before
VIENNA SUMMIT	Final conference with JFK
BERLIN WALL	Construction begins in response to conferences

Meanwhile in Cuba

CUBAN REVOLUTION	Capitalist President Batista is overthrown	American businesses thrown out. USA fearful of spread of communism and failure of Containment. US bans sugar imports. USSR agree to trade with Cuba
BAY OF PIGS	CIA plan costing $45m to regain USA influence in Cuba using 1500 Cuban Exiles	Operation failed. JFK humiliated, 1100 exiles captured, USA forced to pay $50 in medicine and baby food for their return.

Cuban Missile crisis

IMPACT OF THE BAY OF PIGS DISASTER	Russia and Cuba become greater allies in the face of threat from America
MISSILE LAUNCH SITES	US Spy planes discover construction of missile launch sites on the island.
THE BLOCKADE	A quarantine is established around Cuba. US military prevent missiles being delivered
OUTCOME	The situation calms and the Russian ships return home. A hotline is established to improve communications between the two sides. Nuclear test ban treaties in place

Prague Spring

NOVOTNY	Czechoslovakian leader	Food shortages and poor standard of living in Czech
DUBCEK	Reforms during Prague Spring 'Socialism with a human face'.	April - August 1968, removes secret police and some communist controls
BREZHNEV	New leader of USSR	Needed to reassert authority
BREZHNEV DOCTRINE	Created to justify an invasion of Czechoslovakia	Tanks enter to reestablish USSR control, peace protests by the Czech people.
OUTCOME	Dubcek resigned as leader and communism restored	The West condemned the invasion, but failed to assist the Czech people.

Key Dates

BERLIN ULTIMATUM	1958
CUBAN REVOLUTION	1959
PARIS SUMMIT	1960
VIENNA SUMMIT	1961
BAY OF PIGS	1961
BERLIN WALL	1961
CUBAN MISSILE CRISIS	1962
HOTLINE	1963
LIMITED TEST BAN TREATY	1963
PRAGUE SPRING	1968
BREZHNEV DOCTRINE	1968

TOPIC 3: THE END OF THE COLD WAR

Detente 1970's

HOTLINE	Between USSR and USA improving communication
DETENTE	Period of improved relationship between USA and USSR, until Invasion of Afghanistan
SALT 1	Strategic Arms Limitation Talks led to a 5 year freeze on ICBM production
APOLLO SOYUZ	Space linkup between USA and USSR and the handshake in space
HELSINKI	Agreements made to improve human rights, security and cooperation.
SALT II	Discussed but never ratified

Gorbachev - 'New thinking'

PERESTROIKA	Restructuring the economy	Business ownership was allowed
GLASNOST	Openness	Freedom of speech
SINATRA DOCTRINE	Warsaw Pact countries had freedom to make their own decisions	

Soviet Invasion of Afghanistan

AMIN	Communist leader in Afghanistan, reliant on Soviet support to rule	Anti-muslim policies and persecution causes unrest
MUJAHEDEEN	Guerilla fighting force based in the mountains	Declared Jihad on the Amin Government
ISLAMIC FUNDAMENTALISM	Islam spreading through the region	Potential threat to communism
INVASION	Soviet troops enter to restore order	Amin shot and replaced with Kamal
CARTER	Carter Doctrine established, USA force if necessary	USA boycott Moscow olympic games

Second Cold War

REAGAN	Replaced Carter, tough on Soviet Union	'Evil Empire' speech, increases defence spending
STRATEGIC DEFENCE INITIATIVE (SDI)	Known as the 'Star Wars' programme, never constructed	Plan for surface, laser armed anti ballistic missile system.

The collapse of the Soviet Union

BERLIN WALL	Demonstrations in Berlin following New thinking	Berlin Wall falls 1989
WARSAW PACT	Rejected by communist countries	Pact dissolved in 1991

Key Dates

DETENTE	1970
SALT 1	1972
SALT 11	1974
APOLLO SOYUZ	1975
HELSINKI AGREEMENTS	1975
AFGHANISTAN	1979
MOSCOW OLYMPICS	1980
SDI	1983
LOS ANGELES OLYMPICS	1984
GORBACHEV	1985
GENEVA SUMMIT	1985
INF TREATY	1987
BERLIN WALL FALLS	1989
COLLAPSE OF SOVIET UNION	1990

Hospitality & Catering Part 1

The hospitality and catering industry includes hotels, guest houses, bed and breakfasts (B&Bs), inns and pubs, restaurants, cafes and takeaways, contract catering (such as weddings), catering in leisure attractions (such as museums) and motorway service areas. It includes aeroplane meals and snacks on trains. It also includes food served in hospitals, prisons, schools and the armed services.

LO1 Understand the environment in which hospitality and catering providers operate

Commercial – make profit e.g. hotel

Non commercial – don't make profit e.g. prisons

Residential- can book in to stay over night

Non residential – cannot stay overnight

commercial	Non commercial
hotels	hospitals
B&B's	schools
pubs	army
Guest houses	Care homes
Holiday parks	prisons

Cafes/Coffee Shops

Restaurants

Hospitals Prisons Armed Services Fast-food & Take-away Outlets

Air-line Meals

Main sectors of the Hospitality Industry are:

- Accommodation e.g. Hotels & **guest houses**
- **Food and drink e.g. Pubs & restaurants**
- **Meetings and events e.g. hotels and conference centres**
- **Entertainment and leisure e.g. spas , leisure centres , golf clubs, bowling alleys**
- **Travel and tourism e.g. Aeroplanes , cruise ships and hotels**

- 1.7 million people employed
- £85 billion brought into the UK economy
- £7.5 billion on accommodation

Marriott Niagara

- 4 star Hotel
- 3 different themed restaurants
- Breakfast restaurant
- Room service
- Starbucks attached to ground floor!

Bristol hotel Gibraltar

- No food or restaurant on site
- Shared breakfast room across street with another hotel

Meals on wheels

Social meal service provided by volunteers, to people unable to prepare their own food.

Care home meals

food served may depend on the needs of the clients, some may have conditions which need special meals. Some residents may need help eating and drinking

Bed & breakfasts, Guesthouses, Farmhouses

Often showcase local themes or produce.
May be breakfast, Half board or full board, family run

Motels & Holiday parks

Lower standard than hotels, food is usually buffet style breakfast. Corporate or independen

CONTRACT CATERERS

These provide food and drink for a function where catering facilities are not already provided

They prepare the food for functions such as, weddings, banquets, garden parties, and parties in private houses. They may prepare and cook food in advance, and deliver it the venue, or they may cook it on site. They may also provide staff to serve the food if required.

Great for - **parties**

Weddings

Proms

Establishments that do not have facilities to provide food and drink

Armed services meals

Mass catering, Camps on active service, Canteens at bases.High energy, balanced nutritionally

Prisons

Food is prepared in by prison inmates to ensure that tight budgets for food are met

Restaurants

Variety of styles and food types, may be specialist eg italian, or gourmet or fine dining
Styles of service vary with types of food and cost
See styles of service section for more...

Cafes

Can vary from independent "greasy" spoon, Tea rooms or coffee shops.
Serve snacks and full meals.

Type of Service	Description
Plate	Meals are pre plated in the kitchen. Good portion control methods. All plates are consistent in the food presentation. The method relies more on skilled kitchen staff than serving staff. Time consuming for the kitchen staff.
Family	The food is placed on the table, spoons are provided and customers serve themselves. It is a sociable method and it is easy and quick to serve. It requires larger tables. There is less portion control. It suits families.
Silver	Food is served by the staff using a spoon and folk. Full silver service is when all the food is served in this way. It provides a more personal customer experience, service can be slow. It is expensive and staff costs are high as more serving staff are required.
Gueridon	A person serves food from a side table of trolley. Sometime dishes are cooked or assembled in front of the customer. This requires skilled service and is very specialist. It is time consuming with high staff and menu costs.

Type of Service	Description
Cafeteria	Counters displaying food. Customers queue up. Simple basic experience for customers. High turnover and fast method. Low skill of serving staff. Customers may impulse buy from the displays.
Buffet	Food set up along a table, can be self service or served by staff. Less formal than plated or silver service. Fast and simple method, can be low cost depending of the food served. Poor portion control.
Fast food	Take-away service with the option to eat in. Customers collect food from a counter. Quick and simple method. Can have a high customer turnover. Often limited menu choice. Food served in disposable packaging.
Tray or trolley	A meal provided in a tray or a choice of food from a trolley. Food is served like this on airlines and in hospitals.
Vending	Food service from a machine. Food can be served 24 hours. Usually snacks are served in this way but it can also be hot meals.
Home delivery	Delivered to a house. Can be a take-away such as a Chinese or Indian meal. Care services such as meals on wheels also use this type of food service.

Fast food

Chains eg KFC, Dominos or independent businesses
Limited menu, low cost, eat in or take away
Disposable packaging

Take aways

Dedicated take away or restaurant attached or may be just take away, most food is cooked to order.

Public houses

Can serve "basket" meals sandwiches or full table service. Some chain pubs have a fixed menu eg Wetherspoons.

Bars

more cosmopolitan menu than pubs , often themed to the type of establishment. Table service or eat at the bar

Hospitality & Catering Part 2

What are the benefits of ratings?

- Reviews can make or break a business! A good review can increase business for establishments, as people will often try an establishment based on a recommendation.
- Reviews and ratings generate publicity, awards get you in the press!
- Customers might come from further away to dine or stay or both based on reviews.
- Customers can identify less favourable establishments that they will then avoid.

Michelin and rosette inspections are anonymous and are just 1 persons opinion. Trip Advisor and The Good Food Guide are lots of peoples opinions, so likely to be accurate.

Restaurant manager

- The restaurant manager is in overall charge of the restaurant,
- Takes bookings, relays information to the head chef, completes staff rotas, ensures the smooth running of the restaurant

Staff structure in a hotel

Employers want to employ most workers when they have busy times

Busy times of year:
- Christmas
- Tourist season
- School holidays
- Mothers day
- valentines

Days of the week
- Friday
- Saturday
- Sunday
- Pay day

Time of day
- Lunchtime
- Afternoon
- Dinner time
- (breakfast)

The kitchen brigade

PLONGEUR or ESCUELERIE

Kitchen Porter / Dishwasher.

PERSONAL ATTRIBUTES TO WORK IN THE HOSPITALITY AND CATERING INDUSTRY ARE VERY IMPORTANT BECAUSE IT IS CUSTOMER DRIVEN

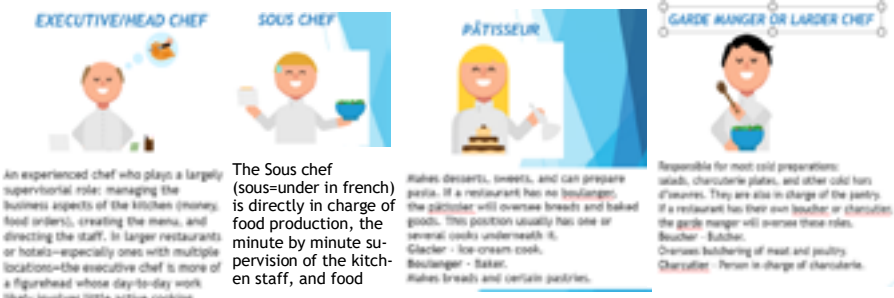
- Friendly personality
- Pleasant and polite manner
- Clean and proper clothing, possibly a set uniform
- Spotlessly clean hands and nails
- A pleasant smell, i.e. no overpowering after-shave or perfume and no body odour
- Fresh breath, discreet make-up, long hair tied back, well-groomed appearance
- Steady hands to be able to carry and serve food
- Knowledge of the menu in order to answer any customer queries and advise on allergies, etc
- Enthusiasm for the job and a willingness to serve others
- Good health because of long hours on feet
- Polite, calm and tactful even when dealing with awkward customers
- Loyalty to place of work and the ability to 'sell' and 'promote' facilities to customers
- Ability to handle compliments and complaints

- **Personal Qualities:** Reliable, punctual, team worker etc.
- Can operate machinery e.g. coffee machines.

The organisation depends on the type and size of the establishment;a large restaurant may include all these roles:

- Head Chef or Executive Chef
- One or two sous chefs
- Chefs de parties or sectional chefs looking after each section (e.g. pastry)
- A demi chef de partie, reporting to and working the opposite shift to the chef de partie
- One or two commis chefs per section per shift
- An apprentice per section per shift.

Hospitality Brigade



An experienced chef who plays a largely supervisorial role: managing the business aspects of the kitchen (money, food orders), creating the menu, and directing the staff. In larger restaurants or hotels—especially ones with multiple locations—the executive chef is more of a figurehead whose day-to-day work

The Sous chef (sous=under in french) is directly in charge of food production, the minute by minute supervision of the kitchen staff, and food

Makes desserts, sweets, and can prepare pasta. If a restaurant has no boulanger, the pâtissier will oversee breads and baked goods. This position usually has one or several cooks underneath it.
Glacier - Ice cream cook.
Boulanger - Baker.
Makes breads and certain pastries.

Responsible for most cold preparations: salads, charcuterie plates, and other cold hors d'oeuvres. They are also in charge of the pantry. If a restaurant has their own boucher or charcutier, the garde manger will oversee these roles.
Boucher - Butcher.
Oversees butchering of meat and poultry.
Charcutier - Person in charge of charcuterie.

ENTREMÉTIER/VEGETABLE CHEF

Entrée preparer/manager. Note that an entrée, under Escoffier, is a starter and not a main dish. Thus, the entremétier traditionally handles vegetable, egg, or soup dishes—generally things that do not involve meat. He or she may supervise the potager and legumier or take on these roles.

Each is the head of a particular station, which prepares specific dishes or types of cuisine. This includes:

Considered the most respected of the chefs de partie, the saucier often reports directly to one of the sous-chefs. Their central role is preparation of sauces and possibly sautéed dishes.

Responsible for the roasting and braising of meats. In the traditional Escoffier brigade, the rôtisseur would also be in charge of the grillardin and friturier. Today, he or she may simply take on these roles.
Grillardin - Grill cook.
In charge of the grill, specifically grilled meats.
Friturier - Fry cook.
Takes care of all frying, specifically deep frying.

Prepares and oversees all fish and seafood dishes. This position usually involves butchering the fish as well. Restaurants with an emphasis on shellfish may also employ an écailler. An écailler prepares fruits de mer or shellfish (i.e., shucking oysters).

Work at specific stations under one of the chefs de partie. They are responsible for the tools at their station. Also described as a kind of apprentice who is usually a recent graduate of culinary school.

Full time

No specific number of hours that makes someone either full or part time, but a full time worker usually works more than 35 hours. The law says that workers don't usually have to work more than 48 hours a week on average, unless they choose to. This law is sometimes called the 'working time directive' or 'working time regulations'.

Part time

Part-time work is when a worker is contracted for anything less than the basic full-time hours. There are no set number of hours that makes someone full or part-time, however average part-time contracts are often 16-20 hours.

Agency Staff:
As an employer, you can hire temporary staff through agencies. This means:
- you pay the agency, including the employee's National Insurance contributions (NICs) and Statutory Sick Pay (SSP)
- it's the agency's responsibility to make sure workers get their rights under working time regulations
- after 12 weeks' continuous employment in the same role, agency workers get the same terms and conditions as permanent employees, including pay, working time, rest periods, night work, breaks and annual leave
- you must provide the agency with information about the relevant terms and conditions in your business so that they can ensure the worker gets equal treatment after 12 weeks in the same job
- you must allow agency workers to use any shared facilities (e.g. a staff canteen or childcare) and give them information about job vacancies from the first day they work there
- you are still responsible for their health and safety

Casual/Seasonal

Casual workers are hired on an irregular basis for a short period of time (no more than 12 weeks). There is no continuing commitment from the employer to offer work, and no obligation on the part of the casual worker to do the work offered.

Staff can earn extra money if they are given tips because the service and food they have delivered has been good. It is sometimes considered rude not too tip. More expensive restaurants automatically add 10-12.5% extra to a bill to cover tips

Hospitality & Catering Part 3

Factors affecting success

Legislation that protects workers

- Disabled Discrimination Act 1995
- Equal Pay Regulations 1970
- Health and Safety At Work 1974
- National minimum wage
- Working Times Regulations 1998
- Part-time workers Regulations 2000

Type of staff	Benefits for employer	Benefits for employees	Disadvantages for employer	Disadvantages for the employees
Full-time 36 hours plus 28 days holiday	Reliable Permanent staff Staff have a good knowledge of services provided	Regular income Job security Permanent contract with holiday benefits. Regular hours of work Will receive sick pay	Bound by contract terms Has to pay sick pay, maternity leave and holidays. Expensive to employ Require lunch breaks unlike part time staff	Usually have to work shifts Less flexibility
Part-time 4-16 hours 28 days holiday	Can be employed at busier times of the day such as lunch or dinner service	Can be more cost effective with less wages needed	Will need to pay for training of more staff rather then small amount of full time staff	Need to work basic requirement of hours before they are entitled to holidays and sick pay
Casual	Can be employed for functions or busy times of the year	Can choose when they want to work	Can be unreliable Have to pay agency fees Don't know the routines Casual staff haven't been trained Unfamiliar with services provided	Called at short notice to work Not a regular income No sick pay Often don't know where they will be working until the week before

Food costs are large **percentage** of costs for most **hospitality businesses**. When planning menus chefs must **calculate** how much dishes will **cost per portion** to be able to **justify** keeping it on the menu. **Expensive** dishes that are not ordered often may lead to **wasted ingredients** that are unused, which result in **less profit.** Chef's must design dishes that generate a profit to stay operational.

Cost per portion x 100

40

Independent shops may supply some establishments

Large Wholesalers

Advantages	Disadvantages
• Very large range of commodities and sundries • Can have in house butchery department • Pre made and pre portioned food • Large bulk packaging of ingredients	• May be expensive for pre made foods • Have to order well in advance • Set delivery days • Have to order large quantities to get a discount

Benefits of portion control

- Keeps the food costs down
- Keep losses in food preparation and serving to a minimum
- Offer a consistent portion to customers
- Minimise waste eg leftovers
- To make a profit which is constant

Catering equipment

Specialist large scale catering and kitchen equipment from specialist companies

Specialist markets

Advantages	Disadvantages
• Large choice of commodities • Several suppliers at the market means costs are kept down by competition • Supplies are always at their freshest • New supplies in every day	• May not be easy to get to eg London • Work through the night and close early in the morning • Costs of transport back may be expensive • Purchaser has to judge quality for themselves before they buy

Local suppliers

Advantages	Disadvantages
• Local deliveries, less environmental impact • May use local farms and companies for commodities • Smaller firms, personal business relationship • May be able to change order at short notice	• May not have a wide selection • Smaller companies buy in smaller quantities so costs more • May not be able to supply large orders

It's important to remember that local sourcing can encompass much more than just using locally supplied and seasonal food. **Local sourcing can also include toiletries for guest rooms and flowers for reception**

Hospitality & Catering Part 4

Kitchen workflow

Workflow in the kitchen should follow a logical process by using different areas so that the clean stages in food production never come into contact with the "dirty" stages.

1. Delivery
2. Storage
3. Food preparation
4. Cooking
5. Holding
6. Food service area
7. Wash up
8. Waste disposal

Workflow

Organising the kitchen into separate areas for separate jobs is the heart of hygienic kitchen design. The e layout will depend upon the size of the kitchen as well as on the type of meals it prepares.

LO2 Understand how hospitality and catering provisions operate

Delivery
Goods vehicles should have adequate access to premises, providing direct deliveries to catering areas. This limits the length of time chilled foods may be in the danger zone. Have adequate space to check orders before they enter the catering area. Check temperature of van and visually examine goods.

Storage
Storage should be near to the delivery area to limit delivery staff entering the catering area. This also reduces the need to move heavy items of stock that may cause injury to staff. Make sure adequate room is available for stock.

Food Prep
Separate hand wash, pot wash and food wash areas/sinks need to be provided as well as separate areas for potential allergen containing food prep. Where premises are small, systems should be in place to ensure utensils are kept separate.

Cooking
Cooking equipment should be selected based on the menu being produced and the ability of the staff using it. State-of-the-art equipment such as water baths, programmable Rational ovens and computerised deep-fat fryers would be desirable, however, if they are not necessary they are a waste of money. Most importantly, the equipment layout should be safe and manageable to work around to prevent accidents.

First In, First Out (FIFO) is a system for storing and rotating food. In FIFO, the food that has been in storage longest ("first in") should be the next food used ("first out"). This method helps restaurants and homes keep their food storage organized and use food before it goes bad. First In, First Out is an effective system that should be standard operating procedure for every food service establishment.

Cooking
A 900mm corridor should be allowed for around the front of cooking equipment, ideally 1200mm. You may be limited by the energy supply available, gas may not be permissible in the building or the incoming electrical supply may be limited. Large scale equipment, whilst can be energy efficient and have energy saving features such as thermostats and auto switch-off, often requires a large electrical supply to run in the first place.

Holding
The food holding area should be near the food service area in order to keep the food at the right temperature (above 63°c). Some kitchens may require separate refrigerator areas to keep desserts chilled and away from raw foods.

Food Service Area
In an à la carte restaurant adequate space needs to be considered to allow plating up.

Food Service Area
In a buffet of canteen system, multiple food collection points can limit queuing. Large service areas may need stock replenished frequently, such as all you can eat buffets, therefore the food service area should be located near the kitchen area.

Wash Up Area
An integral part of the kitchen. If the dish washing area does not function, neither does the kitchen. Ample space should be given to both the size of dish washing area needed for the number of dishes, pots, pans etc. are used in one night as well as adequate space to store and sort washing up. As hot water produces steam, adequate ventilation is required.

Waste Disposal
Dirty plates and waste food needs to be kept separate from food prep and storage areas to prevent cross contamination. Ideally a separate refuse bay should be made available well away from the kitchen entrance (so customers do not see this side of the business)! Adequate changing rooms/facilities should also be provided for staff to change at the start and end of shifts and also easily accessible staff toilets nearby.

Hygienic kitchen design

Work surfaces
Must be strong, hard wearing and easily cleaned. Stainless steel with wheels that can be moved out of the way while cleaning

Floor
Hard wearing, easy to clean , non absorbent and non slip
Coving with the walls prevents dirt and food particles from accumulating

Walls
Smooth, can be tiled or lined with stainless steel as splashback light colour to show dirt easily

Hygienic kitchen design

Ventilation
Effective ventilation system to remove the heat, steam and condensation from the kitchen. Bacterial growth in moist conditions

Sinks
For washing food and utensils. Hot and cold water, stainless sinks are the best

Waste disposal
Waste disposal unit or separate waste bin with a lid that can be foot opened

Advantages
Effective work flow systems, both in the kitchen and front of house staffing, will lead to:
- Good communication between sections/ departments
- More efficient working (time/labour saving)
- Improved quality of the finished product
- Reduce the risk of accidents
- Maintain high standards of hygiene and food safety

All of the above will lead to better customer service and therefore satisfied customers.

In Summary:
When planning a kitchen you must consider:
- The type of customers you wish to attract
- The type of menu (à la carte, table d'hôte, seasonal, ethnic, children's, rotating ...)
- The type of service (self service, plated, buffet, fast food, canteen ...)
- The kitchen brigade structure and number of staff required to make your menu
- Compliance with legislation

Kitchen Layout

Importance of documentation

Why must they be completed?
1. Maintaining organisational procedures
2. Safety of staff and customers
3. Legal requirements
4. Complying with food safety legislation
5. Complying with accounting and taxation practices
6. Ensuring accurate payment of bills
7. Ensuring profitability of kitchen

Chef's uniform

- Chef's jacket
- Chef's pants
- Hat
- Neckerchief
- Apron
- Hand towel
- Slip-resistant shoes

Some establishments have staff wear the same uniform; this makes them easily identifiable for staff and customers. The uniform may change depending on which area of the establishment they work in.

Protective clothing as part of a uniform must be paid for by the employer.

Documentation and Administration

Types of Kitchen Documents

- Temperature charts – fridge, freezer, display, point of sale. Taken at least twice per day.
- Time sheets – logging staff working hours
- Accident report forms – used to report any accidents and near misses
- Food safety information – blast chill records, food related incidents and cleaning rotas
- Equipment fault reports – What was the issue and how was it dealt with.
- Stock usage reports– order books, stock control sheets, requisition books, invoice, delivery notes

Documentation and Administration

Complete kitchen documents:

- They must be legible (readable)
- At correct interval (daily, hourly)
- Completed accurately
- They must be signed and date.

Where do you get kitchen documentation from?:

- Purchased from stationers
- Designed in-house
- Central purchasing

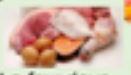
Stock control

Staple foods and supplies that are canned, bottled, dried or frozen
These have a longer shelf life and so do not need to be purchased as frequently. Larger amounts can be bought to get cheaper prices and can be stored .

- Condiments,
- Canned vegetables
- Frozen foods including meat, fish and deserts
- Sauces
- Flour, sugar, fat,oil
- FIRST IN FIRST OUT stock rotation

Perishable food and products that do not stay fresh for very long

- Fresh fruit, vegetables
- Dairy products
- Meat and fish
- Only buy enough to last a few days because they will not last
- FIRST IN FIRST OUT- stock rotation



Hospitality & Catering Part 5

Food Service Equipment

Food service equipment is equipment used to **serve food** in the catering industry

Service equipment can be anything which is **used by customers** or to **serve food to the customers.**

Hand Held Equipment

Hand equipment is non-powered equipment which is used to serve or consume food and drink.

Tableware:
Equipment usually used to 'set' a table
Includes crockery, glasses, cutlery etc

Serving equipment:
Equipment for serving food. This includes utensils for placing food onto tableware such as tongs and ladles.
It also includes items such as wine coolers, champagne buckets and bottle openers.

Care, Use and Maintenance of Hand Equipment

1. Equipment used by customers must be **cleaned at least once a day.**
2. Equipment must be cleaned according to the manufacturer's instructions.
3. Powered equipment **must be serviced** regularly.
4. Powered equipment should be switched off when not in use.
5. Equipment which requires training to use must not be available to customers.

Powered Equipment

Kettle
A jug for boiling water

Mincing machine
For mincing meat

Microwave
For defrosting, reheating and cooking

Food processor
For chopping, mixing and blending food

Blender
A jug with a rotating blade for blending foods to smooth texture

Large Powered Equipment

Identify the name and use of each item.

Specialist Hand Equipment

Hand Equipment: Knives

Care, Safe Use and Cleaning

- If equipment has a blade always take care when using and cleaning: **keep fingers away from sharp edges.**
- **Clean items as soon after use as possible.** If food dries on they will be harder to clean effectively.
- **Choose correct cleaning utensils** which can reach all parts of the equipment – such as a brush for between the wires in a whisk.
- Store small utensils in a drawer or on hooks so they are not lost easily.
- **All equipment should be cleaned in hot water using detergent.**

Powered Equipment: Care, Safe Use and Cleaning

Should be **serviced regularly** by an electrician. Usually at least once a year.

Should be cleaned according to a regular routine and a record kept of maintenance.

Staff must be trained in safe operation of larger equipment.

Manufacturers instructions for cleaning and use must be read, followed, and kept safely.

Equipment should be **switched off at the wall while not in use.**

Equipment must not be situated where it could create **a fire hazard.**

Safety notices should be placed on all large pieces of equipment.

Customer rights

- The right to be protected (against hazardous goods)
- The right to be informed (about quality, quantity, allergies etc)
- The right to have their complaints be heard
- The right to seek redressal (compensation.)
- The right to receive satisfactory goods that match their product description

How can you reduce the risks?

- **Reduce cash handling** by staff, have specific staff take responsibility for money.
- Train staff to **identify suspicious packages** and **individuals.**
- Use **security passes;** ask visitors to sign in.
- **Restrict** workmen or outside agencies to certain areas.
- **Security mark** all equipment.
- Use strict **stock control** procedures, have a **checking system** in place.
- Keep all areas **well-lit.**
- Use **CCTV** cameras.
- Check **guest identification** on check in with photo I.D.

Staff allocation

The restaurant manager coordinates all activities at the restaurant.

The restaurant manager must define the tasks that staff must perform Consider

- The size of the restaurant,
- Flow of customers, type of clientele and
- Menu offerings
- Different skills and personnel requirements related to changes of volume and customer preferences.

Customer trends

Customers are influenced by

- TV
- Magazines
- Health
- Travel abroad
- Technology
- Ratings and reviews

Safety and security

Health and safety, hygiene

- Fire certificate
- Staff training records
- Accident book
- Food hygiene checks
- Cleaning checks
- First aid records

Monitor stock levels for re ordering
Decide frequency of stock check
First in First out for items with a shelf life
Stock level checks could be for

- Wines
- Spirits
- Coffee
- Order pads
- Garnishes
- Cutlery
- Crockery
- Drinks in bar area
- Nuts, breadsticks
- Other consumables

Food service

Food can be served in many ways. The type of service depends on the following factors:

- The type of establishment or where it is
- The type of food or menu being served
- The cost of the meal or food
- The time available for the meal
- The type of customer
- The number of customers expected
- The availability of skilled serving staff

Documentation

A senior staff member such as the head chef or kitchen manager is responsible for carrying out administrative tasks that ensure the efficient working of all equipment and machinery.

Other documentation such as HACCP checks and accident records are kept up to date to comply with legislation.

Temperature control charts
Reading temperature of refrigerators, freezers and store cupboards

Hygiene information
Hazard Analysis Critical Control Points (HACCP)

Time sheets
Staff shifts, rotas

Accident forms
It is the law to report all accidents that occur on the premises

Equipment faults
Any equipment not working properly must be recorded and reported to the appropriate person. Where equipment is under warranty it must be reported to the manufacturer for repair.

Bookings and reservations

- Electronic booking system
- Electronic reservations system
- Diary with bookings and reservations
- Feedback forms

The EPOS system is a computerised piece of technology that **records data.** In the hospitality industry it is used when customers **purchase** services or food. It can be set up to **record bookings**, therefore preventing double bookings as well as updating **food stock levels** as menu items are purchased.

It can be used for –

- Recording sales
- Updating stock levels
- Providing accurate pricing information
- Enable fast and efficient customer service
- Keeping track of sales and taxes

Hospitality & Catering Part 6

Types of customer

Leisure	Local residents	Business / corporate
Customers who visit the establishments in their leisure time e.g. a meal with friends, a family day out, tourists,	Customers who live in the local area who visit the establishment often eg regular Sunday lunch, or get togethers	e.g. business lunches. Use business facilities in establishment for meetings or presentations . Courses and conferences

Leisure customers requirements

- Value for money
- Good facilities
- Families want child menus, play area, child friendly
- Tourists want local food, easy to communicate
- Older people may want more formal service
- Good customer service
- Varied choice of menu
- Dietary needs eg allergies, intolerances, vegetarian catered for without having to ask for special foods
- Facilities for physically impaired customers

Local customers requirements

- Value for money
- good standard of customer service so they return
- Catering for local needs (culture, religion)
- Consistent dishes served
- Loyalty schemes
- Recognised by staff- feel welcome
- Menu specials
- Theme nights
- OAP discount day
- Child friendly
- Entertainment
- Mailing list or email for special offers

Business customers requirements

- Dedicated corporate (business) contact at establishment
- Discounted rates
- Meeting rooms
- Water, juice on tables
- Presentation equipment, projector, tv,
- Office facilities- printer, phone, fax, internet, stationery
- Tea and coffee for breaks
- Lunch or other meals- buffet or restaurant
- Accommodation if attendees are from a long distance
- Quick service for lunch meetings

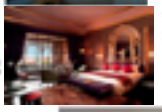
What is good customer service?

Types of Bedroom Accommodation

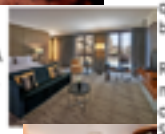
Youth hostel (YHA)
Accommodation is usually in comfortable bunk bedded rooms, sharing with people of the same sex.

Showers and toilets are shared. Bed linen, pillows, duvet and blankets are provided free of charge for you to make up your bed.

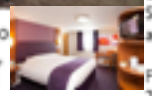
A full meal service is usually provided. Some locations also have self-catering kitchens. Most locations will have a sitting area, drying room and cycle store.

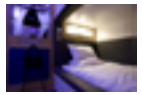


Hotel deluxe suite (Hilton)
Stylish suite with separate living room and large bathroom with free soap, shampoos and creams. A toweling bath robe and slippers are also provided.



Desk with high-speed Internet connection. Also provided: Safe, iron, ironing board, clock, radio and radio alarm, hair-dryer, sofa bed, trouser press, TV with teletext, satellite channels and on-demand films, tea- and coffee-making facilities, bottled water and biscuits.





Cabin room at airports (Yotel)
Book from just a few hours, day or night, to 24 hours or more. Large single bed 2m x 1m (large enough for one or two people at a push) with full sitting height.
Bathroom with shower, revitalising all-in-one body wash, heated mirror and soft towels.
Fold-out work desk and stool (doubles for unpacking), overhead hand-luggage stowage, suit-bag hanging and storage areas for small pieces.
Complete range of power and connectivity including free Internet access and local lighting.
20-inch flat-screen TV with choice of films, radio, games and Internet. 'Cabin'-service menu on screen, and 24-hour 'galley' café service.

Boutique hotel
Designed with a sophisticated and modern slant on the Moroccan theme. Funky leather bed and "bellydancing" ornate bottles. Luxury room featuring a chameleon-floor seating area in the bay window.

New luxury Italian tiled en-suite shower and toilet, CD player (with shower-room speakers), flat screen TV with Free view, fridge, hair-dryer and hot beverage facility.

Motel (Premier/Travel Inn)
Comfortable king-sized beds. Good quality duvets and pillows. En-suite bathrooms with shower gel.

Remote control TVs. Tea- and coffee-making facilities. Hairdryers. Heater control.
Spacious desk area with Internet access.

Family rooms, with cots on request. 24-hour reception. Restaurant and licensed bar nearby. Hot breakfast available.

If you provide any sort of accommodation, serviced or self-catering, the Equality Act 2010 applies to you.

Equality Act 2010

- The Act protects anyone who is disabled, is thought to be disabled or is associated with someone who is disabled.
- The Act gives these people rights of access to goods, facilities and services (including tourist accommodation) and ensures that they are treated no less favourably than other customers.
- You are also required to make reasonable adjustments to the way you deliver your services and to the physical features of your premises to make it easier for disabled guests to use them.

Why is customer service so important in the hospitality industry?

Customer service is what an establishment does in order to meet the **expectations** of their customers and generate customer satisfaction.

- **So customers return.** - People will not return to a place where they were not satisfied with the service. Repeat business means a successful business.
- **Exceeding expectations**-This makes repeat business more likely
- **Growth of the business-** If customers receive a high standard of service and return, they will spend more money and also tell other people about the business

Risk and Security

Workers can be at risk from security hazards in the same way they are from safety hazards.
Security risks include

- Disagreements between customers
- Customers being intoxicated (alcohol)
- Customers who have used drugs
- Verbal abuse
- Physical assaults

Risk factors

- Handling large amounts of money in open areas
- Face to face contact with customers
- Opening late in the evening or early in the morning
- Dealing with customer complaints or disputes
- Selling high value items such as alcohol
- Establishment in an isolated area eg country pub
- Poor lighting
- Establishment in a high crime area

Staff (and customers) may feel threatened by physical assaults, threats and intimidation and verbal abuse
People at risk includes

- Young workers who have less experience
- Night shift workers where there are less people
- Lone workers e.g. people working early or late
- Customers in the establishment

Prevention

- Brightly lit areas
- CCTV
- Easy escape routes
- Area for handling larger sums of money
- Appoint more senior staff to deal with problems and complaints
- Train staff to diffuse angry customers
- Contact local police if necessary
- Make sure lone workers are aware of risks
- Keeping doors and windows secure and locked

Instruction	Guidelines	Sign
Stop	Prohibition Sign • Round shape. • Black pictogram. • White background. • Red edging.	
Danger	Warning Sign • Triangular shape. • Black pictogram. • Yellow background. • Black edging.	

Obey	Mandatory Sign • Round shape. • White pictogram. • Blue background.	
Safety	Emergency Escape or First Aid Sign	
Fire	Fire Fighting Sign. • Rectangular or square. • White picture. • Red background.	

Hospitality & Catering Part 7

LO3 Understand how hospitality and catering provision meets health and safety requirements

The Health and Safety at Work Act (HASAWA) 1974, regulates health and safety issues.

The act aims to:

- secure the health, safety and welfare of persons at work
- protect other people from health and safety risks caused by work activities
- control the use and storage of explosive and dangerous substances.

Under the Health and Safety at Work Act, employers have responsibilities to:

1. ensure the health, safety and welfare of employees
2. provide and maintain safe equipment and systems of work
3. make arrangements for safe use, handling, storage and transport of articles and substances
4. provide information, instruction, training and supervision
5. provide a safe place of work, safe entrance, exit, and work environment
6. provide adequate toilet, washing and changing facilities.

Under the Health and Safety at Work Act, employees have responsibilities to:

1. follow safety instructions and training received
2. co-operate with their employer
3. not to misuse or tamper with anything provided in the interests of health and safety
4. take reasonable care of their own and other people's health and safety
5. tell someone if you think the work or inadequate precautions are putting anyone's health and safety at serious risk.

PPER - Personal Protective Equipment

Employers have duties concerning the provision and use of personal protective equipment (PPE) at work.

PPE is equipment that will protect the user against health or safety risks at work. It can include items such as safety helmets, gloves, eye protection, high-visibility clothing, safety footwear and safety harnesses. It also includes respiratory protective equipment (RPE).

These prevent injuries to:

- the lungs, eg from breathing in contaminated air
- the head and feet, eg from falling materials
- the eyes, eg from flying particles or splashes of corrosive liquids
- the skin, eg from contact with corrosive materials
- the body, eg from extremes of heat or cold
- PPE is needed in these cases to reduce the risk.

RIDDOR - Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013.

What to report?

- Deaths and injuries
- Occupational Diseases
- Carcinogens, mutagens and biological agents
- Specified Injuries to Workers
- Dangerous Occurrences
- Gas Incidents

Who should report it?

If you are an employer
If you are an employer, you must report any work-related deaths, and certain work-related injuries, cases of disease, and near misses involving your employees wherever they are working.

If you are in control of premises
If you are in control of premises, you must report any work-related deaths, certain injuries to members of the public and self-employed people on your premises, and dangerous occurrences (some near miss incidents) that occur on your premises.

Agency Workers/Casual Staff
Agencies should ensure that responsibility for reporting under RIDDOR is clearly assigned to the appropriate person based on the particular facts of the employment relationship. Agencies should ensure that reporting responsibilities are clearly understood by host businesses and the workers.

Accidents are reported to the **HSE** Health and Safety Executive

Record other accidents resulting in injuries where a worker is absent from work or is incapacitated for more than 3 days.

H.S.E Health and Safety Executive.

- H.S.E stands for the **Health and Safety Executive.**
- The H.S.E will investigate any complaints and safety incidents.
- The H.S.E employ Health and Safety Enforcement Officers who will inspect safety procedures being used.
- They have the power to serve notice and/or issue legal proceedings over safety incidents.
- It is compulsory to contact the H.S.E if an operative has an absence of more than three days following an accident at work.

First Aid

- Employers have to provide first aid facilities at work
- As a minimum, there should be a fully stocked green first aid box and a person appointed to take charge in an emergency
- Some workplaces have qualified first aiders and first aid rooms
- Green and white notices should inform you where the first aid box is kept and who the first aider(s) or appointed person(s) is/are

Fire safety

- Employers must have arrangements in place
  - to prevent fires
  - To raise the alarm
  - To fight fires (fire extinguishers)
  - Emergency evacuation (including a pre-arranged meeting place for staff to assemble following evacuation)
- Notices showing the safe evacuation routes from buildings should be green and white

COSHH - Control of Substances Hazardous to Health Regulations 2002

COSHH covers substances that are hazardous to health.
Substances can take many forms and include:

- chemicals
- products containing chemicals
- fumes
- dusts
- vapours
- mists
- nanotechnology
- gases and asphyxiating gases and biological agents (germs). If the packaging has any of the hazard symbols then it is classed as a hazardous substance.
- germs that cause diseases such as leptospirosis or legionnaires disease and germs used in laboratories.

Employers must display health and safety posters in work areas where necessary, especially related to COSHH.

Every substance that is a hazard has a COSHH safety sheet

Employees responsibilities under COSHH

1. Use control measures and facilities provided by the employer
2. Ensure equipment is returned and stored properly
3. Report defects in control measures
4. Wear and store personal protective equipment (PPE)
5. Removing PPE that could cause contamination before eating or drinking
6. Proper use of washing, showering facilities when required
7. Maintaining a high level of personal hygiene
8. Complying with any information, instruction or training that is provided

PPE in catering situations

- You **must** wear the p.p.e. if it has been provided for you. You could be held personally liable if you had an accident which could have been prevented by you wearing your p.p.e.
- You must care for it, store it and clean it as necessary;
- You must report any defects.

What Is Manual Handling?

- Any transporting or supporting of a load by hand or bodily force
- Lifting, putting down, pushing, pulling, carrying or moving

The top 4 injury types in Hospitality and catering

- Cuts
- Burns
- Sprains & strains
- Slips, trips and falls

How Can Cuts Be Prevented?

- To prevent knife cuts:

Cut properly, using the bridge and claw grips


incorrect


correct

- Carry knives with point down and backwards
- Wear gloves that protect your hands from cuts.

- To prevent machine cuts:
  - Be sure moving parts are covered by guards.
  - Turn off power and unplug to clean.
  - Keep your hands, face and hair away from moving parts.


Meat Slicer

Teens under the age of 16 are prohibited from operating food slicers.

- Not wearing clothing or jewelry that could get caught in machines.

- Not using equipment that you have not been trained to use.

How Can Strains Be Prevented?

- Ask for help with heavy loads.
- Ask for training in safe lifting methods.
- Push loads rather than pull them.

- Don't lift and then twist.
- Don't lean out drive-through windows.

How Can Slips, Trips & Falls be Prevented?

To prevent trips, slips and falls:

- Make sure your path is clear, clean and dry before carrying a load.

- Move boxes and carts out of the way.
- Watch for mop and broom handles

- Use non-slip floor pads.


Slip-resistant shoes

Customer safety

- Warning signs when cleaning is taking place
- Do not allow customers in areas where maintenance work is happening
- Signs "mind your head" "watch the step" "hot water"

- Use ladders correctly

- Don't lean out
- Move it closer
- Have a helper

Causes of fires

- **Equipment** that is not serviced regularly can cause over heating and cause fires.
- **Human Error** many fires that happen in catering. Such as fat fryers.
- **Electrical** smouldering wires can develop unseen overnight and be the cause of major incidents,
- **Arson** rare occurrence. grudge between employee and employer, or insurance fraud.
- **Chemical** not very common now due to the COSHH regulations.

Action on Discovering a Fire.

- Raise the alarm. *Break the glass of the nearest alarm point.*
- Call the fire services.

- If safe to do so tackle the fire, if in doubt get out.
- Leave the building via the nearest exit calmly. DO NOT run or use lifts.
- Evacuate the premises and report to your designated assembly point.

How Can Burns Be Prevented?

- To prevent other oil and grease burns:
  - Watch out for spatters and spills.
  - Use protective apron and mitt.
  - Clean up spills as soon as they happen.


Protective Mitt

- To prevent burns from open flames:
  - Keep hair and clothes away from flames.
  - Keep flammable materials away from flames.

To prevent steam burns:

- Watch out for steam cloud when you open dishwasher, steam table or other places where steam occurs.
- Wear protective gloves whenever you open something filled with steam.

Hospitality & Catering Part 9

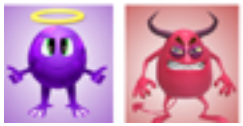
LO4 Know how food can cause ill health

BACTERIA

Bacteria are microscopic organisms which are commonly referred to as **'GERMS'**. They found everywhere including on and in people, on food, in water, soil and air. Some are **good** for us, and some are **bad!**

MICROBES (or BACTERIA) are found in:

- Soil and Water
- Plant and Plant Products
- Air and Dust
- Animal Fur
- Gut of animals and humans
- Food handlers
- Food prep and serving utensils



AT RISK GROUPS

COMMON CAUSES OF FOOD SPOILAGE

- Inadequate temperature storage
- Prolonged storage times
- Inadequate ventilation
- Cross contamination
- Delays between delivery and storage
- Delays between preparation and cooking

WHAT FOOD SPOILAGE LOOKS LIKE

MOULDS

- Tiny fungi which grow from spores found in the air
- Settle on food products and multiply
- When visible, food is described as 'mouldy'
- Causes food spoilage

PARASITES

Parasites are organisms that derive nourishment and protection from other living organisms known as hosts. The most common foodborne parasites are protozoa, roundworms, and tapeworms.

Causes food poisoning when humans ingest undercooked meat products in which the parasite has often survived.

CHEMICALS

- Remnants of cleaning chemicals
- Pesticides
- Insecticides
- Paint (wall surfaces)

PHYSICAL

Physical Contaminants Include:

- Hair
- Finger nails
- Broken utensils
- Pests

POISONOUS PLANTS

Some plants naturally produce poisonous chemicals. If these are eaten they may cause death. Other foods may contain chemicals that give rise to allergies in some people.

