

Knowledge Organiser Booklet Year 10 Term 1 Non Core

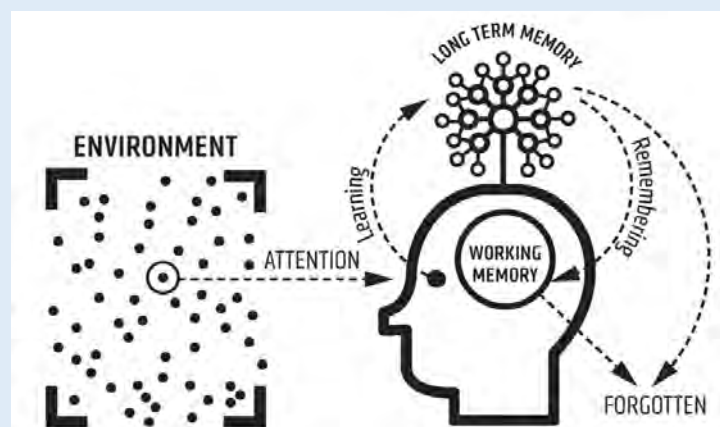


Our working memories can only store a limited amount of information, whereas our long term memories can store limitless information. To learn successfully, we need to store core knowledge into our long term memories, so we can retrieve it when we need it.

For instance, if you are at work or in the shops and need to work out a 25% discount, you can't memorise 25% of every number, so you need to be able to quickly recall the method for calculating a percentage. Committing core knowledge to our long-term memories is a life-hack. It makes thinking about difficult things easier.

Using a knowledge organiser with regular retrieval activities is a way for you to store core knowledge & subject specific words, into your long term memory so it is there when you need it.

Click here to be taken to the knowledge organiser part of the school website.



Contents

Clicking on the subjects below will take you directly to the knowledge organisers for each subject. These are to support learning that has taken place this past term. Use these to help reinforce the key knowledge. Use some of the strategies explained in the introduction to help you retain this important information.

Blending Learning expectations.....	Page 3
How to use a Knowledge Organiser.....	Page 4
Art & Design.....	Page 11
Computer Science.....	Page 16
GCSE Design & Technology.....	Page 23
CNAT Engineering Design.....	Page 26
Enterprise.....	Page 28
Food Preparation and Nutrition.....	Page 30
French.....	Page 34
Geography.....	Page 36
Graphic Design.....	Page 40
Health & Social Care.....	Page 44
History.....	Page 49
Interactive Media.....	Page 56
Music.....	Page 65
Performing Arts.....	Page 79
PE.....	Page 83
Sports Studies.....	Page 88
Statistics.....	Page 91
Travel and Tourism.....	Page 93

Blended Learning Expectations

Make sure you have access to a computer at home (If you don't please make pastoral staff aware or email langley.homelearning@taw.org.uk)

Download Microsoft Teams on both your phone and computer. (If you don't know how to do this please ask a member of staff or do this in your next computing lesson)













Spend at least 2 hours a week using teams EVERY WEEK. (Engagement in teams can be tracked and monitored). You need to be accessing each of your class teams and recapping on the previous learning or completing additional tasks set by your class teacher.













If you have any issues with teams (e.g. login problems or missing classes etc then please email langley.homelearning@taw.org.uk)

Teams is a tool to support ongoing learning and should **only be used for educational purposes.**



How to complete homework your teacher has set

	LOOK, COVER, WRITE, CHECK	DEFINITIONS TO KEY WORDS	FLASHCARDS	DUAL CODING
STAGE 1	<p>Look at & study an area of your knowledge organiser</p> 	<p>Write down the key words & definitions</p> 	<p>Write key words, dates/formulae, equations/quotes on one side & answers on the other</p> 	<p>Draw pictures/diagrams/ cartoon strips</p> 
STAGE 2	<p>Cover up your knowledge organiser and write everything you remember</p> 	<p>Cover up the definitions. How many can you remember? Repeat.</p> 	<p>Include pictures or diagrams if it helps. Read through them.</p> 	<p>Label your pictures/diagrams/ cartoon strips</p> 
STAGE 3	<p>Check. Correct mistakes in green and add anything you missed. Repeat</p> 	<p>Check. Correct mistakes in green pen. Which ones do you find hard to remember?</p> 	<p>Test yourself and get someone to test you.</p> 	<p>Explain out loud to yourself or family/friend what your images show</p> 

	SELF QUIZZING	MINDMAPS	PAIRED RETRIEVAL	SPEAK, COVER, WRITE, CHECK
STAGE 1	<p>Use your knowledge organiser to create quiz questions.</p> 	<p>Create a mindmap of everything you can remember from your knowledge organiser</p> 	<p>Give a family member/friend the knowledge organiser to hold</p> 	<p>Read out loud the information from the knowledge organiser several times.</p> 
STAGE 2	<p>Write down the answers to your quiz</p> 	<p>Check your knowledge organiser & use a green pen to make any corrections.</p> 	<p>Get them to test you using the knowledge organiser</p> 	<p>Cover up your knowledge organiser and write everything you remember</p> 
STAGE 3	<p>Keep self-quizzing until you get all the answers correct</p> 	<p>Add additional information to your mindmap or make connections to other knowledge</p> 	<p>Write down your answers to their questions</p> 	<p>Check. Correct mistakes in green and add anything you missed. Repeat.</p> 

Retrieval Placemat

Look at your knowledge organiser. Now cover it up and write down
Key vocabulary & definitions from memory:

First time: Look.
Cover. State 3 facts

Second time: Look.
Cover. State 3 facts

Third time: Look.
Cover. State 3 facts

Check & green pen your answers

Look at the knowledge organiser again. Now cover it up and
without looking, explain a concept or idea in your own words

Re-read your answer above. Look at the knowledge organiser
again. Now cover it up and improve on your previous explanation in
green pen.

Retrieval Relay

Look at your knowledge organiser. Now cover it up.

First time: Write down everything you can remember

Second time: Look. Cover. Write down everything you can remember

Third time: Look. Cover. Write down everything you can remember

Write down everything here that you didn't remember:

Vocabulary focus 1

Look at your knowledge organiser. Select a key word and write it here:

Write a definition of the key word in your own words - not the same as the one on the knowledge organiser:

Write a sentence with the key word in it:

Create a question where the key word is the answer:

What other words are connected to this key word?

Draw a picture or diagram to help you remember this key word:

Vocabulary focus 2

Definition:

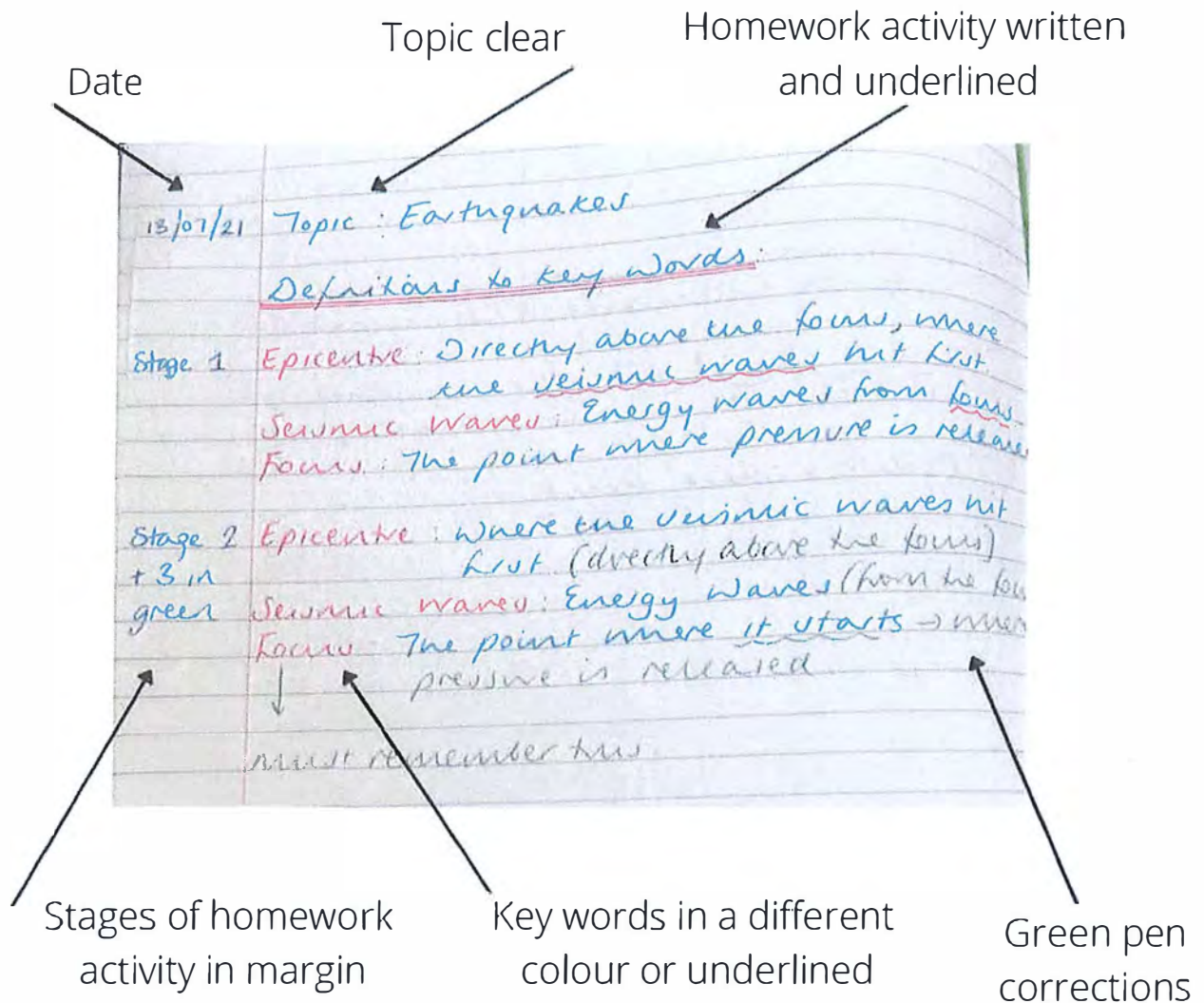
Characteristics:

Key word:

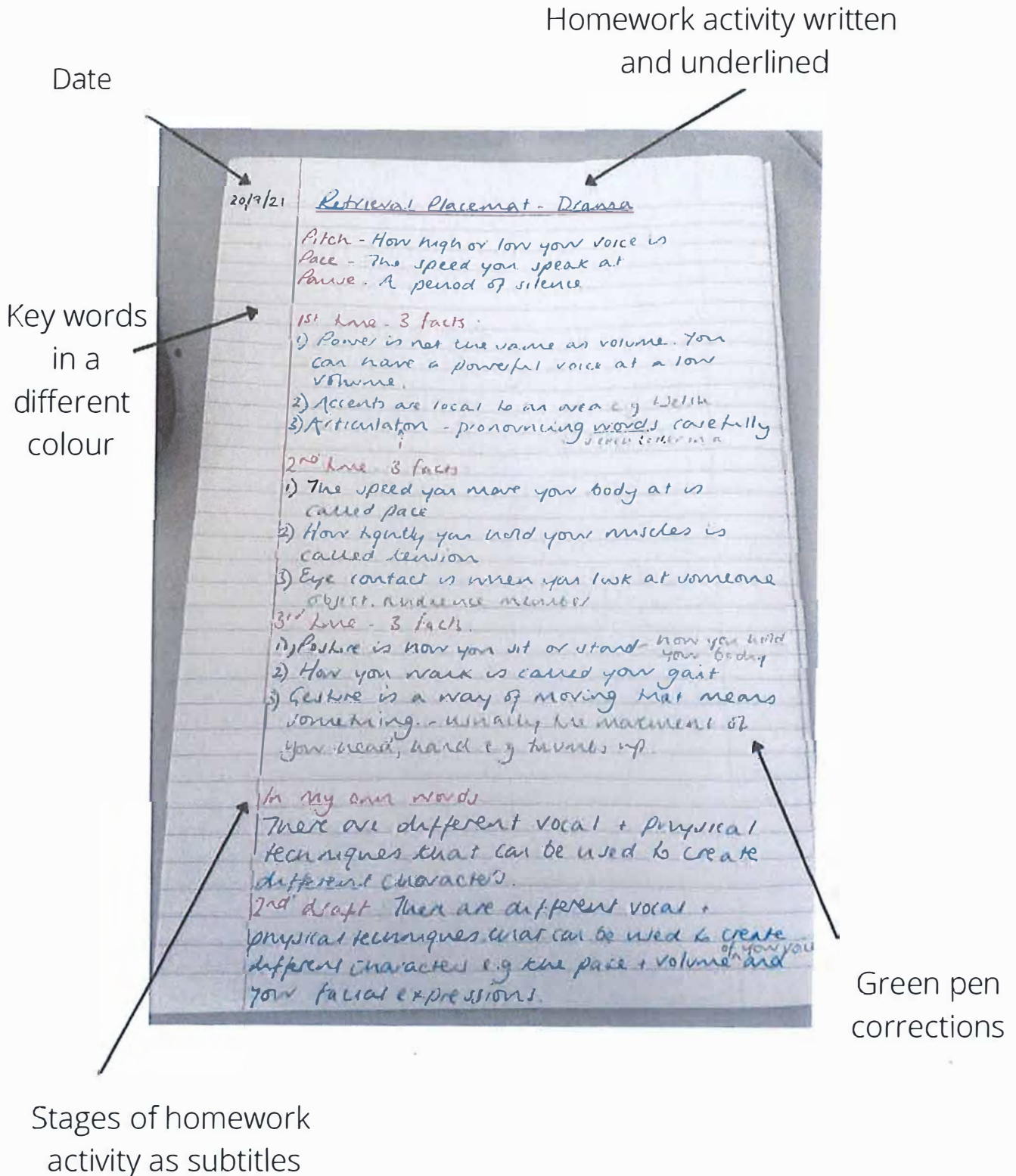
Examples:

Non-examples:

What should my knowledge organiser homework look like?