Other poisonous plants: some fungi, rhubarb leaves, parts of potatoes which are exposed to the sun while growing.

Metals like lead and mercury stay in our body for a long time and make us ill. Foods may taste or smell funny.

Mercury is a naturally occurring element found in air, water and soil. A highly toxic form (methylmercury) builds up in **fish, shellfish** and animals **that eat fish.** Fish and **shellfish** are the main sources of methylmercury exposure to humans. Fish that typically have higher levels of mercury include **king mackerel, marlin, shark, swordfish, tilefish,** and tuna.

Many of these types of fish are used in sushi.

SIGNS AND SYMPTOMS

- Impairment of peripheral vision
- Disturbances in sensations 'pins and needles'
- Lack of coordination
- Impairment of speech, hearing, walking
- Muscle weakness

Intolerance	Allergy	Poisoning
Hours to days to see effect	Can occur within minutes of exposure to food	From 30 min for toxins 12-48 hours bacterial
Digestive system cant process the food	Immune response to allergen	Bacteria poison or disrupt digestive system
Possible to eat a small amount without effect	Body reacts to tiny amounts of food	Toxins- few bacteria Large amounts colonise gut
Stop eating the food and it goes away	May need adrenaline or anti histamines	Runs its course of illness then ends
Easier to detect the food	Allergens may be small amount in ingredients	No smell, no taste, no sign
Symptoms if you eat a lot or frequently	Symptoms every time even tiny amounts	Symptoms if the food is contaminated
Moderate to serious illness	Can be fatal	Serious illness to fatal

Food intolerance

Mouth ,may be sore, bad breath

Skin rash, redness, itching swelling eczema

Gut abdominal pain, bloating, heartburn, cramping, vomiting, diarrhoea or constipation

Lungs chronic cough, wheezing

Head headache, brain fogginess, migraines

Perception irritable, moody, panic, depression

PESTICIDES AND HERBICIDES

Some of the chemicals used in farming may remain on or in the food we eat. These may cause us harm.

Farmers spray pesticides on crops to kill the insects that may reduce crop yield. They also spray herbicides to kill weeds that may compete with the crops. Some of these chemicals may remain on the surface of, for example, fruit. Others may be absorbed by the plant and therefore be present in the crop.

The European Union has strict laws that determine how much of these chemical residues are permitted in foods.

If you suspect someone of going into anaphylaxis you must:

- Call an ambulance
- Check for the casualty's Epi-Pen and help them use it. **You may have to do this for them, all pens have instructions on the side.**
- Lie the casualty down with their legs elevated to treat for shock
- Stay with the casualty and reassure them while you wait for the ambulance

ALLERGENS

Some people may develop an allergy to peanuts or to the gluten in wheat. If they eat foods containing these, they may become very ill, and possibly die.

The 8 most common food allergies include:

- Cow's milk
- Eggs
- Tree Nuts
- Peanuts
- Shellfish
- Wheat
- Soy
- Fish

Symptoms can occur anywhere from a few minutes after exposure to a few hours later, and they may include some of the following:

- Swelling of the tongue, mouth or face
- Difficulty breathing
- Low blood pressure
- Vomiting
- Diarrhea
- Hives
- Itchy rash

COW'S MILK

Milk, Milk powder, Cheese, Butter, Margarine, Yogurt, Cream, Ice cream

TREE NUTS

Brazil nuts
Almonds
Cashews
Macadamia nuts
Pistachios
Pine nuts
Walnuts

SHELLFISH

Shrimp, Prawns, Crayfish, Lobster, Squid, Scallops

In more severe cases, a food allergy can cause anaphylaxis. Symptoms, which can come on very quickly, include an itchy rash, swelling of the throat or tongue, shortness of breath and low blood pressure. Some cases can be fatal.

Hospitality & Catering Part 10

INTOLERANCES: LACTOSE INTOLERANCE

What is the issue?

Can't digest lactose.

What are the problem ingredients?

Lactose can be found in dairy products.

What food products cannot be eaten by coeliac disease sufferers?

Milk, Milk powder, Cheese, Butter, Margarine, Yogurt, Cream, Ice cream

INTOLERANCES: COELIAC DISEASE/GLUTEN INTOLERANCE

What is the issue?

Can't digest gluten.

What are the problem ingredients?

Gluten can be found in wheat and other grains.

What food products cannot be eaten by coeliac disease sufferers?

Flours, Pasta, Bread, Cereal, Certain alcoholic drinks

What is an Environmental Health Officer?

EHOs are personnel qualified in Environmental Health laws, enforcement and inspection methods. They have a 3 year degree in Environmental Health

Many organisations employ EHOs including

- Local councils
- Private companies
- NHS
- Military
- Food Standards agency

EHO roles in the Hospitality and Catering industry

Legislation enforced by EHOs

The Food Safety Act.
Food safety from the manufacturer or producer to the point of sale. Might involve different companies or premises e.g. suppliers, manufacturers or kitchens, shops or restaurants.

The Food Safety Act (General Food Hygiene) Regulations.
Ensures food producers **HANDLE** all food hygienically.

Legislation enforced by EHOs

The Food Safety Act (Temperature Control) Regulations.
Temperatures at which to store or hold food.
- Freezers from –18°C
- Chillers from 3°C to 8°C
- Fridges from 0°C to 5°C
- Cooked core temperature at 75°C or above
- Hot holding above 63°C

The Food Composition Regulations.
Specifies what ingredients **CAN** or **CANNOT** be used in the manufacture of foods e.g. bread, breakfast cereals and use of additives

Inspecting businesses for food safety standards

- Powers of entry at any reasonable time
- Inspect food and premises
- Power to seize and detain food
- Serve notices
- Power to close
- Prosecute

Why do we have Food Hygiene Regulations?

- We have food hygiene regulations to prevent outbreaks of food poisoning.
- Customers need to know that food is safe to eat.
- Food safety regulations are constantly changing and establishments should follow the latest guidelines.
- Food safety and hygiene regulations are enforced by Environmental Health Officers (EHO) who regularly check all food premises.

The Environmental Health Officer's (EHO) role is to inspect premises in order to ensure the food a establishment produces is safe to eat.

At the end of their visit, in England, Wales, and Northern Ireland, they will present the establishment with a score from the Food Hygiene Rating scheme of 0 - 5. The scheme is standardised across England and Wales to maintain a consistent assessment of safety standards. Any business should be able to achieve a "5 - very good" rating.

These regulations cover three main areas:

- Food premises
- Personal hygiene of staff
- Hygienic practices

Food premises must:

- Be well maintained.
- Be regularly cleaned.
- Have lockers for employees.
- Have hand-wash facilities provided.
- Have clean cloakroom and toilet facilities.
- Have first aid available.
- Have clean storage areas.
- Have temperature-control fridges and freezers.
- Have equipment that is clean and in good working order.
- Be free from pets, pests, etc.

Food handlers must:

- Have a **certificate/regular training in food safety.**
- Be dressed in **clean** 'whites' or other uniform.
- Have **hair tied back** (and ideally wear a hat or hair/beard net).
- Have **short, clean nails** - no nail varnish or jewellery.
- Be in **good health** (they cannot work with upset stomachs).
- Have **'good' habits**, e.g. no coughing or sneezing over food.
- **Wash their hands** after handling raw meat, after blowing nose, after going to the toilet, etc.
- Cuts should be covered with coloured waterproof plasters.

Examples of good hygiene practices include:

- Food deliveries should be checked thoroughly.
- Food should be labelled and stored correctly (in freezers, chillers, fridges and dry stores).
- Food should be 'rotated' (first in, first out).
- Care should be taken with temperature control in the kitchen (i.e. food kept out of the danger zone of 5°-63°C).
- Food should be prepared quickly and as close to cooking time as possible.
- Hot food should be maintained at above 63°C.
- The core temperature of cooked food needs to be at least 75°C.
- Chilled food should be stored below 5°C
- Washing up should be done in hot soapy water if there is no dishwasher available.
- Waste should be disposed of safely.

Hospitality & Catering Part 11

HACCP (2006)
What does it stand for?

Hazard
Analysis
Critical
Control
Points

What does it mean?

- Legal requirement
- Identify the most critical (dangerous in terms of bacteria) areas of their business to make sure they are under control

HACCP System

Food companies need to:
- Analyse the hazards to food safety
- Assess the level of risk from each hazard
- Decide the most critical points that require controls
- Implement appropriate controls
- Establish a monitoring system
- Set up procedures to correct problems (corrective action)
- Review the system when operations change

Hazard
Analysis

A hazard is something that has the potential to cause harm.....

Type of hazard	Example
Biological	Salmonella in chicken
Chemical	Contamination from cleaning materials e.g. bleach
Physical	Damaged packaging, glass found in food

Critical
Control
Points

A critical control point is a step which eliminates or reduces the hazard

Control is essential to reduce the risk of food poisoning.

If a caterer gets it wrong they could be breaking the law all stages from purchasing through to preparation and serving is controlled.

The Consumer Protection Act 1987

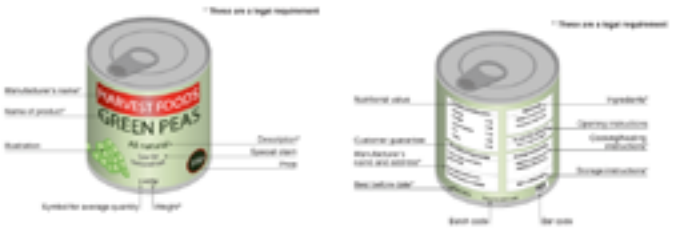
This protects the public by:
- prohibiting the manufacture and supply of unsafe goods
- making the manufacturer or seller of a defective product responsible for damage it causes
- allowing local councils to seize unsafe goods and suspend the sale of suspected unsafe goods
- prohibiting misleading price indications

The Trade Descriptions Act 1968

The Trade Descriptions Act makes it an offence for a trader to make false or misleading statements about goods or services.

It carries criminal penalties and is enforced by Trading Standards Officers, making it an offence for a trader to:
- apply a false trade description to any goods
- supply or offer to supply any goods to which a false trade description has been applied
- make certain kinds of false statement about the provision of any services, facilities or accommodation

Food Labelling Regulations (1996)



Examples of CCP's (Critical Control Points) are:
- Inspection of goods on delivery
- Storage & handling of ingredients & finished product
- Temperature of fridges, freezers & ovens
- Cleaning procedures for equipment
- Cross-contamination
- Personal hygiene & health standards
- Proficiency of use and cleaning of equipment

Record Keeping

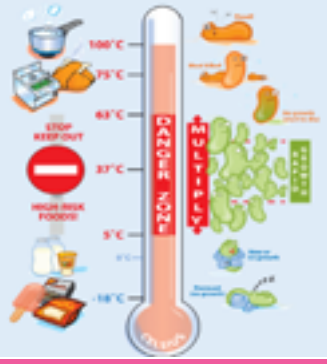
Legal requirement that certain records are kept as part of the HACCP-based food safety management system, eg:
- Fridge/freezer records
- Cooking/hot-holding temperatures
- Cleaning records
- Training records
- Pest control checks

The Food Hygiene regulations 2006

- Applies to high-risk foods
- Cold foods- store below 8°C
- Hot foods – store above 63°C

During service :-
- Cold food max 4hrs at room temperature then discard or refrigerate
- Hot food maximum 2 hrs
- Buffet food 90mins at room temperature

Influence of temperature



Dead!.
Destroys most pathogens

Too hot (start to die 63°C)

Multiply rapidly

Spoilage slow growth, most pathogens no growth (<5°C)

Dormant (no growth – spoilage or pathogens).

Defence of Due Diligence

- The principal of defence under The Food Safety Act 1990
- A business must be able to demonstrate that it has done everything within its power to safeguard consumer health
- Accurate records are useful in proving this defence; these may include:
  - Temperature control records delivery/storage/cooking
  - Microbiological records
  - Hygiene training for staff
  - Use of HACCP system
  - Pest control records
  - Hygiene manuals, cleaning schedules
  - Hygiene policy

Food poisoning

Mouth increase in saliva

Head headache

Skin fever, shivering

Gut abdominal pain, nausea vomiting, diarrhoea

Circulation, low blood pressure, weak pulse, fatigue

The Food Safety Act 1990

Food businesses:
- Must ensure that the food served or sold is of the nature, substance or quality which consumers would expect, e.g. :
  - Nature - pollock rather than cod;
  - Substance - contains foreign material including glass or packaging;
  - Quality – mouldy bread or stale cake.
- Ensure that the food is labelled, advertised and presented in a way that is not false or misleading, e.g. photos on menus that do not look like the dishes served to customers.

Hospitality and Catering Businesses can be fined up to £20,000 or owners can face up to 2 years in prison for failing to comply with food laws.

1. Keep yourself clean.
2. Keep the workplace clean.
3. Wear suitable clothing.
4. Protect food from contamination.
5. Store, prepare & serve food at the correct temperature.
6. Inform a manager if you are ill.
7. Do not work with food if you have symptoms of food poisoning.

PREVENTION: Personal Hygiene
- Tie hair back
- Remove jewellery
- Roll up sleeves
- Wear an apron
- WASH HANDS THOROUGHLY

Hospitality & Catering Part 12

Campylobacter

Found in: raw meat and poultry

Contract Me!

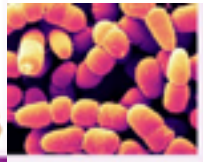
Friend suggestions:
Salmonella
E-coli
Clostridium Perfringens
Listeria
Bacillus Cereus
Staphylococcus Aureus

Symptoms: Can last for 10 days

Fever
Headache
Abdominal pain
Diarrhoea

Illness caused by small numbers.

Most common form!



Clostridium Perfringens

Found in: animal poo, soil, manure, sewage, raw meat, and poultry

Contract Me!

Friend suggestions:
Campylobacter
Listeria
Bacillus Cereus
Staphylococcus Aureus
Salmonella
E-coli

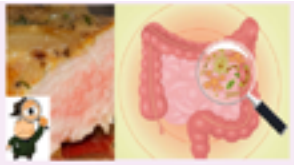
Symptoms: Can last for 3 weeks!

Can take 8-18hrs for symptoms to show:
Nausea
Abdominal pain
Diarrhoea
Can be fatal!

Produces spores which may not be killed by cooking!

E-coli

Friend suggestions:
Campylobacter
Clostridium Perfringens
Listeria
Bacillus Cereus
Staphylococcus Aureus
Salmonella



Found in: the gut of animals and humans

E Coli 0157 found in raw and undercooked meats and raw vegetables

Can survive refrigeration and freezing

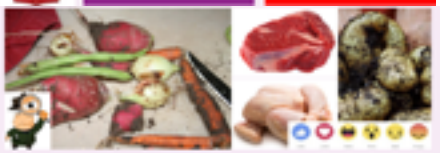
Illness caused by small numbers.

Symptoms:

Can take up to 5 days for symptoms to show:
Diarrhoea
Can be fatal!

Salmonella

Friend suggestions:
Campylobacter
E-coli
Clostridium Perfringens
Listeria
Bacillus Cereus
Staphylococcus Aureus



Found in: raw meat, poultry and unwashed vegetables

Contract Me!

Symptoms: Can last for 3 weeks!

Can take 48hrs for symptoms to show:
Fever
Vomiting
Abdominal pain
Diarrhoea
Can be fatal!

2nd most common form of food poisoning!

Caused by large numbers

High Risk Foods

- Foods high in protein
- Foods high in moisture
- Stocks, sauces, gravies and soups
- Eggs
- Meat, poultry and other meat products
- Milk and dairy products
- Fish and Shellfish
- Cooked rice
- Foods which are handled and those which are reheated
- However, preserved foods, or those with high concentrations of vinegar, salt or sugar, are low-risk.

Listeria

Friend suggestions:
Campylobacter
E-coli
Clostridium Perfringens
Salmonella
Bacillus Cereus
Staphylococcus Aureus

Found in: soil, vegetation, meat, poultry, soft cheese and salad vegetables

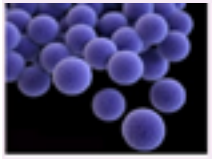
Contract Me!

Symptoms: Can last for 3 weeks!

Can range from:
Flu like symptoms
Meningitis
- Pregnant women
- Elderly
- Very Young

at greater risk!

Can grow at low temperatures



Staphylococcus Aureus

Found in: on the skin, cuts and boils and up the nose!

Contract Me!

Symptoms: Onset within 6hrs

Two types:
Severe vomiting
Diarrhoea
Abdominal pain
Can last 6 days!

Friend suggestions:
Campylobacter
E-coli
Clostridium Perfringens
Salmonella
Listeria
Bacillus Cereus

Transferred to food from hands, nose or mouth

Survives refrigeration

Caused by large numbers

Produces a toxin which may survive cooking

INFECTIVE POISONING
Result of eating contaminated food with bacteria itself;
Examples: Salmonella, Listeria

TOXIC POISONING
Some bacteria produce toxins, these toxins cannot be destroyed with cooking. Examples: Staphylococcus Aureus, Clostridium Perfringens

Bacillus Cereus

Friend suggestions:
Campylobacter
E-coli
Clostridium Perfringens
Salmonella
Listeria
Staphylococcus Aureus

Found in: soil and dust

Contract Me!

Frequently found in: rice dishes

Symptoms: Usually lasts less than 24hrs

Two types:
After 1-5hrs
Vomiting
After 8-18hrs
Diarrhoea and Abdominal pain

Forms spores that are resistant to heat

Illness can be caused by a small number of bacteria

Yr10 Cambridge National LO1

Key Words	
Workflow	What task is dependent on another
Contingency	Time in a project plan that has no tasks assigned. Making sure the project still meets the final deadline.
Milestone	A point in time when a task is expected to be started, completed or checked.
Interaction	How the phases link together.
Iteration	The repeating of a phase.
Data dictionary	A description of the structure, contents and format of a spreadsheet or database. The relationships within the database can be included.
Asset log	A list of all the resources used in a project
Iterative process	A process of repeatedly carrying out a process
Concurrent: Tasks	Tasks that can be completed at the same time
Dependency	A task that cannot be started until a previous task has been completed.
Feasibility report:	Created during the initiation stage and considers each of the questions and constraints. Success criteria and objectives are also defined.

Advantages of the Project Life Cycle

It provides a structured approach.
It shows clearly defined tasks to be carried out in each phase.
The inputs and outputs of each phase are defined
The roles and responsibilities of each project team member are defined.
Resources are allocated at the start of the project.
The project progress can be monitored to make sure the final product is delivered to the client on time.

Constraints:
Time
Resources
Regulations
Security/Risk management
Mitigation of Risks

Phase	Input	Output
Initiation	User requirements User constraints	Feasibility report Legislation implications Phase review
Planning	Feasibility report Legislation implications	Project plan Test plan Constraints list Phase review
Execution	Project plan Test plan Constraints list	Deliverable product Test results Phase review
Evaluation	Deliverable product Test results	Release of deliverable product User documentation Final review report

Planning Tools

Gantt Chart Components: Dates/days along the top. Tasks down the left side. Milestones. Dependent tasks. Concurrent tasks.

PERT chart Components: Nodes/sub-nodes. Time. Dependent tasks. Concurrent tasks. Critical path.

Visualisation diagram Components: Multiple images. Position and style of text. Font. Annotations. Colours/themes.

Flow Chart Components: Start point. End point. Decisions. Processes. Connection lines. Direction arrow.

Mindmap Components: Nodes. Sub-Nodes. Branches/connecting lines. Key words. Colours. Images.

Task list Components: Tasks. Sub-tasks. Start date. End date. Duration. Resources.

Mitigating Risk

Time
- Is there enough time to reasonably develop the product?
- Is there extra time available if problems are found?

Security
- What data needs to be protected?
- Who needs access to the data?
- Do different groups needs to be able to do different things?

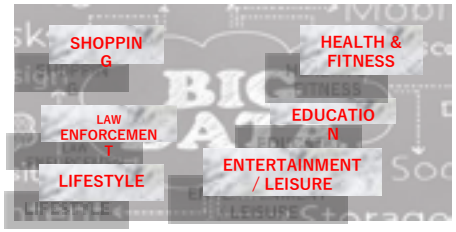
Resources
- What hardware is needed?
- Do you have access to them?
- Can you use them?
- What software is needed?
- Do you have access to them?
- Can you use them?

Regulations
- What laws do you need to think about?

Ethical and moral
- What data do you need?
- Who should not see it?
- What should not happen with the data?

ICT Cambridge National LO3

Cambridge National LO3



Key Words	
Bias	Considering only one point of view.
Closed question	A question with only a set of number of questions.
Open question	Allows the person completing the questionnaire to give a detailed answer in their own words.
Data subject	The person the data is being stored about.
Data types	A specific kind of data item that is defined by the values that can be stored using it.
Information	Processed data that has a meaning and is in context.
Interviewee	The person answering the questions.
Interviewer	The person asking the questions.
Record	A collection of data about a single item. Each record must be unique.
Personal data	Information held about an individual.
Primary research method	When the data and information collected is fresh data collected for a specific purpose.
Secondary research methods	Methods that use data and information that has already been collected
Validation:	Can include length checks, presence checks, format checks, range checks and input masks.
Validity:	How believable the data and information collected is.

Methods used to collect data

1. Questionnaire
2. Email
3. Sensors
4. Interviews
5. Consumer panels
6. Loyalty schemes
7. Statistical reports

Data Collection Tools

Barcode Reader
QR Codes
Web Based
Surveys
Wearable Technology
Mobile Technologies

Data	Raw facts collected for a purpose
Information	Data in Context - making sense of the data.

Data must be processed to become information.
Information = data + [structure] + [context] + [meaning]

Process

What is cloud storage?

Online devices to …

…place, keep and retrieve electronic data

What is physical storage?

Physical solid devices to …

…place, keep and retrieve electronic data

Data Types	
Text	Any character
Alphanumeric	Any combination of letters, symbols, spaces and numbers
Integer	Whole numbers
Real	Any number with or without a decimal place
Currency	Numbers in the form of money, sometimes with 2 decimal places and a currency symbol
Percentage	A number that includes decimal places and a % symbol
Fraction	A number which allows fractions to be input and manipulated
Decimal	A number which includes a decimal point.
Date/time	Different formats of the way he date and time can be displayed.
Limited choice	Restricts the choice by a user and used to gather information reducing data errors on input. (e.g. drop down lists, radio buttons, tick list)
Object	An additional component. It can consist of a chart graph or image.
Logical/Boolean	There are only 2 choices Yes/No True/False

Storage Methods

The Cloud - Hard Disk Drive - Solid State Drive - Optical Drive - Flash Memory

ICT Cambridge National LO4

Yr10 Cambridge National LO4

Vulnerabilities which can be exploited in a cybersecurity attack:
Environmental - natural disasters
Physical - theft of identity, theft of property
System - insecure software applications, weak passwords, insecure modems

Prevention Measures	
Physical:	Biometric access device Emerging measures
Logical:	Access rights and permissions including authentication, usernames and passwords - anti-virus software - encryption - secure backups of data.
Secure destruction of data:	Over writing - magnetic wipe - physical destruction

Malware		
Malware Type	**Why/how it's used**	**How to mitigate**
Adware	Generates revenue for its author: this is any software that shows adverts such as pop-ups.	Install, run and update a security software package. Do not run software/click links from unknown sources.
Bot	Takes control of a computer system: this is a type of malware that works without a user's knowledge. It can result in a 'botnet', which is a network of infected computer systems.	
Bug	Connected to flaws in software; usually the result of human error during coding of the software.	Check for and install any patches that are released from software vendors.
Ransomware	Holds data on a computer system to ransom; usually encrypts files and displays a message to the user. It spreads like a worm.	Install, run and update a security software package. Do not run software/click links from unknown sources.
Rootkit	Designed to remotely access a computer system; allows a remote cyber attacker access to steal/modify data and/or configuration on a computer system.	Difficult to detect as they are not usually detected by security software; regular software update, keeping security software up to date and not downloading suspicious files are the only ways to trying to avoid a rootkit being installed.
Spyware	Collected data from infected computers; usually hidden from the user and installed without the user's knowledge.	
Trojan horse	Standalone malicious program designed to give full control of a PC to another PC; can be hidden in valid programs.	Install, run and update a security software package. Do not run software/click links from unknown sources.
Virus	Attempts to make a computer system unreliable; replicates itself from computer to computer.	
Worm	Standalone program that replicates itself to other computers; almost always cause harm to networks even if only by using bandwidth.	

Current relevant IT legislation:

GDPR 2018	Aims to protect the rights of the owners of data – the data subjects. It does not protect the data itself.
Copyright, Design and Patents Act 1998	Makes it illegal to copy a work without permission from the owner or copyright holder. It is also illegal to make unauthorised copies of software.
Computer Misuse Act 1990	Aims to protect data and information that is held on computer systems.
Health and Safety at Work Act 1974	Provides guidance to employers and employees when working with computer systems. The act also defines actions that an employer should take to protect employees who work with computers in their job.
Freedom of Information Act 2000	Provides public access to information held by public authorities.

Security/risk Management

Logical protection methods include:
- Firewalls
- Encryption
- Access rights
- Usernames and passwords

Physical protection methods include:
- Locking rooms that computer equipment is located in.
- Bolting computers to desks.
- Using device locks.
- Using and closing blinds at windows.

LO4: Understand the factors to be considered when collecting and processing data and storing data/information

RFID: Radio Frequency Identification Tags can use radio frequency to transfer data from the tags to a computer system, for example to allow access to a room.

Access rights: Control over who has access to a computer system, folder, files, data and/or information.

Permissions: A set of attributes that determine what a user can do with files and folders, for example to read, write, edit or delete.

Encryption software: Software that is used to encrypt a file or data.

Encryption code/key: A set of characters, phrase or numbers that is used when encrypting or decrypting data or a file.

The impacts of a cyber-security attack
Denial of service (DoS) to authorised others
Identify theft
Data destruction
Data manipulation
Data modification
Data theft
Consequences of a cyber-security attack
Loss: financial - data - reputation
Disruption: Operational - financial - commercial
Safety: individuals - equipment -finance

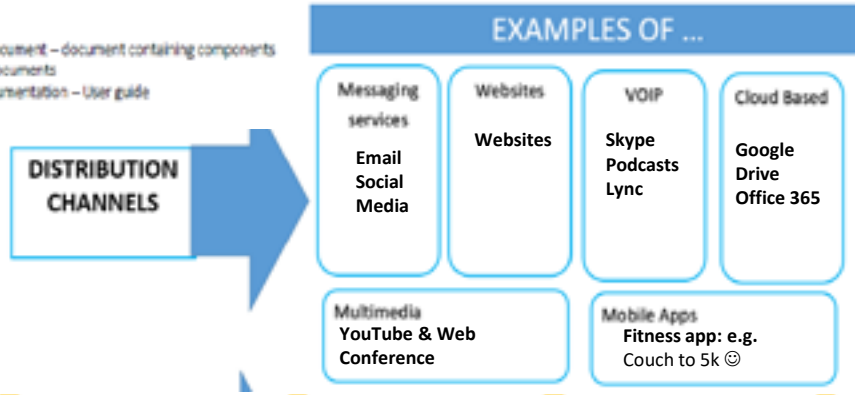
ICT Cambridge National LO6

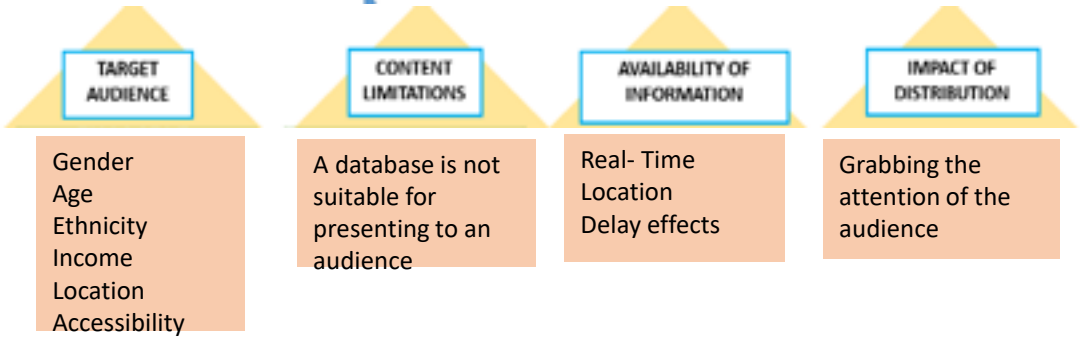
Yr10 Cambridge National LO6

LO6: Understand the different methods of processing data and presenting information

Distribution channel: The methods that can be used to share information by individuals

- Email
- Social Media
- Websites
- Intranet – private network
- Internet
- VoIP – enables voice calls to be made over the internet
- Multimedia – text, sound, video and graphics
- Cloud
- Mobile apps
- Integrated document – document containing components from other documents
- End user documentation – User guide





Gender
Age
Ethnicity
Income
Location
Accessibility

A database is not suitable for presenting to an audience

Real- Time
Location
Delay effects

Grabbing the attention of the audience

Spreadsheet software

PROS
Stores and processes text and numerical data
Can create charts from processed data
Can carry out calculations

CONS
Data entry takes time
Easy to make errors in formulas
Needs experience to use effectively

Word Processing software

PROS
Easy to enter Text
Excellent for reports
Excellent for mail merge
CONS
Costly to buy
Takes time to learn mail merge
Limited to word processing

Database software

PROS
Fewer data entry errors
More accurate data
Independence from applications programs

CONS
Skills are required to set up a database
Multiple tables can take time to set up
Lots of training required for all users

Presentation software

PROS
Easy to manipulate text & images
Excellent for slides

CONS
Costly to buy
Takes time to learn

Desk top Publishing software

PROS
Easy to manipulate text & images
Excellent for marketing

CONS
Costly to buy
Takes time to learn

Key Words	
Table	Contains data about 'things'. EG A customer's table.
Validation	Can include length checks, presence checks, format checks, range checks and input masks.
Validity	How believable the data and information collected is.
vlog	A video blog.
VoIP	Voice over Internet Protocol is a system that enables voice calls to be made over the internet.
Workbook	A collection of worksheets.
Worksheet	One spreadsheet contained within a workbook.
Integrated document	A document featuring components from other documents.
Distribution channel	The methods that can be used by an individual or businesses to share information.
Blog	A regularly updated website that is usually run by one person.

Reports	**Tables**
Presentations	**Integrated Documents**
Graphs/ Charts	**User End Documents**

Maths F - Indices & Standard Form

INDEX LAWS v174

When MULTIPLYING you ADD the powers

$$a^m \times a^n = a^{m+n}$$

For Example

$4^5 \times 4^7 = 4^{12}$

$a^7 \times a^{13} = a^{15}$

When DIVIDING, you SUBTRACT the powers

$$\frac{a^m}{a^n} = a^{m-n}$$

For Example

$12^8 \div 12^3 = 12^5$

$b^{12} \div b^6 = b^6$

When Raising one power to another you MULTIPLY them

$$(a^m)^n = a^{m \times n}$$

For Example

$(3^2)^4 = 3^{2\times4} = 3^8$

$(c^3)^6 = c^{3\times6} = c^{18}$

Anything to the POWER OF 1 is ITSELF

$$a^1 = a$$

Anything to the POWER OF 0 is just 1

$$a^0 = 1$$

The Index Laws

Turn NEGATIVE powers upside down

$$a^{-n} = \frac{1}{a^n}$$

For Example

$5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

When dealing with FRACTIONS, apply the power to both the bottom AND the top

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

For Example

$\left(\frac{3}{10}\right)^2 = \frac{3^2}{10^2} = \frac{9}{100}$

Fractional Powers

The power $\frac{1}{2}$ means square root

The power $\frac{1}{3}$ means cube root

The power $\frac{1}{4}$ means Fourth root etc.

For Example

$25^{\frac{1}{2}} = \sqrt{25} = 5$

$64^{\frac{1}{4}} = \sqrt[4]{64} = 4$

Two-stage fractional powers

$$a^{\frac{m}{n}} = \left(a^{\frac{1}{n}}\right)^m$$

With fractional powers like $64^{\frac{2}{3}}$ always split up the fraction into a root and a power, and do them in the order: root first, then power.

$(64)^{\frac{2}{3}\times1} = \left(64^{\frac{1}{3}}\right)^2 = (2)^2 = 32$

CALCULATING WITH STANDARD FORMv210,

Positive Power = Large Number

$$4.3 \times 10^6 = 4\,300\,000$$

Negative Power = Small Number

$$2.1 \times 10^{-3} = 0.021$$

- Write in Standard Form:

23,400,000,000m

2 3 4 0 0 0 0 0 0 0 0 0

The decimal has to 'move' 10 places to make the first number between 1 and 10

→ 2.34×10^{10}

- Write as Standard Form

0.000073

0 0 0 0 0 7 3

→ 7.3×10^{-5}

CALCULATING IN STANDARD FORM (non calc) v254

$(4 \times 10^2) \times (2 \times 10^5)$

$= 4 \times 2 \times 10^2 \times 10^5$

$= 8 \times 10^7$

Is this in standard form? ✓

Remember to add the powers

$\frac{(96 \times 10^5)}{(8 \times 10^{-2})}$

$= (96 \div 8) \times (10^5 \div 10^{-2})$

$= 12 \times 10^7$

Is this in standard form?

Remember to subtract the powers

$= 1.2 \times 10^8$

Calculate $2.3 \times 10^5 + 5 \times 10^4$

$2.3 \times 10^5 = 230{,}000$ $5 \times 10^4 = 50{,}000$

$230{,}000 + 50{,}000 = 280{,}000$

$280{,}000 = 2.8 \times 10^5$

Calculate $5.8 \times 10^5 - 3.2 \times 10^3$

$5.8 \times 10^5 = 580{,}000$ $3.2 \times 10^3 = 3200$

$580{,}000 - 3{,}200 = 576{,}800$

$576{,}800 = 5.768 \times 10^5$

Add

7.35×10^4 and 8.21×10^3

73.50×10^3

$+ 8.21 \times 10^3$

$81.71 \times 10^3 = 8.17 \times 10^4$

Subtract

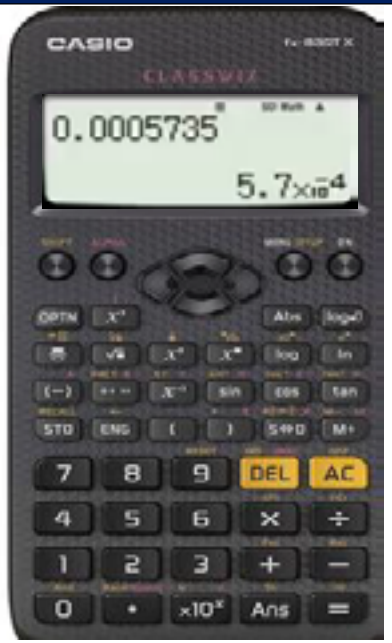
3.21×10^6 from 6.14×10^7

61.40×10^6

$- 3.21 \times 10^6$

$58.19 \times 10^6 = 5.82 \times 10^7$

USING A CALCULATOR



The Calculator Guide

Change numbers to standard form

Write the number 0.0005735 in standard form

Press **SHIFT**, then **SETUP**, then **7** for SCI mode

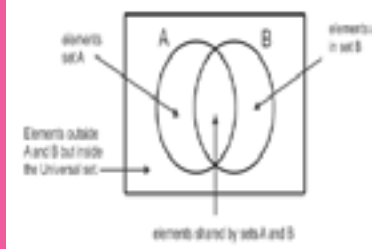
Change the number of significant figures to 2 (or however many you need)

Input the number 0.0005735 and press **=**

The answer of 5.7×10^{-4} is displayed.

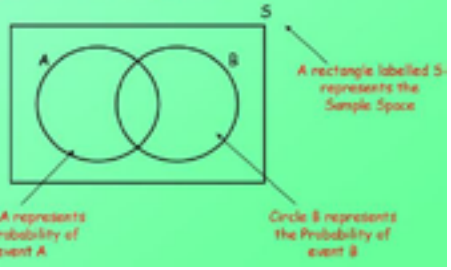
Maths F - Probability

PROBABILITY FROM VENN DIAGRAMS v174

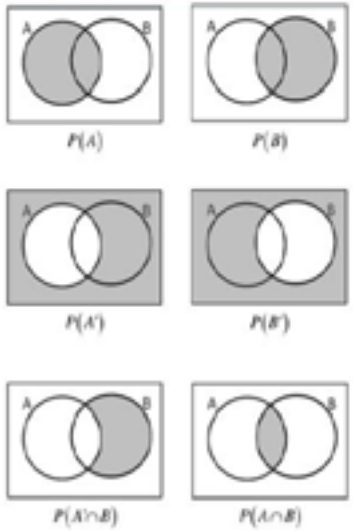


Using Venn Diagrams

Venn diagrams are a very useful way of representing Probabilities. They can also help you answer multi-part questions.



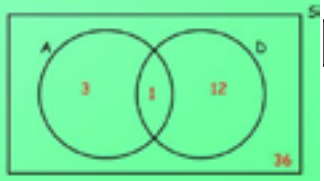
Venn Unions and Intersections



Using Venn Diagrams

A card is selected at random from a pack of 52 playing cards. Let A be the event that the card is an ace, and D be the event that the card is a diamond. Draw a Venn diagram to show this information.

1) Always fill in the middle first. The middle represents an ace and a diamond.
→ 1 card
2) There are 4 aces in total, one of which has already been filled in
→ 3 cards extra in 'A'
3) There are 13 diamonds, one of which has been filled in
→ 12 extra cards in 'D'
4) 52 cards in total, subtract the 16 that have been used
→ 36 cards left outside the circles



Using Venn Diagrams

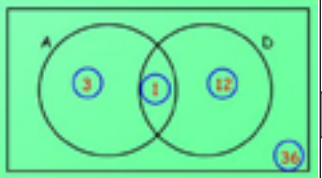
A card is selected at random from a pack of 52 playing cards. Let A be the event that the card is an ace, and D be the event that the card is a diamond. Draw a Venn diagram to show this information.

$P(A \cap D) = \frac{1}{52}$
Probability of an Ace and a Diamond

$P(A \cup D) = \frac{16}{52} \longrightarrow \frac{4}{13}$
Probability of an Ace or a Diamond

$P(A') = \frac{48}{52} \longrightarrow \frac{12}{13}$
Probability of it not being an Ace

$P(A' \cap D) = \frac{12}{52} \longrightarrow \frac{3}{13}$
Probability of it not being an Ace, and being a Diamond



Using Venn Diagrams

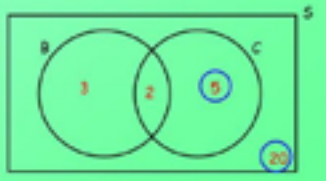
In a class of 30 students, 7 are in the choir, 5 are in the school band and 2 are in both the choir and the band. Draw a Venn diagram to show this information.

Probability of not being in the band

$P(B') = 1 - P(B)$

$P(B') = 1 - \frac{5}{30}$

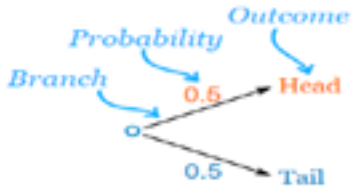
$P(B') = \frac{25}{30} \longrightarrow \frac{5}{6}$



You could also have got $^{25}/_{30}$ by counting the parts not in the 'B' circle.

PROBABILITY TREES v252

Here is a tree diagram for the toss of a coin:

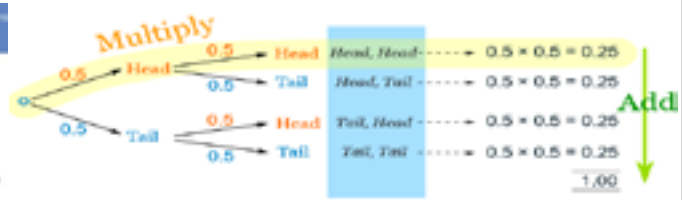


There are two "branches" (Heads and Tails)

- The probability of each branch is written on the branch
- The outcome is written at the end of the branch

P(A or B) = P(A) + P(B)

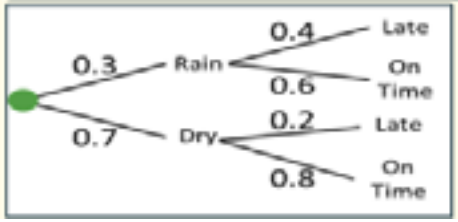
The AND rule
P(A AND B) = P(A) × P(B)



DEPENDENT EVENTS clip

Dependent events

Probability trees where the outcome of one events affects the outcome of the next event e.g. no replacement, weather etc.

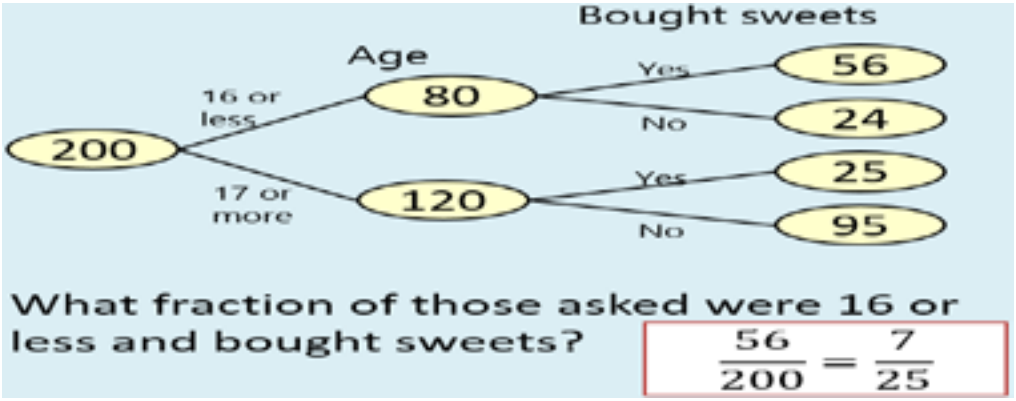


$P(Rain\ and\ late) = (0.3 \times 0.4) = 0.12$

$P(On\ time) = (0.18 + 0.56) = 0.74$

When dealing with no replacement, remember to reduce the denominator by one for the second event

PROBABILITY FROM FREQUENCY TREES v376



What fraction of those asked were 16 or less and bought sweets?