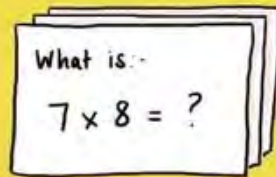
What should my knowledge organiser homework look like?



Art & Design

FLASHCARDS

Create your own flashcards, question on one side answer on the other. Can you make links between the cards?



You need to repeat the Q&A process for flashcards you fail on more frequently & less frequently for those you answer correctly

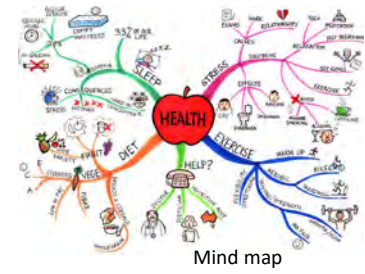
Create a flash card with all the key facts you want to learn (this can be drawn in your book). On the next page try writing down as many facts or as much of the knowledge as you can. If you find you are getting certain facts wrong then these are where you need to focus and relearn.



Year 10: Unit 1

Unit 1
Threshold Concept (TC47) - Understand that a mood board is an effective method to generate ideas.
Threshold Concept (TC28) - Understand the main components of an artist research page.
Threshold Concept (TC48) - To gain knowledge and understanding of a chosen artist.

Keywords
 Effective research
 Mood board
 Primary source
 Secondary source



A mind map helps you to connect ideas and experiences, identifying the relationships relating to a particular topic. This will help to improve the focus of your mood board.

- Bronze**
- ... understand what a 'mood board' is.
 - ... understand how to undertake effective research.
 - ... understand how to cut out appropriate images and present them on the page.
 - ... select basic information and write this on the page.
 - ... understand what an artist research page is.
 - ... understand how to cut out appropriate images.
 - ... select basic information and write this on the page.
 - ... understand why photographs are an important source of information.

Formal Elements of Art
Colour – what you see when light reflects off something.
Line – a mark made which can be long, short, scribbled, straight etc.
Shape – a 2D area which is enclosed by a line.
Form – a shape which has 3 dimensions.
Tone – how light or dark something is.
Texture – how something looks or feels (visual or actual) rough etc.
Pattern – a symbol or shape that can be random or repeated.

Primary sources are your own photographs and this is an excellent way of recording.
Secondary sources are photographs and images that are not your own and taken from newspapers, magazines and the internet. This is not as beneficial as using your own photographs for recording and 'materials and processes.'

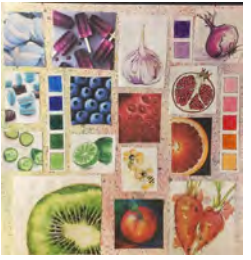
Secondary source photographs are a good way of illustrating your artist research page.

A mood board is a creative exercise that focuses on the subject of what you are studying.



Photographs are critical ways of recording, documenting and visually supporting your artwork and written work.

Effective mood board:
 A title
 Keywords
 Ideas
 Photography
 Illustrations
 Artists
 Colours
 Your thoughts



Mood boards can be physical or digital collages that arrange images, materials, text and other design elements.
 A mood board can also be representative of the style of or contain elements of the final design.
 A mood board will link to the mind map and reflect the content.



Primary source:
 Your own photographs



Secondary source:
 Pictures that you have taken from magazines or the internet.



Always arrange your title, information and images on your background **before you stick them down** just to be sure that you have them in the correct position.



Year 10: Unit 1:

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Main components of an artist research page:

Studying the work of different artists and completing an artists research page helps to give you ideas for your own work perhaps through similar subject matter, theme or style.

- Background,
- Title,
- Facts,
- Images,
- Copy of the artist work,
- Your opinion of the work.

KS4 Artist Research
 Lesson Objective: To produce a research page on an artist/art movement.

Keywords
 background title facts opinion research images copy
 analysis mood content form context process
 line tone colour pattern texture shape form

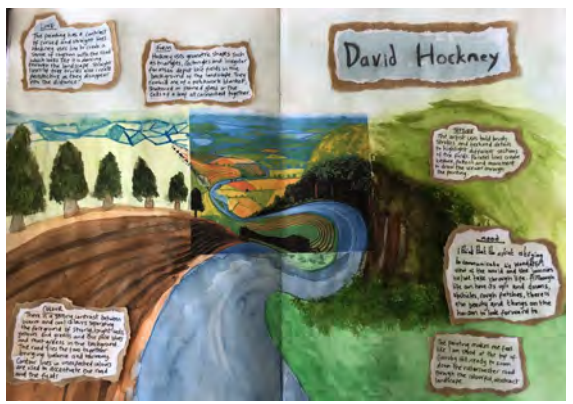
Grade 4 or lower	Grade 5 to 6	Grade 7 to 8	Grade 9
1) A basic background is produced.	1) A creative background is produced that links to the artist(s).	1) A very effective background is produced that links to the artist(s).	1) A very effective background is produced that links to the artist(s).
2) A basic title is produced.	2) A skilful and creative title is produced.	2) A very skilful and creative title is produced.	2) A very skilful and creative title is produced.
3) Keywords linked with facts about the artist are researched.	3) Keywords/sentences (facts) about the artist are researched.	3) Many interesting facts about the artist are researched.	3) Many interesting facts about the artist are researched.
4) There is a basic opinion about the artist's work.	4) There is an opinion about the artwork with reasons.	4) There is in depth analysis of the artwork (MC FC P) with opinion .	4) There is in depth analysis of the artwork (MC FC P) with opinion .
5) There is limited research and selection of images.	5) A range of different images are researched and selected.	5) There is evidence of in depth research when selecting images.	5) There is evidence of in depth research when selecting images.
6) The images are arranged with some thought.	6) The images are well presented.	6) Images are presented in a creative way.	6) Images are presented in a creative way.
7) There is a basic copy of the chosen image(s).	7) There is a skilful copy of the chosen image(s).	7) There is a very skilful and accurate copy of the chosen image(s).	7) There is a very skilful and accurate copy of the chosen image(s).



Choosing images, researching the facts and producing a copy of the art work will give you a knowledge and an understanding of your chosen artist.



How to cut neatly using scissors
 Watch from 1:33 to 2:50



Effective research is important:
 Ensure that you have the right artist
 Check that all images are relevant and in focus
 Double check spellings are correct
 Keep information to what is important, only include information which is relevant to the artist and their work.



Always arrange your title, information and images on your background **before** you stick anything down just to be sure that you have them in the correct position.



Year 10: Unit 2

Unit 2

Threshold Concept (TC28) - Understand the main components of an artist research page

Threshold Concept (TC48) - To gain knowledge and understanding of a chosen artist.

Threshold Concept (TC49) - Understand how photography can be used to inform a final art outcome.

Threshold Concept (TC50) - Understand the reasons for, and why making a copy of the work of a chosen artist, is important.

Bronze

- ... understand what an artist research page is.
- ... understand how to cut out appropriate images.
- ... select basic information and write this on the page.
- ... understand why photographs are an important source of information.
- ... understand why photographs are important to develop ideas for a project.
- ... recognise the style of an artist.

Keywords - Main components of an artist research page:

- Background,
- Title,
- Facts,
- Images,
- Copy of the artist work,
- Your opinion of the work.

A background which links to the artist is an effective way of bringing all the components together.

The title of an artists research page is usually the name of the artist but written in an artistic way which reflects the style of the artist.



Include images which show the artist and several of their artworks. Make sure you include artworks that you can talk about. It is good to have an image that you can talk about - how this artwork makes you feel, whether you like it or not and why.

KS4 Artist Research

Lesson Objective: To produce a research page on an artist/art movement.

Keywords

background title facts opinion research images copy
analysis mood content form context process
line tone colour pattern texture shape form

Grade 4 or lower	Grade 5 to 6	Grade 7 to 8	Grade 9
<ol style="list-style-type: none"> 1) A basic background is produced. 2) A basic title is produced. 3) Keywords linked with facts about the artist are researched. 4) There is a basic opinion about the artist's work. 5) There is limited research and selection of images. 6) The images are arranged with some thought. 7) There is a basic copy of the chosen image(s). 	<ol style="list-style-type: none"> 1) A creative background is produced that links to the artist(s). 2) A skilful and creative title is produced. 3) Keywords/sentences (facts) about the artist are researched. 4) There is an opinion about the artwork with reasons. 5) A range of different images are researched and selected. 6) The images are well presented. 7) There is a skilful copy of the chosen image(s). 	<ol style="list-style-type: none"> 1) A very effective background is produced that links to the artist(s). 2) A very skilful and creative title is produced. 3) Many interesting facts about the artist are researched. 4) There is in depth analysis of the artwork (MC FC P) with opinion. 5) There is evidence of in depth research when selecting images. 6) Images are presented in a creative way. 7) There is a very skilful and accurate copy of the chosen image(s). 	

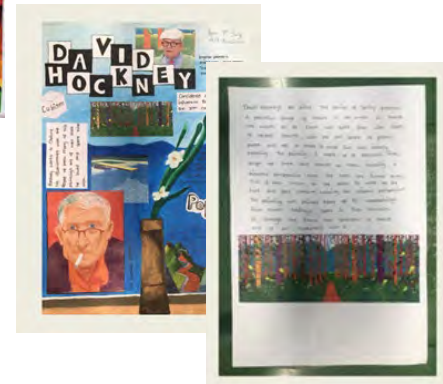


Facts to include in your artists research page are brief facts that are relevant to the work and career of the artist including their birth and possible death dates. Facts that relate to their every day life may not be relevant if not related to their artwork.

When you do a copy of the artists work, include the name and date of the artwork and what materials it was made from. This will help you to understand their style and how the work was constructed.

Copying a piece of artwork by an artist will also help towards developing your own style with your final piece of work.

There may be something about the style which you might like to include in your final piece. It may be the style used by the artist, the colours used by the artist or the subject matter and how it was communicated to the viewer.



Formal Elements of Art Colour, Line, Shape Form, Tone, Texture, Pattern



How to cut neatly using scissors
Watch from 1:33 to 2:50



Analysis of a piece of the artists artwork will help you to understand the artists message, recognise the choices that the artist made and why. It helps to have a better understanding of the ideas, content and meaning of the artwork. Visual analysis can be the starting point for art-historical writing.



Year 10: Unit 2

Unit 2

Threshold Concept (TC28) - Understand the main components of an artist research page

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Formal Elements of Art
Colour, Line, Shape
Form, Tone, Texture, Pattern

Bronze

- ... understand what an artist research page is.
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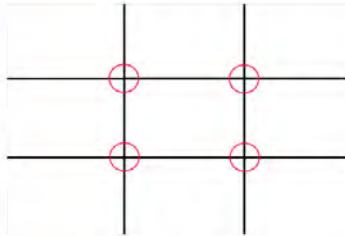
Artists would paint 'en plein air' which is French for 'outside' but photography captures a moment and allows the artist to paint an outside scene indoors.

Photography has grown from an automatic means of replicating reality into gaining artistic credibility, it allows artists closer analysis of light and the scene they are looking at. This will help you to develop ideas for your project when using your 'materials and processes' to support further progress of your project.

What makes a good photo?

Rule of thirds

The Rule of Thirds is the process of dividing an image into thirds, using two horizontal and two vertical lines. This imaginary grid has nine parts with four intersection points. When you position the most important elements of your image at these intersection points, you produce a much more natural image.



What elements can we use to create an interesting image?

- Composition
- Rule of Thirds
- Leading Lines
- Framing
- Lighting
- Story telling
- Perspective



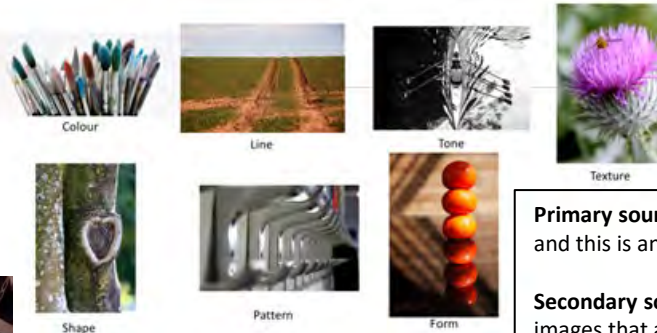
Primary source:
Your own photographs



Secondary source:
Pictures that you have taken from magazines or the internet.

Photographs are critical ways of recording, documenting and visually supporting your artwork and written work.

Original photographs can be works of art in their own right, depending on choices made by the photographer.



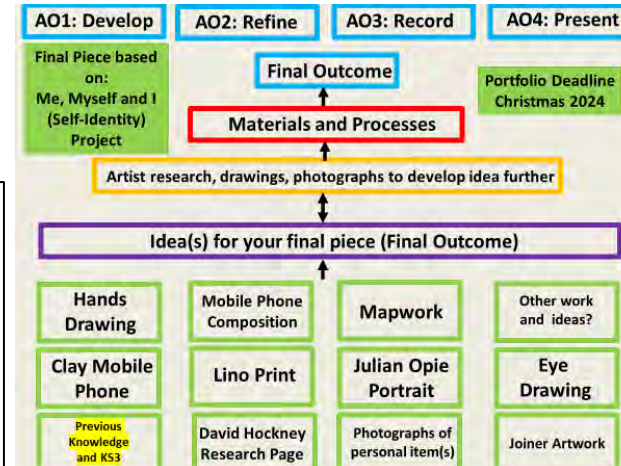
Primary sources are your own photographs and this is an excellent way of recording.

Secondary sources are photographs and images that are not your own and taken from newspapers, magazines and the internet. This is not as beneficial as using your own photographs for recording and 'materials and processes.'

Secondary sources photographs are a good way of illustrating your artist research page.



Rule of Thirds



This project that you will complete help you to look at an object or scene and interpret it artistically in your own way. Studying an artist and their artwork will also help you to develop your own style. These will all help towards ideas for your final piece.

Computer Science

Algorithms

An **algorithm** is a sequence of ordered instructions that are followed step-by-step to solve a problem. This does *not* need to be on a computer.

Decomposition is the breaking down of a complex problem into smaller more manageable problems that are easier to solve.

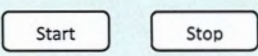
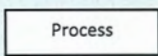

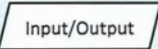
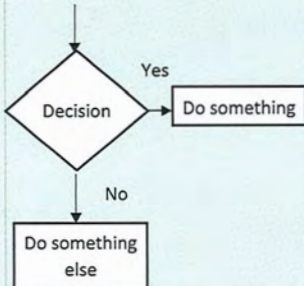
Abstraction allows us to remove unnecessary detail from a problem leaving us with only the relevant parts of a problem thereby making it easier to solve.

Algorithm Efficiency More than one algorithm can be used to solve the same problem. Normally we use the algorithm that solves the problem in the quickest time with the fewest operations or makes use of the least amount of memory.

Dry run testing is carried out using **trace tables**. The purpose of the trace tables is for the programmer to track the value of the variables and outputs at each step of the program and to track how they change throughout the running of the program.

Flowchart Symbols

We can represent algorithms using flowcharts

<p>Start and Stop</p> 	<p>Process – An operation that the algorithm performs</p> 
<p>Connector – Links all the other symbols together</p> 	<p>Input and Output of data that is read in and written out</p> 
<p>Decision is the same as a selection (if then ... else)</p> 	<p>IF answer is "yes" THEN do something ELSE IF answer is "no" do something else ENDIF</p>

Pseudocode

We can represent algorithms using pseudocode

	Example	Python equivalent
Variable assignment	a ← 10	a = 10
Constant assignment	constant PI ← 3.142	PI = 3.142
Input	a ← USERINPUT	a = input()
Output	OUTPUT "Bye"	print("Bye")
Arithmetic Operators		
Add	+	+
Multiply	*	*
Divide	/	/
Subtract	-	-
Integer division	a ← 7 DIV 2	a = 7 // 2
Modulus (remainder)	a ← 7 MOD 2	a = 7 % 2
Relational Operators		
Less than	<	<
Greater than	>	>
Equal to	=	==
Not equal to	≠ or <>	!=
Less than or equal to	≤	<=
Greater than or equal to	≥	>=
Boolean Operators		
AND	AND	AND
OR	OR	OR
NOT	NOT	NOT
Selection		
if ..	IF i > 2 THEN j ← 10 ENDIF	if i > 2: j=10
if .. else ...	IF i > 2 THEN j ← 10 ELSE j ← 3 ENDIF	if i > 2: j=10 else: j=3
if ... else if ... else	IF i ==2 THEN j ← 10 ELSE IF i==3 THEN	if i ==2: j=10 elif i==3: j=3

	j ← 3 ELSE j ← 1 ENDIF	else: j=1
Iteration		
While loops	a ← 1 WHILE a < 4 OUTPUT a a ← a + 1 ENDWHILE	while a<4: print(a) a=a+1
For loops	FOR a ← 0 TO 3 OUTPUT a ENDFOR a ← 1	for a in range(3): print(a)
Repeat loops	REPEAT OUTPUT a a ← a + 1 UNTIL a=4	
Subroutines		
procedure	SUB hello() OUTPUT "hello" ENDSUB	def hello(): print("hello")
Function (with parameters and return)	SUB add(n) a ← 0 FOR a ← 0 TO n a ← a + n ENDFOR RETURN a ENDSUB	def add(n): a=0 for a in range(n+1): a=a+n return a
Built-in functions		
Length of array	LEN(a)	len(a)
Random integer	RANDOM_INT(0, 9)	import random random.randint(0,9)

Sound

Sample - Measure of the analogue signal at a given point in time

Sample rate - number of samples taken per second and is measured in Hertz.

Sample resolution - number of bits used to represent each sample

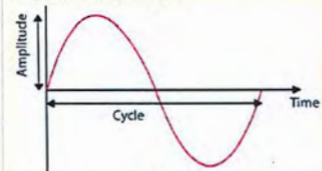
The size of sound files can be calculated using:

$$\text{size of file} = \text{length (seconds)} \times \text{sample rate} \times \text{sampling resolution}$$

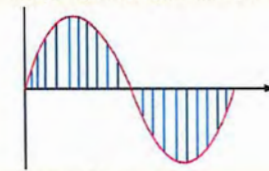
For sound to be stored digitally on a computer it needs to be converted from its continuous analogue form into a discrete binary values. The steps are:

1. Microphone detects the sound wave and converts it into an electrical (analogue) signal
2. The analogue signal is sampled at regular intervals
3. The samples are approximated to the nearest integer (quantised)
4. Each integer is encoded in binary with a fixed number of bits

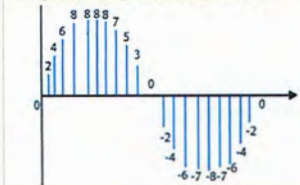
Original analogue signal



Sample signal at regular intervals



Integer values give to each sample



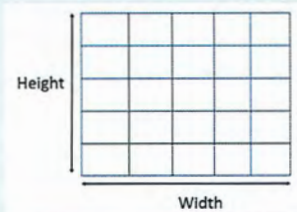
Encode as binary

0 2 4 6 8 8 8 8 7 5 3 0 ->
 00000 00010 00100 01000
 01000 01000 01000 00111
 00101 00011 ...

Images

Bitmap images are made up from tiny dots called **pixels**. Each pixel will have a colour associated with it. An image can then be constructed from many of pixels which will have different colours arranged in rows and columns.

Total number of pixels in image = width in pixels x height in pixels



Colour depth is the number of bits used to represent each pixel in an image. If we have a black and white image it has two colours. Each pixel can be represented by a single pixel because a bit value of 0 is black and 1 is white.

Image and corresponding binary encoding



To represent more colours we can use more bits. For instance if we have 2-bits per pixel we can represent 4 colours because we know have 4 binary code combinations (00, 01, 10 11) where each code represents a different colour

Pixelation occurs when the image is overstretched. In these situations, the image loses quality and has a blocky and blurred appearance. This arises when the image is presented at too large a size and there are not enough pixels to reproduce the details in the image at this larger size.

Calculating the size of a bitmap image

$$\text{File size in bits} = \text{width in pixels} \times \text{height in pixels} \times \text{colour depth}$$

$$\text{File size in bytes} = \text{width in pixels} \times \text{height in pixels} \times \text{colour depth} / 8$$

Data Compression

The purpose of data compression is to make the files smaller which means that:

- Less time / less bandwidth to transfer data
- Take up less space on the disk

Given that there are 7 bits per ASCII character, the uncompressed size of an ASCII phrase is:

$$\text{size} = \text{number of characters (including spaces)} \times 7$$

Run Length Encoding (RLE) is a compression method where sequences of the same values are stored in pairs of the value and the number of those values. For instance, the sequence:
 0 0 0 1 1 0 1 1 1 1 0 1 1 1 1
 would be represented as:
 3 0 2 1 1 0 4 1 1 0 4 1

Huffman coding is a form of compression that allows us to use fewer bits for higher frequency data. More common letters are represented using fewer bits than less common letters. For instance, "a" and "e", which occur in many words would be represented with fewer bit than "z" which occurs rarely. This allows for much more effective compression than RLE.

The steps involved in Huffman encoding as are follows:

1. Do frequency table
2. Order table
3. Create the tree
4. Add 1, 0 to the branches
5. Encode letters
6. Encode message

Worked Example: How much smaller is the phrase henry horse encoded using Huffman encoding compared with its uncompressed size.

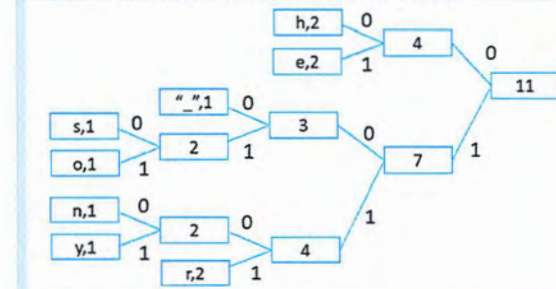
Calculate the uncompressed size

In the phrase *henry horse* there are 11 characters (including the space). Therefore the uncompressed size is $11 \times 7 = 77$ bits

Generate ordered frequency table (steps 1 and 2)

letter	frequency
e	2
h	2
r	2
<space>	1
o	1
s	1
y	1
n	1

Create the tree and add 1 and 0 to branches (steps 3 and 4)



Encode letters

Letter	encoding
e	01
h	00
r	111
<space>	100
o	1011
s	1000
n	1100
y	1101

Encode message

00 01 1100 111 1101 100 00 1011 111 1000 01 = 33 bits

Therefore by using compression we have reduced the size from 77 bits to 33 bits a saving of 44 bits.

Data Representation

Number bases

Denary (or decimal) is base-10 and is the number system we are most familiar with. We have the columns of units, tens, hundreds, thousands and so on. Base-10 means that we have 10 possible values (0, 1, 2, 3, 4, 5, 6, 7, 8, 9) in each column.

Binary is base-2 and has 2 values, 0 and 1. It requires a greater number of digits in binary to represent a number than denary. This is how data and instructions are stored in a computer.

To calculate the maximum value for a given number of bits we use $2^n - 1$ where n is the number of bits. For example for 4 bits we have $2^4 - 1$ which is 15.

Bits	Max value binary	Max value denary
1	1 ₂	1 ₁₀
2	11 ₂	3 ₁₀
3	111 ₂	7 ₁₀
4	1111 ₂	15 ₁₀
5	11111 ₂	31 ₁₀
6	111111 ₂	63 ₁₀
7	1111111 ₂	127 ₁₀
8	11111111 ₂	255 ₁₀

Hexadecimal is base-16. To make up the 16 values we use the ten denary numbers in addition to 6 letters (A, B, C, D, E, F).