$\frac{56}{200} = \frac{7}{25}$

Maths F - Multiplicative Reasoning

GROWTH AND DECAY clip

Compound Appreciation/Depreciation Formula

$$V = Im^n$$

V = Value
I = Initial value
m = % multiplier
n = number of years

Appreciation

£4,000 appreciates at a rate of 10% for 3 years

I = 4,000
m = 1.1
n = 3

$V = 4000 \times 1.1^3$
$= £5,324$

Depreciation

£25,000 depreciates at a rate of 25% for 5 years

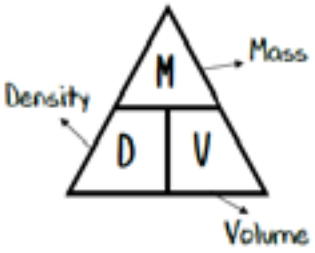
I = 25,000
m = 0.75
n = 5

$V = 25000 \times 0.75^5$
$\approx £5932.62$

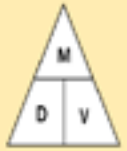
COMPOUND MEASURES v299, 384, 385

Compound Measures

Density



Mass Density Volume

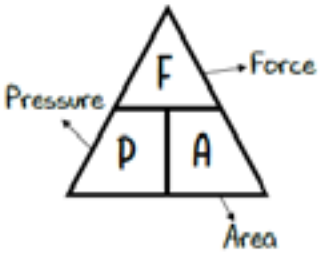


Volume = Mass / Density

Density = Mass / Volume

Mass = Density x Volume

Pressure



Force Area Pressure

Pressure = Force / Area

Area = Force / Pressure

Force = Area x Pressure

Average Speed

Speed Distance Time

Speed = Distance / Time

Distance = Speed x Time

Time = Distance / Speed

SUVAT Equations

$v = u + at$

$v^2 = u^2 + 2as$

$s = ut + \frac{1}{2}at^2$

$s = vt - \frac{1}{2}at^2$

$s = \frac{1}{2}(u + v)t$

s – displacement
u – initial velocity
v – final velocity
a – acceleration
t - time

PROPORTION v254, 255

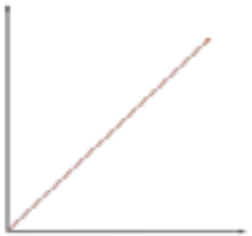
$y \propto x$

$y = kx$

Statement	formula for y in terms of x
y is proportional to x	$y = kx$
y is proportional to the square of x	$y = kx^2$
y is directly proportional to x cubed	$y = kx^3$
y varies directly with the square root of x	$y = k\sqrt{x}$

Direct Proportion: if two quantities are in direct proportion, as one increases, the other increases by the same percentage

$$y \propto x$$
$$y = kx, where\ k\ is\ a\ constant\ value$$

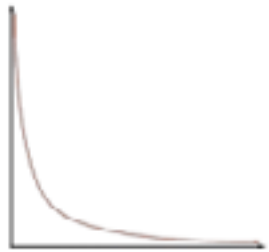


DIRECT PROPORTION

V254

Indirect Proportion: is when one value increases as the other value decreases.

$$y \propto \frac{1}{x}$$
$$y = \frac{k}{x}$$

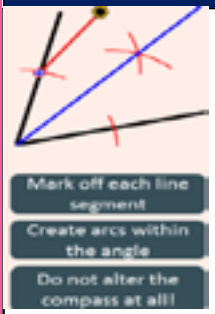


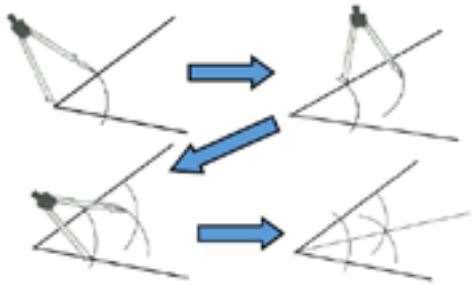
INVERSE PROPORTION

V255

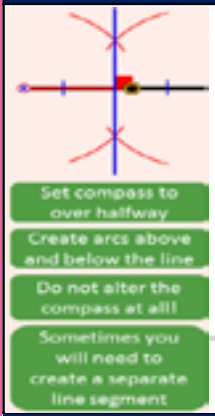
Maths F - Constructions & Loci

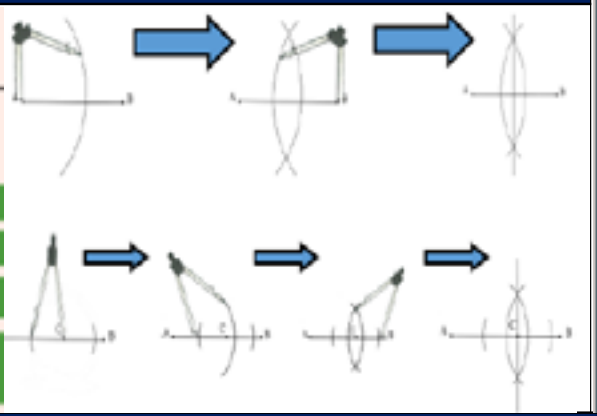
ANGLE BISECTOR v72

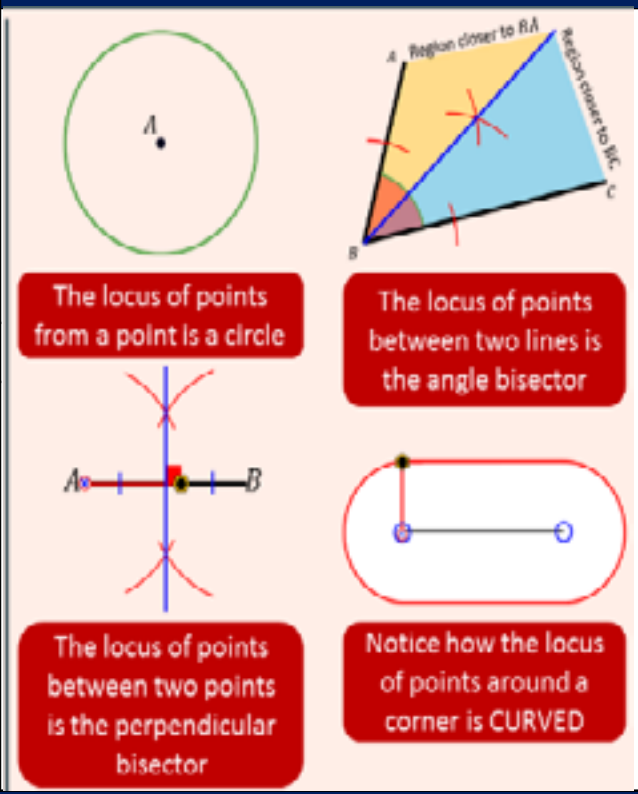




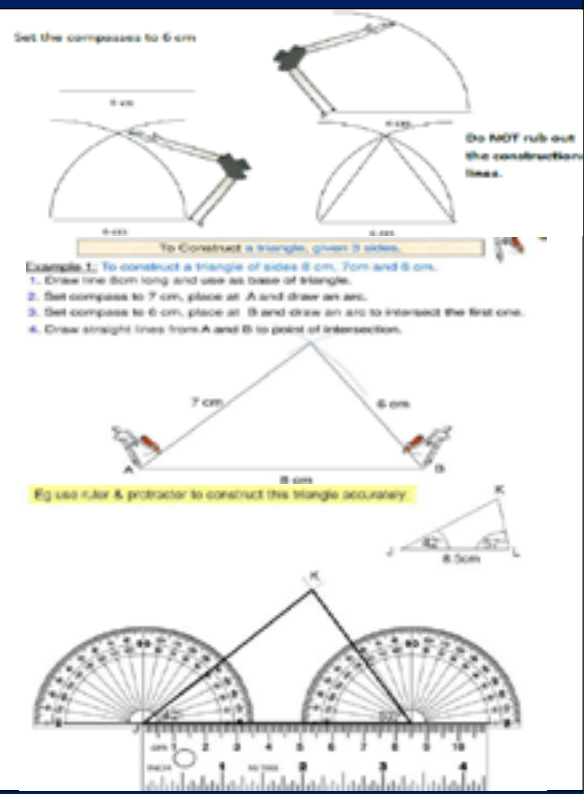
LINE BISECTOR v78.



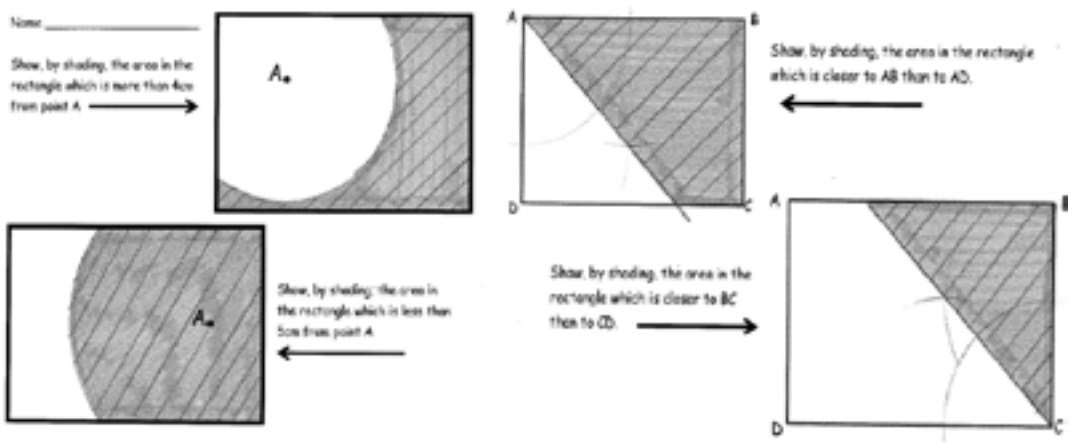


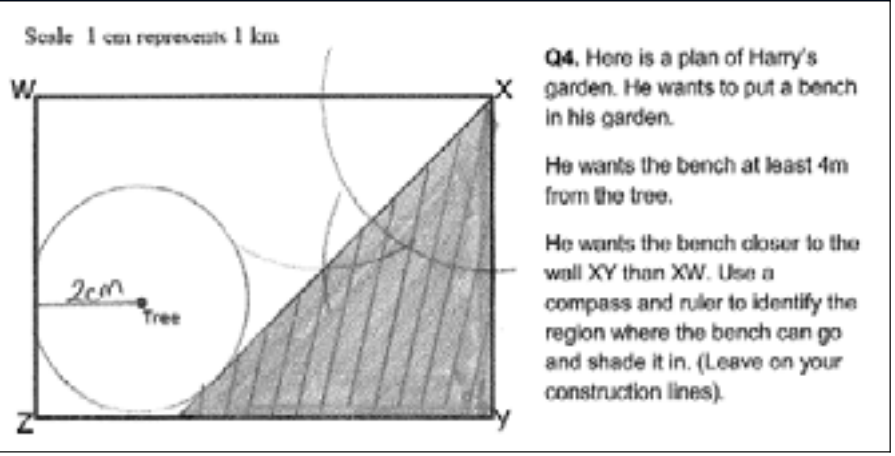


CONSTRUCTIONS v73



LOCI REGIONS & LOCI REGION PROBLEM v75, 76, 77





Maths F - Vectors

VECTORS v353

Vectors describe translations

$\begin{pmatrix} x \\ y \end{pmatrix}$ — x: Direction along; y: Direction up/down

Notation

$\overrightarrow{AB}$ $\quad a$ $\quad \underline{a}$

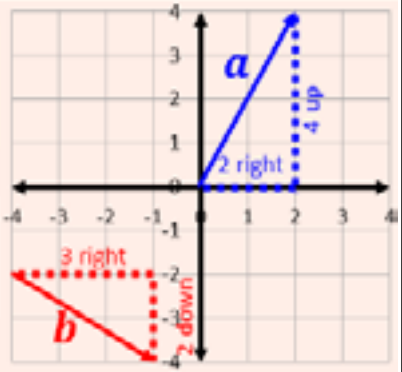
Magnitude = Length of Arrow

Direction = Where arrow is pointing

Represented by arrows

$a = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$ — 2 right, 4 up

$b = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$ — 3 right, 2 down



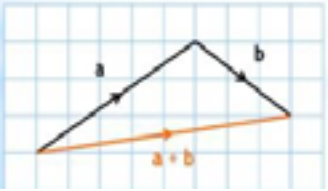
ADDING & SUBTRACTING COLUMN VECTORS v353a (from 2:31)

Adding two vectors is equivalent to applying one vector followed by the other. For example,

Suppose $\mathbf{a} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 3 \\ -2 \end{pmatrix}$

Find a + b

We can represent this addition in the following diagram:



$\mathbf{a} + \mathbf{b} = \begin{pmatrix} 8 \\ 1 \end{pmatrix}$

In general, if $\mathbf{a} = \begin{pmatrix} a \\ b \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} c \\ d \end{pmatrix}$

$\mathbf{a} + \mathbf{b} = \begin{pmatrix} a + c \\ b + d \end{pmatrix}$

- **Resultant Vector**
  - The **resultant** vector is the sum of a given set of vectors

We can subtract two column vectors by subtracting the horizontal components and subtracting the vertical components. For example,

Suppose $\mathbf{a} = \begin{pmatrix} 4 \\ 4 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$

Find a - b

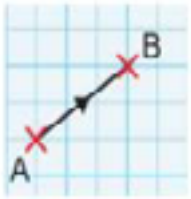
$\mathbf{a} - \mathbf{b} = \begin{pmatrix} 4 \\ 4 \end{pmatrix} - \begin{pmatrix} -2 \\ 3 \end{pmatrix} = \begin{pmatrix} 4 - -2 \\ 4 - 3 \end{pmatrix} = \begin{pmatrix} 6 \\ 1 \end{pmatrix}$

COLUMN VECTOR v36

To get from A to B, you go 3 right, 2 up:

$\overrightarrow{AB} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ (a)

Reverse: $\overrightarrow{BA} = \begin{pmatrix} -3 \\ -2 \end{pmatrix}$ (-a)



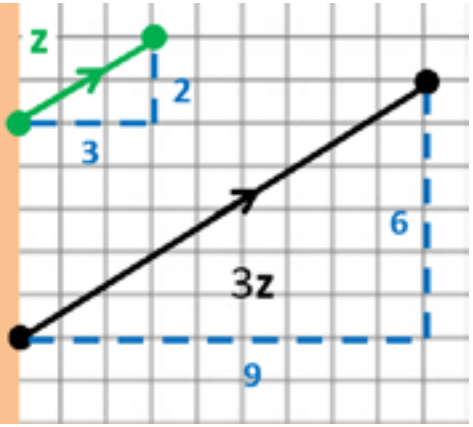
Vectors are labelled with a lower case letter, either **bold** or underlined.

Multiplying vectors clip

What are z and 3z as Column Vectors

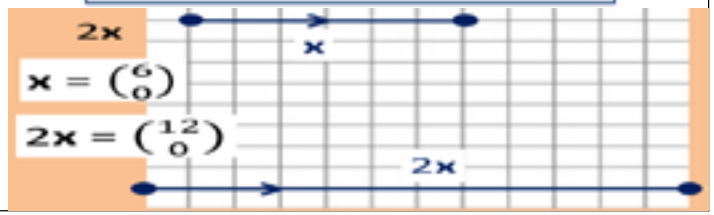
$\mathbf{z} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

$3\mathbf{z} = \begin{pmatrix} 9 \\ 6 \end{pmatrix}$



To multiply a **Vector** by a Scalar. Write the **Vector** as a **Column Vector** then multiply each entry in the **Column Vector** by the Scalar

$3\mathbf{z} = \begin{pmatrix} 3 \\ 2 \end{pmatrix} \begin{matrix} \times 3 \\ \times 3 \end{matrix} = \begin{pmatrix} 9 \\ 6 \end{pmatrix}$



Maths H Indices

Year 10 Higher Half term 3, Topic 1: Indices

V172, V173, V175

a^b — b is the index number (plural indices); a is the base number

This is read as "a to the power of b"

Example 1 Evaluate $3^4 = 3 \times 3 \times 3 \times 3 = 81$

Key words

Evaluate – work out the answer as a number
Simplify – write answer in index form
Solve – work out the value of the letter
"to the power of" - tells you the number of times the base number is multiplied by itself
Square numbers – the answer when a number is multiplied by itself
Cube numbers – the answer when a number is multiplied by itself 3 times
Root – the base number which was squared, cubed or raised to some other power (as in square root, cube root, fourth root etc)

Index rules

Multiplying -	add the index numbers Example 1	$a^m \times a^n = a^{m+n}$ $5^8 \times 5^2 = 5^{(8+2)} = 5^{10}$
Dividing -	subtract the index numbers Example 2	$a^n \div a^m = a^{n-m}$ $5^{12} \div 5^4 = 5^{(12-4)} = 5^8$
Brackets -	multiply the index numbers Example 3	$(a^n)^m = a^{n \times m}$ $(5^3)^6 = 5^{3x6} = 5^{18}$
Power of 1	the answer is itself Example 4	$a^1 = 5$ $5^1 = 5$
Power of 0	the answers is always 1 Example 5	$a^0 = 1$ $5^0 = 1$
Fractions	mean roots Example 6	$a^{\frac{1}{n}} = \sqrt[n]{a}$ $8^{\frac{1}{3}} = \sqrt[3]{8} = 2$
Negative	mean reciprocal Example 7	$a^{-n} = \frac{1}{a^n}$ $5^{-3} = \frac{1}{5^3} = \frac{1}{125}$

The rules work with algebra as well V174

Example 8 $4x^5 \times 2x^8 = 4 \times 2 \times x^5 \times 2x^8 = 8x^{13}$
Example 9 $20x^5 \div 5x^3 = 20 \div 5\ (x^{5-3}) = 4x^2$
Example 10 $(5x^6)^3 = 5^3\ x^{6x3} = 125x^{18}$

Evaluating more complex fractional powers

$a^{\frac{m}{n}} = (\sqrt[n]{a})^m$ $\quad 27^{\frac{2}{3}} = (\sqrt[3]{27})^2 = 3^2 = 9$

The denominator is the root – do this first.
The numerator is then just a normal power
If the number in the bracket is a fraction do the top and bottom separately.

$\left(\frac{25}{16}\right)^{\frac{3}{2}} = \left(\frac{\sqrt{25}}{\sqrt{16}}\right)^3 = \left(\frac{5}{4}\right)^3 = \frac{125}{64}$

Solving equations with indices

Write all the numbers with the same base and then equate the index numbers

$a^x = a^y \Rightarrow x = y$

Solve: $8^{2x} = 4^{x-1}$

$\Rightarrow (2^3)^{2x} = (2^2)^{x-1}$

$\Rightarrow 2^{3x2x} = 2^{2(x-1)}$

$\Rightarrow 6x = 2x - 2$

$\Rightarrow 4x = -2$

$\Rightarrow x = -\frac{1}{2}$

Maths H Standard Form

Year 10 Higher Half term 3, Topic 2: Standard Form

Standard Form is used for writing very big or very small numbers without lots of zeros (which are difficult to count!). It is always written in the form $A \times 10^n$ where A is a number between 1 and 10 V300

$$(1 \leq A < 10) \times 10^n$$

Converting numbers into standard form
Large numbers (n is a positive number)
Put the decimal point after the first digit and count the number of places

34500780000 into standard form = 3.450078×10^{10}

Distance from Earth to the sun is **147100 million** metres

147 100 000 000 = 1.471×10^{11}

Small numbers less than 1 (n is a negative number)
Move the decimal point to after the first digit of value. Count how many places (or **easier count the 0s including the one in front of the decimal point!).** Make the power of n negative to show this is a number less than 1.

0.000507 into standard form = 5.07×10^{-4}

Size of a bacteria is 0.00000037

$0.00000037 = 3.7 \times 10^{-7}$

Converting numbers in standard form back to ordinary numbers
Large numbers (n is a positive number)
The decimal point needs to move the value of n places to the right.
Count how many places to get to the end of the number and thn add 0s to make a total of n places
Convert

$5.67 \times 10^9 = 5\ 670\ 000\ 000$

2 places plus 7 zeros gives a total of 9 places

Small numbers less than 1 (n is a negative number)
The decimal point needs to move the value of n to the left. The number of zeros before the first digit (including the one before the decimal point) is the same as n.

$2.4 \times 10^{-6} = 0.0000024$

n is 6 so there are 6 zeros before the first digit

Multiplying in Standard Form V302
Multiply the numbers and add the powers of 10

$$(3 \times 10^7) \times (2 \times 10^4)$$

$= 3 \times 2 \times 10^{(7+4)} = 6 \times 10^{11}$

Make sure the answer is in standard form

$$(7 \times 10^3) \times (6 \times 10^{10})$$

$= 42 \times 10^{(3+10)} = 4.2 \times 10^{14}$

(divide 42 by 10 to get 4.2, so add 1 to the power of 10)

Dividing in Standard Form V303
Divide the numbers and subtract the powers of 10

$$(8 \times 10^9) \div (4 \times 10^3)$$

$= (8 \div 4) \times 10^{(9-3)} = 2 \times 10^6$

Make sure the answer is in standard form

$$(2 \times 10^8) \div (4 \times 10^3)$$

$= 0.5 \times 10^5 = 5 \times 10^4$

(multiply 0.5 by 10 to get 5 so subtract 1 from the power of 10)

Adding and Subtracting in Standard Form V301
Easiest is to convert to ordinary numbers, add or subtract, and then convert the answer back to standard form.
or
Convert both numbers to the higher power of 10 and then just add or subtract the number part.

$(4 \times 10^3) + (2 \times 10^4)$ we need to change the 10^3 into 10^4. Since this makes the number 10times bigger we have to compensate by dividing 4 by 10

$(0.4 \times 10^4) + (2 \times 10^4) = 2.4 \times 10^4$

Using a calculator
Input numbers in standard form using the $\times 10^x$ button.

If you want the answer in standard form, change the mode to SCI (shift, mode, 7) and choose a number – this will return answers correct to the required number of sf.

Don't forget to change your calculator back! Shift, 9, 3, =, =

Maths H Inequalities & Graphs

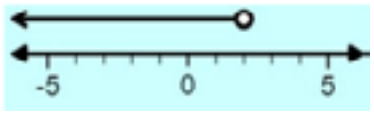
Year 10 Higher Half term 3, Topic 3 Inequalities and graphs

=	is equal to
≠	is not equal to
<	is less than
>	is greater than
≤	is less than or equal to
≥	is greater than or equal to

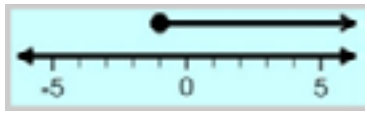
Representing inequalities on a number line V176, V177

an open circle means the number is not included < or >

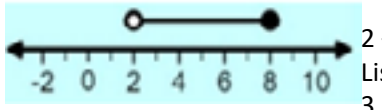
a coloured circle means the number is included ≤ or ≥



x < 2



x > -1



2 < x ≤ 8
Listing the integers
3, 4, 5, 6, 7, 8

Worded questions V178, V179 – turn the words into algebra, and solve the inequality (use balance method just like for equations).
Watch out for less or more which tells you it is an inequality not an equation.
e.g. Sam and Alex play in the same soccer team. Last Saturday Alex scored 3 more goals than Sam but together they scored less than 9 goals.
What are the possible number of goals Alex scored?
A= S+3 and A+S < 9
So 2S + 3 < 9 and S < 3, goals have to be integers do the most S scored is 2 and therefore the most A scored is 2 + 3 which is 5.

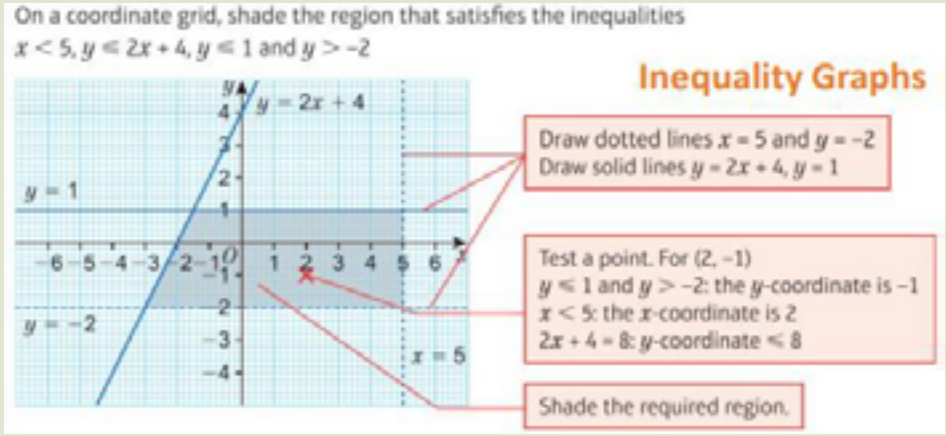
Plotting graphs and shading regions V180, V181, V182

Step 1 – draw the line which forms the boundary
e.g for y > 3 draw the line y=3
for y≤ 2x -6 draw the line y = 2x -6

Step 2 – if points on the line are included (≤ or ≥) the line is solid
if the points on the line are not included (< or >) the line is dotted

Step 3 – decide which side of the line satisfies the inequality by testing a point. If possible test the point (0.0). E.g. y>3, the point (0,0) does not satisfy the inequality

Step 4 - Shade the region required (read the question carefully!)

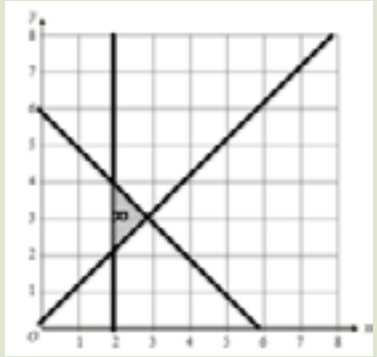


Example GCSE question

On the grid draw straight lines and use shading to show the region R that satisfies the inequalities

x ≥ 2 y ≥ x x + y ≤ 6

The lines x = 2, y = x and x +y +6 are drawn.
They are all solid.
The region to the right of x = 2 is required
The region above y= x is required
The region below x + y = 6 is required.
This gives a triangular region to be shaded and labelled R.



Maths H Probability

Year 10 Higher Half term 3, Topic 4 Probability

Key Words V245, V249,

Probability a measure of how likely something is to happen.
It is a number which can be expressed a fraction, decimal or percentage
P(A) refers to the probability that event A will occur

Certain a probability of 1

Impossible a probability of 0

Exhaustive the whole range of possible outcomes. As long as the outcomes are mutually exclusive
the sum of the probabilities of exhaustive outcomes is 1

Mutually Exclusive outcomes that cannot happen at the same time

Independent the outcome of a previous event does not influence/affect the outcome of a second event.

Theoretical probability assumes all the outcomes are equally likely

Bias Unfair. The outcomes are not equally likely

Relative Frequency calculating probability based on the results of an experiment or survey V248

Expected number the number of times an outcome is predicted based on the probability

Sample Space shows all the possible outcomes of one or more events. Could be shown as a list, two way table or a tree diagram V246

Formulae

Theoretical probability = $\frac{\textit{Number of Favourable Outcomes}}{\textit{Total Number of Possible Outcomes}}$

Relative frequency = $\frac{\textit{Number of Successful Trials}}{\textit{Total Number of Trials}}$

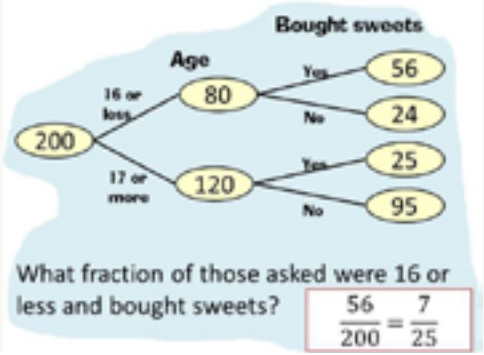
Expected number = Probability x number of trials

Probability of "not". If the probability that something will happen is p, the probability that it will **not happen** is 1 – p. P(A) + P(NOT A) = 1 V250

"And" rule P(A + B) = p(A) x p(B) Multiply along the branches in a tree diagram

"Or" rule V244 P(A or B) = p(A) + p(B) Add the probabilities of the outcomes required

Frequency trees and two ways tables - show numbers V376, V319

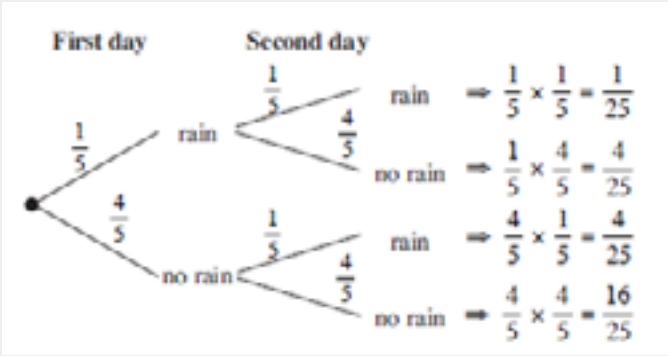


	First	Second	Third	Crew	Total
Survived	203	118	178	212	**711**
Died	122	167	528	673	**1490**
Total	**325**	**285**	**706**	**885**	**2201**

a) Probability of a crew member surviving = 212/2201

b) Probability of surviving given that 1st class passenger = 203/325

Tree Diagrams – show probabilities, branches have to add to 1 V252



Probability that it rains on just one day = $\frac{4}{25} + \frac{4}{25} = \frac{8}{25}$

Dependent events are where the outcome of a previous event affects the next event – tree diagrams with "not replaced"

Conditional probability is the probability of a dependent event. The probability of a second outcome depends on what has already happened in the first outcome V247

Maths H Direct & Inverse Proportion

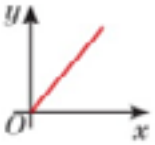
Year 10 Higher Half term 4, Topic 1 Direct and Inverse Proportion

The symbol ∝ means "proportional to"

Direct Proportion V254 - two variables are in direct proportion, when as you multiply (or divide) one by a number you multiply (or divide) the other by the same number.
The ratio between the two variables stays the same and can be expressed as 1:k, where k is the constant of proportionality.

x	y	$\frac{y}{x} = k$
3	6	$\frac{6}{3} = 2$
5	10	$\frac{10}{5} = 2$
7	14	$\frac{14}{7} = 2$
9	18	$\frac{18}{9} = 2$

When a graph of two quantities is a straight line through the origin one quantity is directly proportional to the other.



The gradient of the graph is k
$y \propto x$ therefore $y = kx$

Directly proportional to
the square …. $y \propto x^2$ therefore $y = kx^2$
the cube …. $y \propto x^3$ therefore $y = kx^3$
the square root $y \propto \sqrt{x}$ therefore $y = k\sqrt{x}$

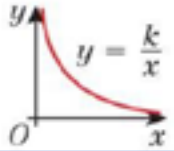
- **Square**
  - y is proportional to the square of x

- **Square root**
  - y is proportional to the square root of x

Inverse Proportion V255 - two variables are inversely proportional, when as you multiply one by a number you divide the other by the same number. The product of the two variables gives the constant of proportionality, k.

x	y	$xy = k$
2	12	(2)(12) = 24
4	6	(4)(6) = 24
6	4	(6)(4) = 24
8	3	(8)(3) = 24

When y is **inversely proportional** to x, $y \propto \frac{1}{x}$ and $y = \frac{k}{x}$



Inversely proportional to the square …. $y \propto 1/x^2$ therefore $y = k/x^2$
the cube …. $y \propto 1/x^3$ therefore $y = k/x^3$
the square root $y \propto 1/\sqrt{x}$ therefore $y = k/\sqrt{x}$

Example

y is proportional to the square of x. $y = 60$ when $x = 6$
a Find a formula for y in terms of x.
b Find y when $x = 4.5$
c Find a value of x for which $y = 135$

a) $y = kx^2$ k constant
$60 = (k)(36)$
$k = \frac{5}{3}$
$y = \frac{5}{3}x^2 = \frac{5x^2}{3}$

b) $y = \frac{5(4.5)^2}{3}$
$y = 33.75$

c) $135 = \frac{5x^2}{3}$
$405 = 5x^2$

Maths H Algebraic Fractions

Year 10 Higher Half term 4, Topic 2 Algebraic Fractions

Algebraic fractions obey the same rules as ordinary fractions

Simplify – cancel common factors (so factorise)
Add/Subtract – must have common denominator
Multiply – just do it
Divide – KFC (keep it, flip it, change it!

Simplify – two types! V24

Type 1 – use index rules

Pair up the numbers and letters and cancel each pair separately

e.g. Simplify a) $\frac{5y^2}{y} = 5y$ b) $\frac{8a^5b^6}{2a^2b^{10}} = \frac{4a^3}{b^4}$

(In b, 8÷2 = 4, $a^5 \div a^2 = a^3$ and $b^6 \div b^{10} = b^{-4} = \frac{1}{b^4}$)

Type 2 – factorise first

Remember
Single Brackets

$3x + 12 = 3(x + 4)$
HCF of 3x and 12

Double brackets

$x^2 + 5x + 6 = (x + 3)(x + 2)$

T – **Times** to make the
E – **End** Value
A – **Add** to make the
M – **Middle** value

T – x 6
E – (1 x 6) (2 x 3) (-1 x -6) (-2 x -3)
A – + 5
M – $(x + 2)(x + 3)$

Difference of two squares t^2 - 64 = (t+8)(t-8)

e.g. $\frac{x^2+5x+6}{3x+9} = \frac{(x+2)(x+3)}{3(x+3)} = \frac{(x+2)}{3}$

$\frac{r^2-4}{r^2+2r-8} = \frac{(r+2)(r-2)}{(r-2)(r+4)} = \frac{(r+2)}{(r+4)}$

Adding and Subtracting V21

Step 1 – find a common denominator by multiplying the two denominators
Step 2 – find equivalent fractions by multiplying numerators
Step 3 – add or subtract numerators, expanding and simplifying

e.g. a) $\frac{x}{2} + \frac{x}{3} = \frac{3x}{6} + \frac{2x}{6} = \frac{5x}{6}$

b) $\frac{(x-3)}{3} - \frac{(x+4)}{4} = \frac{4(x-3)}{12} - \frac{3(x+4)}{12}$
$= \frac{4x-12}{12} - \frac{3x+12}{12}$
$= \frac{x-24}{12}$

Multiplying V23

Step 1 – multiply numerators
Step 2 – multiply denominators
Step 3 – factorise top and bottom and cancel if you can

e.g. $\frac{2x+4}{3xy} \times \frac{x}{(x+2)} = \frac{x(2x+4)}{3xy(x+2)} = \frac{2x(x+2)}{3xy(x+2)} = \frac{2}{3y}$

Dividing V22

Step 1 – Keep the first fraction but flip the 2nd
Step 2 – change ÷ to x
Step3 – continue as above for multiplying

e.g. $\frac{(x-3)}{15} \div \frac{x^2-3x}{5} = \frac{(x-3)}{15} \times \frac{5}{x^2-3x}$

$= \frac{5(x-3)}{15x(x-3)} = \frac{1}{3x}$

Solving equations with algebraic fractions V111, V111a

Step 1 – aim to write the fraction side as a single fraction (+, -, x or ÷)
Step 2 – multiply both sides by the denominator (or get a common denominator on both sides)
Step 3 – equate the numerators and solve in usual way.
Don't forget to solve a quadratic it must equal 0.

e.g.

a) $\frac{x+4}{2} + \frac{x+1}{5} = 5$

$\frac{7x+22}{10} = 5$

so 7x + 22 = 50 x = 4

b) $\frac{4}{x+6} + \frac{5}{x+8} = 1$

$\frac{4(x+8)+5(x+6)}{(x+6)(x+8)} = 1$

$\frac{9x+62}{x^2+14x+48} = 1$

Multiply by denominator and make quadratic = 0

$9x + 62 = x^2 + 14x + 48$
$0 = x^2 + 5x - 14$
$0 = (x + 7)(x - 2)$

x = -7 and x =2

MEDIA LANGUAGE

Signs are designed to convey meaningful and important information in a condensed way.

The study and understanding of signs and the meaning they communicate is called semiotics.

In the media, it is agreed among producers and audiences that specific meanings can be attributed to certain signs.

Denotation refers to what is literally visible within a sign or symbol.

Connotations are the meanings associated with a sign or symbol.

Charles Sanders Peirce was an American philosopher who identified three different types of signifier:

An **icon** is a signifier which resembles. *For example, a bicycle is used to indicate a cycle lane*	
An **index** is a signifier which is physically or literally connected to what is being signified. *For example, the skull and cross bones indicates a toxic substance*	
With a **symbol** there is no resemblance between the signifier and the signified. *For example, the interlocking symbols indicate male and female solely due to a collective agreement among people*	

Ferdinand de Saussure was one of the key founders of semiotics. He proposed that signs have meanings via two elements.

1. **The signifier** is the form of a sign – something which can be seen, heard, touched, smelt or tasted.
2. **The signified** is the idea or meaning conveyed by that signifier. An example of these two elements working in correlation can be found in the theatrical poster for the film *Jaws* (1975). **The signifier** is a young woman swimming in the ocean with an open-mouthed great white shark swimming beneath the surface of the water. **The signified** is the idea that the shark is probably about to eat the woman. You are likely to find examples of this in all four media frameworks.

Roland Barthes was a French theorist and semiotician who suggested that a story's narrative uses five different types of code. These codes work together to enable the reader to make sense of what is happening in the story.

1. Action Codes – an object or event (often very simple) that leads to narrative progression *e.g. the drawing of a gun suggests that violence will occur*
2. Enigma Codes – the set-up and resolution of a puzzle, *e.g. a film poster might contain an image of a closed treasure chest (the puzzle). The audience must see the film in order to discover what is inside the treasure chest (the resolution)*
3. Semic Codes – signs referring to additional meaning through the use of connotation, *e.g. A model lifting weights implies that they are strong or like exercising*
4. Symbolic Codes – a range of non-literal references found in an image or a text, normally presented through two contrasting codes, *e.g. good vs bad, man vs woman*
5. Cultural codes – all references found within a text that can be understood with a good knowledge of news, events and culture, both contemporary and historical, *e.g. the image of the Union flag usually implies British pride*

Mode of address – The type of media language used to speak to audiences. *For example, in most lifestyle magazines the cover star will look into the frame (at the audience) creating a direct mode of address*

Iconography – Visual codes that audiences associate with certain genres. *For example, frightening masks will often appear on the posters for horror films*

Typography – The style of font. This helps to create a house style or brand identity for a print media product as well as helping to establish genre. *For example, large boldface typography is a common convention of tabloid newspapers*

Intertextuality – When a media text references another text in order to shape meaning and affect audience interpretation. *For example, advertisements may contain references to a popular film in order to create comedy and make them stick in the audience's head*

Genre provides us with a way of clearly categorising media products.

We can determine which products fit into which genre by looking out for the **repetition** of certain codes and conventions. ➡ *For example, a film is likely to fit into the crime genre if it contains certain character types (gangsters, detectives), narrative beats (a heist, an arrest), technical codes (rapid editing, low-key lighting) and familiar visual iconography (guns, dark suits, getaway cars).*

Producers incorporate new and unexpected codes and conventions into their products in order to maintain audience interest. **Genre hybridity** (the incorporating of codes and conventions from multiple genres into a single product) is an effective way of achieving this. ➡ *For example, the film Shaun of the Dead effectively blends elements of the horror genre with elements of the romantic comedy genre.*

NARRATIVE DEFINITIONS

Content	Refers to what happens in the story as well as the meaning behind it
Form	Refers to the text type that the writer uses *e.g. magazine, newspaper, website*
Plot	The term used to describe how the main events in the story unfold
Structure	Relates to the order of events in a narrative and the form in which it is told
Storytelling	The activity of presenting a story to an audience
Action	Either the physical movements of the people in the story or their behaviour
Dialogue	The engagement of conversation or vocalised thought of the people in the story
Conflict	The struggle that often presents itself in a story
Character	Any person, animal or figure presented in a story
Setting	The time and place in which the story takes place
Event	Something that will happen, has happened, or is thought to happen in the future

Vladimir Propp is a theorist whose work is derived from his studies of Russian folk tales with a particular focus on their characters. Through his studies, Propp identified eight types of character, not unlike stock characters, which he claims serve a specific purpose to the story's narrative. It is likely that different character types will overlap, e.g. the dispatcher and the princess's father.

Vladimir Propp – Character Types

1. Hero – the protagonist of the story. Embarks upon a journey motivated by the lack or loss of something.
2. Villain – an antagonistic character who wants to ruin the hero's journey
3. Donor – someone who provides the hero with either an object or the advice they need to complete their journey
4. Helper – someone who aids the hero on their journey (often described as a sidekick)
5. Princess/reward – someone who / something that is unattainable throughout the journey. The story usually ends with the hero acquiring this prize.
6. Princess's father – the person who rewards the hero with the prize at the end of their journey
7. Dispatcher – sends the hero on the journey and illustrates the importance of the journey
8. False hero – raises complications. Tries to take credit for the hero's action and obtain the reward.

Remember: the majority of media products are **polysemic**. This means that their meanings can be multilayered and interpreted in a number of different ways. For example, the image of a scantily clad woman in a fashion magazine might connote liberation and female empowerment for some viewers while connoting objectification and oppression for others.

MEDIA REPRESENTATION

When it comes to analysing representation in the media, it is useful to be aware of contextual factors that have affected cultural attitudes in Western society. Listed below are a number of specific or ongoing events that are likely to inform your analysis.

Gender	Ethnicity	Age
		
In 2017, there was a huge series of accusations from women accusing powerful men in the media of sexual harassment and assault. The hashtags #MeToo and #TimesUp were shared by thousands of women exposing an underlying sexism running through mainstream media (particularly the film industry). This movement has greatly enhanced conversations about female representation in the media.	Martin Luther King Jr's 'I Have a Dream' speech in 1963 was a defining moment for the civil rights movement. With it came a rapid change in rights for the US African-American community.	Traditionally in the media, children have often been depicted as being helpless and in need of saving. Particularly in mainstream cinema, recent representations, e.g. *Stranger Things* and *Pokemon*, have shown children to be capable and often 'more in the know' than their parents about important issues.
A recent statistic revealed that the greatest killer of men under 45 in the UK is suicide. A concerted effort has been made to counter hypermasculine representations in the media and allow men to be presented as being emotionally vulnerable.	The Black Lives Matter movement was founded in 2013 following a number of unprovoked shootings by police on African-Americans in the USA.	Historically, teenagers have been depicted either as stroppy or as violent and rebellious thugs. Over time, mainstream media has started to acknowledge the complex issues of adolescence, representing teenagers as ambitious and three-dimensional. This particularly caters to the **millennial generation**, largely defined by concerns about mental health and an uncertain job market.
According to certain statistics, women (on average) earn 78% of the average male salary in the United States. This inequality is largely reflected in the media. For example, only two of 2016's top 10 paid actors were women.	The hashtag #OscarSoWhite was a retaliation to the abundance of white nominees at the 2015 Academy Awards. In June 2016, the British people voted to leave the European Union. Many believe that racist attitudes towards immigrants largely determined the result of the vote, *e.g. a column in The Sun (the highest-selling newspaper in Britain) described Syrian migrants as 'cockroaches'.*	The majority of the baby boomer generation are currently in their 60s or 70s. More so than in previous generations, many baby boomers are still healthy, highly active and in possession of significant disposable income. This is being reflected in the mainstream media, particularly in advertising as producers will often target the grey pound (a marketing term used to describe the high amounts of money older people have to spend on consumer goods).

Stereotypes are representations that reduce a person or a group of people to a narrow set of traits and characteristics, *e.g. all women want to be domestic housewives.*

Counterstypes are representations that emphasise the positive attributes of a person or a group of people, often combating stereotypes in the process, *e.g. women are physically capable and courageous.*

Representation Terms

Passive objects are characters that have no active role in shaping the narrative. They are only there to be looked at as events unfold around them.

Active subjects are characters that affect the progression of the narrative. They take action and make things happen.

Under-representation

Definition: People or social groups who do not appear (or who appear very briefly) in a media product which might benefit from an individual's or a group's perspective.

Example: Homosexual couples have been historically under-represented in television adverts.

Misrepresentation

Definition: When a media product depicts a person, a group of people or an event in a way that is misleading or unfairly negative.

Example: Many people accuse newspapers such as *The Sun* of misrepresenting the entire British Muslim community as a threat to traditional British values.

The process by which producers **select** and **combine/construct** elements of media language to feature in a media product is known as **mediation**. The messages and ideas that are shown in the product will often be constructed in a way that establishes a particular **point of view**. For example, a newspaper article might use first-person pronouns to align the audience with a particular person's point of view. This process is known as **audience positioning**.

The Theory of 'Otherness'

Representations in the mainstream media have been constructed and mediated by people who are in possession of great social, economic and political power. Stuart Hall argued that media representations often result in an emphasis on 'otherness'. For years this has had a negative effect on representations of active, three-dimensional characters that are not straight, white or male.

Media representation is all about the way in which media producers choose to portray something or someone in a product. Reality is complex, so representing every part of society within a single product is impossible. This is why producers consciously decide who their product is being made for (i.e. its target audience) and then select the parts of life that this group of people can relate to. In doing so, producers construct a version of reality for this particular audience. Representation is often concerned with Gender, Age, Sexual Orientation, Social Class, Ethnicity and Religion. Use the acronym 'GASSER' to help you remember

Important Theories for discussing Gender Representation

Male gaze – Laura Mulvey was a feminist theorist who suggested that visual media (particularly mainstream cinema) is constructed in a way that caters specifically to the pleasure of a male heterosexual audience. This theory largely explains the various ways in which women's bodies have been objectified in mainstream media.

Patriarchy – the idea that Western civilisation is structured in a way that provides socio-economic advantages for white heterosexual males (more specifically father figures) at the expense of women and minorities.

The development of the feminist movement throughout the past 100 years has majorly influenced representations of men and women in the media. The second wave of feminism in the 1960s and 1970s was a time of particular social change– *For example, the contraceptive pill wasn't made widely available in the UK until 1974.*

MEDIA AUDIENCES

Active audience: An audience that actively selects the types of media product they consume. They are also able to actively engage and interpret messages within a media text, applying different readings to different messages.

Passive consumer: An audience that consumes various types of media without actively engaging with the content's messages. They are also happy to accept the meaning of a media product on the most basic and superficial level.

Mass audience: A large audience with mixed interests that collectively consumes the same media product that appeals to the general interests of the masses. It is often mainstream media that appeals to mass audiences.

Niche audience: A small audience with specialised and particular interests. Producers often create much smaller-scale products for these audiences as the financial return is not often very high.

A **demographic** is a group of people distinguished by their identity or socio-economic status: gender, race, age, class, marital status, ability/disability.

A **psychographic** is a group of people distinguished by their lifestyle, habits and interests: Donald Trump supporters, sports enthusiasts, cinema goers, feminists, musicians, etc.

The **primary audience** is the main group targeted by a media product. For example, e.g. GQ magazine has a primary audience of young men.

The Effects Debate: For a long time, it was widely accepted that a large section of the general public were passive consumers, taking the messages encoded in media products at face value. This in turn sparked a debate as to whether the media could shape people's attitudes and behaviours for the worst. A key example of the effects debate taking place in British history is the outrage that was provoked by the release of video nasties: a list of unregulated horror films which began to circulate through video shops throughout the 1980s. Politicians and the popular press expressed their moral outrage and began a fierce campaign to have these videos banned. They argued that the general public (particularly young people) could be encouraged to commit violent behaviour if they were exposed to these films. In hindsight, this campaign is generally considered to be an extreme overreaction and a patronising way of viewing media audiences.

Stuart Hall – Reception Theory

It is widely agreed that media producers encode messages into their products in order to invoke a particular response from the audience.

The audience in turn will decode these messages. However, they will not always do this in the way the producer(s) intended.

Preferred Reading – The audience accepts the messages encoded in the text, interpreting the product in the exact way in which it was intended, e.g. 'Call of Duty is an exciting game with fantastically realistic graphics'.