Denary	Hex.	Binary	Denary	Hex.	Binary
0 ₁₀	0 ₁₆	0000 ₂	8 ₁₀	8 ₁₆	1000 ₂
1 ₁₀	1 ₁₆	0001 ₂	9 ₁₀	9 ₁₆	1001 ₂
2 ₁₀	2 ₁₆	0010 ₂	10 ₁₀	A ₁₆	1010 ₂
3 ₁₀	3 ₁₆	0011 ₂	11 ₁₀	B ₁₆	1011 ₂
4 ₁₀	4 ₁₆	0100 ₂	12 ₁₀	C ₁₆	1100 ₂
5 ₁₀	5 ₁₆	0101 ₂	13 ₁₀	D ₁₆	1101 ₂
6 ₁₀	6 ₁₆	0110 ₂	14 ₁₀	E ₁₆	1110 ₂
7 ₁₀	7 ₁₆	0111 ₂	15 ₁₀	F ₁₆	1111 ₂

Hexadecimal is used a lot in computing because it much easier to read than binary. There are far fewer characters than binary. So hexadecimal is often used in place of binary as a shorthand to save space. For instance, the hexadecimal number 7BA3D456 (8 digits) is 01111011101000111101010001010110 (32 digits) in binary which is hard to read.

Hexadecimal is better than denary at representing binary because hexadecimal is based on powers of 2.

Converting between number bases

Denary to binary conversion

1. Create a grid:

128	64	32	16	8	4	2	1

2. Add a 1 to the corresponding cell if number contributes to target number and 0 to all the other cells

Worked example: convert 24₁₀ to binary.

128	64	32	16	8	4	2	1
0	0	0	1	1	0	0	0

$16_{10} + 8_{10} = 24_{10}$
The binary value is 11000₂ (we can ignore the preceding zeros)

Binary to denary conversion

Worked example: Convert 01011001₂ to denary

1. Create the grid:

128	64	32	16	8	4	2	1
0	1	0	1	1	0	0	1

2. Add up the cells that have a corresponding value of 1:
 $64 + 16_{10} + 8_{10} + 1 = 89_{10}$

Hexadecimal to denary conversion

- Convert the two hex values separately to denary value
- Multiply the first value by 16
- Add the second value

Worked example: Convert A3₁₆ to denary

$A_{16} = 10_{10}$
 $3_{16} = 3_{10}$
 $(10_{10} \times 16_{10}) + 3_{10} = 163_{10}$

Denary to hexadecimal conversion

- Integer divide the denary number by 16
- Take the modulus 16 of the denary number
- Convert the two numbers to the corresponding hex values.

Worked example: Convert 189₁₀ to hex

$189_{10} / 16_{10} = 11_{10}$ remainder 15₁₀
 $11_{10} = B_{16}$
 $15_{10} = F_{16}$
 $189_{10} = BF_{16}$

Hexadecimal to binary conversion

- Find the corresponding 4-bit binary number for the two numbers
- Concatenate the two binary values to give the final binary value

Example: convert C3₁₆ to binary

$C_{16} = 12_{10} = 1100_2$
 $3_{16} = 3_{10} = 0011_2$
11000011₂

Binary to hexadecimal conversion

- Split the binary number into groups of 4 bits: 1110₂ 1010₂
- Find the corresponding Hex value for each of the 4-bit groups

Worked example: Convert 11101010₂ to hexadecimal

1110₂ | 1010₂
 $1110_2 = 14_{10} = E_{16}$
 $1010_2 = 10_{10} = A_{16}$
EA₁₆

Units of Information

Unit	Symbol	Number of bytes
Kilobyte	KB	10^3 (1000)
Megabyte	MB	10^6 (1 million)
Gigabyte	GB	10^9 (1 billion)
Terabyte	TB	10^{12} (1 trillion)

A bit is the fundamental unit of binary numbers. A bit is a binary digit that can be either 0 or 1.

1 byte = 8 bits
1 nibble = 4 bits

Character Encoding

Character coding schemes allows text to be represented in the computer. One such coding scheme is ASCII. ASCII uses 7 bits to represent each character which means that a total of 128 characters can be represented.

Lower case letters	26
Upper case letters	26
Numbers	10
Symbols (e.g. comma, colon)	33
Control characters	33

ASCII encoded values for some characters

A	1000001 ₂	65 ₁₀
B	1000010 ₂	66 ₁₀
a	1100001 ₂	97 ₁₀
b	1100010 ₂	98 ₁₀
"0"	0110000 ₂	48 ₁₀
"1"	0110001 ₂	49 ₁₀

- ASCII has a limited character set (7 bits, 128 characters), but **Unicode** has 16 bits and allows many more (65K) characters.
- Unicode provides a unique character for different languages and different platforms.
- It allows us to represent different alphabets for instance Greek, Mandarin, Japanese, Emojis etc.
- Unicode and ASCII are the same up to 127.

Binary addition

Binary addition rules

$0_2 + 0_2 = 0_2$
 $0_2 + 1_2 = 1_2$
 $1_2 + 0_2 = 1_2$
 $1_2 + 1_2 = 10_2$ (carry 1)
 $1_2 + 1_2 + 1_2 = 11_2$ (carry 1)

Example

```

1 0 1 0 1 0 0 1 2
0 0 0 0 1 0 0 1 2
+ 0 0 0 1 0 1 0 1 2
-----
1 1 0 0 0 1 1 1 2
carry 1 1 1 1
    
```

Binary Shift

The binary shift operator is used to perform multiplication and division of numbers by powers of 2

multiply/divide	x 16	x 8	x 4	x 2	/ 2	/ 4	/ 8
shift	<<4	<<3	<<2	<<1	>>1	>>2	>>3

Example: Apply shift operator to 1101₂ (13₁₀)

Shift	Result	denary
<<1	11010 ₂	$13_{10} \times 2_{10} = 26_{10}$
<<2	110100 ₂	$13_{10} \times 4_{10} = 52_{10}$
>>1	110	$13_{10} // 2_{10} = 6_{10}$

Note that odd numbers are rounded down to the nearest integer when the right shift operator is applied.

Programming - Python

Comment – Text within the code that is ignored by the computer. A Python comment is preceded by a #.

```
# This is an example of a comment
```

Output – Processed information that is sent out from a computer

Python	Pseudocode
print("Hello World!")	OUTPUT "Hello World"
Hello World!	
print("Hello", "World!")	
Hello World!	
print("Hello"+"World!")	
HelloWorld!	
print("Hello\nWorld!")	
Hello	
World!	

Input – Data sent to a computer to be processed

print("Enter name")	OUTPUT "Enter name"
name=input()	name ← USERINPUT
print("Hello", name)	OUTPUT "Hello", name
print("Enter age")	OUTPUT "Enter age"
age=int(input())	age ← USERINPUT

Assignment - The allocation of data values to variables, constants, arrays and other data structures so that the values can be stored.

- **Variable** – Value that can change during the running of a program. By convention we use lower case to identify variables (eg a=12)
- **Constant** – Value that remains unchanged for the duration of the program. By convention we use upper case letters to identify constants. (e.g. PI=3.141)

Data Types

Integer	age = 12	age ← 12
Float (real) number	height = 1.52	height ← 1.52
Character	a = 'a'	a ← 'a'
String – multiple characters	name = "Bart"	name ← "Bart"
Boolean (true/false)	a = True b = False	a ← True b ← False

Arithmetic Operators

Add	7 + 2 = 9	7 + 2
Subtract	7 - 2 = 5	7 - 2
Multiply	7 * 2 = 14	7 * 2
Divide	4 / 2 = 2	4 / 2
power	2 ** 3 = 8	2 ** 3
Integer division	7 // 2 = 3	7 DIV 2
Modulus (remainder)	7 % 2 = 1	7 MOD 2

Relational Operators – Allows the Comparison of values

Less than	<	<	7 < 2	-> False
Greater than	>	<	7 > 2	-> True
Equal to	==	==	7 == 2	-> False
Not equal to	!=	≠ or <>	7 != 2	-> True
Less than or equal to	<=	≤	7 <= 2	-> False
Greater than or equal to	>=	≥	7 >= 2	-> True

Boolean Operators

AND	and	7 < 2 and 1 < 2	-> False
OR	or	7 < 2 or 1 < 2	-> True
NOT	not	not 7 < 2	-> True

Sequencing represents a set of steps. Each line of code will have some operation and these operations will be carried out in order line-by-line

Using + operator for adding

a = 1	a ← 1
b = 2	b ← 2
c = a + b	c ← a + b
print(c)	OUTPUT c
	-> 3

Using + operator for concatenation

a = 'Hello '	a ← 'Hello '
b = 'World'	b ← 'World'
c = a + b	c ← a + b
print(c)	OUTPUT c
	-> Hello World

Random number

Random integer	import random random.randint(0,9)	RANDOM_INT(0,9)
Choice	random.choice('a','b','c')	
Random value from 0 to 1	random.random()	

Selection represents a decision in the code according to some condition. The condition is met then the block of code is executed otherwise it is not. Often alternative blocks of code are executed according to some condition.

<pre>x=RANDOM_INT() IF x < 10 THEN y=1 ELSE y=0 ENDIF</pre>	<pre> graph TD Start([Start]) --> LetX[Let x = Random] LetX --> IsX[Is x < 10?] IsX -- YES --> LetY1[Let y = 1] IsX -- NO --> LetY0[Let y = 0] LetY1 --> Stop([Stop]) LetY0 --> Stop </pre>
--	--

IF ...	IF i > 2 THEN j ← 10 ENDIF	if i > 2: j=10
IF ... ELSE ...	IF i > 2 THEN j ← 10 ELSE j ← 3 ENDIF	if i > 2: j=10 else: j=3
IF ... ELSE IF ... ELSE	IF i ==2 THEN j ← 10 ELSE IF i==3 j ← 3 ELSE j ← 1 ENDIF	if i ==2: j=10 elif i==3: j=3 else: j=1

Iteration Sometimes we wish the code to repeat a set of instructions

WHILE loops are used when we do not know beforehand the number of iterations needed and this varies according to some condition.

<pre>x = 0 while (x < 10): x = x + 1</pre>	<pre> graph TD Start([Start]) --> LetX[Let x = 0] LetX --> IsX{Is x < 10?} IsX -- YES --> LetXplus[Let x = x + 1] LetXplus --> IsX IsX -- NO --> Stop([Stop]) </pre>
---	--

<pre>while True: print("Hello World")</pre>	<pre>WHILE TRUE OUTPUT "Hello World" ENDWHILE</pre>
<pre>a=0 while a<4: print(a) a=a+3</pre>	<pre>a ← 0 WHILE a < 4 OUTPUT a a ← a + 3 ENDWHILE</pre>
<pre>for a in range(3): print(a)</pre>	<pre>FOR a ← 0 TO 3 OUTPUT a ENDFOR</pre>

FOR loops are used when we know before hand the number of iterations we wish to make.

Nested structures - Use constructs (e.g. WHILE, FOR, IF) inside another.

use a nested FOR loop to print out a grid	<pre>for i in range (10): for i in range (10): print ("x ",end="") print()</pre>
Use a nested while and if to print out only even numbers	<pre>i=0 while i<51: if (i%2==0): print(i) i=i+1</pre>

Lists

Create a list	shapes=["square", "circle"]
Access element by index pos	shapes[1] -> circle
Append item to list	shapes.append("triangle")
Remove item from list	shapes.remove("circle")
Remove item from list by index	shapes.pop(1)
Insert item into list	shapes.insert(2, "rectangle")
Number of elements in a list	len(shapes)
Get index pos of item in list	shapes.index("triangle")
Concatenating lists	<pre>shapesGroup1["square", "circle"] shapesGroup2=["triangle"] shapes=shapesGroup1+shapesGroup2</pre>
Loop through list	<pre>for i in range (len(shapes)): print(shapes[i])</pre>
Reverse elements in a list	shapes.reverse()
Order elements in a list	shapes.sort()

2D lists - A list if lists

Create a 2D list	d = [[23, 14, 17], [12, 18, 37], [16, 67, 83]]
Another way to create a 2D list	<pre>a = [23, 14, 17] b = [12, 18, 37] c = [16, 67, 83] d = [a,b,c]</pre>
Access element by index position	d[1][2] -> 37

Strings

Get length of a string	len("Hello")	LEN("Hello")
Character to character code	ord("a") -> 97	ORD("a")
Character code to character	chr(101) -> 'e'	CHR(101)
String to integer	a=int("12")	a=INT("12")
String to float	a=float("12.3")	a=FLOAT("12.3")
integer to string	a=str(12)	a=STR(12)
real to string	a=str(12.3)	a=STR(12.3)

Concatenation -merge multiple strings together	<pre>a="hello " b="world" c=a+b print(c) -> hello world</pre>
Return the position of a character If there is more than 1 of the same character the position of the first character is returned.	<pre>student = "Hermione" student.index('i')</pre>
Find the character at a specified position	<pre>student = "Hermione" print(student[2]) -> r</pre>

sub strings - select parts of a string

Example	student="Harry Potter"	
Output the first two characters	print(student[0:2])	Ha
Output the first three characters	print(student[:3])	Har
Output characters 2-4	print(student[2:5])	Rry
Output the last 3 characters	print(student[-3:])	Ter
Output a middle set of characters	print(student[4:-3])	y Pot

*A negative value is taken from the end of the string.