Negotiated Reading – Certain encoded messages are accepted by the audience whereas others are challenged e.g. "Call of Duty is very well designed, but the gameplay becomes boring. I don't think I'm the target audience"

Oppositional Reading – The audience rejects the encoded messages entirely, e.g. "Call of Duty is a disgusting game that encourages teenagers to become violent killing machines. It is also incredibly boring!"

The uses and gratifications model was originally proposed by Jay Blumler and Elihu Katz in 1974. These theorists developed the model based on the idea that media audiences are not passive. On the contrary, audiences have the ability to select what media they consume, based on their own needs and desires. To a large degree, this theory empowers audiences by suggesting that media producers acknowledge the requirements of an audience and fulfil these requirements in order to prevent their products from being left without an audience.

Uses and Gratifications

Entertainment/Diversion
e.g. The James Bond action films offer audiences escapism from the boredom of daily life.

Education/Information
e.g. BBC World Service informs audiences of the latest news and events.

Personal Identity
e.g. Many people read tabloid newspapers to have their political opinions reaffirmed.

Social Interaction
e.g. Many video games allow audiences to compete with their friends and exchange tactics.

Demographics

Media products tend to establish target audiences based on the following demographics:

Gender: Perhaps the most widely considered demographic in media. Magazines and advertisements in particular will usually establish a demographic based on gender, *e.g. GQ specifically targets young men.*

Age: Certain media industries will establish specific age bands. However, most will establish general age categories, *e.g. children, teenagers, adults, elderly people.*

Ethnicity: Audiences are rarely targeted based on ethnicity as racism remains such a contentious issue. There are notable exceptions, *e.g. Pride magazine specifically targets women of colour.*

Class: While it is rare for audiences to be targeted based on class, demographics in the UK can be broken down into the following socio-economic groups: A, B, C1, C2, D, E.

The **secondary audience** will be a group that consumes a media product even though they are not the main target audience, e.g. young women might also read *GQ* magazine in order to understand men's interests.

A **water-cooler topic** is a huge, widely recognised event or topic that can be discussed in the workplace during lunch breaks as well as in other public spaces.

The **mode of address** describes the way in which a media product communicates with its audience, e.g. adverts often use imperatives such as 'Buy this!'

Media conglomerate: A large media company that owns a number of smaller media companies

Vertical integration: The act of a media company owning most (if not all) of the chain of production for a media text

Horizontal integration: When a media company which is already established in creating a particular form of media text acquires another company operating within the same form. This may also be referred to as **diversification.**

Synergy: Different parts of a media conglomerate combining to promote two separate products

Cross-platform marketing: Involves campaigns that span across different media platforms

Viral marketing: Exclusive to the Internet (particularly to social media); its success is dependent on the success of, and awareness raised by, collective sharing and discussion of the product being marketed

Convergence: The act of media products that were previously perceived as being exclusively separate from one another coming together to enhance the media form in question or create a new one. Originally, mobile phones were used to make calls and text. Now, mobile phones can be used to enhance our lives in ways that were not considered possible before the creation of smartphones.

Instagram
Founded: 2010

Facebook
Founded: 2004

Twitter
Founded: 2006

The distribution and circulation of modern media products have been significantly affected by the development of online technology. Most media companies will maintain active social media pages, allowing them to target a wider range of audiences. *For example, distribution companies will generate hype for a new film by releasing posters and trailers through various social media accounts. They then rely on audiences to share this marketing material, building a larger audience through word of mouth.*

MEDIA INDUSTRIES

Every media product goes through three general stages...

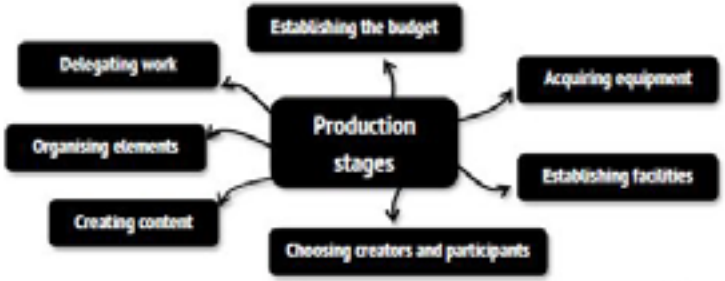
Production: the initial construction of a media product – e.g. writing, shooting and editing a film

↓

Distribution: the delivery of a media product through the appropriate platforms – e.g. stocking newspapers in shops / delivering newspapers to people's homes

↓

Consumption: the audience's experience of 'consuming' the media product – e.g. playing a video game



How are different media products distributed?

Media Form	Methods of Distribution
Magazines	Online editions, delivery through subscription, shops stocking physical copies, physical copies in public spaces (e.g. cafés, waiting rooms)
Newspapers	Online editions, delivery through subscription, shops stocking physical copies, physical copies in public spaces (e.g. cafés, waiting rooms), shares on social media
Advertisements	Television, cinemas, billboards, posters, pages in magazines and newspapers, official websites, shares on social media
Films	Cinemas, DVD, Blu-ray, streaming services, iTunes, television programming
Radio	Live broadcasts, repeat broadcasts, online catch-up services, iTunes, downloadable podcast
Video Games	Physical copies for consoles, console-specific store (e.g. Nintendo eShop), mobile app stores, PC, arcades

Regulation

The rise of online media has made regulation significantly more difficult. An effort has been made to establish online regulation for **video on demand** services such as BBC iPlayer under the watch of ***Ofcom*** (Office of Communications). However, it is almost impossible to effectively regulate online media, meaning more young people than ever before are exposed to adult content.

Many media products are produced by subsidiaries of large organisations. These products will usually have a high amount of financial backing, and access to the best resources and talent, and will, therefore, tend to have high production values (the technical quality of a media product). However, there is more pressure for these media products to appeal to a mass audience otherwise these large organisations risk losing huge amounts of money. ***Notable examples: News Corporation, Channel 4, Sony***

VS

Many media products are produced by independent companies. While these products may lack a huge amount of financial backing, there are advantages for companies operating outside of the mainstream. These products are less restricted by the aims and political biases of media conglomerates. They can also be designed to target a more niche audience, without the producer's vision becoming compromised. ***Notable examples: Pride Media Group, Atlantic Productions***

Magazine Covers

Genre Conventions of Lifestyle Magazines

- **High-key lighting** – *Lighting designed to create visual clarity and prevent shadows*
- **Mode of address** – *Direct: cover star makes eye contact with the reader*
- **Cover star** – *Will usually be a celebrity or an elite person*
- **Shot types** – *Cover stars are usually framed in full or medium shots*
- **List-based articles** – *A clear, readable way of conveying life advice*
- **Imperatives** – *Media language which instructs the audience: 'Do it!'*
- **Audience appeal** – *Highly gendered and generally appealing to 'aspirers'*
- **Ideology** – *Focus on buying products promotes consumerism*
- **Coverline features** – *Many include pull quotes from celebrity interviews*

Circulation	The number of people who exchange money for the consumption of a magazine
Readership	The number of people who consume a magazine regardless of whether they have bought it, *e.g. in a waiting room*
Selection	The combination and exclusion of elements in a magazine. Generally, current affairs will be selected over past affairs.
Construction	The way a magazine is pieced together before it is provided to consumers. This mainly refers to the layout and design stages.
Mediation	The final process the magazine goes through before it is released to consumers, usually overseen by editors and media owners

Dateline and **issue number** refer to information relating to the date of publication and the number of previous publications.

Cover price: information that reveals the price of the publication. In tabloid magazines, this will appear in a larger font.

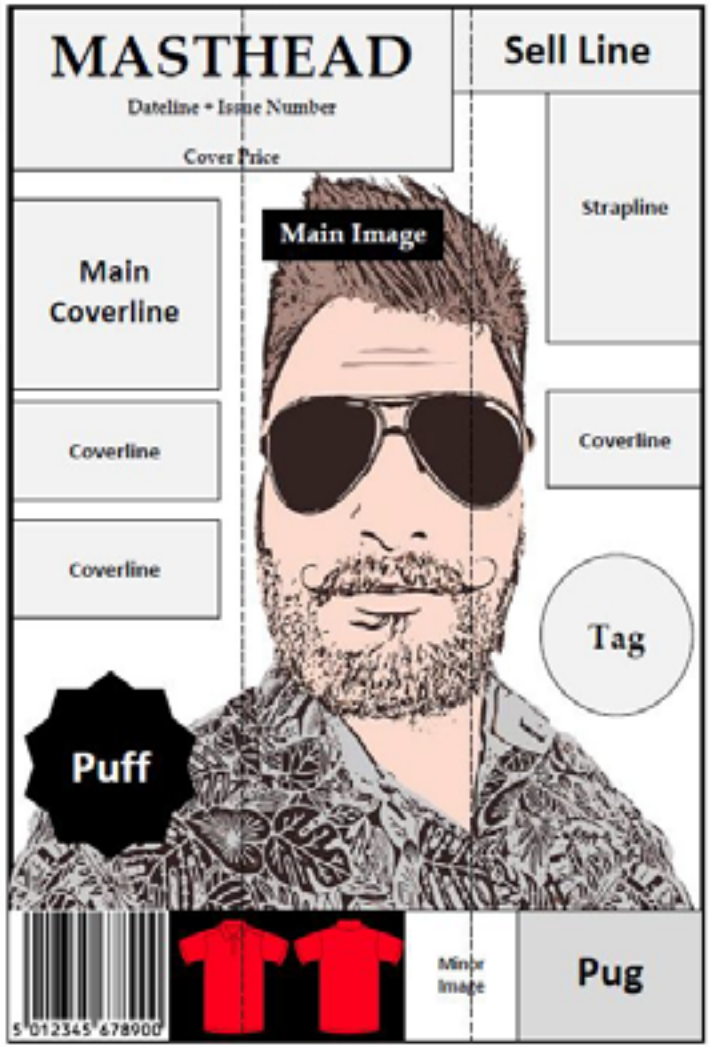
The **main coverline** is considered the main title of the cover page. This often corresponds to the main image or to the model of that issue.

Cover lines are titles/excerpts from articles found in the issue which appear on the front cover. Editors believe these will sell the issue if they feature heavily.

A **puff** is an added incentive featured on the magazine cover (e.g. a voucher or instructions for a new diet). This usually contrasts stylistically with the rest of the cover.

The **masthead** is the title of the magazine, designed and displayed on the front page.

The **sell-line** is generally found close to the masthead. It acts as a hook to gain audience interest and make the publication stand out.



A **barcode** will often feature in the bottom corner of the cover.

Most covers can be split into **thirds**.

Minor images are positioned in the outer sections of the cover and do not intrude on the main image.

A **strapline** is fairly similar to a sell line; however, it directly relates to articles found in the issue. Often located down the right-hand side of the cover.

A magazine cover will typically feature one **Main image** (sometimes called the **cover image**) – often of a model or a celebrity – that ties into themes of the issue.

Tags are phrases used to catch the reader's attention. Often sensational, with exclamatives such as 'Exclusive interview!' or 'Plus!'. Can also be called **buzzwords**.

Pugs are pieces of information located on the outer corners of the cover, used to catch the reader's eye and draw their attention to the magazine. Can be in the form of straplines, promo info and imagery.

News Conglomerates

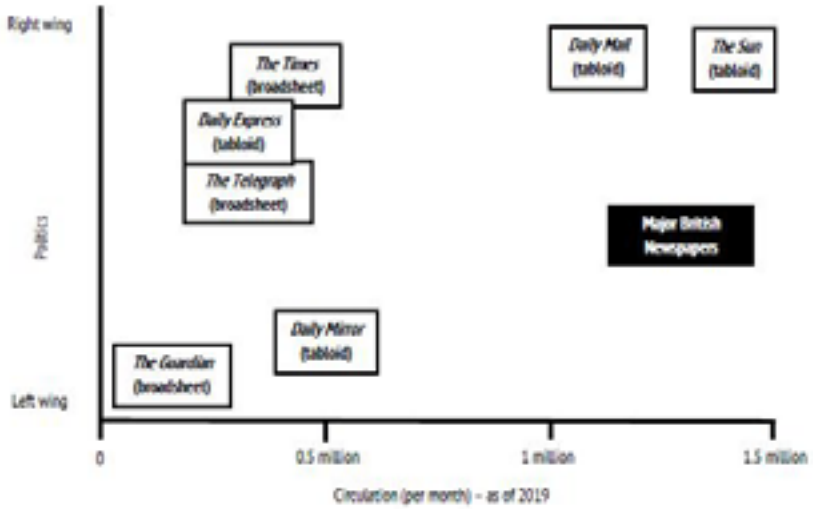
There are generally considered to be three media conglomerates that own over 70% of news publications in the UK. These are:

- **DMGT** – *Daily Mail, Metro*
- **Reach PLC** – *Daily Mirror, Mail on Sunday*
- **News UK** – *The Sun, The Times*

Note: **Reach PLC** was formerly known as **Trinity Mirror** until 2018

Rupert Murdoch – owner of News UK

Newspapers –
Media Language and Representation



KEY TERMS

Red top: an identifying feature of British tabloids where the masthead is positioned in front of a red backdrop

Anchorage: how the meaning of a picture is shaped in a newspaper through the captioned text associated with it

News values: various factors that newspapers take into account before deciding whether to publish a particular story

Continuity: the development of certain news stories will be covered across multiple editions of the same publication

Gatekeepers: the producers who decide which stories are included in a final news publication. They 'filter' through the content provided by journalists.

Left Wing

Believes in government support and intervention, *e.g. Labour Party*

Right Wing

Believes in the rights of the individual, *e.g. Conservative Party*

Tabloids often use layman's terms (simplistic language) and sensationalist imagery	VS	Broadsheets will often use formal language, factual evidence and tasteful imagery
Tabloids tend to target an audience between C2 and E of the British social grade classification	VS	Broadsheets tend to target an audience between A and C1 of the British social grade classification
Tabloids include shorter articles with minimal content on the front page	VS	Broadsheets feature much longer articles, including multiple stories on the front page
The layout of tabloids will often consist of bold typeface, vibrant colours and huge headlines	VS	The layout of broadsheets will often consist of smaller typeface, limited colours and reasonably sized headlines
Tabloid stories will evolve around celebrity gossip, national issues, scandals and stories about 'ordinary' people	VS	Broadsheet stories will evolve around politics, cultural issues and economics, as well as national and international stories

Codes and Conventions

Masthead	The title of the newspaper, designed and displayed on the front page (usually in the top left corner)
Headline	The title of a news article, summarising the topic (usually in a large font size and style in order to command the reader's attention)
Byline	The name of the author (*remember: a 'line' of text that tells you who the story is 'by'*)
Standfirst	Presented in a different size or font to the rest of the article, the standfirst is a small paragraph of text summing up the story or enticing the audience to read on
Imagery	Pictures used to provide further context, suggest thought or provoke information
Caption	A description of the image, normally in a way that relates to the story
Pull quote	An important quote from the article that is enlarged and used to break up the story
Subhead	A subtitle for the article, normally expressed in a single line
Crossheads	Extracts from the main text (displayed in a large font) used to break up the article and add more white space. These are utilised in the same fashion as pull quotes but they do not quote a source directly.
Body text	The main text of the article. On many occasions this will not appear on the front page (particularly in tabloids).
Imprint	Information found in the newspaper that contains the publisher's information and contact information
Lead story	The story that is considered 'most important' by newspaper producers

Media - Advertisement

ADVERTISE MENT

Context- Gender Roles in Society

In terms of women's roles, the 1950s are known as an era of domesticity and conformity. Having been forced into traditionally male jobs during the Second World War, women were largely encouraged to be domestic housewives and allow men to retain their positions as 'breadwinners'. Despite the social change that occurred as a result of the civil rights movement and the second wave of feminism in the 1960s and 1970s, advertisements (until quite recently) have primarily depicted white, middle-class models that conform to patriarchal ideas. Print advertising became a booming industry during the 1950s. The Conservative government at the time repeated the slogan 'Set the people free', promising to allow the general public more access to arts, entertainment and luxury. A similar technological boom has occurred in the last 15 years or so, with the invention of YouTube, Facebook, smartphones, etc.

Commercial advertising describes the promotion of goods or services for a consumer audience, *e.g. McDonald's, Gillette.* **Non-commercial advertising** seeks to provide the audience with public information relating to a certain issue. In most cases, this form of advertising will encourage the audience to take some form of action, *e.g. Think! ClothAid.*

Personification: When human characteristics or personality are applied to a non-human object. This can make advertising more vivid and allow audiences to view a product in a certain way.

'I really am that tasty'

'These are berry, berry tasty'

Wordplay: Experimenting with the multiple meanings or spellings behind words create humorous effect (often in the form of puns).

'Stupendous strawberries'

Alliteration: When the same consonant sound is repeated at least twice in a phrase or sentence in order to emphasise style or a particular emotion (often humour).

Rhetorical question: A question that dramatically implies an answer without stating it, allowing the audience to answer for themselves.

'What are you waiting for?'

Hyperbole: When language is used to exaggerate statements and make something sound larger or more extreme than it really is.

'The finest strawberries in the South'

'Ripe strawberries ripe'

Intertextuality: When a media text references another text in order to shape meaning and effect audience interpretation, e.g. 'Ripe strawberries ripe' references the musical *Oliver!*

'Get them while they're half price!'

Imperatives: Media language which directly instructs or commands the audience to take action (in this case, the action is to buy a particular product).

Each of these quotes could qualify as the SLOGAN for a strawberry advertisement. Slogans are designed to summarise the benefits or importance of a product, service or message in a short, memorable manner.

'Ripe. Juicy. Jam-packed with flavour.'

Rule of three: The act of making speech or text more memorable, emotive and satisfying by breaking down ideas into three points.

Key Definitions!

Shock Tactics – when elements of media language are used to invoke a highly emotional response from an audience, *e.g. adverts tackling domestic abuse may use violent images to shock the audience into recognising the seriousness of the issue*

Advertising campaign – the strategy an advertising company will use to promote a particular product, service or message, possibly across multiple media platforms, *e.g. This Girl Can used a range of print and video advertisements to encourage women to participate in sport*

Public service announcement – the promotion of a message through the media on the basis of public interest or to raise social awareness, *e.g. anti-smoking adverts*

Targeting – the ways in which media producers select and mediate their content in order to appeal to a particular audience demographic, *e.g. adverts for toy lightsabers have traditionally targeted an audience of young boys*

Aspiration – describes the desire people have for greater levels of wealth or success, *e.g. advertisements for beauty products will often feature actors or models who present a high standard of beauty for audiences to strive to*

Advertising copy – the main body of text in a print advert explaining the functions and benefits of a product, service or cause, *e.g. an explanation of each flavour in a tin of chocolates*

HARD SELL – an advertisement which places sole emphasis on the promotion of a product, service or message

SOFT SELL – an advertisement which places less direct emphasis on the central product, service or message, rather it constructs a scenario which indirectly shows the benefits of this

FILM MARKETING

MEDIA LANGUAGE AND REPRESENTATION

The Matrix © Warner Bros. / Village Roadshow Pictures / Silver Pictures, 1999

Star names: The names of the principal actors are included in order to bring in audiences. Marketing producers used the established fan bases of Keanu Reeves and Laurence Fishburne (who had previously appeared in *Speed* (1994) and *Boyz n the Hood* (1991) respectively) to sell the film.

High-concept: Refers to a film in which the premise is striking and easy to summarise, e.g. a boy is transformed into a superhero when he is bitten by a radioactive spider.

Distributor: The company responsible for marketing a film and getting it seen in cinemas, on streaming services, on DVD, etc.

Terms that really need to be known!

Main image: A central image connoting the genre, characters or narrative of the film. The costumes and sunglasses of the characters connote the cyberpunk subgenre of the film. The guns connote the presence of conflict and binary opposites.

Tent pole: A film with a significantly high budget, often designed to financially provide for a major film studio.

Franchise: A series of films that collectively cover a single narrative or character, e.g. *Star Wars*

This poster is riddled with enigma codes. The costumes and sunglasses suggest that the characters are unified in some way, but we are not sure how. Furthermore, the vertical green computer coding layered over the background connotes something that needs solving in the narrative.

Title: Piques the audience's interest and reveals information about the film's tone, content or genre. 'Matrix' connotes deep intellectual themes surrounding society and culture. Its vagueness creates enigma and audience intrigue.

Examples of Propp's character types in the *Bond* franchise

Hero – James Bond is always sent on a dangerous mission motivated by the desire to save the world and serve 'queen and country'.

Villain – Every *Bond* film has a main antagonist motivated by either a personal vendetta against Bond or a desire to destroy the world.

Princess/Reward – Every *Bond* film has a romantic interest. Their main function in the narrative is usually to be saved by Bond and to fall in love with him.

Helper – In most films, the 'Bond Girl' will take the role of the helper as well as the princess. They often share a similar motivation to Bond.

Dispatcher / Princess's father – 'M' is James Bond's boss. He/she appears in most films to give Bond his mission and congratulate him when he succeeds.

Dispatcher – 'Q' is James Bond's quartermaster. He is usually there to provide Bond with the gadgets he will need to complete his mission.

False hero – The majority of *Bond* films will feature an additional female character. Bond is attracted to her at first, but it is later revealed that she is working with the villain.

The thin, distorted typography of the title suggests that something in the story is broken or manipulated by a higher power. The sans serif font of the stars' names and the tag line resembles the typography seen online. This connotes modern technological themes and elements of the science-fiction genre.

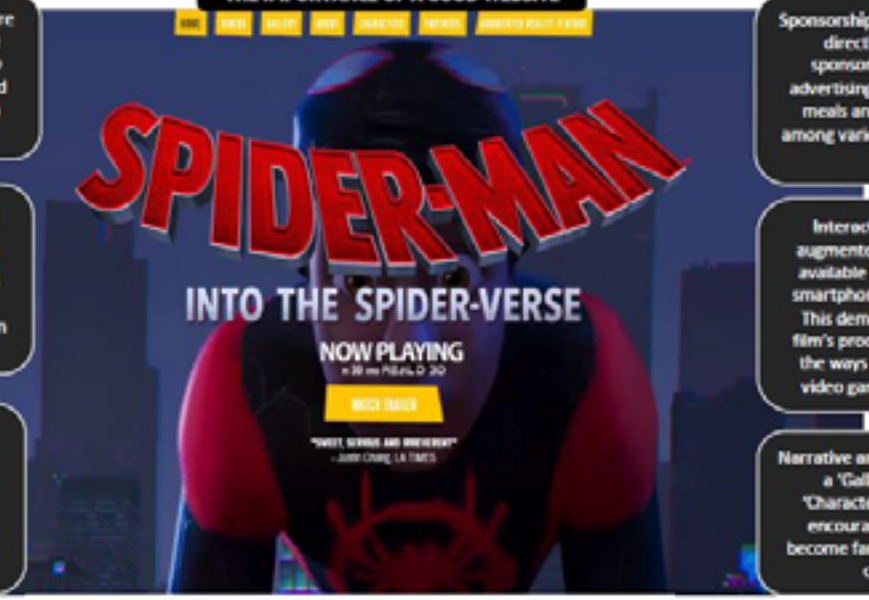
Tag line: A catchy slogan used to increase audience intrigue. This is a rare example of a tag line being blended with the release date. The words 'fight' and 'future' immediately connote the genres of action and science fiction. The line also invokes binary opposites through the promise of a fight between two sides.

Technical information: Situated below the billing block are the age rating (R is an American rating), the logos for the two major production companies (Warner Bros. and Village Roadshow Pictures) and a link to the film's official promotional website, encouraging active audience participation.

Billing block: Reveals the film's key creative contributors. Certain writers, supporting actors, composers and producers are famous enough to increase audience hype; for example, following the success of *The Matrix*, mentioning the Wachowskis as directors would be an effective method of selling a new film.

FILM INDUSTRIES

THE IMPORTANCE OF A GOOD WEBSITE



Audiovisual material: Links are provided to the film's three main trailers. There are also links to featurette videos and lyric videos for songs which appear in the film.

Technical information: The film's high budget spectacle and unique animation style make it an event film. Much emphasis is placed on the availability of 3D screenings in cinemas.

Critical reception: Since the film's release, *Spider-Man: Into the Spider-Verse* has received extreme critical acclaim and an Academy Award. This information is regularly added to the

Sponsorship: Unusually, the film directly promotes its sponsorship partners by advertising McDonalds Happy meals and Jordan trainers, among various other associated brands.

Interactive features: An augmented reality feature is available on the website for smartphone and tablet users. This demonstrates that the film's producers are aware of the ways in which films and video games can converge.

Narrative and character: There is a 'Gallery' page and a 'Characters' page included, encouraging audiences to become familiar with the film's characters.

Link to Website: https://sites.sonypictures.com/spiderverse/site/

Did you know?
A decent number of mainstream films earn over 30% of their gross profit in the opening weekend that they are released.

Disney is a media conglomerate that owns both its films and the merchandise associated with those films.

Horizontal Integration

Vertical Integration

Disney has bought film franchises such as *Star Wars* and MCU, reducing competition from other studios.

Key Stages of Mainstream Film Production
The budget is decided
Rights are purchased; particularly as so many modern films are based on existing properties or franchises
The script is written
Shooting locations are selected
The cast and crew are hired
The production schedule is created
The film is shot
The film is edited
If necessary, digital effects are added
Any sound effects or soundtracks are added
The film is distributed; usually through cinema screenings or streaming services
Marketing campaigns are launched
Trailers, TV spots, promotional interviews, press packs and posters are released for public consumption

1. Discrimination
2. Drugs
3. Imitable behaviour
4. Offensive language
5. Nudity
6. Sex
7. Threat
8. Violence

British Film Regulation

Age ratings applied to films in the UK are decided by the British Board of Film Classification (BBFC). Films are assigned one of several core age certificates, based on a set of eight content categories.

DISTINGUISHING RATINGS

Remember that films are only rated **12A** when they are distributed to cinemas. This rating means people under the age of 12 can see the film, providing they are accompanied by an adult. Home media releases are rated **12** and can only be purchased by those who are older than 12.

KEY DEFINITIONS

A distribution company is responsible for the marketing and promotion of the film, as well as the channels which the film will go through in order to reach audiences, e.g. cinemas, television rights, streaming services, DVD

Sponsorship describes deals between film companies and alternative companies, which allow them to promote one another, e.g. James Bond will often be shown drinking Heineken beers on screen. This is known as product placement.

Syndication is the process in which the rights to a media company's material are sold to another company for exhibition or integration with their material

Blockbusters are high-budget films designed to appeal to a wide demographic and make studios a lot of money, e.g. Spectre, Skyfall

A production studio is responsible for the development and creation of the film e.g. casting, shooting, editing, soundtrack

Independent forms of media are free from the influence of government or corporate interests. Independent films tend to be made with a great deal of creative freedom, e.g. *Lady Bird*, *I, Daniel Blake*.

Mainstream media products are considered to be most popular at the time of their release. It is often films produced in Hollywood that fit the mainstream criteria, e.g. *Star Wars*, *Avengers*, *James Bond*.

Exhibition is the process in which films are presented on various platforms, such as television, streaming services and, most commonly, cinemas

Film Industries

Production studio: Eon Productions and United Artists	Budget: $245 million (approx.)	Director: Sam Mendes
Distributors: MGM and Columbia	Profit: $880 million (approx.)	Producers: Michael G Wilson and Barbara Broccoli
Exhibition: 4,000 cinemas (approx.)	Release date: 26/10/2015 (UK)	Original author: Ian Fleming

Daniel Craig: Since being cast as James Bond in 2005, Craig has achieved international stardom, appearing in films ranging from *Cowboys & Aliens* (2011) to *The Girl with the Dragon Tattoo* (2011). For many audiences, Craig has become the quintessential *Bond* actor, appearing in some of the franchise's most critically acclaimed films, as well as in a video segment at the 2012 London Olympics.

Sam Mendes: Following an Academy Award for his feature film debut *American Beauty* (1999), Mendes continued to direct critically acclaimed dramas throughout the 2000s. In 2012, Mendes directed *Skyfall*, arguably the most critically and financially successful *Bond* film of all time. Mendes demonstrated here that mainstream cinema and artistic film-making can sometimes be one and the same.

Christoph Waltz: This German actor shot to fame playing the infamous "Jew hunter" in the film *Inglorious Basterds* (2009). Waltz has since become one of the most iconic screen actors of recent years, bringing his sinister charm to the role of Bond's most classic nemesis, Blofeld (a character who had already appeared in six films in the franchise prior to *Spectre*).

Naomie Harris: Despite working as a character actress throughout the noughties, Harris rose to fame thanks to her co-starring role in *Skyfall* (2012) and *Spectre* (2015) as the iconic character of Moneypenny. Appearing in such a large franchise has put Harris on the road to global stardom. In 2017, Harris received an Academy Award nomination for her performance in *Moonlight* (2016).

Comparing the production budgets and worldwide gross (not adjusted for inflation) for the oldest *Bond* films against the most recent *Bond* films

Film	Production Budget	Worldwide Gross
Dr. No	$1.1 million	$59.6 million
From Russia with Love	$2 million	$79 million
Goldfinger	$3 million	$124.9 million
Thunderball	$9 million	$141.2 million
Casino Royale	$150 million	$599 million
Quantum of Solace	$200 million	$586.1 million
Skyfall	$200 million	$1.18 billion
Spectre	$245 million	$880.7 million

Analysing the official poster for *Spectre* can offer good insight into the ways in which producers have attempted to market the film. As shown above, the producers of *Spectre* have utilised exciting technologies to create a sense of grandeur around the film's opening. The film was released in IMAX theatres, demonstrating to the audience that the film would be of a high visual quality and require viewing on the big screen.

The Appeal of *Spectre*

- Daniel Craig has established star appeal and become the quintessential Bond for many contemporary audiences.
- The soundtracks to *Skyfall* and *Spectre* (sung by Adele and Sam Smith respectively) have both won Academy Awards and reached number one in the UK charts. *Bond* themes have arguably become as iconic – in some cases, more so – than the films themselves.
- *Spectre* fulfils the minimum requirements of a mainstream film produced for a mass audience. It is a big-budget action film with a familiar genre, a three-act structure and a satisfying resolution.
- The franchise has largely remained popular on account of its use of exotic locations. For example, scenes from *Spectre* were shot across Rome, Soelden, Morocco, Austria and Mexico City (the setting of the opening scene).

SPECTRE Marketing Strategies

- A James Bond themed comedy sketch was released on Red Nose Day, featuring the film's principal cast
- Companies sponsoring the film, such as Heineken and Omega, integrated aspects of the film into their advertisements in exchange for product placement
- The Aston Martin DB10 was revealed as Bond's official car for the film at a press conference
- Video logs and production stills were posted on Eon's social media pages

Production Issues

Since Die Another Day (2002), every James Bond film has received a 12A rating. However, producers at Sony were forced to cut certain images of violence in order to secure a 12A rating in the UK and allow a family audience to see the film. It is likely that this decision was made without the approval of director Sam Mendes, demonstrating that the generation of profit is more important to the film's producers than artistic integrity.

The complicated process of film production is reflected in the fact that the James Bond franchise was very nearly cancelled. The production of the 2012 Bond film *Skyfall* was suspended when MGM Studios were revealed to be on the verge of bankruptcy. The company eventually managed to secure $500 million revolving credit.

Newspaper: Audience and Industry

Traditional ways in which newspaper readers could become active audiences

Writing letters to editors; holding a protest; calling the paper's offices and lodging a complaint; taking legal action; boycotting the paper

Contemporary ways in which newspaper readers can become active audiences

Sending direct emails; joining online message boards; condemning the paper on social media; promoting protests online (e.g. through Facebook, YouGov)

Greater public exposure to issues relating to the ethics of journalism, particularly through cases such as the Leveson Inquiry

An increasing access to news from different types of media platform (e.g. unedited long-form podcasts). Audiences have to be more selective about the form of news they choose to consume.

How have newspaper audiences become more active over time?

The rise of the internet and digital media platforms has made audiences increasingly aware of tabloids and their habits of not reporting fully accurate information (e.g. an apology for printing false information is made public)

Multiple news platforms are increasingly contradicting each other, forcing people to interpret information that claims to be factual

Newspapers such as the *Metro* and *The London Evening Standard* that are given out for free are often called **free sheets**. The vast majority of free sheets are tabloids as they aim to appeal to as universal an audience as possible. They tend to generate profit solely through advertising revenue

The vast majority of newspapers in the UK have experienced a steady decline in profits throughout the past several years. This is mostly down to the increasing availability of news online, e.g. through phone apps and social media. For instance, look at the daily readership figures for *The Guardian* for each media platform:

Print: 741,000 adults

PC: 1,492,000 adults

Mobile: 3,347,000 adults

Key Terms

Gatekeepers are the people responsible for dictating, filtering and disseminating the information which is broadcast or uploaded. These are usually the owners of the media company, *e.g. Rupert Murdoch.*

Opinion leaders are people in society who have the power to affect what people think about things. Celebrities are easily identifiable opinion leaders in today's society, but sports personalities, journalists, politicians, religious leaders and activists are also appropriate examples.

Bias is an inclination or prejudice for or against something, *e.g.* The Sun *is currently biased in favour of the Conservative Party.*

Columns are short, compressed newspaper articles in which a writer or opinion leader will express their opinion on a certain topic or issue, *e.g. Katie Hopkins and Giles Coren are notable examples of this.*

News of the World © News International, 2011

News of the World **used to be** ***The Sun's*** **sister paper and another successful subsidiary of News Corp. In 2011, the paper was forced to close when a number of its journalists were implicated in the phone-hacking scandal and advertisers withdrew their support.**

REGULATION OF UK NEWSPAPERS

Until recently, British newspapers and magazines were regulated by the Press Complaints Commission (PCC), a body of voluntary representatives of each major publisher. However, the PCC was disbanded in 2014 following the infamous phone-hacking scandal in which the private voicemail messages of various celebrities, politicians and murder victims were illegally accessed and listened to. Much of this misconduct was discussed and exposed in the Leveson Inquiry, an investigation into the ethics of the British Press announced by then Prime Minister David Cameron. It was agreed in the inquiry that British news publications should be self-regulated but ultimately monitored by an unbiased organisation that has the liberty to respond to public complaints and hold British publications to proper professional standards. Most British newspapers are now regulated by the Independent Press Standards Organisation (IPSO), an independent body created to advise journalists and editors of appropriate ethical approaches, uphold standards and handle complaints from the public in a fair and balanced way.

The Editors' Code of Practice promises to...

1. Set out the standards to which most British news publications are now held
2. Deal fairly with complaints from the general public
3. Conduct investigations from an unbiased perspective
4. Balance both the rights of the individual and the public's right to know
5. Uphold general standards to which all publications are held: journalistic harassment; accuracy; privacy; intrusion into grief; reporting of suicide; reporting on children; confidential sources; payments received by criminals, etc.

Set Product: Audience and Industry

	2019	2018	2017	2016	2015
Daily circulation (January)	1.396 million	1.545 million	1.667 million	1.787 million	1.978 million

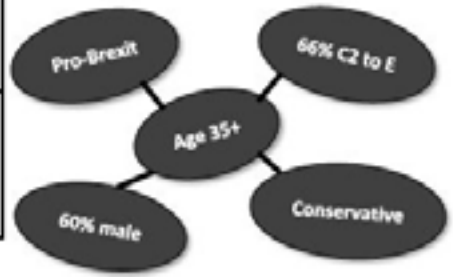
Did you know?
One-seventh of all the money spent on groceries in the UK is spent by a reader of *The Sun*.

Uses and Gratifications

	The Sun provides **information** by printing contemporary news stories, particularly those relating to human interest, sport and national politics.
	The Sun provides **entertainment** and **diversion** to its readers by featuring celebrity gossip, strong opinion pieces, human interest stories, various brainteasers and crosswords.
	The Sun appeals to its audience's sense of **personal identity** by featuring stories about ordinary people while enforcing certain sociopolitical ideologies and presenting news in layman's terms.
	The Sun encourages **social interaction** by enabling online comments on its website and providing material for water-cooler topics (things that can be discussed casually in a place of work).

Tactics used	• Bright, flashy colours • Bold layout • Shocking headlines • Sensationalism • Clear political bias
The risk of these tactics	• Perceived lack of quality • Misinformation • Lack of journalistic integrity • Greater focus on scandal than on truth

Core Demographic



There are two main sources of revenue: payment for physical issues and advertising. The news industry's heavy focus on advertising has led many to start seeing journalism as a commodity rather than an impartial form of delivering information.

Making money → The Sun → Losing money

A growing reduction of publishing rights, advertisers moving from print to digital media, paying redundancies when employees are no longer required and legal payments for the ongoing phone-hacking scandal. The latter has cost News Corp. £366 million in legal payments.

Political Allegiance

In **1964**, *The Sun* was founded as an independent publication: it had no loyalty to any particular political party until it was purchased by Rupert Murdoch's News Corporation UK five years later.

In **1979**, *The Sun* responded to Margaret Thatcher's Conservative government by dramatically changing its political stance as expressed in the headline 'VOTE TORY THIS TIME'.

In **1997**, the following headline was printed: 'The Sun backs Blair'. This saw the paper switching its political allegiance back in favour of Labour.

In **2009**, shortly after the financial crash, *The Sun* published the headline 'Labour's lost it') it has consistently supported the British Conservative Party ever since.

The Hillsborough Disaster: In April 1989, 96 people were crushed and killed at the Hillsborough Stadium in Sheffield during a football match between Nottingham Forest and Liverpool. A few days later, *The Sun* newspaper printed a headline entitled 'The Truth', in which it accused Liverpool fans of stealing from victims of the tragedy, assaulting police officers and preventing efforts to save lives. The people of Liverpool were outraged at the way in which *The Sun* had used sensationalist language and unverified facts to portray Liverpool supporters as hooligans with no remorse for their fellow fans. *The Sun* later apologised for the way in which it had reported the tragedy. Since The Hillsborough disaster, there has been a widespread boycott of *The Sun* throughout Liverpool leading to a significant reduction in readership. Journalists are taught to 'never bite the hand that feeds you' in relation to the owners of media companies. What this shows is that betraying your audience can prove costly.

The Sun: Stuart Hall's Audience Reception Theory

Preferred	A Conservative voter in their 50s who voted Brexit and wishes their news to be entertaining
Negotiated	A Conservative voter in their 20s who voted Brexit but prefers to read news that is more densely packed with information
Opposed	A Labour voter in their 20s who voted Remain and wants their news to adopt an impartial, informative mode of address

Between 2013 and 2015, *The Sun* provided an online subscription called *Sun+*. This service generated approximately £24.5 million during its run, averaging at around £250,000 per week.

Sun+ cost £2 per week for audiences to access. However, too many other British newspapers (including the *Daily Mail* and *The Guardian*) were already offering the same kind of online service for free, so News Corp. scrapped its service.

Media - Magazines: GQ

Language

Colour scheme
Colours carry dozens of meanings and connotations. Media producers are highly aware of the qualities that audiences associate with certain colours. Producers will use this knowledge to create a colour palette that helps to establish a particular tone or genre. In the case of *GQ*, the following colours combine to emphasise ideas of physical strength, determination and becoming the ultimate 'masculine man'.

Colour	Connotations
Red	anger, passion, danger, power, sexuality, courage
Black	strength, power, danger, mystery
White	goodness, perfection, a successful beginning

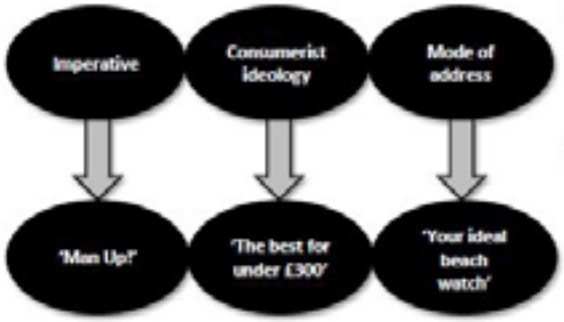
Imagery

Gaze
The Rock faces directly into the camera, making eye contact with the reader. Cover stars will almost always look outwards towards the reader in order to form a personal connection between the reader and the magazine.

Facial expression
Stern, brooding expression – invokes emotions often associated with traditional masculinity. Also a sense of Johnson challenging the reader to aspire to his success.

Shot type
Johnson's biceps is presented in an extreme close-up, placing emphasis on the actor's strong physical appearance rather than his clothes (which a fashion magazine may emphasise using a full shot).

Body language
The Rock's chin is resting on his flexed biceps, emphasising his muscular physique. This invokes themes of modern masculinity and being 'the perfect man'.



Magazines: Set Product
GQ (Gentlemen's Quarterly)

GQ © Condé Nast Publications Limited, 2016

Publisher Condé Nast Inc.
Circulation (2018) 114,000
Readership (2018) 400,000
Founded in 1931
Catchphrase 'The magazine for men with an IQ'
Cover star Dwayne 'The Rock' Johnson
Tone Viola Beach were a British indie rock band whose members died in a car crash in Sweden (evidence of more serious journalism from the magazine).

3 THINGS TO KNOW ABOUT DWAYNE 'THE ROCK' JOHNSON

1. The Rock was the highest paid actor of 2016 with an annual income of $64 million (US dollars), a huge increase from 2015.
2. In the summer of 2016, The Rock was promoting *Central Intelligence*, one of 2016's most financially successful comedy films.
3. The Rock started his career as a professional wrestler. His muscular physique established him as a Hollywood action star.

The focus of *GQ* magazine...

Representation

The film industry has a particularly long history of under-representing non-white faces both on and off camera.

In 2015, April Reign (the editor of *Broadway Black*) initiated #OscarsSoWhite in response to the all-white list of acting nominees at the 2015 Academy Awards. This act of under-representation was repeated the following year.

Ethnicity in Magazines

The Rock is of mixed racial background (black Nova Scotian and Samoan).

The Rock's status as the highest paid actor in Hollywood has made him an inspiring role model for BAME audiences.

Gender: Stereotypes vs Countertypes

'Man Up!' (Coverline)	Stereotype
A common phrase associated with male bullying, toxic masculinity and representations of 'how a man should act' in the media.	
'GQ's rebooted fashion guide' (Puff)	Countertype
Fashion has traditionally been represented as a 'feminine' interest in mainstream media.	
'Mind, Body & Masculinity' (Strapline)	Combination
The importance of a strong body has been historically encouraged in men. The importance of a healthy mind is a more contemporary and sensitive approach to masculinity.	

BAME – black, Asian and minority ethnic
Metrosexual – Heterosexual men living in urban environments who hold more 'feminine' interests, such as fashion and shopping
Spornosexual – men who care about their physical appearance but focus mainly on having a toned, muscular body
Hypermasculine – describes stereotypical 'male' qualities, such as strength and aggression

Media - Magazines: Pride

CONTEXT

Distributor COMAG A subsidiary of Condé Nast Inc.	Catchphrase 'Celebrating the Woman of Colour'
Circulation 30,000 per month (as of 2018)	Readership 146,000 per month (as of 2018)
Founded in 1990	Cover star Naomie Harris

Cultural references
'Bond' (the popular British spy film franchise)
'FGM' (female genital mutilation)
'Harley Street' (a street in London known for private medical practices)

The Focus of *Pride* magazine...


Life stories


News


Hair and beauty


Entertainment


Fashion


Health

3 THINGS TO KNOW ABOUT NAOMIE HARRIS

1. Naomie Harris was still a rising star in the film industry in 2015. Her most recognisable role to date had been as Calypso in the *Pirates of the Caribbean* film franchise.
2. By November 2015, Harris had gained some global prominence due to having starred alongside Daniel Craig in the 24th Bond film: *Spectre* (2015).
3. Harris is the first black actress to play the iconic role of Eve Moneypenny in the James Bond franchise. (Her mother and father emigrated from Jamaica and Trinidad respectively.)

Magazines: Set Product

***Pride* magazine**

MEDIA LANGUAGE

Colour scheme: In this context, bright red is likely to connote power, passion and courage. White is likely to connote perfection and success.

Strapline: *Celebrating 24 years at the top!* – highlights an achievement. Lends a sense of accomplishment to loyal readers, providing a sense of community.

Masthead: hidden slightly by the cover star – this shows the editor's confidence that the magazine is established enough to still be recognised by the core target audience, even if the magazine's main identifier is not fully visible.

Coverlines
- Rhetorical questions
- Audience-specific subjects
- List-based articles
- Exclamatory sentences
- Direct mode of address

Intertextuality: *Bond And Beyond* – this cover was published in November 2015 while the James Bond film *Spectre* was enjoying its run in cinemas. The selection of Harris is significant considering that she was neither the lead actress (*Léa Seydoux*) nor the most high-profile actress (*Monica Bellucci*).

Thirds: the left third focuses on the strapline and coverlines. The right third focuses on the image of Harris. The right third focuses predominantly on the main coverline.

Imagery: like the majority of cover stars, Harris stares directly into the frame, looking outwards towards the audience. Harris is not sexualised in the image, nor is her skin Photoshopped to appear whiter (A common magazine convention).

Main coverline: simply states the name of the actress. The phrase 'Bond And Beyond' tells the audience that they can learn about Harris's involvement in the franchise as well as her wider career or personal life.

#BlackLivesMatter is a social movement which began in 2013 following a number of unprovoked shootings by American police officers on African-Americans.