Subroutines are a way of managing and organising programs in a structured way. This allows us to break up programs into smaller chunks.

- Can make the code more modular and more easy to read as each function performs a specific task.
- Functions can be reused within the code without having to write the code multiple times.

- **Procedures** are subroutines that do not return values
- **Functions** are subroutines that have both input and output

Procedure: No input parameters or return	<pre>SUB greeting() OUTPUT "hello" ENDSUB</pre>	<pre>def greeting(): print("hello") call: greeting()</pre>
Procedure: One input parameter, no return	<pre>SUB greeting(name) OUTPUT "Hello", name ENDSUB</pre>	<pre>def greeting(name): print("Hello", name) greeting("grey")</pre>
Function: 1 input parameter, and 1 return value	<pre>SUB add(n) a = 0 FOR a = 0 TO n a = a + n ENDFOR RETURN a ENDSUB</pre>	<pre>def add(n): a=0 for a in range(n+1): a=a+n return a</pre>
Function: Two input parameters, and 1 return value	<pre>SUB (num1, num2) sum=num1+num2 return sum</pre>	<pre>def add(num1, num2): sum=num1+num2 return sum greeting(1,2)</pre>

The **scope** of a variable determines which parts of a program can access and use that variable.

A **global variable** is a variable that can be used anywhere in a program. The issue with global variables is that one part of the code may inadvertently modify the value because global variables are hard to track.

A **local variable** is a variable that can only be accessed within a certain block of code typically within a function. Local variables are not recognized outside a function unless they are returned. There is no way of modifying or changing the behavior of a local variable outside its scope.

Global variables need to be defined throughout the running of the whole program. This is an inefficient use of memory resources. Local variables are defined only when they are needed so have less demand on memory. Local variables only exist within the subroutine.

Reading and writing files

Open file Whatever we are doing to a file whether we are reading, writing or adding to or modifying a file we first need to open it using:

```
open (filename, access_mode)
```

There are a range of access mode depending on what we want to do to the file, the principal ones are given below:

Access Mode	Description
r	Opens a file for reading only
w	Opens a file for writing only. Create a new file if one does not exist. Overwrites file if it already exists.
a	Append to the end of a file. Create a new file if one does not exist.

Reading text files

read - Reads in the whole file into a single string	<pre>f=open("file.txt", "r") print(f.read()) f.close()</pre>
readline - Reads in each line one at a time	<pre>f=open("file.txt", "r") print(f.readline()) print(f.readline()) print(f.readline()) f.close()</pre>
readlines - Reads in the whole file into a list	<pre>f=open("file.txt", "r") print(f.readlines()) f.close()</pre>

Writing text files

Write in single lines at a time	<pre>file=open("days.txt", 'w') file.write("Monday\n") file.write("Tuesday\n") file.write("Wednesday\n") file.close()</pre>
Write in a list	<pre>say=["How\n", "are\n", "you\n"] file=open("say.txt", 'w') file.writelines(say) file.close()</pre>

Data Validation Routines

Check if an entered string has a minimum length	<pre>OUTPUT "Enter String" s ← USERINPUT IF LEN(S) > 5 THEN OUTPUT "STRING OK" ELSE OUTPUT "TOO SHORT" ENDIF</pre>
Check is a string is empty	<pre>OUTPUT "Enter String" s ← USERINPUT IF LEN(S) == 0 THEN OUTPUT "EMPTY STRING" ENDIF</pre>
Check if data entered lies within a given range	<pre>OUTPUT "Enter number" s num ← USERINPUT IF num > 1 AND num < 10 OUTPUT "Within range" ENDIF</pre>

Authentication Routine

```
OUTPUT "Enter Username"
username ← USERINPUT
OUTPUT "Enter Password"
password ← USERINPUT

WHILE username != "bart" OR password != "abc"

    OUTPUT "Login failed"
    OUTPUT "Enter Username"
    username ← USERINPUT
    OUTPUT "Enter Password"
    password ← USERINPUT

ENDWHILE

OUTPUT "Login Successful"
```

Debugging

Syntax errors – Errors in the code that mean the program will not even run at all. Normally this is things like missing brackets, spelling mistakes and other typos.

Runtime errors – Errors during the running of the program. This might be because the program is writing to a memory location that does not exist for instance. eg. An array index value that does not exist.

Logical errors - The program runs to termination, but the output is not what is expected. Often these are arithmetic errors.

Test data

Code needs to be tested with a range of different input data to ensure that it works as expected under all situations. Data entered need to be checked to ensure that the input values are:

- within a certain range
- in correct format
- the correct length
- The correct data type (eg float, integer, string)

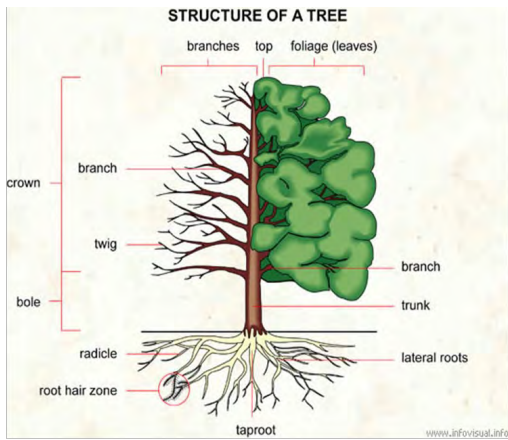
The program is tested using normal, erroneous or boundary data.

Normal data - Data that we would normally expect to be entered. For example for the age of secondary school pupils we would expect integer values ranging from 11 to 19.

Erroneous data - Data that are input that are clearly wrong. For instance, if some entered 40 for the age of a school pupil. The program should identify this as invalid data but at the same time should be able to handle this sensibly which returns a sensible message and the program does not crash.

Boundary data - Data that are on the edge of what we might expect. For instance if someone entered their age as 10, 11, 19 or 20.

GCSE Design and Technology



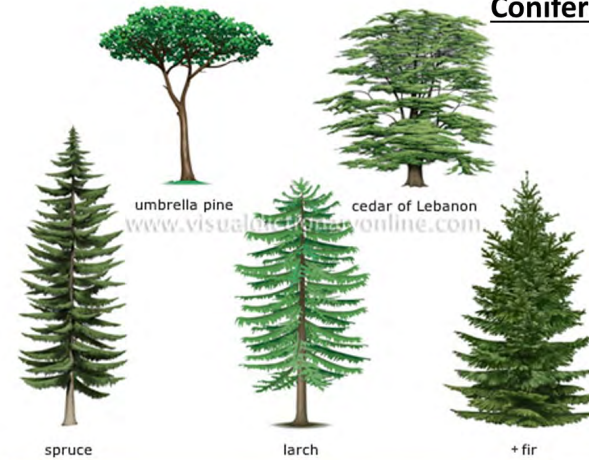
Trees come in all shapes and sizes. They produce many different types of wood that can be used for many different jobs. All trees grow relatively slowly, some take 20 – 30 years to reach full size and others 300-400 years. A few can live for thousands of years. And reach over 120 meters in height.

The bark of the tree is there to protect the living part of the tree from the weather and insects. The heart wood is the strongest part of the tree.



Mr E 2011

Coniferous trees



Coniferous trees are also known as 'Evergreens'. This group of trees keep their leaves all year. They tend to have tall, flexible trunks to allow them to bend in heavy winds and under the weight of snow. They are generally found in milder, temperate climates such as northern Europe, Russia and North America.

The wood produced from Coniferous trees is known as **softwood**. This does not necessarily mean it is 'soft'. 80% of the world's production wood is softwood.

Some coniferous trees are very fast growing reach maturity in 25 years.



Thin needle like leaves.

Mr E 2011

Farming Trees???

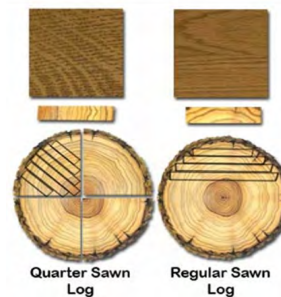
Due to the amount of time it takes a **deciduous tree (hardwood)** to grow there is little point in landowners planting these and hoping to make a return (profit) in a short amount of time. Because of the speed they grow, hardwood is expensive.

Conifers (softwood) mature much quicker and as a result landowners plant these with the aim of cutting them down to sell. You often see these growing in neat, straight rows. Because of the speed they grow, softwood is cheap.



Once the trees have been cut down, they need to be converted into planks and boards that we can use. However at this point 80% of the tree's weight is water, this has to be reduced before we can use it. This process is known as seasoning. Wood that isn't dried is known as **'Green'** wood.

Mr E 2011



Once cut down the timber is cut into workable planks. This is either done by 'slab' sawing or quarter sawing. Both have advantages and disadvantages. Once cut the timber needs to dry out before it can be used.



Mr E 2011



Deciduous trees

Deciduous trees are the group of trees that lose their leaves during the winter seasons. They tend to have rigid trunks with visible branches. These trees lose their leaves during changes in climate to protect themselves. This is usually to protect from freezing and snow, but it can be to protect from drought.



Broad leaves

Mr E 2011

The wood produced from Deciduous trees is known as **Hardwood**. This does not necessarily mean it is 'Hard'. 20% of the world's production wood is hardwood. **Most deciduous trees are slow growing and take over 100 years to reach maturity.**

Trees can be split into two main groups – Coniferous and Deciduous



Coniferous trees; tall single trunk, generally small needle like leaves.



Deciduous trees; large trunk with large visible branches and broad leaves.

Mr E 2011



Seasoning is the name given to the methods of drying timber

There are two methods by which timber can be dried:

- (i) natural drying or air drying,
- (ii) artificial drying.

Air drying

Air-drying is the drying of timber by exposing it to the air. The technique of air-drying consists mainly of making a stack of sawn timber (with the layers of boards separated by sticks) on raised foundations, in a clean, cool, dry and shady place. This can take up to 18 months to dry the timber.

Artificial or Kiln drying

The process of kiln drying consists basically of introducing heat. In this process, deliberate control of temperature, relative humidity and air circulation is provided.

For this purpose, the timber is stacked in chambers, called wood drying kilns, which are fitted with equipment for manipulation and control of the temperature and the relative humidity of the drying air and its circulation rate through the timber stack. This process is quick and can dry the wood in 48 hours



Mr E 2011



The Forest Stewardship Council (FSC) helps take care of forests and the people and wildlife who call them home.

FSC is an international, non-governmental organisation dedicated to promoting responsible management of the world's forests.

The FSC are an independent organisation that check that managed forests meet internationally and nationally agreed standards of responsible forest management.

Forest products like timber can then carry the FSC label, guaranteeing that it comes from a well-managed forest and enabling you to pass on the benefits of certification to your customers.



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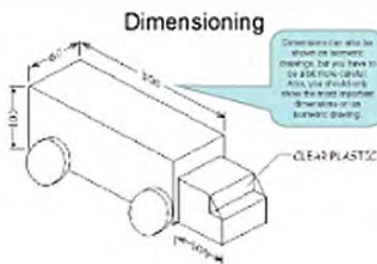
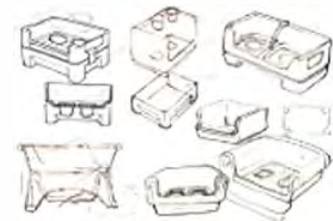
Knowledge Organiser

Unit R039—Communicating Design ideas

Project Brief

A national company produces a range of television (TV) appliances. As the design engineer, you have been tasked with designing the remote control unit that will support new TV equipment. Your design will be packaged with the TV and be available to be purchased online and in electrical goods retailers.

- The remote control should:
- consist of a moulded construction
- be comfortable to hold
- be sized to suit the 5th to the 95th percentile range
- include buttons to press
- include numbers 1 through to 0, play, fast forward, rewind, pause and stop as a minimum
- allow users to easily identify its functions
- be aesthetically pleasing
- be powered by two single AA batteries
- have a maximum size no greater than 220 mm × 80 mm × 30 mm.



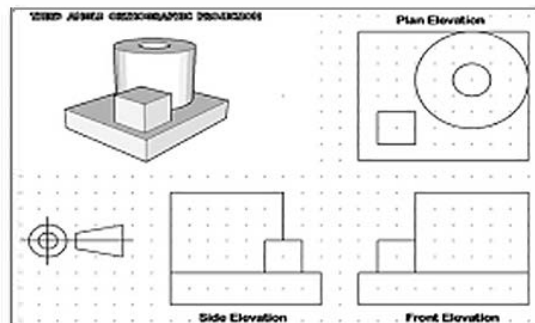
Topic Area 1

Free hand drawing techniques. Production of 2D and 3D designs drawn by hand. Use the isometric grids to help keep the design ideas following an ISOMETRIC convention. Use of colour rendering along with full use of notes and annotation (include key features, functions, dimensions, materials etc)

Topic Area 2

Produce a 3rd angle Orthographic projection drawing.

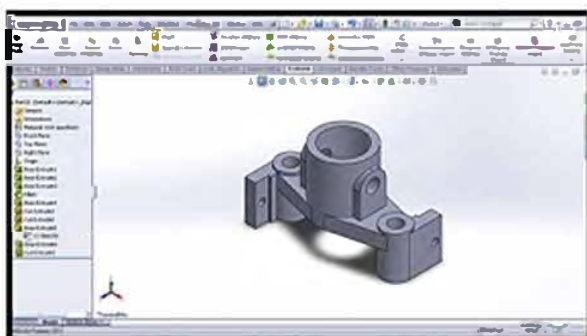
Orthographic Projections are formal drawings that are drawn in 2D. They generally show three faces; the front view, the side view and the top view. These have to be in specific places. These should be drawn neatly and dimensions added in a specific way (normally below and to the left).



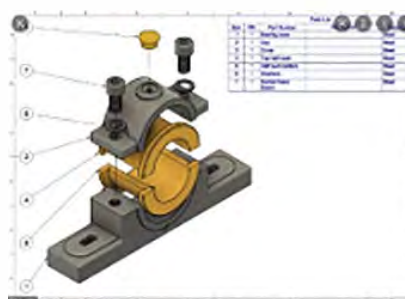
Topic Area 3

Use of Computer Aided Design—CAD

Computer Aided Design allows for fast, accurate production of design ideas. There are many different packages such as Auto-desk, ProDesktop, Solid works that are used to produce high quality designs. Your final designs will be produced using CAD and must show orthographic projection and full rendered



Exploded and Assembly drawings allow you to show how your design would be manufactured and assembled. It allows you to show DFMA (design for Manufacture Assembly) as well as DFM (Design for Maintenance)



Enterprise

Market Research

Anything a business does to find out potential customers' wants and needs is called market research.

Primary methods of research generate new data through **surveys, focus groups, observations and interviews**. Data can be expensive to gather, especially if a large amount is needed, but it will be more likely to suit a business's research needs.

Secondary sources of market research, such as **competitor research, government publications, books and newspapers** use data that already exists. Data is cheaper to obtain and quicker as it has already been generated. The data might not be fully applicable to the business's research needs though.

Data generated from research will either be **quantitative** (numbers and percentages) or **qualitative** (written thoughts and opinions).



Sampling

The people a business asks to take part in their research are known as the **sample**. How this sample is selected is known as a **sampling method**.

- **Cluster** – selecting people within a particular group (e.g. age)
- **Convenience** – selecting people who are near and willing
- **Random** – choosing people without thought
- **Quota** – people from each group represent the full population.

Customer Profiles

A Customer Profile is a detailed description of a business's main target customer. They're really specific depictions, so they often include the customer name and picture as well as other key details such as their age, gender, spending habits and lifestyle.

Market Segmentation

Market segmentation is the process of dividing a market into groups – customers are grouped based on key characteristics such as their **age, gender, occupation, income, location or lifestyle** (e.g. Poundland™ segments by income).

Businesses segment their market so they can tailor products to suit their target audience and so they can aim their marketing efforts at their target customer.

Customer Profile Example

Name: Gary Asher

Age: 39

Occupation: Decorator

Gary lives in Derby with his wife who he married in 2015 and their two children, Izzy and Abbie.

He works full time and, as he has two young children, lives a busy life. He enjoys eating out with his family and plays football at the weekend with a group of friends. He is trying to save as much money as possible to put towards a new house.



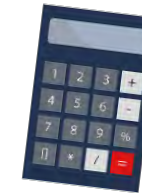
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Key Calculations

Revenue:

$$\text{Selling Price} \times \text{Number Sold}$$



Total Costs:

$$\text{Fixed Costs} + (\text{Variable Cost for 1} \times \text{Number Sold})$$

Profit or loss:

$$\text{Revenue} - \text{Total Costs}$$

It's a loss if the answer is negative

Break-even:

$$\frac{\text{Fixed Costs}}{\text{Selling Price} - \text{Variable Cost per Unit}}$$

The answer is given in units, not pounds

Design Mix Model

This is the combination of what a product does (**function**) with how it looks (**aesthetics**) and how much it costs to make (**economic manufacture**).

New products start as ideas, presented as **mind maps, brain shifters, mood boards, sketches or drawings**.


Pricing

When businesses set a price for a product or service, they consider many factors including being able to cover their costs in order to make a **profit**.

Pricing strategies are specific approaches businesses can use when setting their prices and include:

Competitive Pricing – where businesses base their prices on those of their rivals.

Psychological Pricing – where businesses avoid round/whole numbers for their prices.

Price Skimming – where businesses set a high price for a new product and lower this price over time. 

Price Penetration – where businesses set a low initial price, later increasing this price.

Risk and Viability

Setting up a new business or launching a new product can be **risky** for a person/business. Market research helps reduce this risk.

Viability refers to how successful a product might be – often based on finances – is the break-even point realistic, for example.

Food Preparation and Nutrition

Macronutrients - fats and proteins

Macronutrients are needed by the body in large amounts

PROTEINS

large biomolecules built of amino acids bound together into long chains

Proteins have many functions in our bodies:

Functions

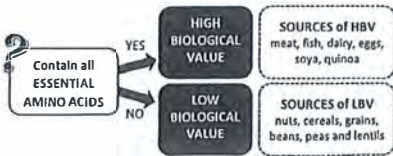
- Build enzymes and hormones
- Build cell membranes
- Repair and maintain tissues
- Defend the body (antibodies)
- Secondary source of energy

15% of daily energy intake

There are approximately 20 amino acids in total and each one has a specific function in our body. While most can be made by our bodies, approximately nine cannot – these have to be consumed through food.

- Essential amino acids – cannot be made by our bodies and need to come from food
- Non-essential amino acids – readily made by the body

Different foods contain different amounts of these essential amino acids. Foods that contain them all are called high biological value (HBV) and a protein source that lacks one of these essential amino acids is called a low biological value (LBV) protein.



You can obtain HBV proteins by combining two LBV proteins. This is called protein complementation.

Protein Complementation

A process of combining two or more LBV protein sources to obtain an HBV protein

Examples of protein complementation:
baked beans + bread
rice + peas
peanut butter + porridge oats

Too much or too little protein and the following can happen:

Excess	<ul style="list-style-type: none"> • Kidney and liver diseases • Weight gain
Deficiency	<ul style="list-style-type: none"> • Kwashiorkor • Slowing of growth rate • Swelling

What about vegetarians and vegans?

Protein Alternatives

Vegetarians and vegans don't consume meat so instead they use protein alternative products, which are manufactured in order to provide protein in a diet, and protein-rich plant foods.

Examples include:

- Mycoprotein (Quorn*)
- Tofu
- Tempeh
- Soy chunks
- Textured vegetable proteins (TVP)
- Beans, lentils, chickpeas



FATS

large biomolecules built of one particle of glycerol and three particles of fatty acids that provide energy

3x fatty acids
TRIGLYCERIDE

The functions of fats include:

Functions

- Source of energy
- Insulation
- Dissolve vitamins
- Build hormones
- Build cell membranes

35% of daily energy intake

Omega 3
Polyunsaturated essential fatty acids present in fish, fish oil and cold-pressed vegetable oils

There are two types of fatty acid, outlined below:

Saturated

Contain only single bonds. Solid at room temperature.

Sources:

- meat, cheese, butter, cream, whole milk, lard, suet, eggs

Unsaturated

Contain one or more double bonds. Liquid (oils) at room temperature.

Unsaturated fats (or fatty acids) can be divided into two further categories:

Monounsaturated
One double bond

Polyunsaturated
More than one double bond

Sources: fish and fish oil, vegetable oils and spreads, nuts and grains, avocados

Food can contain fat, even when you can't see it.

Visible



- Fats you can see – such as the fat on meat – are often saturated.
- However, visible fats can be unsaturated (such as oils in fish and from plants).

Invisible



- Unsaturated fats you cannot see – such as those in nuts and avocados – are often good for the brain!
- However, some invisible unsaturated fats can be found in processed foods.

Fats are needed, but so is a balance of them – too much fat or too little fat has consequences...

Excess

- Obesity
- Hypertension
- Coronary heart disease
- Fatty liver disease
- Type 2 diabetes

Deficiency

- Weight loss
- Vitamin deficiency
- Heart disease
- Feeling cold

Cholesterol

Fatty substance present in animal-origin foods, responsible for transporting fats around the body
Low-density lipoprotein (LDL) is 'bad' cholesterol
High-density lipoprotein (HDL) is 'good' cholesterol

Macronutrients - carbohydrates

CARBOHYDRATES

Large biomolecules built of carbon, oxygen and hydrogen, either in the form of simple, double or complex molecules built of hundreds of molecules of sugar bonded together

50% of daily energy intake

What do we need carbohydrates for?

Functions

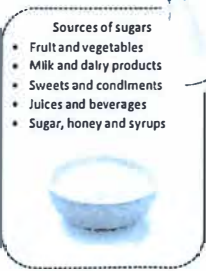
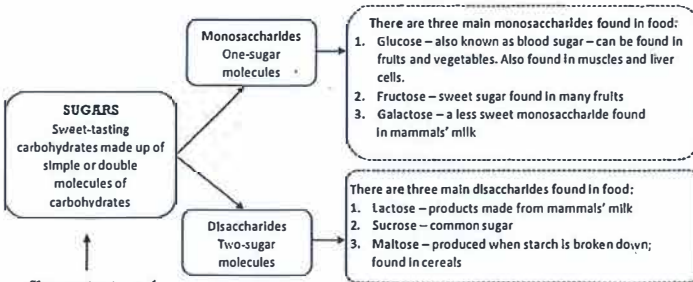
- Primary source of energy
- Store energy for later
- Build DNA
- 'Protein sparer'

Free sugar

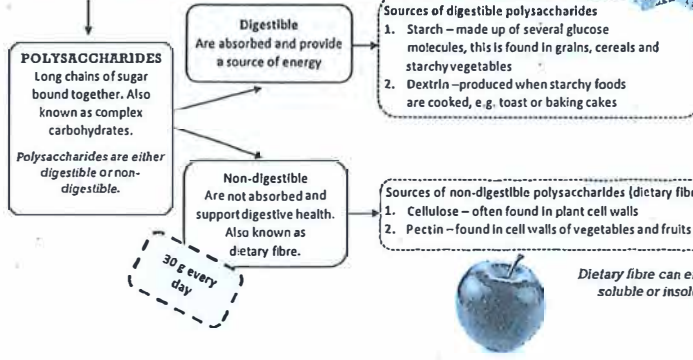
Sugar that is added to foods, and the sugar naturally present in honey and fruit juices. These should make up no more than 5% of your daily energy intake.

Intrinsic sugar

Sugar that is naturally present in fruit and vegetables.



There are two types of carbohydrates: sugars and complex carbohydrates known as polysaccharides, which are further broken down into subgroups.



What happens if you eat too many or too few carbohydrates?

Excess	<ul style="list-style-type: none"> • Tooth decay • Type 2 diabetes • Weight gain and obesity • Hyperglycaemia
Deficiency	<ul style="list-style-type: none"> • Weight loss • Lack of energy, tiredness • Severe weakness • Hypoglycaemia

→ Hypoglycaemia – very low blood sugar level
o collapse/fainting, coma
→ Hyperglycaemia – very high blood sugar level
o type 2 diabetes, damage to the nerves

What happens if you eat too much or too little fibre?

Excess	<ul style="list-style-type: none"> • Constipation or diarrhoea • Impaired absorption of nutrients
Deficiency	<ul style="list-style-type: none"> • Constipation or diarrhoea • Increased risk of obesity, type 2 diabetes, cardiovascular disease, bowel cancer

For more information, practice questions and activities, go to the online textbook.