REPRESENTATION

The word 'pride' has been historically associated with the civil rights movements of the 1960s and 1970s. As a result, *Black Pride* and *Gay Pride* have become common expressions. *Pride* magazine's title emphasises the idea that BAME British women should feel empowered and proud of their ethnicity. It has maintained its status as a market leader for BAME audiences.

The topics discussed on the cover are very representative of women in the twenty-first century: free and autonomous from men to some extent but still systematically oppressed by the opposite sex.

'Failed by Feminism' – feminism is a major hot topic in many social circles. Any article pointing out criticisms of this movement is likely to attract the attention of women with activist tendencies or just a passing interest in the matter.

Female Issues

'FGM on Harley Street!' – refers to the exposure of a horrific practice carried out on women of all ages happening in Central London.

'Objectified. Sexualised. Mocked.' –gives the target audience of black women a communal sense of concern about the ways in which their bodies are perceived in contemporary society.

Stereotypical representation	Pride representation
Women have historically been represented as the fairer sex and the homemaker.	The combination of Harris's confident body language and the controversial issues in the coverlines imply that women can be strong, independent and unafraid of a challenge.
In lifestyle magazines, women are often sexually objectified for a heterosexual male gaze.	Harris wears a long dress and is standing upright, as opposed to lying down or sitting. The coverlines address issues of objectification and unrealistically high beauty standards.
Black women are often stereotyped as having thick, curly and unmanageable hair.	The juxtaposition of Harris with long, sleek, straight hair and 'The wig revolution is here!' suggests that Harris has hair women should aspire to have.
Lifestyle magazines often suggest women are primarily interested in fashion, beauty and physical appearance.	The coverlines featured on *Pride* cover a range of intellectual issues from social activism to feminism and political change to the exposure of FGM.

Media - Marketing: Spectre

Set Product 1: *Spectre* (2015)

Eon Productions and United Artists	$245 million	$880 million
Production Company and Distributor	The Film's Production Budget	The Film's Worldwide Box Office

FILM MARKETING

Action code	Bond's pistol (fitted with a silencer) suggests that violent conflict will take place in the narrative.
Enigma code	The sinister figure in the background is wearing a skeletal mask to conceal his identity. The audience must watch the film to discover the identity of this figure and the true meaning behind the word 'Spectre'.
Semic code	Bond's white tuxedo implies that the character will have to infiltrate 'high-class' events. From previous films in the franchise, we can assume these might be casino nights or functions in private bars.
Symbolic code	The contrast between the sinister shades of dark blue and grey with Bond's white tuxedo and the elegant gold typography culminates in binary opposites: light and darkness; good and evil; the familiar and the unknown.
Cultural code	The figure in the background is dressed for the 'Day of the Dead' festival. This implies that Bond may travel to Mexico at some point in the story.

THREE EXAMPLES OF INTERTEXTUALITY IN THE *SPECTRE* POSTER

Daniel Craig's white dinner jacket and blood-red corsage directly mirror the tuxedo worn by Sean Connery in the classic James Bond film *Goldfinger* (1964).

The pistol fitted with a silencer is a piece of iconography historically associated with the James Bond character. There is not one major James Bond poster in which the titular character is not holding a gun.

Daniel Craig's cool and calm posture pays homage to previous images of the character in film marketing material (particularly Sean Connery, the first actor to play the role of James Bond).

Representation of Masculinity

Bond holds his iconic pistol close to his chest. This is iconography of the classic Hollywood action hero, who solves narrative conflict through violence. This stereotype almost always manifests itself in male characters, perpetuating the idea that men are physically stronger and more violent than women.

Bond's white tuxedo is a brand from celebrated designer Tom Ford. The image forms a glamorous and elegant representation of masculine values as the character is painted as a gentleman.

Bond is positioned centrally within the frame. His arms are folded and his legs are spread apart culminating, in a strong, secure posture. His masculine qualities are presented as strengths which contribute to his status as the film's hero.

Like all previous lead actors in the franchise, Craig is a white, middle-aged actor who speaks in an RP accent, connoting middle-upper-class roots. He possesses many of the same identifying qualities as classic action heroes from the early days of Hollywood cinema.

Bond stares into the camera with cold, glaring eyes. He fits into the stereotype of the stoic action hero who never shows emotional vulnerability and who will always 'get the job done'. This is a fairly old-fashioned representation of masculine values.

How do we know this is a darker take on the James Bond character?

The title in itself is an enigma code invoking images of a ghost or a mysterious and dangerous presence. It might also suggest that Bond is haunted by something in his past, suggesting a deeper look into the character's psychology.

The juxtaposition of cloudy blue and grey contributes to a bleak colour scheme connoting a sinister sense of the unknown.

The background image of a looming skeletal figure connotes themes of death and haunting. The fact that the image is faded and obscured in darkness could imply the skeleton represents Bond's inner demons, connoting themes of fear, guilt and mental health. This shows some evidence of movement towards a more complex representation of masculinity.

Bond's facial expression is cold and devoid of emotion. He is presented more as a ruthless killing machine than he is in posters for other *Bond* films, such as *The Man with the Golden Gun* (1974).

Technical information: A tent-pole film such as *Spectre* will often be marketed not just as a film but as a 'cinema experience'. This poster emphasises that the film will be screened in IMAX, a cinematography technique which significantly increases the size and richness of a film's image.

Day of the Dead: The pre-title sequence of *Spectre* takes place during the 'Day of the Dead' festival in Mexico City. The film inspired the Mexican government to organise a parade similar to the one seen in the film the following year. This was seen as a brilliant way of promoting the vibrancy of Hispanic culture, and the parade was attended by over 250,000 people. This is a core example of a mainstream film inspiring events in real life.

Media - Marketing: Golden Gun

Set Product: *The Man with the Golden Gun* Poster (1974)

- Eon Productions and United Artists — Production Company and Distributor
- $7 million — The Film's Production Budget
- $97 million — The Film's Worldwide Box Office Takings

FILM MARKETING

Representation of Men	Representation of Women
Only the men hold guns in the poster	The character dressed in the karate outfit is the only example of a woman who is not represented as a sexual or domestic object
James Bond has his arms crossed, exuding strength, confidence and calm in the midst of chaos	The women are illustrated in a way which emphasises the shape of their bottoms and breasts for heterosexual male pleasure
James Bond and the henchman NickNack are dressed in full-piece suits	Both women are heavily sexualised by the fact they are wearing revealing bikinis
Roger Moore receives top billing followed by Christopher Lee reflects the way men were traditionally cast as the active leads in action films	Britt Ekland is the only woman to receive billing on the poster – suggests that women take a 'back seat' role in the story
Bond looks into the camera frame, establishing familiarity with the audience	Both women look into the camera, establishing familiarity with the audience

THREE THINGS TO KNOW ABOUT *THE MAN WITH THE GOLDEN GUN*

Laura Mulvey's theory of the male gaze can definitely be applied to the *Bond* franchise as a whole. Up until 1990, all major *Bond* posters depicted women in various states of undress, presumably for the pleasure of a heterosexual male audience.

The film was released shortly after the 1973 energy crisis. The poster's representation of power plants and explosions relates to certain Arab countries ceasing to supply oil to the West due to its involvement in the Egypt–Israel conflict.

The Man with the Golden Gun was the second film starring Roger Moore as Bond. He had appeared in *Live and Let Die* the previous year. Moore had also attracted a large fan base due to his playing the lead role in the TV series *The Saint* (1962–1969).

EXAMPLES OF ROLAND BARTHES' CODES

Action code: The golden gun being loaded with a bullet with '007' inscribed on it implies that the unknown assailant intends to shoot James Bond

Enigma code: The face and body of the man loading the golden gun are not visible. The audience must question who the man with the golden gun is – a question they can only answer by watching the film.

Semic code: The fact that both white women wear revealing bikinis suggests that these characters will form sexual or romantic relationships with Bond.

Cultural code: The man in the boat on the top right-hand side is wearing a conical hat, possibly hinting at an Asian setting.

Symbolic code: Multiple binary opposites are present in the poster: two women, one protecting Bond and one pointing him out to the shooter (good vs evil); Bond (the hero) facing off against the man with the golden gun (the villain); the blown-up beach hut on the left contrasting with the untouched hut on the right (chaos vs order).

the man with the golden gun © Danjaq/EON/UA/Eadaí, 1974

PROPP'S CHARACTER TYPES

Hero: James Bond – The main character who goes on a quest, often for the greater good. *Bond is positioned centrally within the poster, making direct eye contact with the audience. In the tradition of most action film heroes he is a white, handsome man holding an iconic weapon.*

Villain: the man with the golden gun – an evil character who wants to antagonise the hero. *The mysterious man in the foreground of the frame is pointing a gun directly at Bond. The fact he is not shown leads to enigma.*

Princess: blonde woman – the reward given to the hero for overcoming the villain. *Britt Ekland plays the bikini-clad woman who falls for Bond and must be saved by him. However, the fact that she is trying to shield Bond from a bullet suggests that she may also act as a helper in the film.*

The film's poster was illustrated by American artist Robert McGinnis, who worked on multiple *Bond* posters throughout the 1960s and 1970s.

Set Product 1 – Quality Street Advert

Framing – The male character is positioned centrally within the frame facing out towards the audience. This encourages the audience to identify primarily with his situation.

Advertising copy – The advert is mainly image-based. The most detailed copy comes in the form of the descriptions of the three individual chocolates in the bottom third of the page.

Typography – Tall, elegant characters emphasise the luxurious nature of the brand. The brand name is written in large text in order to catch the audience's attention.

Targeting – The age of the characters and the comedic approach to representing gender suggests that the target audience are young professionals aged between 21 and 40.

Alliteration – The use of repeated 'd' sounds ('delicious dilemma') rolls off the tongue, creating a sense of strength behind the brand.

Narrative – The male character is positioned as the hero (according to Vladimir Propp's character type theory). His dilemma in the story revolves around which of the two women (the princesses) he will choose.

Repetition – The word 'delicious' is repeated three times across the advertisement, emphasising the quality of the brand and implying that, above all else, the product tastes good.

Enigma codes – The advert sets up a puzzle by providing detail on only three of the individual chocolates. The audience must buy the entire tin in order to solve this puzzle.

Quality Street © Alamy Stock Photo, 1956

Mode of address – The advert establishes a mode of address which is playful and casual in its use of alliteration and hyperbole. However, the audience is not directly addressed through the image or the text.

Anchorage – The positioning of the male character's head in front of the golden frame forms the image of a halo, providing him with godlike status.

Cultural codes – The painting in the background shows a couple dressed in clothes reminiscent of the Regency era. Certain audiences will associate these characters with a sense of luxury and cultural development. Furthermore, certain audiences will recognise the couple as Miss Sweety and Major Quality from the 1930s adverts for Quality Street, solidifying the brand's identity.

KEY REPRESENTATIONS

The advert enforces the stereotype that there is a universal love of chocolate among women. Many chocolate advertisements identify young women as their key target audience due to scientific evidence that chocolate increases levels of serotonin in women's brains.

There is clear reinforcement of patriarchy: the two women are given a choice in the advert, but the man is allowing the women to select a chocolate. This is emphasised by centrally framing the male character and giving him possession of the product.

The male character's eyeline is directed at the product which is placed suggestively on his lap. This gives the product something of a phallic significance (it is an effective way of attracting the opposite sex).

By placing the audience's identification with the male character, the advert acts as a clear illustration of Laura Mulvey's theory of the male gaze (in which media is framed from the perspective of a heterosexual, patriarchal male audience).

How do we know this is an advert from the 1950s?

1. The male model wears a traditional pinstriped suit with a handkerchief.
2. The women wear colourful, long frilly skirts, typical of the period.
3. The pastel coloured illustration style is highly typical of the period. Photographic imagery is most commonly used for contemporary adverts.
4. The image shows a domestic environment in which characters are well dressed and conform to traditional gender roles.
5. Quality Street was still a fairly recent brand. It was still necessary to illustrate and describe the specific types of chocolate in the tin. Nowadays, a Quality Street advert is likely to be more enigmatic and focus on the already established brand identity.

ADVERTISEMENT

Little Boxes of Context on Quality Street

Quality Street chocolates were originally manufactured by Harold Mackintosh in 1936.

They were originally named after a theatrical play by JM Barrie.

Quality Street is currently produced by Nestlé.

Initially only families from middle- to upper-class backgrounds could afford to buy tins of chocolates.

Throughout the 1950s, Mackintosh endeavoured to make the product affordable for working-class families following the post-war rationing period.

The characters in the framed painting are typical of the Regency era (1811–1837), a time of great development in culture and architecture for the United Kingdom.

Colour Scheme

Colour is one of the most important indicators of meaning in print-based media. The colours in the Quality Street advert carry dozens of meanings and connotations.

Red: love, passion, danger, power, sexuality, courage, fire, blood, anger

Purple: reflection, wisdom, royalty, luxury

Gold: extravagance, quality, value, wealth, status

Set Product 2 – This Girl Can Advert

ADVERTISE MENT

This Girl Can © Sport England, 2017

Framing – The young woman is framed centrally within the print advertisement. She is shown in a medium shot, allowing the reader to see not just her facial features but her strong, slim body as she exercises.

Model selection – The woman is neither a celebrity nor a spokesperson. She is more relatable to the general public. Audiences can realistically aspire to her level of fitness.

Colour scheme – The image is tinted with a red glow, creating a clashing colour scheme that connotes passion, strength and growth (principles that are likely to inspire women to participate in sport).

Audience participation – The hashtag in the top left corner draws attention to aspects of the campaign beyond those which are visible from the print advert. Women are provided with a sense of social cohesion as they can share their stories of getting fit and overcoming barriers through various social media sites, particularly Twitter.

Main image – The central character is visibly sweating. Her armpits are bare and her hair is stuck to her face. Instead of looking embarrassed, she is lost in the moment and has an expression of determination and pure satisfaction.

Advertising copy – The advert is mainly image-based with minimal text. The advert's catchphrase subverts the negative connotations of 'sweating like a pig' and reframes it as something to be proud of. The phrase 'feeling like a fox' contains alliteration, which implies a sense of strength and energy. Furthermore, negative connotations surrounding the word 'girl' are subverted; in this context, it is used to imply universality among women.

Traditional Connotations

The word 'girl' is often associated with negative connotations, *e.g. throwing like a girl, crying like a girl*. Furthermore, feminists argue that when it comes to the male sex, men are never referred to as 'boys', so it is rather demeaning that women are often referred to as 'girls' even as they enter adulthood.

'Sweating like a pig' is usually an unflattering phrase used to describe someone who is physically large and who tires easily while excercising.

'Feeling like a fox' – in many contexts, describing a woman as 'a fox' implies that she is sexually attractive, cunning and beautiful.

Subverted Connotations

The word 'girl' is used to describe women universally and express the idea that approaching a task like a girl is a positive and inspiring thing.

The juxtaposition of the active female model and the phrase 'sweating like a pig' produces positive connotations. Rather than being a sign of weakness, sweat is implied to be a satisfying result of the woman's hard work.

In this context, there is no sense of the model being sexualised as she exercises. The word 'fox' might instead refer to her qualities as a fierce and motivated woman.

The 'This Girl Can' campaign was promoted across multiple platforms ranging from print advertisements and television advertisements to social media campaigns and an official working website.

THIS GIRL CAN CONTEXT

- 1.6 million women have started exercising regularly as a result of the campaign.
- In a large-scale survey conducted by Sport England, women identified the 'fear of being judged' as the main factor preventing them from getting into sport.
- The central aim of the *This Girl Can* campaign was to help women overcome social barriers and excel within sport.
- The This Girl Can campaign was developed by Sport England and is currently funded by the National Lottery, making it a prime example of non-commercial advertising.
- Sport England initiated the campaign having discovered a significant gender gap in the number of 14–40-year-olds regularly participating in sport.

Model Character Type – The Hero (Propp)

By fiercely exercising, the woman in the advert is embarking on a journey with the central motivation of becoming healthier. On the other hand, the audience is arguably positioned as the hero. In this sense, the model acts as the **donor**, providing the audience with the inspiration they need to exercise. This is a more abstract reading of the advertisement.

THE Sun

The main body of text is cut off mid-sentence so the audience is encouraged to read the rest of the article on later pages. This teasing of information could be identified as an enigma code, according to the narrative theory proposed by Roland Barthes.

Masthead: Written in a large, bold font, allowing it to stand out for readers. The text is written in italics (slanting forwards), connoting the paper's informal cutting-edge style and setting the paper apart from the competition posed by other red tops, such as the *Daily Mirror*.

Masthead Caption: For a Greater Britain' is a slogan that clearly attempts to appeal to the reader's sense of national pride. The implication is that *The Sun* is fighting to make Britain as glorious a nation as possible.

Puff Box: Draws attention to the publication's reasonable pricing, particularly for audiences in the C2DE class bracket. An opportunity is also taken to criticise rival tabloid *The Daily Mirror*.

Red Top: Includes a date line, cover price and official website address. Positioned in the top third of the page, ensuring that the paper will stand out on shop shelves and appeal to *The Sun*'s loyal target audience.

Main Headline: Highly emotional and sensationalist, appealing to an audience of passive consumers. It makes strong use of **binary opposites** ('Great Britain or Great Betrayal') and first-person pronoun ('We say to them') in order to empower readers and persuade them to adopt a pro-Brexit ideology.

Colour Scheme: The Alpha jets create the colours of the Union Jack, a national symbol of British pride and patriotism. By using a symbol of British nationalism, the paper is provoking its readers' patriotism to elicit a response.

Main Image: Britain is shown to be made up of glorious countryside. The image could act as a reference to the lyrics 'green and pleasant land' from the song 'Jerusalem' (originally written as a poem by William Blake). This is considered by many to be the most patriotic British anthem of all time.

Digitally Imposed Images: Implies that Britain is responsible for extraordinary achievements in terms of architecture (The Shard), industry (the steam from cooling towers), sporting achievements (a football), fascinating history (Windsor Castle), and brands (Minis and red double-decker buses).

The Sun © News UK, 2018

Standfirst: Highly emotive terms such as 'Rebels' and 'destroy' emphasise a sense of conflict. The line ('The 17.4 million majority voted for') is the only point on the front page in which *The Sun* backs up its political opinions with facts and logic.

Layout and Design: The high ratio of images to text appeals to an audience that might not have the time or the desire to read large portions of text. Furthermore, the headline takes up the majority of the page space. This appeals to an audience who are more willing to take information at face value.

THE SUN – FACT SHEET

Format: Tabloid

Date of Publication: 12th June 2018

Average Circulation: 1,302,951 (As of May 2019)

Core Demographic: C2DE. 52% male readership

Politics: Right wing, pro-Brexit

Ownership: News Corporation (owned by Rupert Murdoch)

Sister Papers: *The Sun on Sunday* (previously *News of the World*)

Online Readership: 5,310,000 (daily)

Dominant Image: A digital composition of the British countryside featuring quintessentially British elements including the Shard Tower in London, the Houses of Parliament, a double decker bus, Stonehenge, and the Angel of the North, among other things

The Sun has a long history of constructing highly negative representations of certain individuals and groups. Notable examples of this are listed below...

Positively represented	Negatively represented	Under-represented
• Hard Brexit • Tougher laws for immigration • British sovereignty • *The Sun* • *The Sun*'s readers • Boris Johnson	• European Union • Rebel Tory MPs • Jeremy Corbyn • The Labour Party • Islam	• Migrants • Left-wing voices • Pro-EU voices • Muslim voices

Brexit Timeline

February 2016 – Despite publicly claiming that he wishes for Britain to remain a part of the European Union, Prime Minister David Cameron calls for a referendum to decide whether Britain should leave the EU

23 June 2016 – The British people vote to leave the European Union (51.9% voted to leave, 48.1% voted to remain). David Cameron resigns as prime minister the following day.

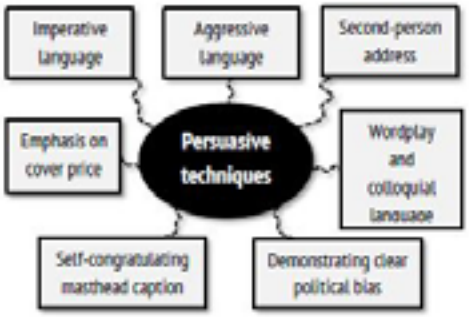
13 July 2016 – After little competition or objection in the leadership race, Theresa May becomes prime minister of the UK.

18 April 2017 – Theresa May calls a snap election in the hope that the Conservatives will win a larger majority in the House of commons, thus strengthening the party's position to negotiate Brexit deals with the EU

8 June 2017 – The Conservatives lose their overall majority and are forced to form a coalition with the Democratic Unionist Party of Northern Ireland. May's party is left weakened and divided by the result.

12 June 2018 – Theresa May's government narrowly wins a Brexit bill vote ensuring that pro-Remain Conservative MPs don't override her Brexit negotiations (*Date of Set Product Publication*)

24 May 2019 – Having suffered three defeats in the House of Commons, Theresa May announces her resignation as prime minister



theguardian

THE GUARDIAN – FACT SHEET

Format: Broadsheet (compact since 2018)
Date of Publication: 12th September 2018
Average Circulation: 134,567 (as of April 2019)
Core Demographic: ABC1, 52% male readership
Politics: Liberal (left wing), anti-Brexit
Average Age of Readers: 44
Ownership: Owned and published by Ghe Guardian Media Group (This allows the paper to maintain editorial independence)
Sister Papers: *The Observer*; *The Guardian Weekly*
Online Readership: 42.6 million
Dominant Image: Conservative MPs (Boris Johnson, Peter Bone and Jacob Rees-Mogg) are shown looking bored and frustrated during a gathering in the House of Commons
Secondary Images: An image of Hungarian Prime Minister Viktor Orbán; a hand-drawn animated image of a young woman skating with her dog

CONTEXT: THE MEN ON THE COVER

Boris Johnson: Previously famous for being Mayor of London from 2008 to 2016, Johnson was one of the most notable Leave campaigners in the run-up to the Brexit vote and was consistently critical of Prime Minister Theresa May's failed attempt to negotiate a Brexit deal. In July 2019, Boris Johnson replaced May as Prime Minister of the United Kingdom.

Jacob Rees-Mogg: A Conservative MP who (as of July 2019) is serving as Leader of the House of Commons. Rees-Mogg has remained one of the most notable Leave campaigners and has continually supported Boris Johnson throughout his political career.

Viktor Orbán: The Conservative Prime Minister of Hungary who has received international criticism for his socially conservative attitudes and his moderate support of nationalism. Many critics have described Orbán as an authoritarian leader.

The Guardian represents itself as a serious paper by covering serious topics: The financial crash; the economic effects of Brexit; A scientific approach to Health and Fitness

Representations of Right-wing Figures in a Left-wing Paper

Boris Johnson was accused of peddling lies ahead of the Brexit referendum; most notably, that Britain would be able to put an extra £350 million towards the NHS if it left the EU.

The Guardian is able to maintain a certain level of journalistic integrity because it is not largely owned by shareholders. While it makes no claims of political bias, its content generally suggests a left-wing ideology.

Representation	Context	Implication
Main Image shows bored and exhausted looking Conservative MPs, ironically juxtaposed with the sign in the background: 'From Project Fear to Project Prosperity'	Johnson and Rees-Mogg are often controversial politicians due to their stances on Brexit among other political issues, e.g. immigration, abortion	The three Tory MPs are either not taking Brexit seriously enough or are unsure of how Britain will be able to leave the European Union
Image is anchored by a caption revealing that these men are Brexit supporters gathering at the House of Commons	*The Guardian* has consistently supported the Remain campaign and is often quick to produce articles calling out racism, sexism and right-wing nationalism	The men leading the Leave campaign are struggling to come up with an effective way of exiting the European Union
Headline: Theresa May has come under criticism from one of Britain's most successful business owners for using 'tactics' and risking 'thousands of jobs'	*The Guardian* has consistently criticised the Conservative Party and its leaders, particularly since the party's policy of austerity began in 2010	Although the criticism is subtly implied, May is represented as a weak and careless leader. This is framed through the viewpoint of an influential business owner.
Juxtaposition of 'Orbán v the EU' and an image of Orbán looking aggressively into the camera frame	*The Guardian* is both pro-Europe and left wing (politically the opposite to Orbán)	Orbán is an aggressive and authoritarian leader who is causing problems for the European Union

Puff Box Image: Unusual to see an animated image in a broadsheet newspaper; however, it accompanies a light-hearted self-help/lifestyle article. Such an image would not be used to accompany a story focusing on politics or economics

Colour Scheme: The colours are noticeably less bright and vibrant compared to tabloid papers. The majority of the front page is comprised of a formal black-and-white colour palette. The top third of the page is mostly dark blue, connoting a sense of strength and reliability. There is also bright yellow text to highlight a less serious article on staying fit.

Imprint: Very detailed in the context of all British newspapers. It reveals the price of the publication, the date and the issue number.

Masthead: The use of small typeface and curved font gives the paper a unique style that differentiates it from the competition. The style invites connotations of subtlety and approachability.

Dairy food may protect the heart, study finds

Jaguar chief warns May: thousands of jobs at risk from your Brexit tactics

Orbán v the EU Rightwing Hungarian PM defiant over sanction threat

In October 1929, the United States stock market crashed, leading to the Great Depression, which lasted 12 years and had a serious effect on the economy of most Western countries. 'The Great Crash' was a term coined in 1955 by an author exploring the causes of the crash.

Main Headline: The use of emotive language ('warns' and 'risks') creates a sense of danger. *The Guardian* use the audience's assumed knowledge about the Brexit deadline to create a compelling story. The reference to Jaguar (one of Britain's most recognisable manufacturers) lends a sense of legitimacy to the headline.

Main Image: Juxtaposition of the background poster with the deflated politicians creates a sense of irony as they do not appear to actually believe prosperity is on the horizon. The image is taken from close proximity (a convention of broadsheet papers).

Trail: Directs audiences to the page on which they can continue to read the story in more detail. It is a convention of both tabloids and broadsheets to have these break up sentences mid-flow.

Secondary Image: Right-wing PM pointing aggressively at a document. This implies that he is a confrontational and untrustworthy public figure.

Body Text: The language used is formal and serious in tone and there is a much higher proportion of text to images. This is thought to be appropriate for a well-educated, ABC1 target audience.

Image Caption: Clarifies that the three politicians are in a meeting with Brexit supporters. They look bored and exhausted, implying that even these men who have supported Brexit are doubting whether leaving will lead to a positive outcome.

MUSIC INDUSTRY AND AUDIENCES

Horizontal Integration: When a media company which is already established in creating a particular form of media text acquires another company operating within the same form, *e.g. Facebook acquired Instagram in 2012*

Vertical Integration: The act of a media company owning most of the chain (if not the entire chain) of production for a media text, *e.g. Sony Music, Universal Music Group and Warner Music Group are all examples of record labels that control multiple stages of music production and distribution*

List of ways in which music videos can be accessed
- Music television channels (*e.g. MTV, 4Music, Trace*)
- Streaming websites (*e.g. YouTube, Vimeo, Vevo*)
- Band's/artist's website
- Radio station website
- Music streaming services (*e.g. Tidal, Spotify*)
- iTunes store
- DVD release (*e.g. Michael Jackson Greatest Hits, One Direction: Up All Night Live Tour*)
- Social media pages (*e.g. Twitter, Facebook*)

- **MTV** is an American television channel launched in 1981. Initially, the channel mostly broadcast music videos, but in recent years it has begun to focus more on original reality TV shows. Popular programmes include *Teen Mom* and *Ex on the Beach*.
- YouTube is a successful platform as viewers can choose the music videos they want to watch, making it more of an on-demand service.
- MTV is successful as it can expose viewers to music videos that they may not have thought to look for, thus increasing the exposure of a band or artist's work.

There are three notable record labels that have ownership over numerous smaller record companies. These labels have experienced **horizontal integration**.

Sony Music Entertainment: Arista Records; Columbia Records; Epic Records; Syco Entertainment

Universal Music Group: Capitol Records; EMI; Geffen Records; Island Records

Warner Music Group: Atlantic Records; Asylum Records; Elektra Music Group

Music Industry: Key Contributors
- **Composers** – responsible for the instrumental arrangement of an artist's song (sometimes this is the artist themself).
- **Songwriters** – responsible for writing the lyrics of an artist's song (sometimes the artist does this themself).
- **Record Producers** – responsible for overseeing all aspects of a song's recording within a studio setting.
- **Audio Engineers** – responsible for overseeing the technical aspects of the recording process, and for operating studio equipment.
- **Booking Agents** – responsible for generating work for an artist, this typically takes the form of booking tours, live shows, paid interviews and paid appearances.
- **Talent Managers** – responsible for overseeing the day-to-day affairs of an artist (their client). They do this in exchange for a percentage of an artist's income.

Things to consider about music audiences

The idea of popular music is thought to have begun during the 1950s with the rise of rock and roll. This happened during the post-war period in which young people finally had disposable income (money that can be spent on leisure activities and consumer goods).

Certain genres of music have become synonymous with their own specific set of fashion choices, activities and ideas, *e.g. fans of punk music are known for their embrace of leather jackets, outlandish hairstyles, body modifications and views that go against mainstream values*

Subcultures relating to certain genres of music are often occupied by teenagers and young adults who are looking for a sense of community and to establish their own sense of personal identity

Regulation
- **The Parental Advisory Scheme:** The organisation responsible for identifying music content that might be inappropriate or harmful to younger viewers in the UK.
- The BPI (**British Phonographic Institute**) is responsible for overseeing the Parental Advisory Scheme which sets out guidelines as to the suitability of music video content.
- Record labels are responsible for ensuring music is distributed to age-appropriate audiences. They achieve this by ensuring that the Parental Advisory logo is added onto the physical copies of their products, e.g. Vinyl and CDs. The logo should also appear next to the product if it is being accessed online.
- Music videos normally have a Parental Advisory warning if they contain any of the following: bad language; violence or criminal behaviour; sexual activity or nudity; dangerous behaviour presented as safe; drug misuse or substance abuse.
- The **BBFC** is responsible for regulating music videos released on DVD.
- Since 2013, the BBFC has been working with YouTube and Vevo to improve **online safety** for viewers.

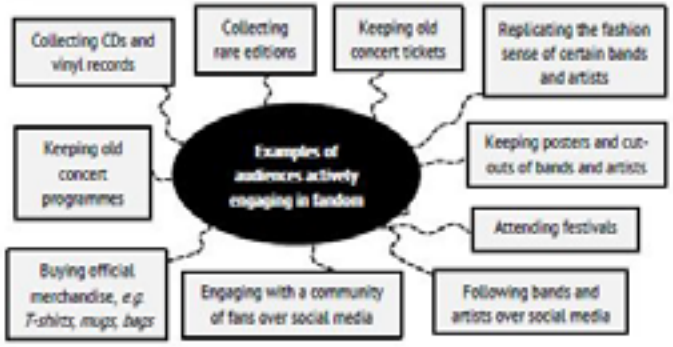
Distribution Process

Radio: In order to gain permission to play a song on their broadcast frequency, radio broadcasters purchase the rights to the song. These rights are known as **performance royalties**. The broadcasters themselves will be paid via advertising in the case of commercial broadcasters such as Apple Beats 1 Radio or via the TV licence in the case of public service broadcasters such as the BBC.

Streaming Services: Senior company members gain permission to play a song on their streaming service by purchasing the **performance royalties**. Individuals working for streaming services get paid through subscription fees from consumers or from advertising revenue.

Retailers: Retailing companies purchase music in the form of physical media (e.g. CDs, vinyl records) from distributors (who themselves acquire this media from the record label). Retailers then sell this media to the end consumer.

Function of music videos
- Help to promote the artist and increase sales of their song
- Emphasise the artist's brand identity
- Illustrate the narrative or concept of a song using film
- Create a sense of familiarity and connection between the artist and the audience
- Push artistic boundaries within the form of music videos



Did you know? Over 50% of music listener engagement in the UK is down to streaming services. Spotify has hugely changed the landscape of the modern music industry. Spotify is free to download, but between every two or three songs, an advertisement appears. In order to prevent ad interruptions, people can download Spotify Premium, allowing audiences to listen to music without adverts for £9.99 a month. The producers of songs downloaded will receive a fraction of this revenue.

Uses and Gratifications of Music Videos	Explanation
Entertainment/Diversion	• Can showcase an artist's diverse range of skills, *e.g. dancing, acting, creativity* • Music videos can be narratively or visually engaging in their own right • Enrich the experience of listening to a song by adding visual context
Information	• Informing audience of further music in the artist's collection • Educating audiences on issues that the artist is singing about
Personal Identity	• Usually stimulate discussion and debate surrounding the artist and the song, particularly over social media
Social Interaction	• Relating to the artist based on similar experiences tackled in themes of their songs/videos • Fans can aspire to present themselves in the way the artist does by mimicking their style, fashion sense or outlook on life

Taylor Swift
Bad Blood

Vladimir Propp's Character Types

Character Type	Character	Explanation
Hero	Catastrophe (Taylor Swift)	A tough action hero who wants revenge on the best friend who betrayed her
Villain	Arsyn (Selena Gomez)	The previous ally who betrays Catastrophe and pushes her out of a window
Donor	Welvin Da Great (Kendrick Lamar)	The leader of the mysterious organisation that resurrects and trains Catastrophe
Helper(s)	Catastrophe's Allies	The women that join Catastrophe on the battlefield to fight Arsyn

Bad Blood © Max Martin, Shellback, Ilya, 2015

Facts you need to know about *Bad Blood*...

- **Release Date:** 17th May 2015
- **Album:** *1989* (2014)
- **Label:** Republic Records
- **Conglomerate:** Universal Music Group
- **Certification (UK):** Gold
- **Certification (US):** 5x Platinum
- **Peak Chart Position (UK):** 4
- **YouTube Views (2019):** 1.29 billion

Bad Blood has a linear narrative structure...

Equilibrium: Swift as Catastrophe and Selena Gomez as Arsyn are in a high-rise office building fighting against several men. The women easily beat the men as Catastrophe comes into possession of a suitcase.

Disruption: In a surprise twist, Arsyn knocks Catastrophe out with some form of powder, steals the case and pushes her out of the window. Catastrophe crashes onto the roof of a car below, causing the song to start.

Recognition: Catastrophe begins to sing the chorus, establishing that she and Arsyn have 'Bad Blood'. Catastrophe is rebuilt in a robotics laboratory. Throughout this process, Catastrophe seems determined to exact vengeance on Arsyn.

Attempt to repair: Catastrophe pursues training following her resurrection. She trains with a variety of strong women, learning skills that include sword fighting, shooting and driving. Once her training is complete, Catastrophe is ready to exact revenge on Arsyn.

Resolution: Catastrophe and Arsyn meet on the edge of a city that is in ruins. The narrative arguably concludes with a cliffhanger as it is not revealed which side has won the battle. In some ways, Catastrophe's character arc has reached a new equilibrium in which she acknowledges that sometimes people have enemies, and that is a way of life; however, with a good support system of friends and allies you can overcome any obstacle.

Female Stereotypes

- The women are all slim and provocatively dressed while also fulfilling traditional standards of beauty in the media. Therefore, the video could be accused of holding women to unrealistically high standards of beauty and creating the impression that strength is synonymous with good looks.
- Women will go to extreme lengths to exact revenge following a betrayal.

Female Countertypes

- Women can be as **active** and strong as men.
- Women can be courageous and stand up for each other.
- Women can successfully carry out activities typically associated with men (motorcycling, combat, use of lethal weapons).

Cameos in the music video

Selena Gomez; Kendrick Lamar; Lena Dunham; Hailee Steinfeld; Ellie Goulding; Zendaya; Cara Delevingne; Jessica Alba, etc.

Key functions of cameos...

- Illustrates Swift's status as a popular and influential woman in the industry
- Inspires female audiences by featuring as many women role models as possible
- Enables active audience interaction. Viewers can attempt to identify all the celebrities.

The music video is almost entirely populated by female characters, all of whom are presented as strong, independent women. The one exception is Kendrick Lamar. His character 'Welvin Da Great' is introduced in a futuristic office building, with his feet on the desk – connoting both dominance and a relaxed quality. It is implied that he is the boss of the training camp the audience is about to see (*this is informed by intertextual knowledge of the Charlie's Angels series in which three female spies answer to a male boss*) Lamar comes across as something of a **patriarchal** figure as a result.

Music Video: Codes and Conventions

- **Binary Opposites** – Good vs evil, betrayal vs loyalty. The battlefield at the end connotes a clash between two sides.
- **Timed Editing** – Catastrophe and the warriors move to the beat of the music in a militant fashion
- **Lip-Synching** – There are moments in which Swift and the other warriors sing directly into the frame
- **Costume** – Swift and the warriors wear a selection of revealing costumes that are stereotypically sexual
- **Diegetic Sound** – No dialogue, but the music video begins with an action sequence in which the sounds of crashing through windows and breaking bones can be heard

Bad Blood is a typical example of a **narrative music video**. The lyrics of the song which relate to the betrayal of a friend are re-contextualised into a story about a feud between two spies. This story follows a clear narrative structure. There are arguably elements of a **performance music video** as Taylor Swift will often lip-synch directly into the camera.

CODES AND CONVENTIONS: SCI-FI AND ACTION FILMS

- Catastrophe being rebuilt in a robotics laboratory
- The futuristic technology *(invisible car, virtual reality computers)*
- Heavy artillery and weapons
- Close combat training
- Apocalyptic scenes
- London setting (possibly an intertextual reference to British spy films such as the *James Bond* franchise).
- The provocative costumes of the women might act as an intertextual reference to the girls of old town from the 2005 film *Sin City*.
- In the same fashion as many Hollywood action movies, an early shot consists of the director's name (Joseph Kahn) and the title 'Bad Blood' digitally imposed onto a wide shot of Swift lying on the room of a car. This is a fairly unusual device for music videos and will usually be reserved for films with higher production values.

The music video contains heavy use of CGI. This is an extremely common feature of contemporary Hollywood blockbusters such as *Jurassic World* and *Black Panther*. This has the effect of making the story seem as action-packed and epic in scale as possible since CGI allows filmmakers to put essentially anything they can imagine up on screen.

Context

In an interview with *Rolling Stone* magazine, Swift revealed that the lyrics of *Bad Blood* described her relationship with a fellow female popstar. Many believe that Katy Perry is the mysterious star Swift is referring to.

Bad Blood won best music video at the Grammy awards, beating *Freedom* by Pharrell Williams and *Alright* by Kendrick Lamar.

Key Definitions

Patriarchy: The idea that society is structured to provide men with systematic power while largely excluding women and minorities from positions of influence. *Kendrick Lamar comes across as a patriarchal figure.*

The actions of an active character will have a major effect on the people around them and the progression of a narrative. A passive character has little to no effect on the progression of a narrative. *Bad Blood* constructs a positive representation of women by featuring active female characters.

Bruno Mars Uptown Funk

Facts you need to know about *Uptown Funk*...

- **Release Date:** 10th November 2014
- **Album:** *Uptown Special* (2015)
- **Label:** Columbia and Sony and RCA
- **Conglomerate:** Sony Music Entertainment
- **Certification (UK):** 5x Platinum
- **Certification (US):** 11x Platinum
- **Peak Chart Position (UK):** 1
- **YouTube Views (2019):** 3.56 billion

Performance Video

Mars and Ronson were the subject of some controversy as they were accused of plagiarising multiple existing songs ranging from 'Funk You Up' (1979) to 'Oops Up Side Your Head' (1979). The writers of these songs were eventually acknowledged as co-writers on *Uptown Funk* due to how similar the songs sound.

Controversy

Prior to the song's release, *Uptown Funk* was performed on the X Factor live shows by the contestant Fleur East. East's version of the song was extremely popular, reaching number one in the UK iTunes charts. The song's official release was brought forward a month or so in order to reduce the risk of piracy and to ensure that audiences didn't overplay the song before it had even been released. Mars and Ronson's version also reached number one, demonstrating that the X Factor version, if anything, brought in a wider audience and contributed to the song's success. This situation is, therefore, a key example of successful horizontal intersection.

Representation of Men

- The images of Mars and Ronson sitting in a salon with hair rollers subverts the stereotype that men do not care about looking fashionable or beautiful
- Men come in all shapes and sizes, not just muscular and rugged
- Mars has a high-pitched soulful voice and is dressed in the traditionally effeminate colour combination of pink and white
- Men are consistently pursuing women as sexual conquests
- Male pop stars are 'players' and often get what they want with little consequence or rejection, as suggested by the song's lyrics

Representation of Women

- Certain shots focus on parts of women's bodies not covered up by clothing *e.g. bare legs*. The manner in which these images are shot presents women, to an extent, as sexual objects for men to gaze at
- The women who appear in the video all adhere to a stereotypical idea of feminine beauty: young, slim figure and long hair
- The woman that the singer is focusing on only appears briefly at the beginning, so there is not a lot of visible **objectification** (although this is somewhat contradicted by the lyrics)

Objectification: Representations that reduce characters (often women) to objects. This often occurs when the character's physical features are emphasised to make them look sexually desirable.

Uptown Funk © Mark Ronson, Jess Glynne, Bruno Mars, 2015

Iconography traditionally associated with black musicians is used in the music video, such as chunky gold chains, the white Cadillac and oversized suit jackets

Black culture is represented through the depiction of elements traditionally associated with black economy. This includes barber shops, shoe-shiners and jazz clubs.

Ethnicity

The shoe-shiners are old white males, subverting the traditional perception that this job is generally carried out by black males shining white males' shoes. In the video the white males are shining Mars' shoes. This shows how, in some instances, ethnic roles have changed in contemporary society.

The video promotes the idea that ethnicities tend to segregate – Mars' band of hooligans is made up entirely of black males, with the exception of the song's producer, Mark Ronson.

Mark Ronson produced the music video for *Uptown Funk*. He appears in the music video as one of the singing and dancing hooligans. The song is inspired by a style of music known as Minneapolis Sound, popularised by artists such as Prince throughout the 1980s.

Audience Responses

- The successful model/actor Cara Delavigne released an homage to the music video over Instagram the following year. As a celebrity and an aspirer for young people, Delavigne's endorsement contributed to the song's popularity.
- There have been many online fan recreations of the music video, numerous covers by professional artists and YouTube tributes to the song including *Old movie stars dance to Uptown Funk* and *Crazy Uptown Funk flashmob*, which have received millions of views.

Music Video: Codes and Conventions

- **Lip-synching:** Mars does this consistently throughout the music video (usually directly into the camera)
- **Locations:** Shooting took place on practical sets or on location where Mars was touring
- **Technology:** No signs of CGI or digital post-production
- **Performance:** Choreographed dance routines
- **Timed editing:** Mars, Ronson and the hooligans walk, bob and dance to the upbeat rhythm of the song

***Uptown Funk* Visual Codes**

Choreographed dancing: Contributes to Mars' brand identity as an entertainer as well as a singer
Low-angle shots: Make Mars and the hooligans look larger and, by extension, more powerful to the audience
Vibrant colours: Contributes to Mars' brand identity as an eccentric artist with an eye for fashionable trends
Brightly lit shots: A conventional aspect of mainstream music videos used to maintain a light-hearted tone
Mostly mid shots: Effectively captures Mars' entire body and his ability to sing, dance and perform simultaneously
Direct audience address: Creates a sense of personal connection between Mars and the audience
Fast-paced editing: Matches the rhythm of the music and maintains a sense of high energy

Uptown Funk was extremely successful upon release...

- The song topped the official US charts and remained there for 14 weeks
- It is the fourth most highly viewed music video on YouTube of all time
- It earned $100,000 on a weekly basis from Spotify alone
- The song was the first in history to be streamed over two million times in the UK within the first week of release
- By the end of 2015, *Uptown Funk* was the bestselling single of the whole year
- It won Best Music Video of the Year at the MTV Video Music Awards

Technical Codes: *Uptown Funk*

Tracking shots: Mainly used for comedic purposes. Firstly at the start of the second chorus when Mars and the hooligans shuffle casually past a shop window. Secondly, the gradual track across the hair salon in which Mars and Ronson are shown to be moving to the beat of the music in their seats.

Panning shots: Create a sense of fluidity to the filmmaking while ensuring that Mars and the hooligans remain in shot as they dance and travel through the street setting.

Low-angle shots: Used to make Mars, Ronson and the band of hooligans look larger and, by extension, more powerful. As they dance and sing into the camera, the style of shooting connotes that these are men who should be looked up to.

Wide-angle shots: Bruno Mars is famous for being a great dancer and performer as well as a vocalist. These shots capture the choreographed routines, more clearly emphasising the singer's skills.

Rotating camera: Serves to capture the up tempo, high energy soaring of the song's chorus. The movement arguably captures the sensation of dancing to such a song in a club or live concert.

Media - Taylor vs Bruno

ONLINE MEDIA

Taylor Swift

Twitter followers: 83.4 million
Facebook followers: 68.6 million
Instagram followers: 118 million

Taylor Swift Twitter Page: zzwd.ak/99kSwift

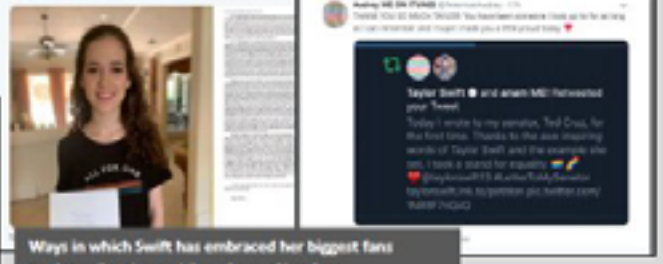
The cover photo advertises Swift's most recent single 'Me!' Before this, the cover photo consisted of the artwork marketing her *Reputation* tour, which was available to stream over Netflix.

Swift's profile picture contains artwork for her latest album which possibly connotes the rainbow colours that represent the LGBTQ movement. It is unusual for a pop artist's profile picture not to feature their face.

A pinned tweet is a post that remains at the top (the most visible point) of an account holder's Twitter feed.

In June 2019, Swift's pinned tweet was an open letter to her senator Lamar Alexander imploring him to support LBGTQ rights in her home state of Tennessee. This demonstrates Swift's willingness to use her fame to support positive socio-political change. This will most likely resonate with her audience, made up heavily of young progressive women and people in the LGBTQ community.

Twitter offers a list of similar music artists that Swift's fans are recommended to follow.



These images collectively show how Taylor Swift interacts with her fans through Twitter. The artist retweets one of her fans who has led by Swift's example and written a letter to her senator to argue for LGBTQ rights. The fan responds to Swift's retweet by thanking her and expressing how much Swift has inspired her.

Ways in which Swift has embraced her biggest fans

- Attending the wedding of one of her fans
- Buying a house for another fan
- Inviting 'super fans' to her house to hear her new album

- **Taylor Swift tweets: her own merchandise; upcoming concert and tour dates; promotion of new singles and albums; vlogs addressing fan base; retweeting fans; personal pictures, *e.g. Swift in her bedroom, Swift with her pet.***
- **Swift launched her own social media app called *The Swift life*. This provided an opportunity for the artist's fan base (the 'Swifties') to engage with her.**
- **Swift has had public social media 'fights' with other major stars such as Kanye West and Kim Kardashian which have alienated some sections of the public.**
- **Swift directly follows and retweets many of her fans. She comments on their accounts and follows their live streams; the direct communication with fans is unusual for a major star and enhances the close connection with her fans and makes her more relatable to her audience.**

Bruno Mars

Twitter followers: 42.9 million
Facebook followers: 51.1 million
Instagram followers: 22 million

Mars' profile picture shows him posing in casual, loose clothing with gold jewellery. This helps to establish his brand identity as a young, cool hip-hop artist.

Mars is known for publicly engaging with fans online. Across Twitter and Instagram, Mars will reply to comments, retweet fans and generally enter into the conversation.

Like Facebook and Twitter, the artist's Instagram page establishes the number of followers he has, the number of people he follows and the number of posts he has made in total.

There is a link to the artist's most recent music video. In this case: 'Please me'; a single he released with Cardi B in March 2019.

Bruno Mars Instagram Page: zzwd.ak/99kBmars

An image of Mars performing on stage with a live band. Affirms his status as a confident performer while also demonstrating his passion for other genres of music such as jazz, funk and soul.

The photos Mars posts show him in a variety of settings and situations.

A professional high-quality picture in which Mars poses seriously, maintaining his brand identity as a serious musician.

Mars is shown to be skilled in playing the electric guitar as well as singing and dancing. Again, the image is high quality, capturing the atmosphere of one of the artist's live gigs.

Perhaps the artist's most informal post. A humorous video Mars appears to have taken himself in his spare time. He sets up the camera, brings our attention to his UFC hoodie and starts performing karate moves. Vlogs such as this help build a sense of personal connection between him and his fan base. The juxtaposition of the handheld camera and his silly behaviour may encourage fans to recognise that behind all the fame and fortune, Mars is just a normal guy.

Another post that makes the artist appear more relatable. Mars posts a personal photo of his meal to give his fans a sense of what he does when he is not singing and performing.

Bottom right image: A thumbnail image for a teaser clip of Mars in a new music video he is releasing with Cardi B. Fans benefit from following his Instagram account as they receive early information about the artist's latest musical endeavours.

Fans are able to comment on the artist's posts, creating the illusion that they are interacting with him directly. In reality, it is rare for Williams to respond to comments from fans. This could suggest that he does not directly run his own social media pages.

Like all social media platforms, fans have the opportunity to comment on the artist's post, allowing audiences to feel directly connected to Bruno Mars. The comments are generally very flattering, consisting mainly of compliments for the artist and expressions of love. While it is rare for music artists to reply directly to their fans on social media, Mars has been known to do so.

THE SWEENEY MEDIA LANGUAGE

Character	Character Type (Crime Genre)	Character Type (Vladimir Propp)
DI Jack Regan	Detective	Hero
DS George Carter	Detective's Junior Partner	Helper
Frank Kemble	Crime Lord / Villain	Villain
Jenny Peters	Detective's Girlfriend	Princess
Dave Brooker	Henchman/Criminal	Villain
Billy Martin	Informant/Thug	Villain/Donor
Chief Inspector Frank Haskins	Superior Officer	False Hero

Character Profile

Behaviour: Regan is quick to lose his temper and will often resort to violence. This is particularly evident when he interrogates Billy Martin and his friend. Regan also has little respect for authority and is happy to use language that would now be considered politically incorrect, e.g. saying 'through there love' to a female police officer would probably be considered sexist and patronising in the modern day.

Nickname: Regan is referred to as 'the guvnor' by his colleagues connoting his high status

Costume: Regan wears a suit and tie, showing that he is a professional detective and that he is higher status than uniformed police officers. His tie is often loosened, implying that he is willing to break rules.

Roland Barthes Codes	Examples
Action Codes 	• The large gun Brooker takes out of the van tells the audience that a violent crime is likely to take place • Regan taking photos of Kemble's men with a long lens camera tells us that he is building an investigation • Regan's office phone ringing moves the plot along. He learns that Jenny has been threatened which gives him more information he'll need to stop Kemble's men.
Cultural Codes 	• Brooker's flat cap implies that he might be an old-school, working-class 'Londoner' • The references to Brixton and Fulham provide certain audiences with a greater sense of where certain locations are in relation to one another • Characters smoking cigarettes indoors tells contemporary audiences the series is set in an older time when such activities weren't illegal in most places
Enigma Codes 	• Brooker is handed money in the opening sequence but we don't know what he has done (or is going to do) to earn this • Regan tells Carter that in the next few hours they have to figure out what Kemble is planning, when it will happen and where will it be. The audience are left in the same state of confusion.

Crime Genre Iconography

- Shotguns
- Batons
- Police bikes
- Pistol
- Long lens surveillance camera
- Cigarettes and alcohol
- Police uniform
- Police paperwork

Crime Genre Location

- London Docklands
- Police station office
- Interrogation room
- Dark room
- Detective's apartment
- Criminal hideaway

Binary Opposites in *The Sweeney*	Cops	Rules	Interrogators
	vs	vs	vs
	Criminals	Results	Suspects

Narrative Stages – *The Sweeney* Pilot Episode

Cold Opening: In the pre-credits sequence, the criminal Dave Brooker is shown picking up a shotgun from a mysterious van driver

↓

Equilibrium: Jack Regan leaves his girlfriend, Jenny, to go to work in the morning. He is shown taking surveillance photos of Frank Kemble and his men. Meanwhile, we are introduced to George Carter and Frank Haskins in the police headquarters.

↓

Disruption of Equilibrium: Regan's car (containing the surveillance photos) is stolen by two young criminals. The more dominant criminal, Billy Martin, recognises the men in the photos and takes them to Frank Kemble.

↓

Recognition of Disruption: Regan and Carter find Billy and learn that he has alerted Kemble and his men about the photos. Regan's fears are confirmed when his girlfriend is threatened by Kemble's men.

↓

Attempt to Repair Disruption: Regan and Carter follow various leads in order to work out what Kemble and his men are up to. Regan is put under extra pressure when his superiors threaten to punish him if Kemble and his men aren't stopped.

↓

Resolution: Regan and Carter discover that Kemble and his men are planning to hatch an escape plan for a prisoner who is being transported across London. They manage to prevent the crime. Eventually Kemble is accidentally shot by his own men.

↓

New Equilibrium: Having successfully foiled the crime, Regan is able to relax in his apartment with Jenny, a cigarette and a glass of scotch

The Sweeney Shooting Style

16mm: An old-school style of film reel usually used for documentaries or low-budget film-making. It allows for flexible shoots and helps create gritty and realistic looking imagery.

Static Shot: A shot that does not feature any form of manoeuvre (e.g. tilt, pan, and track) from the camera operator. When used effectively, this shot can draw attention to elements such as performance or dialogue.

Close-up: A very intimate shot where the background is out of focus. This allows the audience to concentrate on a specific subject, e.g. a facial expression or a small object

Lightweight: Camera equipment which can be transported easily and used effectively to shoot on-location

On-location: Shooting that is achieved outside of production studios in public or privately owned spaces, e.g. streets, parks, real houses

Key Camera Manoeuvres

There is a sharp **zoom out** when Regan is photographing Kemble's men. This manoeuvre invokes a similar style of shooting to that of the 'paranoid thrillers' of the 1970s, such as *The French Connection* and *Day of the Jackal*.

There is a **panning** shot that follows Carter and Regan as they chase a suspect across a railway platform. This has the effect of making the chase easier to follow.

A **tracking shot** follows Dave Brooker as he moves towards the van doors in the opening sequence. This contributes to a sense of gritty realism.

A **low-angle shot** shows Billy excitedly driving Regan's car. This connotes his temporary power and high status.

Notice: The cinematography produces a very different effect from that in contemporary crime dramas such as *Luther*. The colour palette is primarily made up of pastel greens, yellows, blues and browns. Almost the entire episode is shot in daylight (this is probably because on-location shooting at night is more expensive).

THE SWEENEY REPRESENTATION

Significant lines of Dialogue for John Regan...

'I'll rip his ears off when I find him'
John considers himself a tough man and is happy to show off this side of himself in front of his colleagues

'I'm gonna drown you in your own sweat if I find out you're involved'
John is represented as a detective who is happy to threaten suspects with extreme violence

[Responding to 'There's a woman asking for you Guv'] 'Ooh Good'
John is represented as someone who is happy to make subtle sexist comments among his (all-male) co-workers

'We're the sweeney son and we haven't had any dinner'
Regan is represented as an experienced and infamous detective among London's criminals

Underrepresentation
The main characters in the episode are overwhelmingly white and male. Furthermore, all characters speak in either Estuary English or a cockney accent. The show's producers made no clear attempt to represent London's growing multiculturalism throughout the 1970s.

Stereotypical Representations
The only two teenagers (Stupid Hawes and Billy) are presented as reckless criminals stealing Regan's car with little motivation. The episode was released at a time when the representation of teenagers on British television was still fairly undeveloped. They would usually be presented as violent thugs or spoilt and disobedient.

Thaw and Carter collectively form an old-fashioned and stereotypical representation of masculinity. Whereas Regan is tougher and more aggressive, Carter is more measured and professional. They share an interest in smoking, drinking, cracking jokes, solving crimes and socialising with beautiful women.

Unlike *Euston...* *The Sweeney* constructs a more simplistic representation of right and wrong. While Regan is shown to make mistakes (e.g. leaving his car unlocked, not spotting an impending heist sooner) he is generally shown to have the moral high ground in the narrative. Regan and Carter's loyalty to each other is represented as positive and Regan's challenging approach to authority figures is represented as a necessary means of catching criminals.

Representation of London: The pilot episode was predominantly filmed in West London. Much of the on-location shooting was done in London's Docklands, a derelict area perfect for shooting action sequences. The show's producers made a big effort to depict London as a gritty and violent location for a crime drama, overrun by organised crime as opposed to killers and kidnappers. In line with this approach, there are no shots of London's city centre or major tourist attractions. This adds to the sense of gritty realism whilst showing audiences a side of London they will be less familiar with.

Estuary English: A British accent associated with people living in and around the vicinity of London. It is thought to combine elements of RP (an accent commonly associated with the English upper class) and London speech.

Agency: In the context of television, this term is a quality possessed by characters that make things happen and take action in order to affect the outcome of a narrative

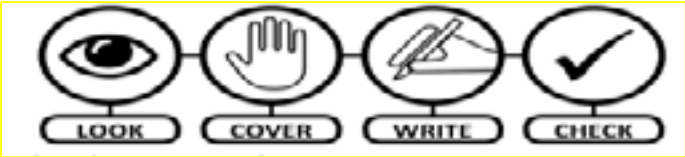
REPRESENTATION OF MASCULINITY

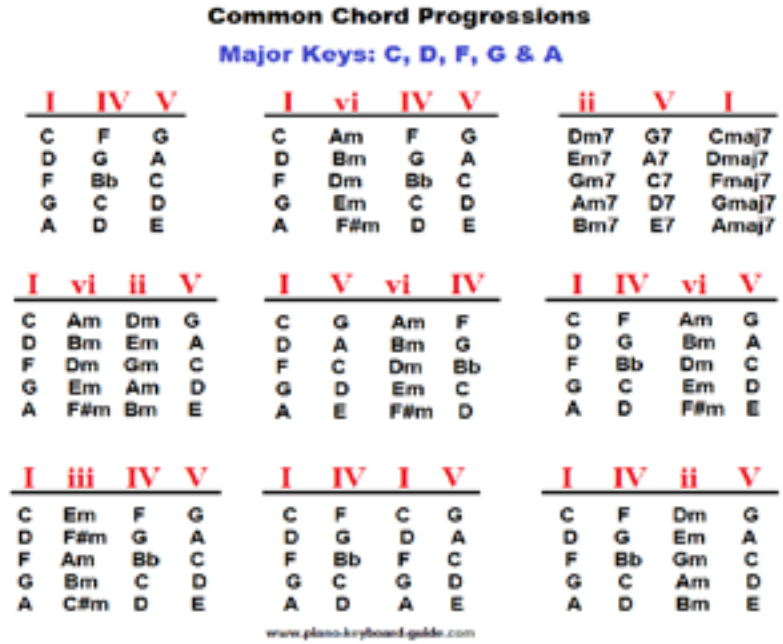
- The men are never shown to be discussing or wrestling with their mental health
- When challenged, the men are either aggressive or unemotional and professional
- The men are never shown to be emotionally vulnerable
- The men all appear to be heterosexual
- The men all appear to possess patriarchal attitudes
- Most of the men are physically capable and willing to use violence
- The men (Kemble's men in particular) objectify women to varying degrees

Representation of women in *The Sweeney*

- Following her interrogation, Jenny has to be comforted and put to bed by Regan. As she lies in her bed, overwhelmed and delirious, she is watched over by another police officer.
- Edie Driscoll (the owner of the pet store) and Mrs Martin demonstrate more **agency** than Jenny. They are able to offer helpful information to the police and they do not appear to be afraid of Kemble and his men. In particular, Mrs Martin says: 'I knew Frank Kemble when he 'ad holes in his shoes'.
- The three women with speaking parts are respectively the girlfriend, mother and wife of three major male characters. The women have little agency and are underdeveloped compared to the male characters.
- Regan's girlfriend, Jenny, is introduced lying on his bed. The camera never focuses on her face, placing more emphasis on her body than her emotions or personality.
- Jenny's status as the submissive half of the relationship is emphasised when she says to Regan: 'I was thinking, the sort of experience I had this afternoon is the sort you go through all the time'
- Jenny is shown to be passive and physically incapable when she is threatened by Kemble's men
- Kemble's henchmen objectify Jenny when they comment on her air stewardess uniform and exchange the following dialogue: *'Pretty isn't she?' 'Darling'*
- All senior detectives and gangsters (those directly involved in the action) are male
- In the final scene of the episode, Regan's dominance in the romantic relationship is visually demonstrated as he sits in an armchair with Jenny sitting at his feet

KNOWLEDGE ORGANISER – Year 10 – Song Analysis/Listening Skills





Song Analysis.

Tonality - refers to the particular system of relationships between notes, chords, and keys. Tonality usually refers to something being Major/Minor/Tonal/Atonal. The easiest way to find the tonality of a song is to look up the chords, you can do this here: www.ultimate-guitar.com/. Then use the table opposite to work out what key you are in (chord I is the key name).

Tempo - the speed at which a passage of music is or should be played. This is measured in BPM (beats per minute). You can normally find a songs tempo using this site: songbpm.com Or you can count how many beats there are in a minute of a song.

Instrumentation - the particular instruments used in a piece of music. Listen to your chosen song, what can you hear? Try to research who was playing each instrument and what type of instrument they were playing (e.g. Queen's guitarist Brian May plays a Red Special, a guitar he made with his father when he was a teenager).

Lyrical Content - the words and meaning of lyrics. Analyse the lyrics and give a brief outline of what story they are telling the listener. Zoom in and use specific lines of lyrics and explain them in more detail. Was there something happening in the society at the time that is reflected in the lyrics.

Production Techniques - techniques that are applied in the studio whilst recording the piece of music. https://www.rslawards.com/a-brief-history-of-music-production/ explains the history of music production. For a list of Music Production terms and definitions look here: https://www.continuummusicstudio.com/glossary-music-production-terms/

Paragraph Structure – Song Analysis

1. **WHAT** is the tonality/tempo/instrumentation/lyrical content/production techniques?
2. **EXPLAIN** what does this mean/how do you know?
3. **EVIDENCE** – is that typical/not typical of the genre? Use another song from the same genre and different genre to prove you point.
4. **ANALYSE** why have they chosen to use this/write the song this way? What effect does it have on the listener?

Tick when done	Listening Skills Tutorials
	https://www.youtube.com/watch?v=JrNsZGMKnUk – "Find the Key of any Song By Ear"
	https://www.youtube.com/watch?v=vKnK5wVfgDk – "The Most Important Production Techniques of the 2010s"
	https://www.youtube.com/watch?v=GMqOXmD8UUA – How to Actually Use the Circle of Fifths"

Music Practice Techniques

PRACTICE TECHNIQUES
WARM UP - Technical exercises: scales, arpeggios, strokes, etc. - Understand the music – identify as much theory as possible – look for keys, scales, chords, patterns, rhythms).
SET A TARGET - Know what you want to achieve in the session - Be realistic
RECORD YOURSELF Compare this with what the piece **should** sound like and identify the problem areas
IDENTIFY THE PROBLEM AREAS Practice the parts you can't play (not the parts you can) first: - Use a metronome - Play it slowly, then speed it up - Try the part in different rhythms so that you get the pitches accurate - Aim to play it correctly **three time in a row** – if you make a mistake, start again!
BREAK IT DOWN - Play the piece section by section: split the piece into **small** parts; practice each one until right; combine each section as you work through the piece - Don't just play through the whole piece repeatedly, be focused - Try to memorise sections
IF YOU CAN PLAY IT – ADD EXPRESSION! - Add dynamics - Play with the tempo - Think about articulation & phrasing
PLAY ALONG WITH A RECORDING/ANOTHER PERSON
REWARD YOURSELF

PE - Principles of Training

Principles of Training

- **Principles of Training (SPORT)**

Specificity - This is all about making sure that training needs are relevant to an individual's sport, activity or fitness goals. For example, a marathon runner would make sure that their training helped to increase levels of cardiovascular endurance, while a weightlifter is more likely to will

- *Applying specificity to your training ensures that the appropriate muscles and energy systems are used in the most effective way to achieve adaptations, and that these adaptations help to achieve the individual's specific fitness goals.*

Progression- This principle can be closely linked to overload and it is all about gradually increasing the level of overload that you include in a fitness programme. This avoids 'plateaus' where performance stays the same.

- *When you are training, it is important to progress and increase your efforts gradually – this gives your body a chance to adjust to the demands you are putting on it. It's also important to get the balance right – if you don't change your training levels at all or you do it too slowly, then progression will not happen; however, you must also make sure you don't push your body too hard or too quickly, as this can lead to injury or illness.*

Overload - This is when you challenge your body beyond its current limit when training. This is gained by increasing (FITT). When this happens, the body must adapt in response to this and increase performance

- *If a person continually performs the same exercise, at the same level of intensity for the same length of time/frequency, then this will not result in any improvements/adaptations. If the person begins to increase the intensity, frequency or duration of their exercise, overload is introduced to challenge the body and it will then adapt to become fitter in order to meet the challenge.*

Reversibility- This is the opposite to progression. Basically, if you reduce training levels too much or stop training altogether, then all of the positive effects that you have achieved can be lost This is sometimes referred to as 'detraining'.

- *Fitness adaptations can reverse very quickly – for example, after just a couple of weeks of detraining, you may start to notice reduced fitness levels!*

Tedium - Tedium means boredom and the focus of this principle is to incorporate a variety of training methods to prevent boredom and lack of motivation in training.

- *Adding variety to the training programme can also help to avoid overworking certain muscles, allowing them to rest and recover while other parts of the body are exercised.*

- **Principles of Overload (FITT)**

Frequency – How often you train over a set period of time

- *For example, the number of training sessions that are carried out per week).*

Intensity – How hard you work during a training session. It's important to get the level of intensity right –

- *If you don't work hard enough, no significant adaptations will occur; however, if you train too hard, then you may not be able to exercise for as long (duration) or as often (frequency) as you want to, and it can also lead to a risk of injury.*

Time –How long you train for/the duration of each training session. This principle is closely linked to intensity –

- *if you are working at high intensity levels, then the length of time spent exercising may be shorter; however, low intensity exercise will need to be performed for longer durations for any benefits to be gained.*

Type -This is all about using the right method of training to achieve the desired fitness goals. The chosen method should also suit individual needs – for example, high impact/high intensity exercise would not be suitable for overweight individuals who are new to exercise.

- *When choosing methods of training, the specificity principle should be considered – by establishing the specific component of fitness/sports performance that needs to be improved, it becomes easier to identify the most suitable training method(s).*

Health and Fitness

Health has been defined by the World Health Organisation as:
"A state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity."
Physical Fitness means having the ability to perform an activity to the required level (this could be a sport, occupation, etc).
There is a clear **link between health and fitness**, it is also important to remember that a person can be healthy and unfit, and also fit and unhealthy eg

- You can be fit, but not physically healthy – a person could have a cold, but still be fit enough to play a football match
- You can be fit, but not mentally healthy – a person may suffer from depression, but goes to the gym regularly
- You can be healthy, but not fit – a person could be free from illness, but not be fit enough to take part in fitness activities

Health Related Components of Fitness

Cardiovascular Endurance – "*being able to exercise the whole body for long periods of time". Eg, in sports such as l*ong distance running and cycling, triathlon events and football. The heart and lungs need to be able to keep supplying oxygen to the body (through the bloodstream) in order to give the body the energy it needs throughout the exercise activity

Muscular Strength "*the amount of force that can be generated by a muscle or muscle group"* Muscular strength is divided into three areas:

1. **Explosive strength** – this is the force that can be generated with one quick and powerful movement, as the muscle contracts at high speed (eg throwing a ball)
2. **Dynamic strength** – this is the force that can be repeatedly generated by a muscle, as it moves and contracts (eg when performing weight lifting repetitions).
3. **Static strength** – this is when the muscles contract and hold one position without changing length (eg when holding a heavy object or performing a statics plank).

Muscular Endurance "A *muscle or muscle group being able to continue performing/contracting over a set period of time and against resistance, without becoming tired*" eg , a swimmer needs muscular endurance in the upper body so that they are able to constantly use their arms and shoulders for the duration of a race.

Body Composition " *the percentage of fat, muscle and bone that makes up your body weight".* Having the right body composition is important for eg , a rugby player will need to have a very different body composition to a marathon runner.

Flexibility " *the amount of movement that can be achieved in all joints of the body*".

1. **Static flexibility** involves holding part of the body still, at its full range of movement (a gymnast holding a balance on the beam).
2. **Dynamic** uses the full range of movement across a joint, and a fast action is performed but not held (a high jumper arching their back over the bar)

Skill Related Components of Fitness

Agility " *the ability to quickly move/change the direction or position of your body, in a controlled way".* To move and change direction quickly is important in sports such as football, tennis and basketball.

Balance " *the ability to maintain your centre of mass over a base of support".*
This is demonstrated when a person is still (static balance) or when they are moving (dynamic balance). Eg, a gymnast performing a handstand would require static balance, while a footballer running while dribbling the ball would require dynamic balance

Coordination "*is the ability to control two or more body parts at the same time particularly during physical activity*" Eg:, having good hand-eye coordination means that you are able to coordinate eye movement with hand movement in a controlled way – this skill is used when catching a ball, using a racket, etc.

Power "*is the ability to use strength at speed, usually in an explosive movement*" (for example, jumping, sprinting, throwing, etc).This is done by combining maximum speed with maximum strength.

Reaction time *"the time it takes for the body, or part of the body, to respond to a stimulus".* The speed of response can be affected by the situation

- **Simple situations** – here, there is only one response so it should not take a long time to react. Eg a sprinter reacting to the starter's gun
- Com**plex situations** – here there is a choice to be made so more time is needed in order to evaluate the situation and choose a response. For example, a tennis player deciding which shot to play in a match.

Speed "the ability to perform a movement or cover a distance as quickly as possible.

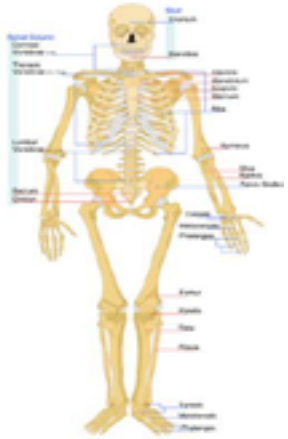
- **Accelerative Speed** (used in sprints up to 30 metres)
- **Pure Speed** (this is used in sprints up to 60 metres)
- **Speed Endurance** (this is used when sprinting with short recovery periods in-between such as in team games and racket sports).

Skeletal System

The Skeletal System

Structure – The skeleton is divided into two sections and you should be able to locate the bones listed below:

- **Axial** – cranium, sternum, ribs and vertebrae
- **Appendicular** – clavicle, scapula, humerus, radius, ulna, carpals, tarsals, pelvis, femur, tibia, fibula and phalanges



The skeletal system is made up of bones that join together to form **joints.** The skeletal system allows **movement** to happen when it is joined up with the muscular system. **Connective tissue** called **tendons** link the bones to the muscles and **ligaments** join up bones at the joints.

Three Types of Joints

- **Fixed joints** - There is no movement in these joints. Examples are the skull and the pelvis.
- **Slightly moveable joints** - These joints are linked by cartilage, which means that there is some movement but it is very slight/limited. Examples of these joints can be found in the spine, ribs and sternum.
- **Synovial joints** These are the joints that provide a great range of movement within the body

Types of Synovial Joints

Pivot joint – this type of joint is found in the neck/; it allows rotation of the head**.**
Condyloid joint – these joints are found in the wrist and ankle.
Saddle joint – this type of joint is found at the base of the thumb.
Gliding joint – this type of joint is found in the wrist and the clavicle.
Ball and socket joint – these joints are found in the shoulder and hip; this type of joint allows the greatest range of movement.
Hinge joint – these joints are found in the elbow and knee; they allow movement that is limited to one plane (similar to a door swinging on its hinge).

Four Different Types of Bone

- **Long bones,** such as the femur (your thigh bone) and the humerus (in your upper arm). These bones are usually connected with large movements of the body.
- **Short bones**, such as the carpals and tarsals (found in your hands and feet). These bones are linked to smaller movements of the body.
- **Flat (or plate) bones**. These bones protect the internal organs – for example, the skull, the ribs, the sternum and the scapula.
- **Irregular bones**. These bones are irregular in shape, such as the vertebrae (in your spine)

The Main Functions of the Skeletal System

- Working with muscles to allow **movement** in joints
- Giving **support** to our muscles and organs
- **Protecting** vital organs (for example, our skull protects our brain)
- Maintaining our basic **body shape**
- **Producing red and white blood cells** (this is done in the bone marrow)
- **Storing minerals**, such as calcium

Joint Actions

- **Abduction**: this is movement away from the mid-line of the body.
- **Adduction:** this is movement towards the mid-line of the body.
- **Extension**: this is when we straighten the limbs (arms/legs) at a joint.
- **Flexion:** this is when we bend the limbs (arms/legs) at a joint.
- **Rotation**: this is a circular movement around a fixed point, either inward or outward

The Spine (also known as the vertebral column or spinal column)

The spine is split into the following regions:

- Cervical (7 vertebrae)
- Thoracic (12 vertebrae)
- Lumbar (5 vertebrae)
- Sacrum (5 fused vertebrae)
- Coccyx (4 fused vertebrae)

Kyphosis is a curving (curvature) of the spine that causes the top of the back to appear more rounded than normal.
Lordosis where the lumbar or cervical vertebrae are either slightly or significantly pronounced (curved).
Scoliosis is when the spine curves to either side of the body.

Muscular System

Types of Muscle

Cardiac:
- Found in the heart
- Oxygen dependent, involuntary
- Aids blood flow through the heart

Smooth
- Found in multiple locations including digestive tract, blood vessels and lungs; contracts in all directions
- Can work without oxygen, involuntary
- Aids digestion, helps the distribution of blood

Skeletal:
Found around the body
Can work with or without oxygen, works voluntarily
Aids with movement

The Muscular System

Location and Movement Functions of Key Muscles

- **Biceps** – Found in Upper front Arm and allow flexion of the elbow
- **Triceps** –Found in upper rear arm and allow extension of the elbow
- **Hip Flexor-** – Found in hip and allow flexion of the hip
- **Gluteus Maximus** – Found in rear of lower torso and allow extension of legs at hip
- **Abdominals** – Found in lower front torso and allow flexion of the spine
- **Quadriceps** – Found in upper front leg and allow extension of the knee
- **Hamstring** - Found in upper rear leg and allow flexion of the knee
- **Pectorals** – Found in upper torso and allow adduction of the arm
- **Deltoids** - Found in the neck and allow abduction of the deltoid

Antagonist Pairs

Each pair of muscles has an **agonist** (*the muscles that pull, produce the movement and shorten)* and **antagonist (** *the muscle that relaxes and lengthens*). An example of an **Antagonist Pair** is the biceps and triceps. When the elbow flexes the bicep is the **agonist** and triceps is the **antagonist .**

Types of Mucle Contractions

Isotonic Contractions – This is when a muscle contracts to create movement. These are either :
- **Concentric** which causes the muscle to shorten as it contracts eg during a bicep curl the bicep shortens, pulls the lower arm up and flexes the elbow.
- **Or Eccentric** where the fibres contract as the muscle lengthens. Eg when the weight is lowered after performing a bicep curl. Here it continues to contract (and lengthen) in order to allow the weight to be lowered back down with control.

Isometric Muscle Contractions - The muscle contracts but there is no resulting movement of either the limb or the joint. The muscles are working and contracting to keep the joint stable and working with high amounts of force . Eg plank, Rugby scrum

Muscles Fibre Types

Type 1 - Slow twitch –these fibres **contract slowly** and produce **low force.** They can produce **large amounts of energy** and **work for a long time** without getting tired. For this reason, slow twitch fibres are important in **endurance activities, eg running or cycling.**
- ***Slow twitch fibres*** *need a good supply of oxygenated blood in order to produce energy for muscle contraction. This means that muscles that contain a lot of slow twitch fibres are red, because they contain lots of blood vessels.*

Type 2 – Fast Twitch – These fibres **contract much more rapidly** and produce **medium to high force.** They can **produce explosive energy**, but they can **quickly get tir**ed as they consume lots of energy when contracting. Fast twitch muscle fibres are used in shorter, higher intensity actions – such **as jumping to catch a ball or sprinting short distances**.
- ***Fast twitch muscles*** *are white in colour, compared with slow twitch muscles. This is because fast twitch muscle fibres don't need oxygen in order to produce energy, so they don't need such a rich blood supply*

Key point Remember we all have a **mixture** of these fibres. If you have a high percentage of Fast Twitch muscles you will be good at explosive actions such as sprinting, jumping.

Cardiovascular System

The Cardiovascular (CV) System

The main functions of the CV system during exercise are -

1. **Transport oxygen** and nutrients to fuel vital organs and muscles in the body.
2. **Transport carbon** dioxide and waste products away from organs & muscles.
3. **Regulate** body temperature.
4. Redistribution of Blood during Exercise (**Vascular Shunt)** during exercise .

The cardiovascular system comprises the **heart, blood** and **blood vessels.**

Blood Vessels

Veins

- Thin walls, contain valves to ensure blood flows in one direction
- Carry deoxygenated blood to the heart,
- carry blood under low pressure

Arteries

- Thick, muscular walls
- carry blood under high pressure
- Carry oxygenated blood away from the heart to the body

Capillaries

- The smallest blood vessels,
- with very thin walls
- Assist with gaseous exchange at the lungs

Vascular shunt – the function of blood redistribution to the muscles with greater demand, while diverting away from areas of lower demand, through:

- *The widening of blood vessels (vasodilation). The narrowing is called (vasoconstriction)*

Blood Pressure (BP)

- The **systolic pressure** (higher number/ first number) measures the force at which the heart is pumping blood around the body
- The **diastolic pressure** (lower number/ second number) measures the resistance to the blood flow in the blood vessels.
- Both numbers are measured in **millimetres of mercury** (or mmHg) and expressed as systolic pressure/diastolic pressure mmHg.
- A '**normal/ideal range'** would be between 90/60mmHGg and 120/80mmHg. A **high blood pressure (hypertension)** measurement is considered to be 140/90mmHg or higher, while a l**ow blood pressure** measurement would be 90/60mmhg or lower
- **Factors** that effect Blood Pressure – Activity Level, stress, diet, age, alcohol.

CV Measurements

Heart Rate (HR) - the number of times your heart beats in a minute. A normal resting heart rate is 70 to 100 beats per minute.

Stroke Volume (SV) - the amount of blood that is pumped from the left ventricle of the heart every time it beats.

Cardiac output (CO) = Heart rate (HR) x Stroke volume (SV)

Maximum Heart Rate (MHR) = 220 minus your age

Energy Systems

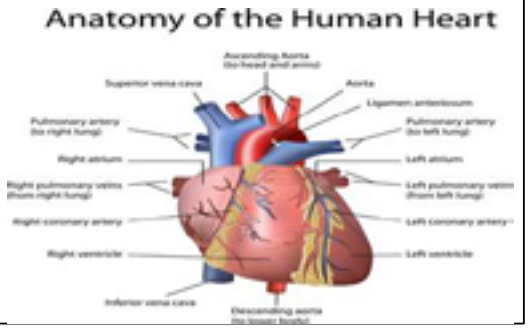
Aerobic – produces the **large amount of energy** and **needs oxygen** in order to be able to work (it makes energy by burning fuel with oxygen). Can be sustained for **long periods of time** in activities such as longer distance running. Carbon dioxide and water are waste products . Uses slow twitch muscle fibres.

Anaerobic –used for activities that involve short, fast, powerful bursts of energy (such as sprinting, powerlifting, throwing), but only for around 10 seconds. Lactic acid is a by-product of this system . The anaerobic system uses fast twitch fibres

The Heart

This is a muscle which is continually contracting and relaxing, in order to pump blood through the blood vessels. Every time the heart contracts and relaxes is called a 'heartbeat'.

- The heart is made up of **four chambers**.
- The **top two** are called the **atria**
- The **bottom two** are called the **ventricles**
- The heart also has **valves**, which stop the
- blood from flowing backwards



Cardiac Cycle

Deoxygenated Blood Pathway – from the body to vena cava, to right atrium, to right ventricle, to pulmonary artery, to the lungs to pick up oxygen and nutrients

Oxygenated Blood Pathway – from the lungs to the pulmonary vein, to left atrium, to left ventricle, to aorta, to the body to drop off oxygen and nutrients, pick up waste products and become deoxygenated

Respiratory System

Pathway of Air Through the Respiratory System

1. **Nose / Mouth –** The nose is the primary opening in the body's airway the mouth the secondary. Air is drawn into these and then passes to the -
2. **Pharynx -** This also known as the Throat . The air passes through this into the -
3. **Larynx** – This is also known as the Voice Box. The air passes through this into the -
4. **Trachea –** This also known as the Windpipe and is the '*main trunk of the tree*' At this point there is the -
5. ***Epiglottis*** *– 'a small flap of cartilage that acts as a switch between the trachea and the oesophagus (the tube connecting the pharynx to the stomach). When breathing this covers the oesophagus and when eating it covers the trachea to stop choking.'*
6. **Bronchi** - Air then travels into either the left or right bronchi *(the two main branches of the tree)* and then into smaller Bronchi. Then air passes into the -
7. **Bronchioles –** These spread like *small branches* into the lungs
8. **Alveoli -** Finally air passes into the Alveoli and you can think of these *as leaves of a tree.* Here oxygen is diffused into the blood. There are thousands upon thousands of these.

Mechanics of Breathing

1. Inspiration (Breathing In).

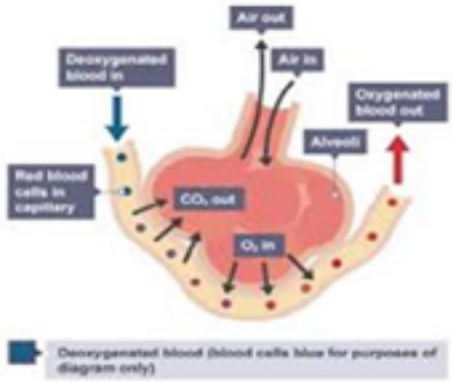
- The **external intercostal muscles** contract and lift up the ribcage (expanding it outwards and upwards).
- The **diaphragm** flattens, pulling downwards and contracting to **increase the volume** of the chest/lungs.
- **Pressure** inside the chest is **lowered** and air is taken into the lungs through the nose/mouth. *(remember gases move from a high to low pressure)*

2. Exhalation (Breathing Out)

- The **internal intercostal muscles** contract , lowering the ribcage (it drops inwards and outwards).
- The **diaphragm** becomes dome-shaped, relaxing and moving up
- The **volume** of the chest/lungs **decreases,**
- **Pressure** inside the chest **increases** and air is forced out of the lungs

Diffusion and Gaseous Exchange

Diffusion –*' gas moving from a high concentration to a low concentration'*
Gaseous Exchange – '*the movement of oxygen and carbon dioxide between the lungs and blood at the alveoli'*



Features of the Alveoli that assist Gaseous Exchange.

- Moist, very thin walls (one cell thick)
- Provide large surface area
- Short diffusion distance
- Surrounded by capillaries

Explanation of how Gaseous Exchange Works

Once oxygen has been breathed in and delivered to the lungs, a process called gaseous exchange takes place in the alveoli. During this process, the oxygen is passed from the alveoli into the blood so that it can be circulated around the body. Carbon dioxide is then removed from the blood and returns to the alveoli so that it can be breathed out of our lungs.

During the process of gaseous exchange, the gases are moved by diffusion…*from a high concentration to a low concentration.* When blood arrives in the alveoli, it has a higher concentration of carbon dioxide. However, the air in the alveoli has a much lower concentration of carbon dioxide which diffuses the carbon dioxide in the blood. Similarly, blood arriving into the alveoli has a lower oxygen concentration, while the air in the alveoli has a higher oxygen concentration. Therefore, oxygen moves into the blood

Lung Volumes

Tidal volume This is the amount of air that enters the lungs during normal inhalation /breathing in when the body is at rest. The average tidal volume is 500ml.
Inspiratory reserve volume This is the amount of extra air that is inhaled / breathed in (over and above the tidal volume) during a deep breath in when exercising
Expiratory reserve volume This is the amount of extra air that is exhaled / breathed out (over and above the tidal volume) during a forceful breath out when exercising
Residual volume. This is the amount of air that remains in the lungs, following maximum exhalation / breathing out .There is always some air in the lungs, to prevent collapsing.
Vital capacity This is the maximum amount of air that you can exhale/breath out after breathing in as much as you physically can

Effects of Exercise of the Body

Short Term Effects'*The immediate responses that your body makes when exercising*'

1. **Breathing rate** - During exercise, our muscles need more oxygen to provide fuel for the increased work they are doing . This increases the **rate and depth of breathing**

2. Heart rate, stroke volume and cardiac output - As your rate of exercise increases, your muscles need more oxygen for fuel. This causes an
•Increase in your **heart rate** and the f**orce/frequency** of its contractions, in order to pump enough oxygenated blood to the muscles that need it most.
•Your body may also **release adrenaline** before exercise begins, and this can also cause the heart rate to rise.
• The wall of the left ventricle expands to allow it to fill up with more blood. This increases the **stroke volume** and so pumps more blood out into the body.
•Increase in **cardiac output .**As cardiac output is determined by heart rate and stroke volume (CO = HR x SV), an increase in these increases cardiac output.

3. Blood Pressure - during and immediately after exercise your blood pressure. will increase. This is because the force of your heart's contractions has increased.

4. Body temperature (sweating) During exercise, the body's temperature will rise. When this happens-
•Messages are sent from the brain to the skin to make it sweat. Sweating is our way of losing heat from our body by the evaporation of sweat.
•Blood vessels near the surface of the skin open up, so that heat can be released.

5. **Hydration levels** As our body temperature increases during exercise, the skin produces sweat. The body can lose a lot of water and become dehydrated.

6 **Muscle fatigue** At some point during exercise, our muscles will experience a decline in their ability to generate force or power (this is known as muscle fatigue). This is because the muscles are contracting more often , therefore using up more energy.

7. **Delayed onset of muscular soreness (DOMS) -** This is when we experience sore muscles after exercise/fitness activities, and occurs 1 or 2 days after exercising. DOMS will usually occur when your muscles work harder than they are used to – for example, if you start a new exercise programme/training method, change exercise or increase intensity. This causes damage to the muscle fibres which results in muscles feeling sore

8. Vascular shunt – This will start. Remember this is the process of redirecting blood away from inactive organs to areas of the body that need more blood.

Long Term Effects .*'The changes to your body due to exercise over a period of time'*
*1***Cardiovascular endurance increases**

- The **ventricle walls get larger/thicken** and become able to contract more powerfully, **pumping out more blood (which increases stroke volume**). This increase in size and volume is known as **cardiac hypertrophy**. Examples of exercise that would produce this include any endurance sport, such as long-distance running, swimming or cycling.
- The **respiratory muscles** (diaphragm, intercostal muscles and lungs) **become stronger.** They are then able to make the chest cavity expand more which allows more oxygen to be inhaled and so more is able to be supplied to the muscles.

2. Efficiency to use oxygen(VO2 Max) increases.
VO2 max is *'maximum amount of oxygen that the body is able to use during exercise'*).

- Long-term exercise leads to an **increase in vital capacity.** This means more oxygen is able to enter the body and go to the working muscles so they can work harder and more diffusion can occur so there are less waste products such as carbon dioxide.
- The **number and diameter of the capillaries around the alveoli will increase** due to long-term exercise – this leads to an increased efficiency in gaseous exchange.

3**. Blood pressure decreases -** Regular exercise can result in a decrease of approximately 6 to 10mmHg in both resting systolic and resting diastolic BP.
4. Resting heart rate deceases . This is because the size of the left ventricle (stroke volume) increases due to regular exercise and gas exchange becomes more efficient.

5. Muscular endurance increases - Through regular training, our body can become more efficient at tolerating the lactic acid and getting rid of it. This will mean the muscles will not fatigue (get tired) as quickly

6. Muscle hypertrophy and strength increases The term '*hypertrophy' means an increase in size,* so muscle hypertrophy means that muscles get bigger.

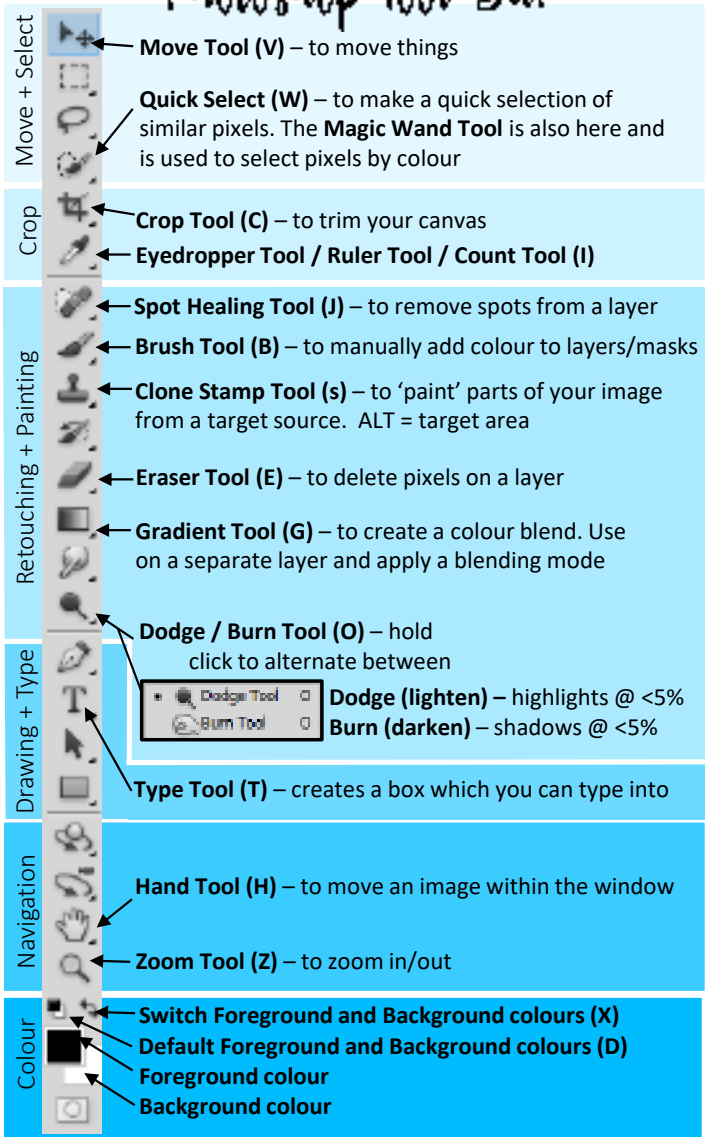
- Muscle hypertrophy occurs when the muscle cells increase in size. When you overload the muscle, small tears in the muscle fibres occur. When these tears repair themselves, the muscle will increase in size. This means that the muscle becomes stronger and it can contract with greater force.