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Password: student3



Micronutrients - vitamins

Micronutrients are needed by the body in small amounts

Water-soluble vitamins

Group B vitamins and vitamin C

Easily excreted from the body, usually non-toxic in excess, deficiency may be harmful

Fat-soluble vitamins

Vitamins A, D, E and K, present mainly in fatty foods, which can be stored in the body for long periods of time - excess may be harmful

A
Retinol
Beta-carotene
DRV 600 mcg daily

D
Cholecalciferol
Sunshine vitamin
DRV 10 mg daily

E
Tocopherol
DRV 4 mg daily

K
Phylloquinone
DRV 0.1 mcg daily per kg body mass

Functions:

- Growth and development of the body
- Helps support vision at night
- Keeps the skin and cell membranes healthy

Sources:

- Liver, milk and dairy, egg yolk, oily fish
- Red, yellow and green vegetables and fruit

Deficiency: night blindness, itchy and dry skin
Excess: toxic, harmful to unborn babies

Functions:

- Healthy bones and teeth
- Helps absorb calcium

Sources:

- Produced in the skin in response to sunshine exposure
- Liver, milk and dairy, egg yolk, oily fish

Deficiency: rickets, osteoporosis, depression, increased risk of cancer
Excess: damage to the kidneys and other organs, weakened bones

Functions:

- Helps growth of the baby during pregnancy
- Keeps cell membranes and muscles healthy
- Helps build sperm cells and red blood cells

Sources:

- Vegetable oils, seeds and nuts
- Egg yolk, wheat germ

Deficiency: muscular dystrophy, anaemia, infertility
Excess: loss of appetite, nausea, flatulence, diarrhoea

Functions:

- Ensures proper blood clotting and healing of wounds
- Prevents bleeding by supporting blood clotting when injured

Sources:

- Produced by gut bacteria
- Leafy green vegetables, green tea

Deficiency: bleeding, bruising
Excess: very rare, no known symptoms

Beta-carotene - inactive form of vitamin A, found in plant foods

Retinol: active form of vitamin A, found in animal-origin foods

Vitamin D deficiency is very common in the UK. For this reason, a doctor can prescribe you a Vitamin D supplement.

	Function in the body	Source	Effects of deficiency and excess
Vitamin B1 Thiamine DRV 1 mg daily	<ul style="list-style-type: none"> Helps release energy from food Supports the nervous system 	<ul style="list-style-type: none"> Liver, milk and dairy Bread and cereals Eggs, nuts, peas 	<ul style="list-style-type: none"> Deficiency: beri-beri disease Excess: very rare
Vitamin B2 Riboflavin DRV 15 mg daily	<ul style="list-style-type: none"> Supports healthy skin, nerves and mucous membranes 	<ul style="list-style-type: none"> Chicken, eggs, milk and dairy Rice, bread, cereals, leafy vegetables, soya 	<ul style="list-style-type: none"> Deficiency: skin problems, dry lips, poor growth Excess: very rare
Vitamin B3 Niacin DRV 15 mg daily	<ul style="list-style-type: none"> Releases energy from carbohydrates Helps keep skin and nerves healthy 	<ul style="list-style-type: none"> Meat and poultry Cereals and grains Pulses (beans, lentils and other) 	<ul style="list-style-type: none"> Deficiency: pellagra, inflammation of skin, dementia (memory loss) Excess: damage of the liver
Vitamin B9 Folate / folic acid DRV 200 mcg daily	<ul style="list-style-type: none"> Ensures proper development of the nervous system Helps build red blood cells 	<ul style="list-style-type: none"> Bread and cereals Broccoli, Brussel sprouts, spinach Liver, chickpeas and peas 	<ul style="list-style-type: none"> Deficiency: spina bifida in newborns Excess: no known effects
Vitamin B12 Cobalamin DRV 1.5 mcg daily	<ul style="list-style-type: none"> Helps build red blood cells 	<ul style="list-style-type: none"> Meat, milk and dairy, egg yolk Fish and beef 	<ul style="list-style-type: none"> Deficiency: pernicious anaemia, more likely in vegans Excess: no known effects
Vitamin C Ascorbic acid DRV 40 mg daily	<ul style="list-style-type: none"> Builds connective tissues (such as skin and mucous membranes) Helps healing of wounds Increases absorption of iron 	<ul style="list-style-type: none"> Potatoes, tomatoes, Brussel sprouts Berries, currants Citrus fruit (lemon, orange, kiwi) 	<ul style="list-style-type: none"> Deficiency: scurvy, impaired healing Excess: stomach pain and diarrhoea

Antioxidants
Protect cells from the damage caused by free radicals.

Help prevent cardiovascular disease, cancer and maintain youth.

FREE RADICALS are particles of oxygen which have seven electrons and steal electrons from other particles in the body, causing damage and oxygen stress.

Sources of antioxidants:

- Fresh fruit and vegetables
- Nuts
- Whole grains
- Oily fish

How cooking affects nutritional value of food

Water-soluble vitamins can be lost by exposure to high temperatures, high pressure, oxygen and enzymes. Therefore, the following should be practised in order to reduce vitamin loss:

- Store foods out of direct sunlight
- Cut vegetables when you need them - so as not to expose to oxygen
- Boil vegetables for a short time when cooking them to reduce exposure to temperature and water
- Steam vegetables when possible
- Avoid damaged fruit and vegetables - bruised vegetables release enzymes that can reduce vitamin C.

Micronutrients (minerals)

Micronutrients are needed by the body in small amounts

Calcium (Ca)

- Works together with phosphorus and vitamin D to ensure proper bone and tooth health
- Helps blood clotting
- Ensures proper functioning of nerves and muscles

Excess: Excess is rare, but too much may lead to it being stored in the kidneys, stopping them from working.

Deficiency: Rickets - effect of calcium deficiency in children, in which bones don't grow properly and impair movement. Osteoporosis - effect of calcium deficiency in adults, in which bones become weak, brittle, easy-to-break and heal slowly.

Commonly found in milk and dairy products. Also present in nuts, bread and cereals, oily fish and green vegetables.

DRV: 700 mg daily

Iron (Fe)

- Necessary for building red blood cells

Haem Iron (Easily absorbed by the body)
Red meat, offal, egg yolk

Non-haem Iron (Difficult to absorb)
Green leafy vegetables, dried fruit, chocolate, lentils

Haemoglobin - red pigment in the blood cells which carries oxygen around the body.

Menstruation
Part of the female monthly cycle when bleeding occurs.

Excess: Stomach ache, Nausea, Vomiting, Constipation.

Deficiency: Iron deficiency anaemia - symptoms include: pale complexion, tiredness, weak and split nails. Deficiencies usually caused by loss of blood, impaired absorption or genetic disorders.

DRV: 11 mg boys / 15 mg girls

Phosphorus (P)

- Works together with calcium and vitamin D to ensure proper bone and tooth health
- Essential for energy release

Excess: Tiredness, Depression.

Deficiency: Decalcification of bones, Weak, brittle bones.

Milk and dairy, Bread and cereals, Nuts, meat and fish.

DRV: 550 mg

Iodine (I)

- Builds hormones in the thyroid gland
- Controls the rate of metabolism

Excess: Weight gain, change in metabolism.

Deficiency: Swelling of the thyroid (goitre), Thyroid: small gland in the front of the neck.

Red meat, sea fish, shellfish, cereals, grains, Nuts, meat and fish. Maybe breathed in at the seaside and in salt caves.

DRV: 140 mcg daily

Fluoride (F)

- Builds and strengthens tooth enamel

Excess: Brittle tooth enamel, Tooth decay.

Deficiency: Tooth decay / dental caries.

Bony fish (e.g. sardines) and seafood, tea, toothpaste and mouthwash. Fluoride is also added to drinking water by fluoridation.

DRV: 3.5 mg daily

Sodium (Na)

- Maintains body water balance
- Important for the conduction of nerve impulses

Excess: High blood pressure = hypertension, Heart failure and stroke, Kidney damage.

Deficiency: Muscle cramps, Swelling of the body.

Sources: Kitchen salt, Tinned foods (e.g. fish), Processed foods and fast foods, Salty snacks (e.g. crisps and nuts), Smoked and cured meats, bacon, cheese, Bread.

DRV: 6.5 g of salt daily

Water

Water is LOST from the body by:

- Breathing - lungs, mouth and nose
- Body waste - kidneys and intestines
- Sweating - skin

This can lead to...

HEAT STROKE: Uncontrolled, life-threatening increase in body temperature

DEHYDRATION: A harmful reduction in water loss in the body

HYDRATION: Amount of water necessary for proper functioning of the body

Adults should drink around 2 litres of water a day

Drink more:

- on hot, sunny days
- when you exercise a lot
- when you have a fever
- when you want to lose weight

DRV: 6.5 g of salt daily

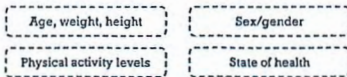
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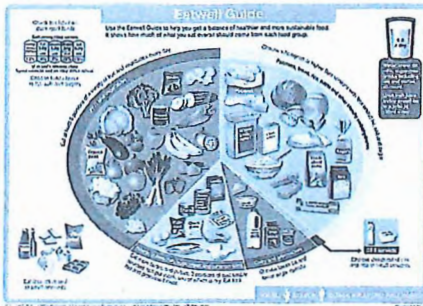
MAKING INFORMED CHOICES for a varied and balanced diet

Current Guidelines

Nutritional needs of people differ depending on:



However, general guidance can be taken from the Eatwell Guide (below).



Planning meals for specific dietary groups

Some people cannot, or do not want to, eat certain products. It is important to take that into account when planning a meal or diet for them.

Lactose intolerance

Common condition in which lactose cannot be digested, causing painful bloating, stomach pains and diarrhoea.

Lactose is a disaccharide present in milk.

Milk and dairy products should be avoided by lactose intolerant people.

Coeliac disease

- Inborn disease characterised by intolerance to gluten.
- Gluten intake causes inflammation and damage to the intestines, impairing nutrient absorption and leading to malnutrition.

Gluten is a protein found in wheat, rye, barley and oats.

A coeliac has to follow a gluten-free diet for their whole life.

Rice, potatoes, buckwheat and quinoa are gluten-free.

Vegetarians

People who do not eat meat and sometimes other foods of animal origin.

- Lacto-ovo vegetarians eat dairy and eggs
- Lacto-vegetarians eat dairy
- Ovo-vegetarians eat eggs
- Pesco-vegetarians eat fish

Vegans

People who do not eat any foods of animal origin, such as meat, fish, milk and dairy, eggs, honey and butter. Often avoid using other products of animal origin, such as leather clothing, fur, feathers, etc. All foods eaten are plant-based. Vegans are at risk of developing vitamin B12 deficiency and anaemia.

High-fibre diets

- Help prevent obesity, coronary heart disease, type 2 diabetes and some cancers
- Dietary fibre is a group of polysaccharides, usually indigestible for humans, present in the cell walls of plants
- Adults should eat 30 g of dietary fibre daily to remain healthy and prevent certain diseases

Soluble fibre:

- Increases satiety
- Slows down sugar ingestion and prevents type 2 diabetes

Insoluble fibre:

- Regulates bowel movements
- Prevents constipation
- Binds toxins and harmful substances
- Fibre-rich foods include: cereals, wholegrain products, raw vegetables

How nutritional needs vary depending on age

As we age, our nutritional needs change due to a number of reasons.

Young children

- Growth spurt means young children require more protein, calcium and vitamin D
- Teething means they require more calcium, fluoride and vitamin D
- More vitamins and minerals are needed to help support the developing immune system
- Fewer sugary sweets and drinks should be consumed to prevent overweight and tooth decay.

Teenagers

- Calcium and vitamin D should be consumed to support growth spurts and help reach peak bone mass
- Immature girls need more iron to prevent anaemia caused by menstruation
- Eat regularly to provide more energy for increased physical and intellectual activity
- Should consume fewer sweets and sugary drinks, do more physical activity and drink more water to prevent obesity and other health conditions

Adults and the elderly

- More dietary fibre should be consumed to prevent obesity, diabetes and cancers
- More vitamin D and calcium is required to maintain strong bones
- Fewer sugary snacks and drinks to prevent diabetes, coronary heart disease and obesity
- Elderly people are less active, so less energy is needed from energy dense foods
- More iron to prevent anaemia and maintain healthy red blood cells
- Less salt and more water should be consumed, and more activity done, to reduce hypertension.

Portion size and costing when planning a meal

Eating the correct portion size can help ensure that an individual's nutritional and energy needs are met.

A portion is the amount of food eaten in one meal.

Planning meals and shopping in advance helps assess the cost and stay within the family budget.

Family budget is the amount of money allocated to spend on food or other goods.

Children may be using pester power to force their parents into buying sweets, toys or other things.

How to carry out nutritional analysis

Nutritional analysis allows you to measure the nutritional value of the food we eat. The following can be used to help you analyse foods:

- Food tables – contain data on all nutrients in a given food
- Nutritional analysis software – helps plan a meal and/or diet for specific target groups or plan a balanced diet.

This allows you to assess the needs of the consumer: their preferences, health conditions, age, etc.

Providing proper amounts of nutrients can help to improve and maintain health.