8 -Red blood cells increase. This increase means that the body becomes more efficient at transporting oxygen in the blood to the muscles that need it during exercise.

9. Flexibility increases. This is due to the ligaments and tendons being stretched and becoming stronger and more when we exercise.

Photography - Photoshop

Photoshop Tool Bar



Move + Select

Move Tool (V) – to move things

Quick Select (W) – to make a quick selection of similar pixels. The **Magic Wand Tool** is also here and is used to select pixels by colour

Crop

Crop Tool (C) – to trim your canvas

Eyedropper Tool / Ruler Tool / Count Tool (I)

Retouching + Painting

Spot Healing Tool (J) – to remove spots from a layer

Brush Tool (B) – to manually add colour to layers/masks

Clone Stamp Tool (s) – to 'paint' parts of your image from a target source. ALT = target area

Eraser Tool (E) – to delete pixels on a layer

Gradient Tool (G) – to create a colour blend. Use on a separate layer and apply a blending mode

Dodge / Burn Tool (O) – hold click to alternate between

Dodge (lighten) – highlights @ <5%

Burn (darken) – shadows @ <5%

Drawing + Type

Type Tool (T) – creates a box which you can type into

Navigation

Hand Tool (H) – to move an image within the window

Zoom Tool (Z) – to zoom in/out

Colour

Switch Foreground and Background colours (X)

Default Foreground and Background colours (D)

Foreground colour

Background colour

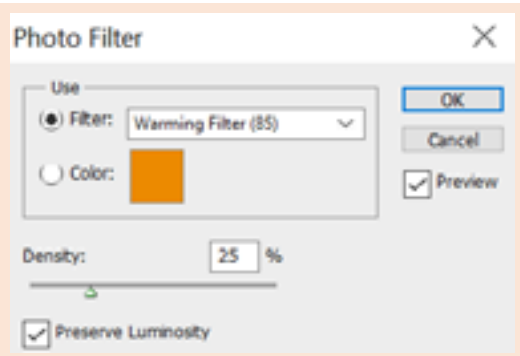
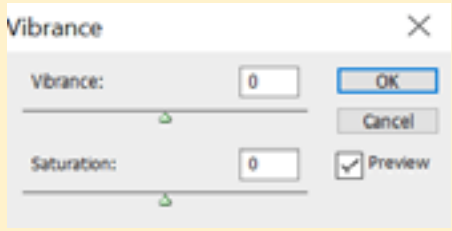
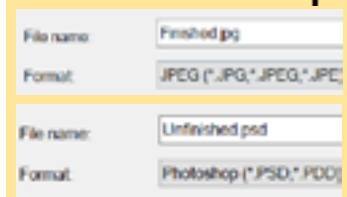


Photo Filter (*Image> Adjustments> Photo Filter*)
Use to mimic the effect of lighting gels



Vibrance (*Image> Adjustments> Vibrance)*
Saturation is the intensity, or richness of the colour/hue. **Vibrance** will only increase the intensity of the more muted hues and leaves already bright hues alone- this protects skin tones.

Gcse Photoshop

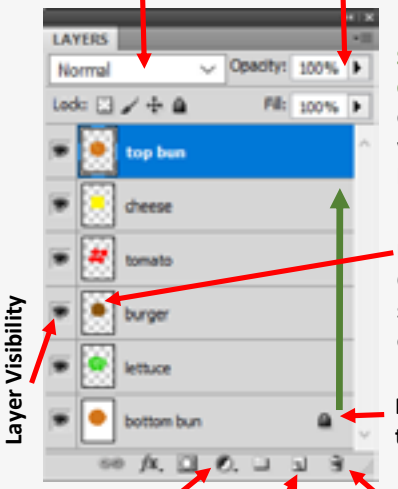


Saving Work
Finished work must be saved as a **JPEG** (not JPEG 2000).
Unfinished work needs to be saved as a Photoshop PSD file.

Useful Shortcuts

1. **CTRL+T –** Transform Tool- use to resize elements
   Hold down **shift** to keep your proportions
2. **CTRL+D** – Deselects your selection
3. **CTRL+ / CTRL—** – zoom in / out
4. **[/] (square brackets** when using a brush based tool)
   will make your brush size smaller / bigger
5. **CTRL+C** – copy a selected area
6. **CTRL+V** – paste a copied area
7. **Shift** (when using a brush based tool) – hold down shift
   to connect brush strokes to form a straight line
8. **Space** – hold space to pan around your screen
9. **ALT** – when using the Clone Stamp Tool, use ALT to define
   your source
10. **F7** – Layers- if you layers palette disappears
11. **CTRL+R** – rulers
12. **Filter> Blur> Gaussian Blur** – add a level of blur to a layer
13. **File> Automate> Merge to HRD Pro** – create a HRD image

Layers Palette



Photography - Assessment Objectives

Assessment Objectives

AO1: Develop

- Find relevant artists/photographers to look at
- Find links between the work of others and your theme
- Produce research pages showing your understanding
- Make personal comments about their work
- Use this work to inspire your work- create your own version

AO2: Refine

- 'Evidence of exploration'
- Explore different media and materials
- Use different techniques and processes
- Use 'digital' manipulation
- Show a connection between experimentation and outcomes
- Show skill and achievement
- Show accuracy in content

AO3: Record

- 'Ability to reflect on work and progress'
- Quality in photography
- Directly support ideas, try things more than one way
- Show skill when using materials or alternative media
- Annotate your work, evaluate how successful it is

AO4: Present

- 'Realisation of intensions' – does your work show a journey?
- Includes every best piece of work
- Is your work presented well? Stuck in straight, mounted nicely, with readable handwriting?
- Ensure your work relates to the preparatory work and artists studied
- Remember 'quality' not 'quantity'

How your book should look

PHOTOGRAPHER / DESIGNERS NAME

Artist work

Name and date if known

Artist work

Name and date if known

Artist work

Name and date if known

- BRIEF background of the artist. "_____ takes photographs which feature/ show us the importance of/ about..." Do not copy and paste from Google.
- Explain why you have picked the contextual references that you have, what do you like most about the work?
- How does the artist relate to the theme? For example- if you looked at Titarenko, his TECHNICAL ability might be something you'd explore (long shutter speeds) or it might be the MESSAGE/ MOOD of his work (being a shadow/ loneliness...). Both could relate to your theme- but what's your link?
- Analyse ONE image in detail- can you pick it apart? How was the photo taken? What lighting? How has light been used? What set up? How was it edited? Informed guesses!

YOUR RESPONSE

Your work

Labelled with meta data (ISO, aperture and shutter speed)

Y11 EXAM ONLY

Try to come up with at 3 ways you could respond to the Artist AND the theme.

For example (Confectionery & Billy Kidd- decay work)

1. Still life sweets- same background and lighting setup
2. Sweets next to fruit rotting away (and the sweets not)
3. Sweet jars filled with photos of decayed teeth and overweight people (the effects of too much)

This could be a spider diagram, or a small list.

Try at least one of these ideas- experiment and refine!

Evaluate your response and include

- Technical details- What did you do? How did you set up your shoot? How did you edit your work? What lighting setup did you use? Why?
- What are your thoughts towards your work? Is your work successful? Why?
    - If you're going to say it's not- fine- do another shoot that works better
- Does your work fit the theme? How? What was your idea?

You could add before and after images that show how you edited your photo (definitely do this if you've combined more than one photograph). You can tie work in the middle.

Photography - Vocab & Words

Photography Vocabulary

Connectives	Form & Shape	Space	Texture	Mood	Technique	Colour	Light	Composition
However	2D / 3D	Above	Bumpy	Atmospheric	Animated	Bright	Balanced	Abstract
Although	Angular	Below	Cracked	Calm	Burnt	Clash	Bright	Background
On the other hand	Obscure	Between	Flat	Depressive	Collaged	Contrasting	Dull	Balanced
Whereas	Geometric	Illusion	Glossy	Emotive	Digital	Cool	Direct	Blurred
Similarly	Perspective	Negative	Grainy	Exciting	Edited	Dark	Dramatic	Bold
Furthermore	Proportion	Open	Hard	Fearful	Film	Dull	Fade	Centred
In addition	Simple	Positive	Matte	Humorous	Filmed	Highlight	Harsh	Depth /of field
Additionally	Silhouette	Shallow	Reflects	Joyful	Layers	Muted	High Key	Distance
It seems	Scale		Rough	Peaceful	Mixed media	Rich	Low Key	Empty
			Shiny	Provoking	Painted	Saturation	Limited	Foreground
			Smooth	Sad	Projected	Shadow	Natural	Horizon
			Spiky	Uplifting	Stop frame	Warm	Soft	Juxtaposed
					Sewn	Vibrant	Strong	Rule of Thirds
					Transfer	Black & White	Subtle	Perspective
							Tonal range	Strong
								Vanishing

Photography Key Words

1. **Exposure:** How light or dark an image is. Can be described hen too much or too little light is in your photo. The exposure is controlled by the aperture, shutter speed and ISO
2. **Aperture**: The size of the hole which controls how much light is allowed into the camera when taking a photograph. The higher the aperture the smaller the hole (less light): This is measured in f/stops, eg, f/16
3. **ISO**: ISO is a camera setting that will brighten or darken a photo. As you increase your ISO number, your photos will grow progressively brighter, but also grainier
4. **Shutter speed**: How long the cameras shutter is kept open . This is measured in seconds and fractions of seconds, eg, 1/125s
5. **Highlight/ shadow:** Light and shadow in your photo can be created and controlled with artificial light (lamps or flash) or natural light (sun)
6. **Contrast:** the difference between the darkest and lightest area in your photograph (high contrast = strong colours- punchy, Low contrast = grey/foggy)
7. **Focal Point:** The part of the photograph that the eye is immediately drawn to
8. **Subject matter:** What is represented in the photograph, a basic breakdown of what can be seen
9. **Composition:** To arrangement of the subject matter and how they relate to one another within the photograph
10. **Crop:** To select an area of an image and remove surrounding area
11. **Perspective:** The position or angle of the shot in relation to object being photographed- this is usually done looking through the viewfinder before you take your photo but can also be adjusted after using the crop feature of Photoshop
12. **Forced Perspective:** A technique that employs optical illusion to make an object appear bigger/smaller/closer/further away than it actually is
13. **Focus:** Areas of an image may be in focus (clear and sharp) and some areas may be out of focus (blurry and difficult to see or make out)
14. **Depth of field:** How much of the image is in focus. It can be described using a scale of two terms- shallow/small and deep/large
15. **Rule of thirds**: A technique used to create a successful composition. The rule states that the focal point should not be dead centre in the image but either one third from the top, bottom or from one side of the image ie, in one of the intersecting points. In landscapes, the horizon line should fall on one of the horizontal grid lines
16. **Leading lines:** A composition technique used to guide the audience to a specific area of your photo through the use of lines
17. **Bokeh:** the orbs created when light is out of focus in an image
18. **Collage:** an image that is created by using layers of other images and/or materials
19. **Mixed Media:** Using a variety of different media to create an artwork.

Photographer Bank

Landscape
Ansel Adams, Joe Cornish, Bill Brandt, Edward Weston, Guy Edwardes, Jem Southam, Adam Burton, Fay Godwin, Michael Kenna

Portrait
Martin Parr, Steve McCurry, Diane Arbus, Sally Mann, David Bailey, Richard Avedon, Nan Goldin, Jane Mown, Martin Schoeller, Alexander Rodchenko

Documentary
Henri Cartier-Bresson, Eve Arnold, Martin Marr, Steve McCurry, Robert Frank, Jan Grurup, John Hilliard,

Architecture
Alexander Rodchenko, Rob Watkins, Simon Doling, Ivan Baan

Fashion
Annie Leibovitz, Corrine Day, Mario Testino, Helmut Newton, Cecil Beaton, Richard Avedon, David Bailey, Lord Snowdon, Dani Carrig, Steven Meisel
Fashion/ Fairy-tale/Illustration
Annie Leibovitz, Tim Walker, Cindy Sherman, Zev Hoover, Slinkachu

Wildlife
Colin Varndell, Xavi Bou, Marina Cano, Nick Brandt

Photography - Lighting Setups

Camera techniques
Long exposures
Quick exposures
Panning
Tracking
Cinematic conventions
Panning with flash
Zoom during exposure
Experiment with depth of field (aperture)
Tilt shift
Macro /wide angle / fish eye
Home made cameras / pinhole / matchbox
Shoot from the Hip
Scanography
Moving image capture
Filters polarizing and neutral density
Microscopy
Blurring
Continuous sequence
Vignette
Low fi

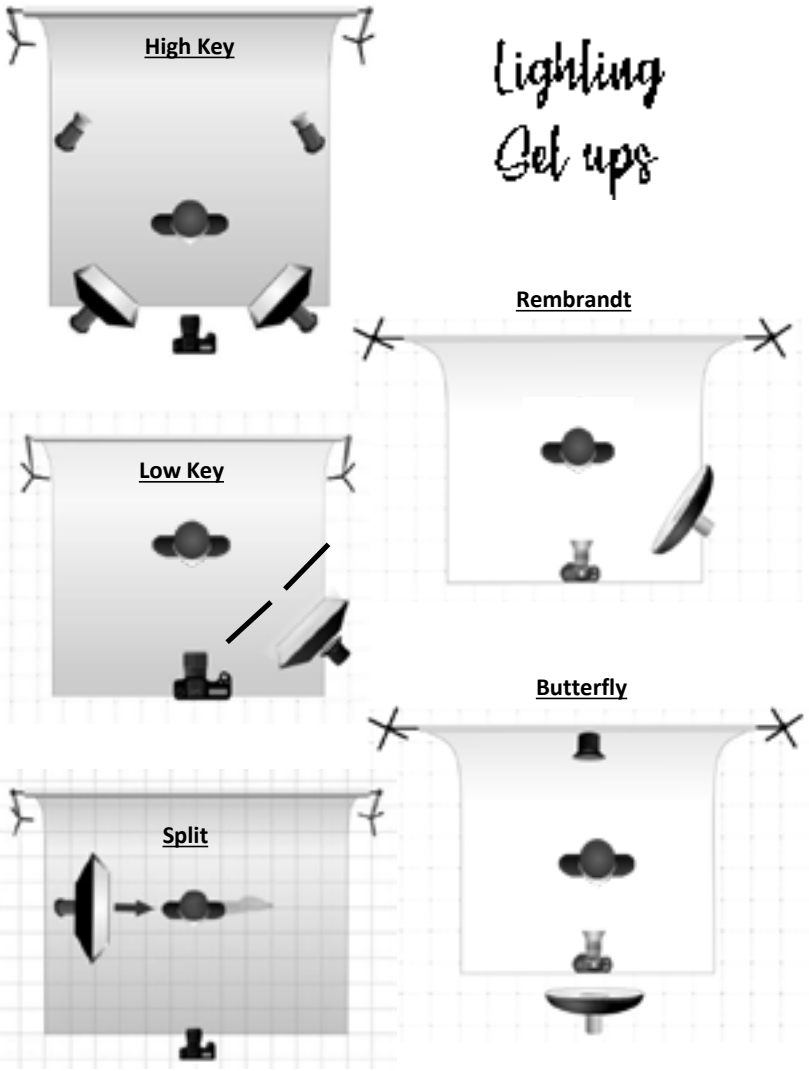
Photoshop
HDR
Panoramic stitching
Repetition and rotation kaleidoscopic
Pattern
Composite montage
Image manipulation
Colour correction
Merging images double exposure
Enhancing
Moving image (cinemographs / stop motion / time-lapse / film)
Over time
Infrared processing

Lighting
Portrait lighting Rembrandt,
Noir style
Hair lighting
Butterfly lighting
Levels of diffusion, (soft light hard light)
Background lighting
Natural
Silhouettes
Shadows
Jill Greenberg
Use of reflectors / mirrors
Use of key and fill lighting
Painting with light
Strobe lighting (Edgerton style)
Colour gels / acetates
Vignette

Further media / format
Sculpture
Sewing
Projection
Framing
Distressing printouts
Triptych
Narrative
Mobiles
Boxes
Books
Obscure formats
Printing on range of surfaces / tracing paper / acetate
Re-photography Combining secondary source
Combining image with text

Types of Photography
Abstract
Architecture
Black & White
Candid
Close-up
Children
Commercial
Cityscape
Composite
Documentary
Double Exposure
Editorial
Fashion
Fairy- Tale
Fine Art
Food
Golden Hour
Interior
Landscape
Long Exposure
Love
Macro
Photojournalism
Photo manipulation
Portraiture
Seascape
Sport
Still Life
Surreal
Street
Time-lapse
Wildlife
War

Ways to experiment



Christianity; practices
Knowledge Organizer 4 Spring

The Lord's Prayer

Our Father, who art in heaven, hallowed be thy name. Thy kingdom come, thy will be done on earth as it is in heaven. Give us our daily bread and forgive us our trespasses as we forgive those who trespass against us. And lead us not in temptation, but deliver us from evil. For thine is the kingdom, the power and the glory for ever and ever. Amen.

	Liturgical Worship	Informal Worship	Individual Worship
What?	*A set pattern with established ritual.*	*Spontaneous (Evangelicals) or silence for Society of Friends.*	*Praying as an individual.*
When?	*Set times during services e.g. Christmas.*	*Generally Sundays but other days as well.*	*Several times a day or once a day.*
Who?	*Members of the church. Mass only for the baptised.*	*Members of church, public.*	*In their homes, alone or somewhere private.*

Why pray?

- *JC did it.*
- *Communication with God/JC.*
- **Adoration** *(praising God),* **confession** *(saying sorry),* **supplication** *(asking for something),* **thanksgiving** *(thanking God).*

Knowledge Organizer 5
Spring

Baptism

What?; brings a person into the church using holy water. God parents are appointed. JC did it.

When? generally babies or young children. Adult baptism or 'full immersion' is common with Evangelicals.

Why? Marks your entry into the church and Christian family. Removes sin. If JC did it... 'spiritual birth'

Mass/Eucharist/Holy Communion

What? Commemorates Last Supper. Symbol of '*body and blood*' of JC.

When? Sunday morning. Usually at the end of the service. RC every week, Protestants less frequently.

Why? RC it is the *literal* body and blood (transubstantiation). Protestants believe more in consubstantiation (essence of JC within the bread and wine)

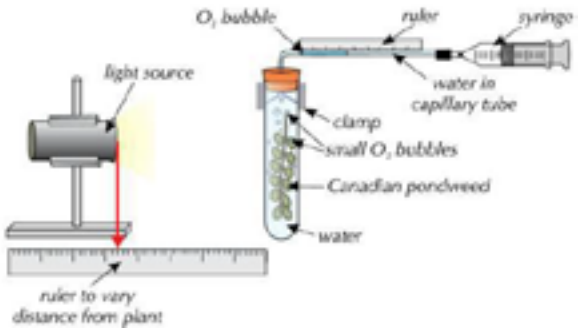
Bioenergetics 1 Photosynthesis

Section 1 Definitions

1	Photosynthesis	An endothermic reaction where plants and algae turn carbon dioxide and water into glucose and release oxygen.
2	Endothermic reaction	A reaction that requires energy to be absorbed to work
3	Chloroplasts	The organelles in plant cells where photosynthesis takes place
4	Chlorophyll	The green pigment contained in the chloroplasts that absorbs light energy necessary for photosynthesis
5	Rate of reaction	How fast a reaction takes place
6	Limiting factor	Limits the rate of reaction

Section 2 – Required practical 5:

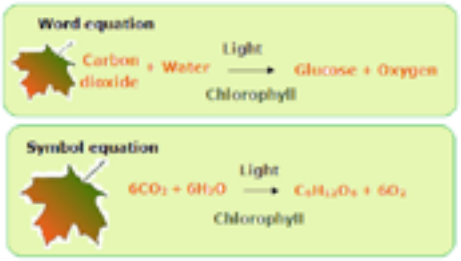
investigate the effect of light intensity on the rate of photosynthesis using an aquatic organism such as pondweed.



Rate of photosynthesis = distance bubble moves / time taken

Section 3 – Making and using glucose

Photosynthesis is an endothermic reaction in which energy is transferred from the environment to the chloroplasts by light.



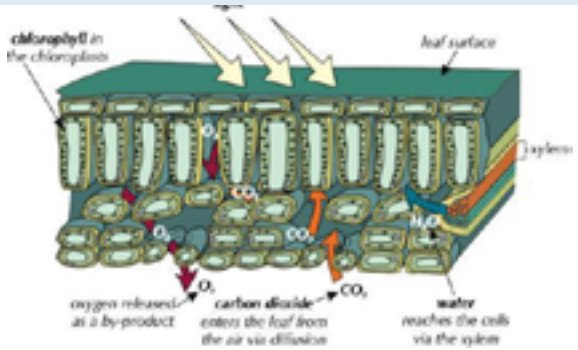
Uses of glucose

The glucose produced in photosynthesis may be:

- used for respiration
- converted into insoluble starch for storage
- used to produce fat or oil for storage
- used to produce cellulose, which strengthens the cell wall
- used to produce amino acids for protein synthesis.

To produce proteins, plants also use nitrate ions that are absorbed from the soil.

Section 4 – Leaf structure and photosynthesis



Adaptation	How this supports photosynthesis
Broad leaves	Large surface area to absorb light energy
Thin leaves	Short diffusion distance for gas
Chlorophyll in chloroplasts	Absorb light
Veins	Deliver water to cells and remove products
Air spaces	Allow gas exchange
Guard cells	Open and close to regulate gas exchange through stomata

Section 5 – Limiting factors

A limiting factor is something that will stop the rate of photosynthesis occurring at a faster rate. Light intensity, temperature and carbon dioxide concentrations are all limiting factors

Light intensity	Temperature	Carbon dioxide levels
Lots of light = lots of photosynthesis. Not much light = not a lot of photosynthesis	Affects chemical reactions. The rate of photosynthesis will increase up to 40°C. After this, enzymes needed for photosynthesis are denatured.	CO_2 is the raw material for photosynthesis. There is only 0.04% CO_2 in the atmosphere. More CO_2 = photosynthesis increases
		

Science - Biology - Respiration

Section 1 Definitions		
1	respiration	Is an exothermic reaction which releases energy from food, such as glucose.
2	Exothermic reaction	A chemical reaction that releases energy into the environment
3	Mitochondria	An organelle in cells where respiration takes place
4	Aerobic respiration	Respiration that takes place in the presence of oxygen.
5	Anaerobic respiration	Incomplete respiration that occurs when oxygen levels are low or incomplete
6	Fermentation	Anaerobic respiration in plants and yeast cells it produces ethanol (alcohol) as a product.
7	Lactic acid	A chemical produced by anaerobic respiration can cause muscle fatigue and cramp.
8	Oxygen debt	The amount of extra energy the body needs after exercise to remove the excess lactic acid
9	metabolism	The sum of all the reactions in a cell or the body
10	synthesis	To make or produce

Section 2 – Metabolism

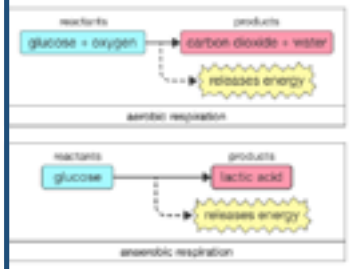
Metabolism is the sum of all the reactions in a cell or the body.
The energy transferred by respiration in cells is used by the organism for the continual enzyme controlled processes of metabolism that synthesise new molecules.
Metabolism includes:

- conversion of glucose to starch, glycogen and cellulose
- the formation of lipid (fat) molecules from a molecule of glycerol and three molecules of fatty acids
- the use of glucose and nitrate ions to form amino acids which in turn are used to synthesise proteins
- respiration
- breakdown of excess proteins to form urea for excretion.

Section 3 – Types of respiration

Bioenergetics 2 Respiration

Cellular respiration as an exothermic reaction which is continuously occurring in living cells.
The energy transferred supplies all the energy needed for living processes.



Respiration in cells can take place **aerobically** (using oxygen). All cells respire aerobically.

Glucose + oxygen → carbon dioxide + water + energy (lots)
$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$

In animal cells can respire **anaerobically** (without oxygen), to transfer energy.

Glucose → Lactic acid + energy (small)
$C_6H_{12}O_6 \rightarrow 2C_3H_6O_3$

Anaerobic respiration in **plant and yeast** cells is represented by the equation:

Anaerobic respiration in yeast cells is called **fermentation** and has economic importance in the manufacture of bread and alcoholic drinks

Comparing types of respiration	Aerobic respiration	Anaerobic respiration	
	All cells	animals	Plants (fermentation)
Is oxygen needed?	Yes	No	No
What products are made?	Carbon dioxide and water	Lactic acid	Ethanol and carbon dioxide
How much energy is transferred?	A large amount	A small amount	A small amount

.Organisms need energy for:

- chemical reactions to build larger molecules
- movement
- keeping warm.

.

Section 4 – The effect of exercise

During exercise the human body reacts to the increased demand for energy.
The heart rate, breathing rate and breath volume increase during exercise to supply the muscles with more oxygenated blood.

If insufficient (not enough) oxygen is supplied then anaerobic respiration takes place in muscles instead.
The incomplete oxidation of glucose causes a build up of **lactic acid** and creates an **oxygen debt**.
During long periods of vigorous activity muscles become fatigued (tired) and stop contracting efficiently (cramp)

Higher tier only

Blood flowing through the muscles transports the lactic acid to the liver where it is converted back into glucose.

The **oxygen debt** is the amount of extra oxygen the body needs after exercise to react with the accumulated (built up) lactic acid and remove it from the cells.

Biology Paper 1– Infection and Response

Section 1 –Pathogens

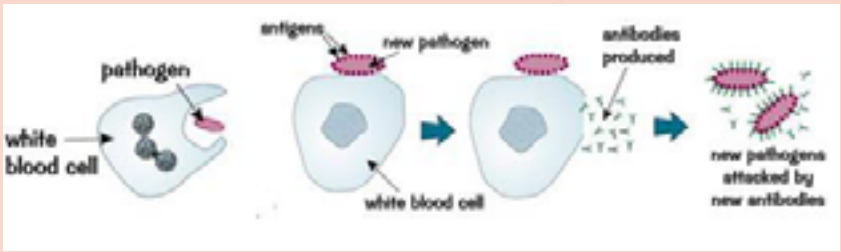
Key terms
Pathogens - **microorganisms** that cause **disease**
Communicable diseases **– Infectious** diseases that can be spread between organisms

Type of Pathogen	Description	Examples of disease
Bacteria 	• Prokaryotic cell. • No nucleus or other membrane bound organelles. • Reproduces and releases toxins that damage cells	• Salmonella (food poisoning) fever, stomach cramps & vomiting. • Gonorrhoea STD. Causes thick yellow/green discharge from genitals and pain while urinating.
Virus 	• Replicate inside your cells – the damage this causes makes you ill	• Measles Spread in the droplets released when a person coughs or sneezes. Causes fever & red rash. Can be fatal. • HIV Flu like illness. Spread by sexual contact or exchange of body fluids (e.g. blood when drug users share needles) Attacks the immune system, leading to AIDS. • Tobacco Mosaic Virus Plant disease. Discolours leaves, preventing photosynthesis.
Fungi 	Spread by making spores.	Rose black spot Fungus spreads through wind or water, causing leaf spots that prevent photosynthesis.
Protist 	Often carried by another animal that spreads the disease (called a vector).	Malaria Vector = mosquitoes. Causes fever and can be fatal.

Section 2 – Human Defence System

The **immune system** is made of **white blood cells**, which destroy pathogens by:

1. Engulfing pathogens by **phagocytosis**
2. Producing **antibodies**, which attach to pathogens' **antigens**
3. Produce **antitoxins** to neutralize toxins from pathogen



Section 3 – Vaccination

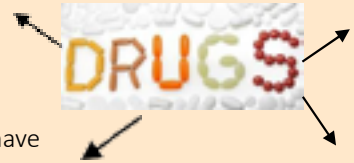
Vaccines contain dead/weakened pathogens.

- A vaccination stimulates white blood cells to make antibodies.
- If the same pathogen re-enters the body, the white blood cells recognises their antigens and is able to produce antibodies quickly and in high quantities.
- You become immune.

Biology Paper 1– Infection and Response

Section 4 – Drugs

Antibiotics, such as penicillin, treat **bacterial infections only**.



Painkillers, such as aspirin, relieve symptoms but do not kill the pathogens

Some bacteria have mutated to become <u>resistant</u> to antibiotics (e.g. MRSA)

Heart drug digitalis → foxgloves.
Aspirin → Willow tree
Penicillin → mould (A Fleming)

Section 5 – Spreading pathogens

Water may contain bacteria, such as those that cause cholera

Flu and cold viruses can be spread by droplets in the air from coughs and sneezes

Food may contain food-poisoning bacteria such as salmonella

Direct contact – e.g. touching a floor infected with athletes foot

Bodily fluids – e.g transfer of HIV through blood on shared syringe or through unprotected sex.

Vectors – Organisms that transmit diseases. E.g. Mosquitos may transmit malaria when they bite humans.

Section 5 – Drug testing

New drugs are extensively tested for **toxicity**, **efficacy** and **dose**.

Stage 1 → Preclinical trials (testing is done in a laboratory using cells, tissues and live animals)

Stage 2→ Animal testing. An amount of substance given to the animals, careful monitoring for any side-effects.

Stage 3 → Clinical trials. Test on healthy human volunteers to check for **side effects**. THEN test on people with the disease.
Volunteers are randomly split into 2 groups:

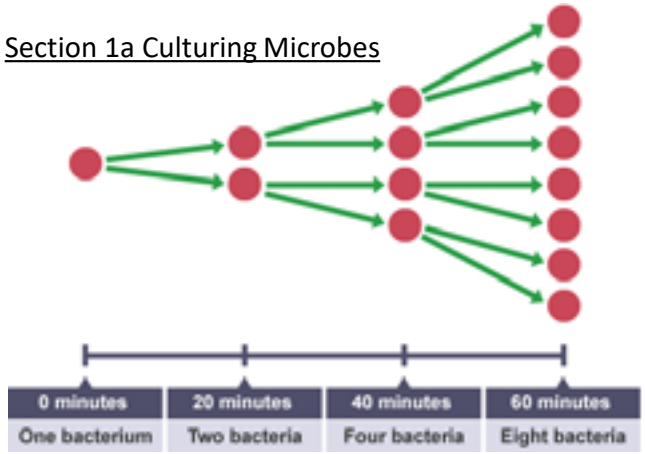
1. **Real drug**
2. **Placebo (fake drug)**

Neither patients or doctors know who is in each group (**double blind**) to prevent **bias.**
The drug only passes the trial if it works better than the placebo.

Results are checked by other scientists in the **peer review** process

Biology Paper 1 Triple extra content

Section 1a Culturing Microbes



Binary fission	A simple form of cell division used by bacteria to reproduce
Factors affecting reproduction	Temperature and the availability of nutrients
Nutrient broth solution or Agar plates	A liquid or gel provides all nutrients (carbohydrates, nitrogen etc)
Agar plates	Bacteria can be spread onto the plates, and form colonies

Section 1b - Aseptic technique – to avoid contamination from competing bacteria

An inoculating loop used to transfer bacteria - sterilised by heating it to red hot in a Bunsen, before and after use.

Do not fully remove or place the lid on the desk to stop contamination

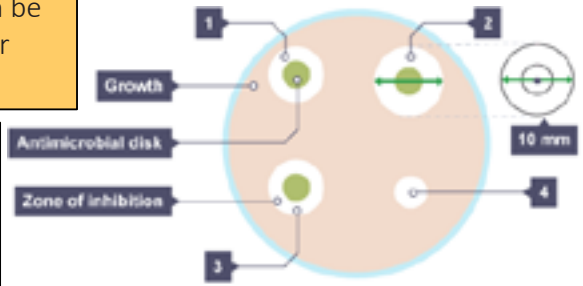
Secure petri dish lid with tape and add a date and label.

Plates are incubated at 25°C in school laboratories for no more than 24–48 hours. So no human pathogens grow.

Section 2 required practical – antiseptics and antibiotics

The effectiveness of antibiotics or antiseptics can be tested experimentally using uncontaminated agar plates.

1.Soak filter paper disks in a variety of solutions, use either different concentrations of the same solution, or a variety of different solutions.
2.Pour the sterile agar plates and allow to set fully.
3.Measure the clear area around the soaked filter paper disks. A control disk must be also included



Section 3 Monoclonal antibodies = identical copies of one type of antibody produced in a laboratory

1. A mouse is injected with a pathogen
2. Lymphocytes produce antibodies
3. Lymphocytes are removed from the mouse and fused with rapidly dividing mouse tumour cells
4. The new cells are called hybridomas
5. The hybridomas divide rapidly and release lots of antibodies which are then collected.

Uses of monoclonal antibodies:
Diagnosis - Pregnancy tests to measure the levels of hormones
Detecting pathogens – small quantities of chemicals in the blood
Detecting molecules – fluorescent dye can be attached so it can be seen inside cells or tissues
Treatment – bound to radioactive substance or chemical cancer cells are targeted

Section 4 plant disease and defences:

Defence mechanisms:
Physical - Thick waxy layers on leaves and cell walls stop pathogens entering
Mechanical - Thorns and curling up their leaves to prevent them form being eaten
Chemical - Antibacterial and toxins made by the plant

Signs of disease:

Stunted growth
Spots on leaves
Malformed leaves/stem
Pests present
Discolouration

Find out what is wrong using gardening manual, websites, lab tests

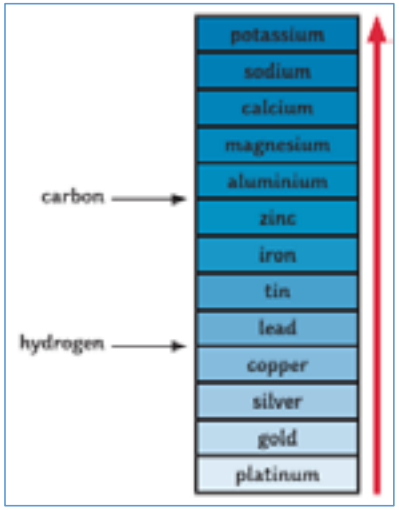
Nutrient deficiencies:

Magnesium ions used to make chlorophyll, leaves turn yellow

Nitrate ions needed for protein synthesis – can cause stunted growth.

Chemical Changes (Part 1)

The **reactivity series** is a list of metals. The more reactive metals are at the top of the list and the least reactive at the bottom



More reactive metals can displace less reactive metals

E.g.
Sodium + Iron Sulphate → Sodium Sulphate + Iron

If the metal is less reactive, no reaction occurs

E.g.
Iron + Sodium Sulphate → NO REACTION

Extracting Metals

Some metals are very **unreactive** as exist in the ground as metals. This is called its **native state**

Most metals exist in the ground as **ores**. These are usually the oxide. For example iron is found as iron oxide.

Less reactive metals can be extracted using carbon

E.g.

Iron Oxide + Carbon → Iron + Carbon Oxide

REDOX Reactions (HT Only)

When metals oxides are extracted a **REDOX** reaction occurs. A REDOX reaction is when both **oxidation** and **reductions** reactions happen at the same time.

Naming Salts

When **hydrochloric acid** is used **chlorides** are produced

When **sulphuric acid** is used **sulphates** are produced

When **nitric acid** is used **nitrates** are produced

PH Scale

In an aqueous solution acids produce **hydrogen (H^+)** ions and alkalis produce **hydroxide (OH^-)** ions
Neutral solutions have a pH of 7
In a **neutralisation reaction** the hydrogen ions from the acid reacts with the hydroxide ions from the alkali to produce water.
$H^+ + OH^- \rightarrow H2O$

Acids and Metals

Metal + Acids → Salt + Hydrogen

E.g. Magnesium + Hydrochloric Acid → Magnesium Chloride + Hydrogen

Acids and Alkali

Acid + Alkali → Salt + Water

E.g. Nitric Acid + Sodium Hydroxide → Sodium Nitrate + Water

Acids and Bases

Acid + Base → Salt + Water

E.g. Sulphuric Acid + Copper Oxide → Copper Sulphate + Water

Metal Carbonates and Acids

Metal Carbonate + Acid → Salt + Hydrogen

E.g. Calcium Carbonate + Hydrochloric Acid → Calcium Carbonate + Water + Carbon Dioxide

Chemical Changes (Part 1) – Required Practical

Making Salt from a metal and an acid

Method

1.) Measure out the acid into the beaker and add the metal
2.) Wait until the reaction is complete, stopped fizzing
3.) Filter the reaction mixture
4.) Leave in an evaporating basin until the water evaporates

Making Salt from a base (metal oxide) and an acids

Method

1.) Heat the acid
2.) Add excess base, to ensure all the acid has been neutralised
3.) Filter the reaction mixture, to remove the excess base.
4.) Leave in an evaporating basin until the water evaporates

Making Salt from an alkali and an acid

Method

1.) Measure out the alkali into a conical flask using a pipette
2.) Add a few drops of indicator
3.) Slowly add the alkali using a burette, until the indicator changes colour
4.) Add activated charcoal to remove the indicator
5.) Filter the reaction mixture, to remove the activated charcoal.
6.) Leave in an evaporating basin until the water evaporates

Chemical Changes – Part 2

Section 1 – Definitions

Ion	The charged particle formed when an atom gains or loses electrons.
Electrolysis	The breakdown of a substance containing ions using electricity.
Cathode	Electrode with a negative charge due to an excess of electrons.
Anode	Electrode with a positive charge due to a lack of electrons.
Electrolyte	A liquid containing free moving ions that can be broken down by electrolysis.
Anion	A negatively charged ion that is attracted to the anode.
Cation	A positively charged ion that is attracted to the cathode.

Section 2 – The process of Electrolysis

1. When an ionic compound is melted or dissolved in water, the ions are free to move about within the liquid or solution.
2. These liquids and solutions are able to conduct electricity and are called electrolytes.
3. Passing an electric current through electrolytes causes the ions to move to the electrodes.
4. Positively charged ions move to the negative electrode (the cathode), and negatively charged ions move to the positive electrode (the anode).
5. Ions are discharged at the electrodes producing elements.
6. This process is called electrolysis.

Section 3 – Electrolysis of molten ionic compounds

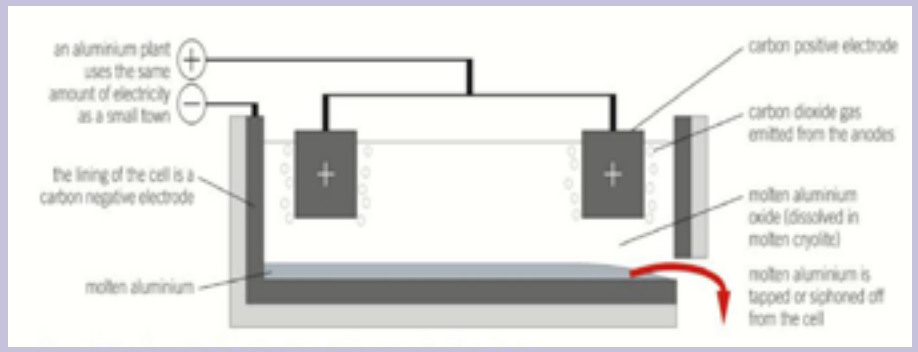
- An ionic solid cannot be electrolysed because the ions are in fixed positions and can't move.
- Molten ionic compounds can be electrolysed because the ions can move freely and conduct electricity.
- Molten ionic liquids (e.g. lead bromide), are always broken up into their elements.
- Positive metal ions are reduced to the element at the cathode.
- Negative non-metal ions are oxidised to the element at the anode.

Section 4 – Using electrolysis to extract metals

If a metal is too reactive to be extracted by reduction with carbon or if the metal reacts with carbon, then electrolysis can be used to extract it.

- This is very expensive as lots of energy is required to melt the ore and produce the required current

1. Aluminium is extracted from the ore bauxite by electrolysis. Bauxite contains aluminium oxide (Al_2O_3).
2. Aluminium oxide has a very high melting point so it's mixed with cryolite to lower the melting point which in turn saved energy and money.
3. The molten mixture contains free ions – so it conducts electricity.
4. The positive Al^{3+} ions are attracted to the cathode were they each pick up three electrons and turn into neutral aluminium atoms. These ten sink to the bottom of the electrolysed tank.
5. The negative O^{2-} ions are attracted to the anode where they each lose two electrons. The neutral oxygen atoms will ten combine to form O_2 molecules.
6. The carbon electrodes react with the oxygen produced to form CO_2, so they need to be replaced regularly.

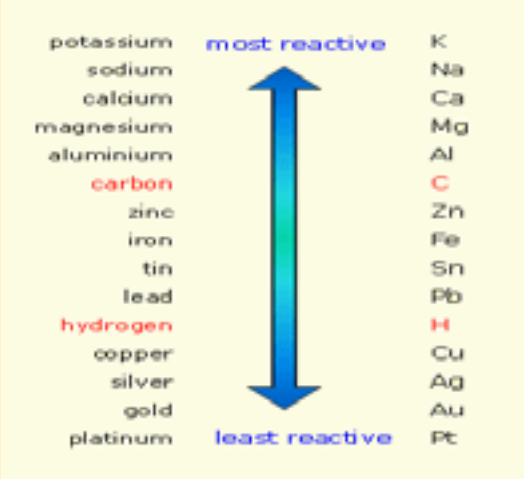


Chemical Changes – Part 2

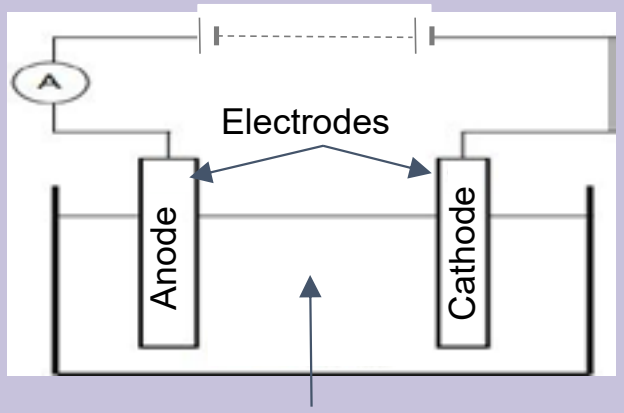
Section 5 – Electrolysis of aqueous solutions

When you electrolyse an aqueous solution, you also have to factor in the ions in the water.

1. In aqueous solutions, as well as the ions from the ionic compound, there will be hydrogen ions (H^+) and hydroxide ions (OH^-) from the water.
2. At the cathode, if H^+ ions and metals ions are present, hydrogen gas will be produced if the metal ions form an elemental metal that is more reactive than hydrogen (e.g. sodium ions). If the metal ions form an elemental metal that is less reactive than hydrogen (e.g. copper ions), a solid layer of the pure metal will be produced instead.
3. At the anode, if the OH^- and halide ions (CL^-, Br^-, I^-) are present, molecules of chlorine, bromine or iodine will be formed. If not halide ions are present, then the OH^- ions are discharged and oxygen will be formed.



Section 6 - A simple electrolysis cell diagram



Electrolyte
(must be molten or a solution so that ions can move)

Section 7 – Half equations (Higher Tier ONLY)

At the anode (positive electrode)

Negative ions (anions) are attracted due to opposite charge.

In aqueous solutions:
- Group 7 ions are oxidised if present.
- Otherwise OH^- ions form oxygen molecules.

Example half equations:

$2Cl^-_{(aq)} \rightarrow Cl_{2(g)} + 2e^-$

$4OH^-_{(aq)} \rightarrow 2H_2O_{(l)} + O_{2(g)} + 4e^-$

At the cathode (negative electrode)

Positive ions (cations) are attracted due to opposite charge.

In aqueous solutions the least reactive of H^+ or metal ions are reduced to form atoms.

Example half equations:

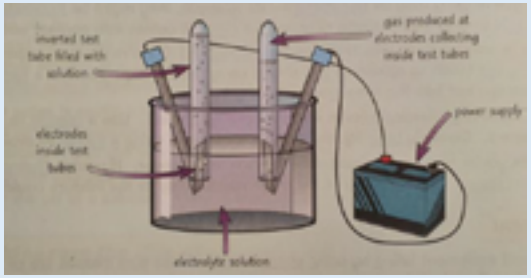
$2H^+_{(aq)} + 2e^- \rightarrow H_{2(g)}$

$Cu^{2+}_{(aq)} + 2e^- \rightarrow Cu_{(s)}$

Section 8 – Required Practical Activity 9

To investigate the substances that are formed at the electrodes when different salt solutions are electrolysed.

- You may need to predict and identify what's been made in an electrolysis experiment. To do this, you need to be able to set up the equipment correctly so that you can collect any gas that's produced. The easiest way to collect the gas is in a test tube.

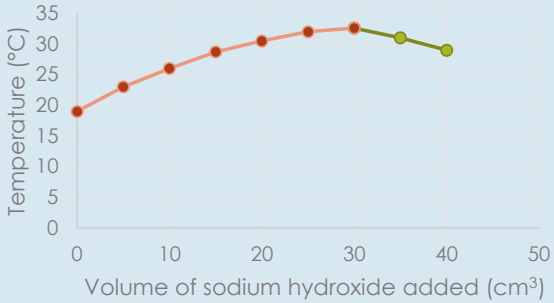


Energy changes (**Higher tier in bold**)

Section 1 - Endothermic and exothermic reactions
Energy is always conserved in a chemical reaction.

Reaction	Energy transfer	Temperature of surroundings	Example
Exothermic	transfers energy *to* the surroundings	increases 	combustion
			neutralisation reactions
Endothermic	takes in energy *from* the surroundings	decreases 	thermal decomposition
			citric acid + sodium hydrogencarbonate

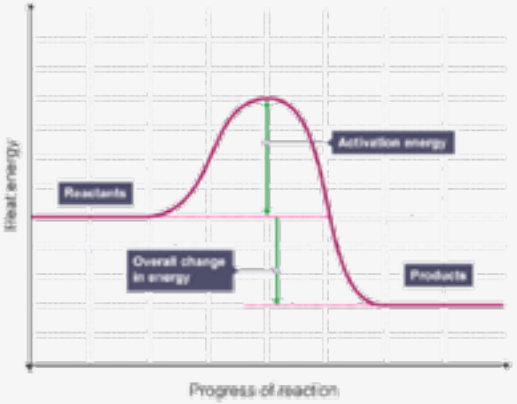
Section 2 – Required Practical
Aim: To react hydrochloric acid with sodium hydroxide solution in a neutralisation reaction and measure the temperature change.



- Add 30 cm^3 hydrochloric acid to a polystyrene cup. Take the temperature.
- Add 5 cm^3 sodium hydroxide. Stir and record the highest temperature.
- Repeat until 40 cm^3 sodium hydroxide has been added.

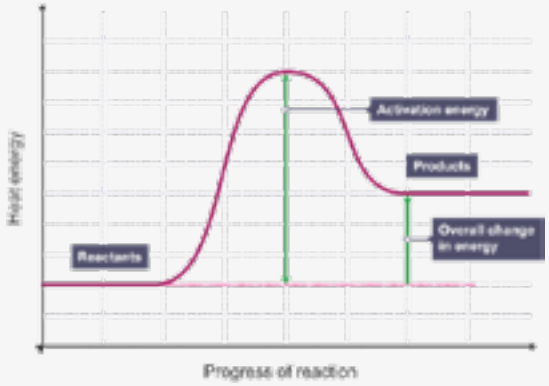
Section 3 – Reaction profiles
Chemical reactions can only occur when the reactants collide with sufficient energy. The minimum energy that particles must have in order to react is called the *activation energy*.

Exothermic reaction



Overall change in energy in an exothermic reaction is the energy

Endothermic reaction



Overall change in energy in an endothermic reaction is the energy taken

Section 4 – Energy change of reactions
During a chemical reaction:
- **energy is needed to break bonds (Endothermic process)**
- **energy is released in making bonds (Exothermic process)**

The overall energy change of a reaction is the difference between the total energy needed to break the bonds and the total energy released from making the new bonds.

Bond energies are used to calculate this.

Exothermic	energy from making bonds > energy needed to break bonds
	energy needed to break bonds > energy from

Quantitative Chemistry

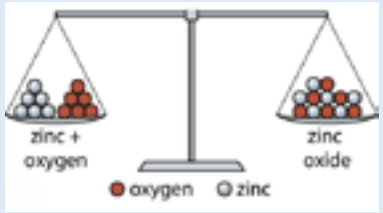
Section 1 – Definitions

The law of conservation of mass	During a reaction, the atoms in the reaction are rearranged into different compounds. Therefore, mass is never gained or lost in a chemical reaction.
Relative atomic mass	Number of neutrons and protons in an atom - A_r
Relative formula mass	The relative formula mass (M_r) of a compound is the sum of the relative atomic masses of the atoms in the numbers shown in the formula.
Mole	M_r or A_r in grams. Mass of 6.02×10^{23} of a substance.

Section 2 – Conservation of mass

Atoms can never be created or destroyed.
Total mass of reactants = total mass of products.

If mass 'seems to change' then there is usually a gas involved.



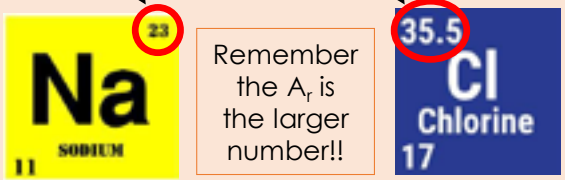
If mass increases → One of the reactants is a gad found in the air (e.g. oxygen) and all of the produces are solids, liquids or aqueous.

If mass decreases → One of the products is a gas and all the reactants are solids, liquids or aqueous.

Section 3 – Relative formula mass - M_r

- Atoms are too small to weigh individually.
- Carbon-12 is used as the standard and is assigned a mass of 12.
- Other atoms are given a mass relative to (compared to) carbon-12.
- For example, A Magnesium-24 atom weighs the same as two Carbon-12 atoms.

- The relative formula mass of a compound can be calculated by working out the sum of all the relative atomic masses (A_r) of the atoms within that compound.
- For example, To calculate the M_r of sodium chloride (NaCl) you need to add the **A_r of Na** and the **A_r of Cl**:



Remember the A_r is the larger number!!

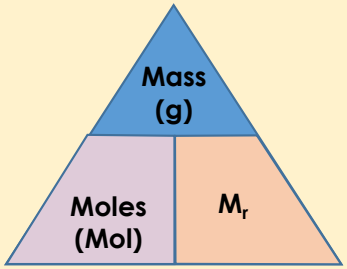
Na + Cl → NaCl
23 + 35.5 → M_r 58.5

Section 4 – Moles (Higher Tier ONLY)

- Chemical amounts are measured in moles (mol).
- The mass of one mole of a substance in grams is numerically equal to its relative formula mass. For example:
  - The A_r of carbon is 12. So one mole of carbon is 12g.
  - The M_r of water is 18. So one mole of water is 18g.

- One mole of a substance always contains the same number of 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:
  - The value of the Avogadro constant is **6.02×10^{23}** per mole.

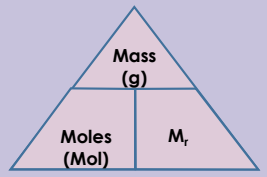
To find out the number of moles:
Moles = mass ÷ relative formula mass



Quantitative Chemistry

Section 5 – Calculating masses (Higher Tier ONLY)

- The masses of reactants and products can be calculated from balanced symbol equations.
- We can work out the mass of a product we are going to make from a set amount of reactants ***or*** work out the amount of reactants we need to make a desired amount if a product.
- **Use the equation in the triangle to help!**



Worked example:
$2NaOH + Cl_2 \rightarrow NaOCl + NaCl + H_2O$
If we had 120g of NaOH how much chlorine do we need?

Equation	2NaOH	+	Cl_2	→	NaOCl	+ NaCl	+ H_2O
Ratio of molecules	2		1		1	1	1
Mass	120g	?	106g				
Mr	40		71				
Mol	3		1.5				

Step 1: Write out the balanced equation and the ratio

Step 2: Add the information given and the information you want to find

Step 3: Use the equation to calculate the number of moles (you will need to work out M_r first)

Step 4: Use the ratio to work out the number of moles for Cl: 3/2 = 1.5

Step 5: Use the equation to work out the mass of the substance you want to find: 71 x 1.5 = 106g of Cl_2

Section 6 – Masses to balanced equations (Higher Tier ONLY)

- If we know the masses of reactants and products we can work out the balanced formula (Mr Mole Rat – M_r, Mol, Ratio)

Worked Example:
Balance the equation using the given masses: $NaNO_3 \rightarrow NaNO_2 + O_2$
8.5g → 6.9g + 1.6g

Equation	$NaNO_3$	→	$NaNO_2$	+	O_2
Mass	8.5g		6.9g		1.6g
Mr	85		69		32
Mol	0.1		0.1		0.05
Rat	2		2		1

Step 1: Write out the balanced equation and the masses

Step 2: Use the equation to calculate the Mr of the reactants and products.

Step 3: Use the equation to calculate the number of moles.

Step 4: Find the simplest whole number ratio of moles by dividing larger number by smallest number: 0.1:0.1:0.1 → 0.1/0.05 = 2 → So therefore the final ratio is 2:2:1

Step 5: Write out the balanced symbol equation using the ratio:

$$2NaNO_3 \rightarrow 2NaNO_2 + O_2$$

Section 7 – Limiting reactants (Higher Tier ONLY)

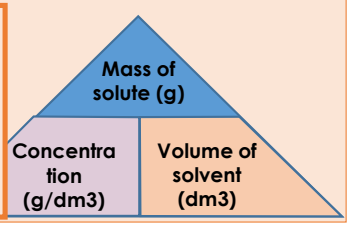
- In a chemical reaction involving two reactants, it is common to use an excess of one of the reactants to ensure that all of the other reactant is used.
- The reactant that is completely used up is called the limiting reactant because it limits the amount of product that is formed.
- **Reactions stop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

Section 8 – Concentration of solutions

- One way to measure the concentration of a solution is by calculating the mass of a substance in a given volume of solution.
- Mass of solute (g) = concentration (g/dm^3) x volume of solvent (dm^3)

Rearranging the equation (Higher Tier ONLY)

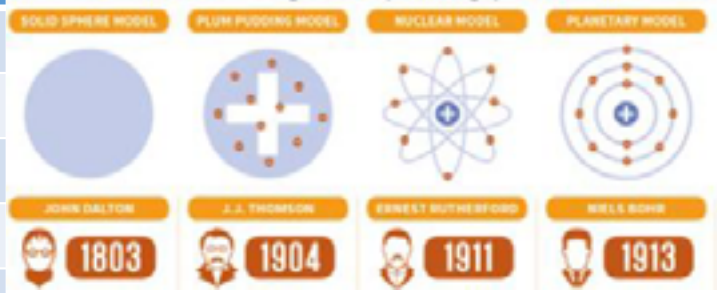
- **Concentration (g/dm^3) =**
  Mass of solute (g) ÷ volume of solvent (dm^3)
- **Volume of solvent (dm^3) =**
  Mass of solute (g) ÷ concentration (g/dm^3)



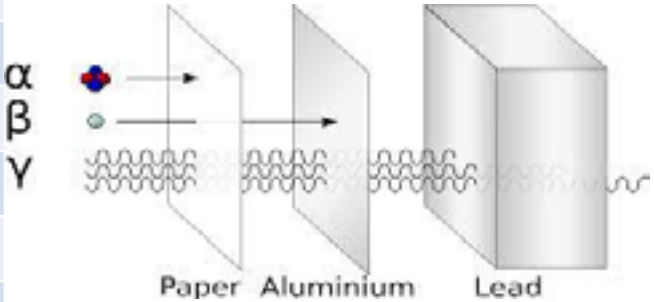
Science - Physics - Atoms & Radiation

Atomic Structure	Definition
Atoms	Very small radius of 1 x 10^{-10} m
Nuclei	Centre of atom nuclei's radius is 1/10 000 times smaller than atom
Atomic Number	Number of protons and electrons in an atom
Mass Number	Sum of the protons and neutrons in an atom
Isotope	Atom with the same number of protons but different number of neutrons
Models	Used in science to explain abstract concepts change with new evidence
Radioactive decay	Some atoms are unstable and spontaneously decay
Geiger-Muller Tube	Counts radioactive decay
Becquerel (Bq)	Unit of measurement for radioactive decay
Alpha (α)	Positively charged helium particle stopped by paper
Beta (β)	Negatively charged high speed electron stopped by few cm of aluminium foil
Gamma (λ)	Electromagnetic Radiation stopped by lead
Half Life	Time taken for the number of nuclei in a radiaoactive sample to half OR Time taken for radioactive activity (count rate) to half`
Contamination	Unwanted presence of radioactive materials on other substances health issues
Irradiation	Process of exposing an object to radioactive radiation – object does not become radioactive itself.

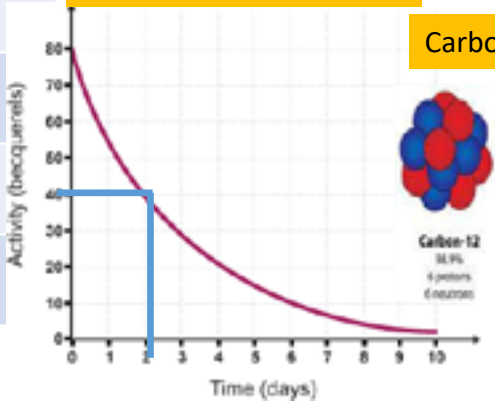
Atomic Models timeline – Chadwick discovers neutron 1932



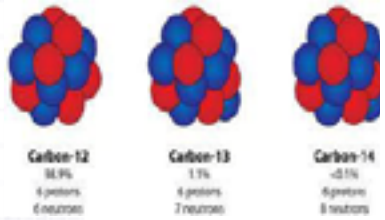
Alpha, beta, gamma penetrating powers



Radiative half life graph

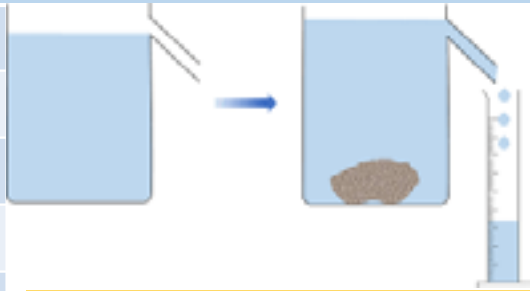


Carbon Isotopes



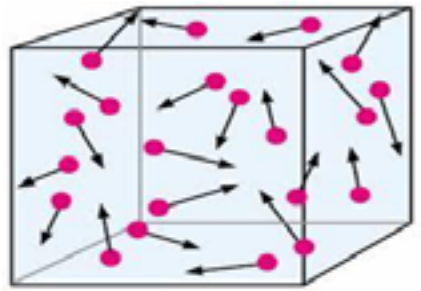
Particle Model	Definitions
Density	Density (kg/m^3) = mass (kg) ÷ volume (m^3) p = m ÷ v
Volume (regular shape)	Volume = length x width x height
Eureka can	Used to find density of irregular shaped object
Physical changes of state	Matter is the same just particles rearrange and energy levels change
Internal Energy of a system	Sum of the kinetic energy (movement) and potential energy (position)
Specific Heat Capacity	Amount of energy used to raise 1kg of a substance by 1^{0}C
Latent Heat	Energy required for 1kg of a substance to change state with no temperature change
Specific Latent Heat of Fusion	Energy required to change 1 Kg of a substance from solid to liquid
Specific Latent Heat of Vaporisation	Energy required to change 1 kg of a substance from liquid to gas
Gas Pressure	The pressure on the walls of the contain caused as the particles collide

Required Practical Eureka Can

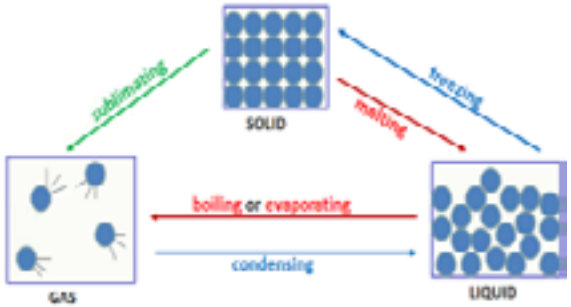


1. Record mass of irregular shape
2. Fill eureka can with water
3. Place irregular shape into water
4. Catch displaced water in a measuring cylinder and record the volume
5. Calculate density using density = mass ÷ volume

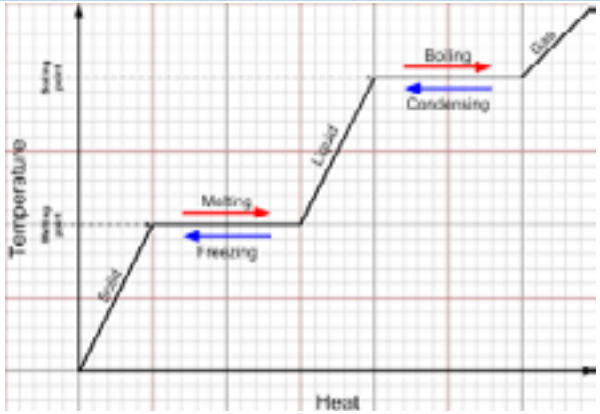
Gas Pressure as particles hit container



Changes of State Particle Diagrams



Latent Heat Cooling Graph – Horizontal lines for state changes



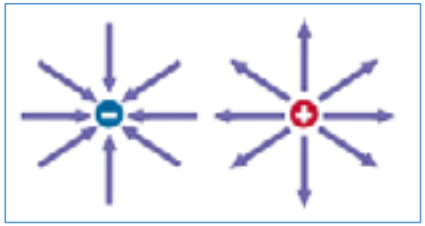
Science - Physics - Triple Content

Separate Science Content: Physics Paper 1

Static Electricity

Static electricity is caused by friction. When materials are rubbed together electrons move from one to another. One material becomes positively charged and one becomes negatively charged

Electric Fields



Electric charges create an electric field. The closer you get to the object the stronger the field.

Electric fields can shown by drawing electric field lines from **positive to negative**, see above.

Pressure and temperature in gases

As the temperature of a gas increases, the pressure also increases. The hotter the temperature the more kinetic energy the particles have. They therefore collide with the sides of the container more often.

Pressure and volume in gases

As the volume of a container is increased the number of collisions will decrease. This reduces the pressure.

P x V = Constant
P (Pa)
V (m^3)

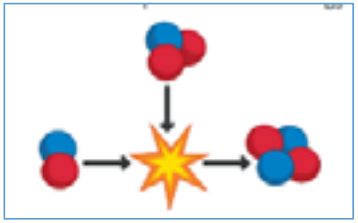
If the volume increases the pressure decreases
If the volume decreases the pressure increases

Work done on a gas

Work done on a gas causes it to increase internal energy, this causes the temperature to increase

Nuclear Fusion

Nuclear fusion is the joining together of smaller atomic nuclei to make a larger atom. Fusion occurs in the sun. Fusion produces much more energy than fission, however a high temperature and pressure for fusion to occur.



Nuclear Fission

Nuclear fission is the splitting of a large radioactive nuclei into smaller ones. As this happens neutrons are released. These neutrons cause more reactions, this is called a **chain reaction**.

Fission is used in nuclear reactors to produce electricity. These reactions are used controlled using control rods. When these reactions are not controlled nuclear weapons can be produced.

Hazards of background radiation

Background radiation comes from natural sources (rocks, food and air) and man-made sources (nuclear weapon's, nuclear waste and nuclear accidents).

Too much radiation can cause radiation poisoning. Radiation does is measured in Sieverts (Sv)

Spanish - Ciudades 1

Spanish Y10 – Ciudades (1)

En mi ciudad		In my city	
Hay/no hay	There is/is not	Está situado	It is situated
En mi ciudad	In my city	En un valle	In a valley
Un ayuntamiento	Town hall	Entre el… y el	Between … and …
Un polideportivo	Sports centre	Al lado del río	Next to the river
Un castillo	Castle	Rodeado	Surrounded by
Un puerto	Port	Lleno de	Full of
Un teatro	Theatre	Bosques	Woods
Una biblioteca	Library	Sierra	Mountains
Una iglesia	Church	Selvas	Forests
Una bolera	Bowling alley	Se puede	You can
Una playa	Beach	Probar platos	Try dishes
Una Plaza Mayor	Main square	Subir a la torre	Climb the tower
Una pista de hielo	Ice skating rink	Ver edificios	See buildings
Una oficina de correos	Post office	Ver paisajes increíbles	See incredible landscapes
Una tienda	Shop	Ver nueva cultura	See new culture
Muchos lugares de interés	Lots of places of interest	No hay nada que hacer	There is nothing to do
Mucho que hacer	Lots to do	Hay mucha marca	There a lot going

Los pros y las contras de la ciudad	The for and against of living in the city
Lo mejor es que	The best is that
Lo peor es que	The worst is that
Es tan fácil desplazarse	It is easy to get around
Hay un red de transporte publico	There is a public transport system
Hay tantas diversiones	There are lots of things to do
Hay muchas posibilidades de trabajo	There are lots of job opportunities
El centro es tan ruidoso	The centre is so noisy
Hay tanto tráfico	There is a lot of traffic
La gente no se conoce	You don't know the people
En el campo	In the countryside
El transporte publico no es tan fiable	The public transport is not reliable
Hay bastante desempleo	There is quite a lot of unemployment
Conozco a todos mis vecinos	I know all of my neighbours

¿Qué tiempo hará?		What will the weather be like?	
Hará sol	It will be sunny	Las temperaturas subirán	The temperatura will rise
Hará viento	It will be windy	Las temperaturas bajarán	The temperatura fall
Habrá nubes	It will be cloudy	El tiempo	The weather
Habrá claros	It will be clear	Se despejará	Will clear up
Lloverá	It will rain	cambiará	Will change

Spanish - Ciudades 2

Spanish Y10 – Ciudades (2)

Las Tiendas		Shops	
El banco	Bank	El abanico	Fan
El estanco	Tobacconist	El llavero	Keyring
La carnicería	Butchets	El oso de peluche	Teddy bear
La estación de trenes	Train station	Los pendientes	Earrings
La farmacia	Pharmacu	La gorra	Hat
La frutería	Fruit shop	La taza	Mug
La joyería	Jewellery shop	Las golosinas	Sweets
La librería	Book shop	Las pegatinas	Stickers
La panadería	Bakery	Un recuerdo	A souvenir
La papelería	Stationary shop	Un regalo	Present
La pastelería	Cake shop	Comprar	To buy
La peluquería	Hairdresses	Hacer cola	To queue
La pescadería	Fishmongers	Las ofertas	Offers
La tienda de ropa	Clothes shop	Las gangas	Bargains
La zapatería	Shoe shop	Caro	Expensive
La tienda de benéfica	Charity shop	Barato	Cheap

Quejas	Complaints
Quiero devolver	I want to return
Está roto	It is broken
Es demasiado estrecho / largo	It is too tight/big
Tiene un agujero/una mancha	It has a hole/stain
Falta un botón	It is missing a button
¿Puede reembolsarme el dinero?	Can you reimburse me the money?
Podemos hacer un cambio	We can make an Exchange
Una talla más grande	A bigger size
Una talla más pequeño	A smaller size
En rebajas	On sale

¿por dónde se va al/a la…?		How do you get to the…?	
¿Dónde está el/la…?	Where is the…?	Toma la segunda	Take the second
¿El/la … está lejos?	Is the… far?	Calle a la derecha	Road on the right
¿El/la … está cerca?	Is the… near?	Calle a la izquierda	Road on the left
Sigue todo recto	Go straight ahead	Pasa el puente	Pass the bridge
Gira a la derecha	Turn right	Cruza la plaza	Cross the sqaure
Gira a la izquierda	Turn left	Coge el autobús numero…	Take the number … bus
Toma la primera	Take the first	En la esquina	On the corner

Statistics - Measures of Central Tendency

Year 10 Statistics. Half term 3 Topic 6: Measures of central tendency (Averages – Mode, Median and Mean)

Already covered in maths
Averages from raw data (lists)
Averages from frequency tables (discrete, grouped discrete and grouped continuous).

Weighted Mean - Instead of each data point contributing equally to the final mean, some data points contribute more "weight" than others.

$$\text{Weighted Mean} = \frac{\Sigma wx}{\Sigma w}$$

When the weights add up to 1, just multiply value by its matching weight and add it up.

Example: Sam want to buy a new camera and decides on the following rating system:

	Sonu scores	Conan scores
• Image quality 50%	8/10	9/10
• Battery life 30%	6/10	4/10
• Zoom range 20%	7/10	6/10

To decide which is best, the weighting is applied

Sonu 0.5 x 8 + 0.3 x 6 + 0.2 x 7 = 7.2

Conan 0.5 x 9 + 0.3 x 4 + 0.2 x 6 = 6.9

So Sam buys the Sonu!

If the weights don't add to 1, you finish by dividing by the sum of the weights.

Example: Alex worked on 2 weeks 1 day, 14 weeks he worked 2 days, 8 weeks he worked 5 days and 32 weeks he worked 7 days. What is the average?

It's like the mean from a frequency table

2 x 1 + 14 x 2 + 8 x 5 + 32 x 7 = 294

294 divided by 56 weeks = 5.25 days per week

Geometric Mean - the nth root of the product of n values

$$\sqrt[n]{(a_1 \times a_2 \times \ldots \times a_n)}$$

It is useful when you want to compare things with very different properties. It is commonly used for growth rates, such as population growth or interest rates.

Example: Sam wants to buy a new camera

One camera has a zoom to 200 and scores 8 in reviews but the other has a zoom of 250 and scores 6 in reviews. It doesn't make sense to add zoom and review score but the geometric means are

- $\sqrt{200\ x\ 8} = 40$
- $\sqrt{250\ x\ 6}$ = 38.7 so although an extra 50 zoom is good the lower rating of 6 has influenced the result.

Example: The number of people aged 65 and over in the UK increased by 5.9% from 1986 to 1996, by 4.7% from 1996 to 2006 and by 22.4% from 2006 to 2016. Calculate the geometric mean of these increases.

3 increases so n= 3 and need the cube root

$\sqrt[3]{}$(5.9 x 4.7 x 22.4) = 8.53%

Note: for more than the cube root use the $\sqrt{\square}$ button

Linear interpolation - finding the median from a grouped frequency table

In Maths you are only asked to find the class in which the median lies.

In Statistics you need to estimate the median from a table.

- Find the class in which the median lies using cumulative frequency in the normal way 36/2 = 18th position so in group $20 \leq x < 30$
- Work out how far into this group you need to go 18-13 =5
- So that is 5 out of the 19 pieces of data in the group
- The group has a class interval of 10, so 5/19 x 10 = 2.63 (2dp)
- Estimated median is 20 + 2.63 = 22.63

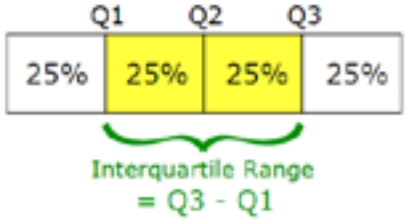
Height	Frequency	Cumulative
$0 \leq x < 10$	5	5
$10 \leq x < 20$	8	13
$20 \leq x < 30$	19	32
$30 \leq x < 40$	4	36

Statistics - Measures of Spread 1

Year 10 Statistics. Half term 3 Topic 76: Measures of Spread (Range, quartiles, deciles, percentiles and standard deviation)

Already covered in maths
Range and Inter-quartile range

Measures of spread (or dispersion) tell you how varied the data is when it is ordered. The bigger the number, the more varied the data.



Position of the LQ $\frac{n+1}{4}$, position of the UQ $\frac{3(n+1)}{4}$

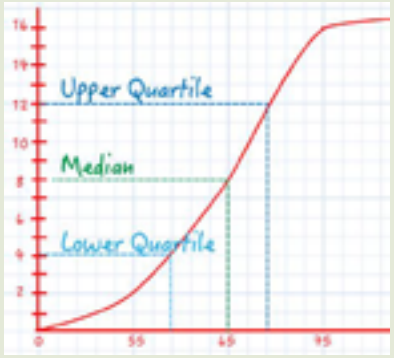
Example

4 6 7 8 9 10 10 11 12 13 14 14 n = 12

LQ at 3.25 position. 3rd number is 7 plus 0.25 x interval to next number = 7 + 0.25 x 1 = 7.25

UQ at 9.75 position. 9th number is 12 plus 0.75 x interval to next number = 9 + 0.75 x 1 = 9.75

IQR = 9.75 – 7.25



If the data is grouped, you can only estimate the range, quartiles and IQR. This is often done from a cumulative frequency graph or by linear interpolation from a table

Time, x (min)	Frequency	Cumulative frequency
$0 < x \leq 5$	3	3
$5 < x \leq 10$	18	21
$10 < x \leq 15$	32	53
$15 < x \leq 20$	26	79
$20 < x \leq 25$	11	90
$25 < x \leq 30$	4	94

LQ at 94/4 = 22.5
So in 10<x≤ 15
22.5 -21 =1.5
10 + 1.5/32 x 5 = 10.23…

UQ at 3 x 94/4 = 70.5
So in 15 <x≤20
70.5 – 53 = 17.5
15 + 17.5/26 x 5 = 18.36….

Est IQR 18.36 – 10.23 = 8.13

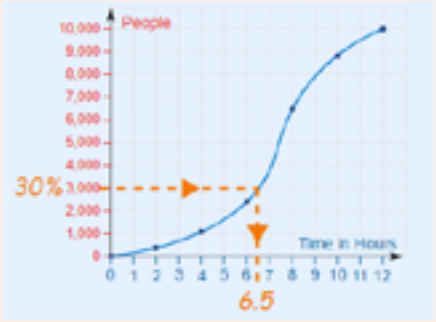
Estimated range when the data has been rounded

Height, h (cm)	Frequency
$150 < h \leq 160$	14
$160 < h \leq 170$	50
$170 < h \leq 175$	32
$175 < h \leq 180$	19

The table shows heights to the nearest cm
Because the data is rounded
Minimum value > 150.5 (anything less than 150.5 would round to 150 (which wouldn't be allowed in the table).
Maximum value ≤ 180.5
Estimated range = 180.5 – 150.5
= 30

Deciles split the data up into tenths e.g. the 6th decile will be 6/10 x n where n is the number of pieces of data

Percentiles split the data up into 100ths e.g. 90th percentile will be 90% x n



Example: n= 10000 and you want to find the 30th percentile
30% x 10000 = 3000, so draw the line to get a value of 6.5

To find an inter-pecentile range, smaller from bigger.
E.g. 20th to 80th percentile range.
Work out 80th percentile – 20th percentile

Year 10 Statistics. Half term 3 Topic 6 (page 1 of 2)

Statistics - Measures of Spread 2

Standard Deviation is a measure of how much the values deviate from the mean. It's symbol is the Greek letter σ

It is the square root of the **Variance,** which is defined as the average of the square differences from the mean (they have to be squared, because otherwise the positive and negative differences would cancel each other out.

To calculate **Standard Deviation**

1. Work out the mean $\bar{x}$
2. For each number work out the difference between it and the mean, then square the result $(x - \bar{x})^2$
3. Work out the average of the squared differences (add them up and divide by the number of pieces of data, n)
4. Square root the answer

This is a given formula

$$\text{Standard deviation} = \sqrt{\frac{1}{n}\sum(x-\bar{x})^2}$$

Alternatively

1. Square each piece of data
2. Add this up and divide by the number of numbers
3. Work out the mean, square it and subtract this from your total
4. Square root the answer

This is a given formula

$$\text{standard deviation} = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$$

$\left(\frac{\sum x}{n}\right)$ is the mean

Learn This one

$$\text{Standard Deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f}\right)^2}$$

The formula for working with a Frequency table is not given but it is the same thing!

A survey of 100 households gave the following results for weekly income £y.

Income y (£)	Mid-point	Frequency f
$0 \leqslant y < 200$	100	12
$200 \leqslant y < 240$	220	28
$240 \leqslant y < 320$	280	22
$320 \leqslant y < 400$	360	18
$400 \leqslant y < 600$	500	12
$600 \leqslant y < 800$	700	8

(You may use $\sum fy^2 = 12\,452\,800$)

1. Work out the mean from the table in the usual way using midpoints

$$Mean = \frac{\sum fx}{\sum f} = \frac{31600}{100} = 316$$

$$\text{Standard Deviation} = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f}\right)^2}$$

$$= \sqrt{\frac{12452800}{100} - \left(\frac{31600}{100}\right)^2}$$

$$= 157.07$$

Statistics - Scatter Graph

Year 10 Statistics. Half term 3 Topic 8a: Scatter Graph and Correlation

Already covered in maths
Plotting a scatter graph, correlation and predicting using the of best fit. Equation of a straight line

A Scatter Diagram is a graph with points plotted to show a relationship between two variables.
Bivariate data is data with two variables that are linked (e.g. height and weight)
The explanatory variable is the x co-ordinate (sometimes called the control variable) and the **response variable** is the y co-ordinate.
Correlation exists when there is a relationship. It is described as positive or negative and interpreted with reference to the variables (naming them!)

Describe	Interpret	
Positive Correlation	As one variable increases, the other variable increases	
Negative Correlation	As one variable increases, the other variable decreases	
No Correlation	As one variable increases, the other variable shows no connection	

If there is correlation **a line of best fit (also called the regression line)** must be drawn thought the **mean point**.

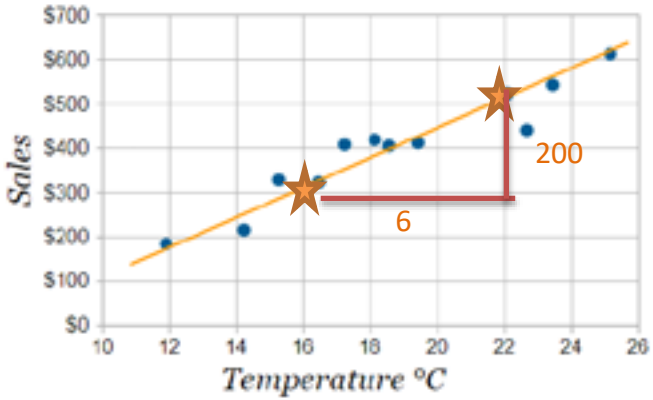
The mean point $(\overline{x}, \overline{y})$ is found by calculating the mean of the two varibles plotted

Interpolation	Using a line of best fit to predict values within the range of data given. Usually accurate
Extrapolation	Using a line of best fit to predict values outside the range of data given. May not be accurate
Outlier	A value far away from the rest of the data

Causal relationship.

(NOT CASUAL!!!!)

When a change in one variable causes a change in another variable.
Not to be confused with correlation (which could be a coincidence)



The relationship between the x and the y variables can be expressed by finding the equation of the line of best fit

$$y = mx + c$$

Where m is the gradient = $\frac{change\ in\ y}{change\ in\ x}$

$$m = \frac{200}{6} = 33.33333$$

Substitute a point into y = mx + c to work out c
(16, 300)

$$300 = 33.33333 \times 16 + c$$
$$-233.3333 = c$$

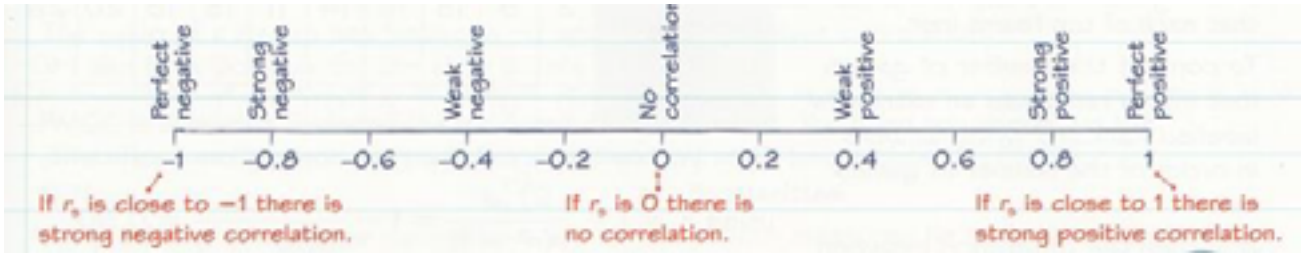
Write the equation using the axis labels

Sales = 33 x temperature – 233

Statistics - Spearman's Rank

Year 10 Statistics. Half term 3 Topic 8b: Spearman's Rank Correlation Coefficient

Spearman's rank correlation coefficient is a measure of well two sets of data are correlated. r_s can take the values from 1 to -1 (inclusive)



It is often used when there are two sets of data about the same thing to see how well they agree, without plotting a scatter graph, and it relies on the difference in the ranking.

Example

Calculate Spearman's Rank Correlation Coefficient and comment on the result.

Step 1 Rank both sets of data
Step2 Work out the difference, d, in the rankings
Step 3 Square all the differences
Step 3 Add up the column d^2
Step 4 Substitute into the formula (given in the exam

Height of a sunflower (cm)	Rank	Width of the stem (mm)	Rank	d	d^2
183	4	21	4	4 − 4 = 0	0 x 0 = 0
134	5	18	7	5 − 7 = -2	-2 x -2 = 4
234	2	24	3	2 − 3 = -1	-1 x -1 = 1
256	1	32	1	1 − 1 = 0	0 x 0 = 0
190	3	29	2	3 − 2 = 1	1 x 1 = 1
89	7	14	6	7 − 6 = 1	1 x 1 = 1
112	6	20	5	6 − 5 = 1	1 x 1 = 1
					8

7 pieces of data, so n = 7

the sum of d^2

$$r_s = 1 - \frac{6\sum d^2}{n^3 - n}$$

6 x the sum of d^2

Divided by

The number of data ranked cubed − the number of data ranked

$$r_s = 1 - \frac{48}{336}$$

$$r_s = 0.857$$

As r_s is close to 1 we can conclude that the wider the stem to higher the sunflower grows.

Pearson's Product Moment Correlation Coefficient (PMCC)

Is a measure of linear correlation.
r can take values between -1 and 1 and it is a measure of how far the data points are from the regression line (line of best fit).
-1 strong negative correlation
0 no correlation
1 strong positive correlation

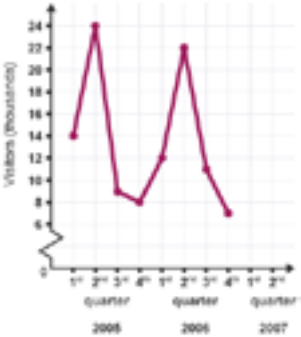
Differences between r_s and r

PMCC tests for linear correlation (how close points are to a straight line).
SRCC tests for any correlation, including points lying on the same curve.

You do not need to be able to calculate PMCC.

Statistics - Time Series / Moving Averages

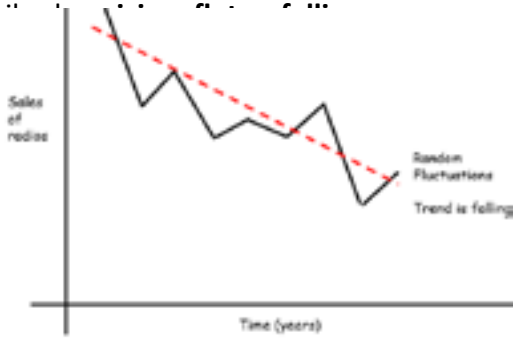
Year 10 Statistics. Half term 4 Topic 9: Time Series, Moving averages and seasonal variation

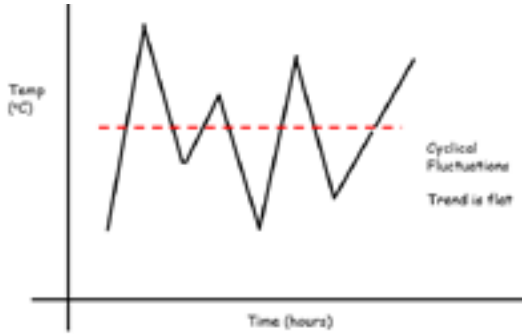


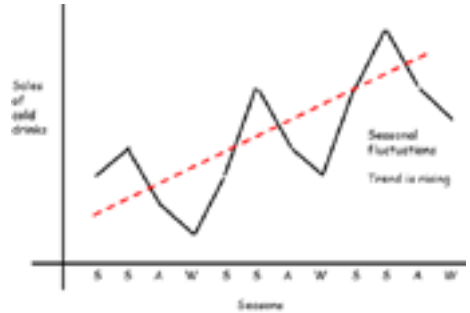
A **time series** is a graph showing how a variable changes over time - time is always plotted on the x axis.

The type of variation over time could be random, cyclical or seasonal (Spring, Summer, Autumn, Winter or quarterly Q1 Jan-Mar, Q2 April to June Q3 July -Sep Q4 Oct- Dec)

Times Series are used to see if there is a **trend,** but because the data is often cyclical or seasonal, **moving averages** are calculated and plotted to then be able to add a **trend line** (like a line of best fit), which can be descr





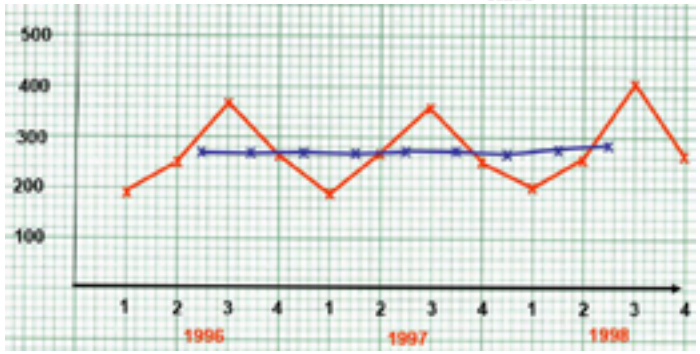


Moving Averages and average seasonal variation

The number of points included in the moving average depends on the cycle of the data.

Method:

- Find the mean of the number of points included
- Drop the first point, include the next point, find the mean
- Repeat
- Plot points (middle of range of points included, mean) e.g. for 4 point moving average plot first point at 2.5
- Draw a trend line through moving averages (like a line of best fit)



Year	1996				1997				1998			
Quarter	1	2	3	4	1	2	3	4	1	2	3	4
Sales	189	244	365	262	190	266	359	250	201	259	401	265

(189+244+365+262)/4 = 265
(244+365+262+190)/4 = 265.25
(365+262+190+266)/4 = 270.75
(262+190+266+359)/4 = 269.25

The seasonal variation at a point = **actual value– value of trend line**

The **mean seasonal variation** can then be calculated e.g. add up the seasonal variations for any quarter and divide by the number.

Predicted value = predicted trend line value + estimated mean seasonal variation (Note- the trend line will need to be extended).

Year 10 Statistics. Half term 4 Topic 10: Probability

Key Points

- Probability is a numerical measure of the chance of something happening
- It holds values between 0 and 1
- Probability = $\frac{number\ of\ successful\ outcomes}{total\ number\ of\ possible\ outcomes}$
- Expected frequency of an event A = p(A) x number of trials
- Estimated probability or experimental probability or relative frequency)

$$= \frac{number\ of trials\ with\ successful\ outcomes}{total\ number\ of\ trials}$$

- Sample space is a list of all possible outcomes
- Sample space diagram is a table used when there are two events
- Independent events – where the outcome of one event does not affect the outcome of the other
- Mutually exclusive events cannot happen at the same time
- For a set of mutually exclusive, exhaustive events, the sum of the probabilities is 1
- A set of events is exhaustive if the set contains all the possible outcomes
- Venn diagrams may have numbers or probabilities in them
- P(A) + P(not A) =1 so P(not A) = 1 – P(A)
- P(A and B) = P(A) x P(B)
- P(A or B) = P(A) + P(B)
- Conditional probability – two events are conditional if the outcome of one event affects the outcome of the other. Conditional events are <u>not</u> independent
- P(B I A) means the probability of B given that A has happened
- Formulas for conditional probability are:

P(B I A) = $\frac{P(A\ and\ B)}{P(A)}$ and P(A and B) = P(B I A) x P(A)

But for independent events A and B, P(A) = P(A I B), so this can be used a test of independence

<u>Alreaady covered in maths</u>

Likelihood; expected number; comparing experimental and theoretical probabilities to determine bias; understand increasing sample size increases reliability of experiment; two way table; sample space diagrams; tree diagrams; Venn diagrams; independent events and conditional probability

<u>Assessing Risk</u>

The risk of an accident or problem with a machine can be determined by working out the **experimental probability** of it happening. The risk is written as a decimal to make it easier to compare.

Risk = $\frac{number\ of\ trials\ in\ which\ event\ happens}{number\ of\ trials}$

Example: using past resords an insurance company assess the yearly risk of a house in a certain area flooding . During the past 50 years, flooding has occurred in the area twice.
Risk = 2/50 = 0.04
Absolute risk is the probability of an event happening
Relative risk is how many times more likely it is to happen for one group compared to another.

Relative risk for a group = $\frac{risk\ for\ those\ in\ the\ group}{risk\ for\ those\ not\ in\ the\ group}$

Example: A study is carried out into the risk of developing lung cancer for smokers and non-smokers. The probability for a smoker is 20% and for a non-smoker is 2%.
The relative risk for smokers compared to non-smokers is 20/2 = 10,
so the risk of developing lung cancer is 10 times higher for smokers compared to non-smokers.

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