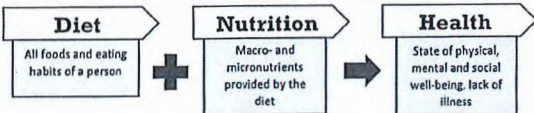
Modifying recipes

You can modify your recipes to make a given meal more suitable for different groups or individuals through a number of ways:

- Substitute ingredients, e.g. soy chunks for meat
- Reduce the amount of sugar, salt, fat or other ingredients
- Replace ingredients with low-fat, low-protein or high-fibre alternatives
- Choose low-fat dressings and sauces, e.g. yogurt instead of mayo
- Substitute saturated fats with unsaturated ones if possible
- Change the consistency of the dish

Diet, nutrition and health

Diet and nutrition have a large impact on health. An imbalanced diet may cause many diet-related diseases and conditions.



Name: Obesity

Condition in which fat is stored by the body in large amounts

Reasons:

- Imbalanced diet
- lack of physical activity
- hormonal issues

Results:

- × increased risk of CHD
- × hypertension
- × stroke
- × diabetes
- × cancer
- × depression
- × social isolation
- × high cholesterol levels
- × infertility
- × back and joint pain

25% of adults and 16% of children in the UK are obese

Diet: balanced, varied, low-fat, low-sugar, regular meals during the day

Name: Coronary heart disease

Condition in which blood vessels in the heart are narrowed by cholesterol plaque build-up

Reasons:

- Imbalanced diet
- too much cholesterol
- obesity
- hypertension
- smoking

Results:

- × cholesterol plaque build-up in the heart blood vessels
- × increased risk of heart attack
- × chest pains (angina)

CHD is the main cause of death in the UK

Diet: balanced, varied, low-fat to reduce weight, low-cholesterol

Name: Type 2 diabetes

Chronic condition in which blood sugar levels are abnormally high

Reasons:

- Imbalanced diet
- obesity
- improper secretion of insulin*

Results:

- × damage to the nerves and blood vessels
- × eyesight loss
- × leg amputation
- × kidney failure
- × increased risk of heart attack and stroke

Diet: balanced, varied, regular meals, no simple sugars, usually low-fat to reduce weight

*Insulin – hormone produced in the pancreas, which lowers sugar levels in the blood by transporting sugar to the cells

Name: Hypertension

Condition in which blood pressure is too high (above 90/140 mmHg)

Reasons:

- Imbalanced diet
- too much salt and cholesterol
- obesity
- Impaired kidney performance
- smoking
- alcohol

Results:

- × cholesterol plaque builds up in the blood vessels (atherosclerosis) and increases the pressure, or liquids are not excreted properly from the body and the pressure rises
- × Hypertension increases the risk of heart failure, stroke and kidney disease

25% of adults in the UK suffer from hypertension

Diet: low in salt/sodium, usually low-fat to lose weight

Name: Iron deficiency anaemia

Condition caused by a lack of iron in the diet, or by impaired absorption in the gut

Reasons:

- Iron is needed to build haemoglobin
- haemoglobin is the red pigment in the blood which binds oxygen and transports it around the body
- If there is not enough iron, red blood cells cannot be built and oxygen cannot be transported properly

Results:

- × pale skin
- × tiredness
- × shortness of breath
- × heart palpitations
- × dizziness
- × fainting
- × immune system is weakened and infections are more likely to occur

Diet: rich in iron and vitamin C, red meat, liver, eggs, broccoli, kale and spinach, beans and lentils, fortified cereals and bread

Vitamin C increases iron absorption in the gut!

Girls and women are at greater risk of developing iron deficiency anaemia

Name: Skeletal disorders

Group of diseases of the skeletal system caused by a deficiency of micronutrients

Reasons:

- lack of calcium
- lack of vitamin D
- lack of fluoride
- deficiency or excess of phosphorus
- excess sodium

Results:

- × Rickets
- × Osteoporosis
- × Tooth decay

Occurs in children

Occurs in the elderly

Bones become soft, don't grow properly, often become curved and make movement impossible

Bones become porous, brittle and easy to break, bones heal slowly after breaking

Diet: high in calcium, vitamin D, fluoride, high in milk and dairy, fish and shellfish, low-sodium, low-sugar

Energy needs

Energy is the number of calories you need to consume every day to properly function and maintain your body mass. It varies for different people, depending on their sex, age, height, weight, occupation, lifestyle, body composition, etc.

Energy is measured in kilocalories (kcal) or kilojoules (kJ).

BMR (basal metabolic rate)

Amount of energy needed to stay alive, i.e. to keep the heart beating, to breathe and to maintain a stable body temperature.

Depends on: age, weight, height and sex

PAL (physical activity level)

Amount of energy needed to perform all life activities, e.g. cleaning, walking, shopping or swimming

1.0–1.4 – low PAL

1.5–1.8 – moderate PAL

Over 1.8 – active PAL

$BMR \times PAL = \text{total energy expenditure (TEE)}$

(or how much energy a person needs each day)

BMI (body mass index)

Indicates whether a person's weight is proportionate to their height

$\text{body mass in kg} / \text{height in m}^2$

BMI < 18.5 – underweight

BMI 18.5–25.0 – healthy

BMI 25.0–30.0 – overweight

BMI > 30.0 – obese

For more information, practice questions and activities, go to the online textbook.

Username: stelfordlangley3
Password: student3



French

French Year 10 Autumn Term - Le Temps Des Loisirs

Objective: To discuss free time activities

Threshold Concepts: -The verb "jouer" is followed by either the preposition à plus definite article or du, de la de l' or des, depending on whether you are playing a sport or an instrument.

- In French, the word "depuis" is used to refer to how long something has been happening. In English, this is used with the present perfect progressive tense (*have been ...ing*); in French it is used with the present tense.

- In French, the verb "faire" is always followed by du, de la or des. The verb "faire" is also used with the majority of free time activities, whilst in English we use the verb "to go".

-There are several two-part structures used in French to make a sentence negative. They parts are sandwiched around the conjugated verb.

-To make a comparison in English the structures plus...que / moins... que / aussi ...que are used. There is no equivalent to the English suffix"-er".

Free Time activities

Je fais.... - I do
du footing - jogging
de la natation - swimming
de l'escalade - climbing
du saut à l'élastique
de l'équitation - horse-riding
du lèche-vitrine - window shopping
du vélo - cycling
de l'escrime - fencing
de la planche à voile - wind surfing
des promenades - walking
des randonnées - hiking
des magasins - shopping
du surf des neiges - snowboarding
Je regarde - I watch
Je joue - I play
J'écoute - I listen
Je crée des playlists - I create
playlists
Je télécharge de la musique - I
download music
Je lis mes emails - I read emails
Je prends des photos - I take photos
Je mets mes photos sur Snapchat
Je vais sur des réseaux sociaux - I go
on social media
Je fais des recherches pour mes
devoirs - I do research for my
homework

Giving Opinions- Essential Vocabulary

J'aime - I like
Je n'aime pas - I don't like
J'ai une passion pour - I love
J'ai horreur de - I hate
Il est dangereux de... - it is
dangerous to...
Il est important de... - it is
important to...
Il est facile de... - It is easy to...
Il est possible de... - it is possible
to...

Time Adverbs

tous les jours - every day
souvent - often
quelquefois - sometimes
de temps en temps - from time to time
rarement - rarely
le samedi - on saturday
une fois par semaine - once a week
le weekend
le soir - in the evening
quelquefois - sometimes
hier - yesterday
le weekend dernier - last weekend

The Perfect Tense with avoir

To form the perfect you need to use
the verb *avoir* in the present tense:

j'ai - i have

tu as - you have

il / elle a - he / she has

on a / nous avons - we have

vous avez - you have

ils /elles ont -they have

You then add the past participle:

-er verbs = é (j'ai joué)

-re verbs = u (j'ai perdu)

-re verbs = i (j'ai fini)

The Perfect Tense with être

There are 14 verbs which use être to
form the perfect tense:

Je suis - I am

Tu es - You are

Il / elle est - he / she is

On est / nous sommes - we are

Vous êtes - you are

Ils / elles sont - they are

The most important verb which uses
être is "aller"

Je suis allé - I went

Using depuis

Depuis means "for" when referring to a
length of time. In English we use the
perfect progressive tense "have been ...ing
for 5 years". In French it is used with the
present tense:

Je fais du judo depuis cinq ans - I have
been doing judo for five years

Je joue au tennis depuis deux mois - I have
been playing tennis for two months

Negative Structures

ne.. pas - don't / do not

ne ...jamais - never

ne....plus - no longer

ne...rien - no more



The Comparative

You use the comparative to
compare things:

plus...que.... = more than

moins...que... = less than

le foot est plus intéressant
que la danse

la natation est moins amusante
que le rugby



Geography

T1

Find a playlist of explainer clips by scanning or clicking the QR code

CLICK ME



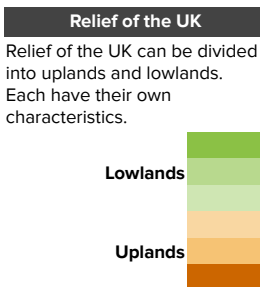
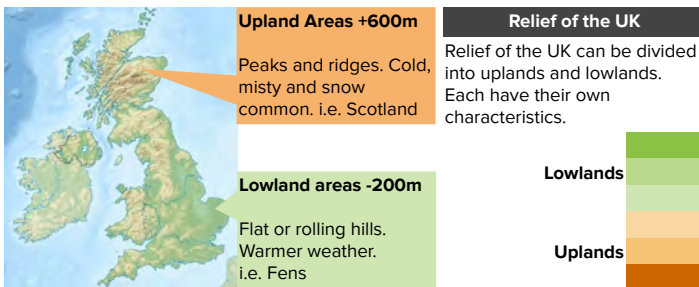
SCAN ME

Landscapes and physical processes



Geography Knowledge Organiser

1.1.1 - Distinctive landscapes



Glaciation in the UK

Over many thousands of years, glaciation has made an impression on the UK's landscape. Today, much of upland Britain is covered in u-shaped valleys and eroded steep mountain peaks.

During the ice age	
Ice covered areas eroded and weathered landscapes to create dramatic mountain scenery.	
After the ice age	
Deep valleys and deposition of sediment revealed	

What is a landscape?

A landscape has visible features that make up the surface of the land. Landscapes can be broken down into four 'elements'.

Landscape Elements	
Physical	Biological
-Mountains	-Vegetation
-Coastlines	-Habitats
-Rivers	-Wildlife
Human	Variable
-Buildings	-Weather
-Infrastructure	-Senses

1.1.2/3 - Human activity

Honeypot site - A location which attracts a large number of tourists who, due to their numbers, place pressure on the environment and local people.
Carrying capacity - The number of people which a region can support without damaging the location and environment.
Visitor pressure - tourists who, due to their numbers, place stress on the environment and local people.

Positives of visitor pressure	Negatives of visitor pressure
Employment opportunities are created to meet the demands of the tourists	Jobs are often seasonal or part time. This makes it harder to support family.
Tourism brings in money and will boost the local economy	There is overcrowding in the peak seasons
There will be upkeep of the area, making it a clean place to live	Businesses are designed for the tourists
Crime can be reduced due to higher levels of employment	There can be congestion on the roads
	Scenic walks and hikes are damaged by footpath erosion

(1.1.3) Management: repairing footpaths

Stone pitching - This technique involves digging stone into the ground to form good solid footfalls. This ancient technique is used extensively in the central fells using stone which is naturally occurring.

Soil Inversion - A digger is used to construct a ditch drain. The soil removed from the drain is placed alongside to create a hard wearing walking surface. Grass seed mix is then sown to encourage vegetation to bind all the works together.

Sheep wool - The fleece is placed between the soil and the stones to prevent the stone from sinking into the soil. This creates a 'floating' path and also absorbs some water to slow surface runoff.

1.2.1 - Processes & landforms (Rivers)

Erosion	
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolved rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart.
Hydraulic Action	Water enters cracks in the cliff, air compresses, causing the crack to expand.
Transportation	
Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.
Deposition	

When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition.

Freeze-thaw weathering

Stage One
Water seeps into cracks and fractures in the rock.

Stage Two
When the water freezes, it expands about 9%. This wedges apart the rock.

Stage Three
With repeated freeze-thaw cycles, the rock breaks off.

Weathering

Chemical
Action of chemicals within water dissolving the rock.

Biological
Rocks that have been broken down by living organisms or plant roots.

Formation of a waterfall

- 1) River flows over alternative types of rocks.
- 2) River erodes soft rock faster creating a step.
- 3) Further hydraulic action and abrasion form a plunge pool beneath.
- 4) Hard rock above is undercut leaving cap rock which collapses providing more material for erosion.
- 5) Waterfall retreats leaving steep sided gorge.

Formation of floodplains and levees

When a river floods, fine silt/alluvium is deposited on the valley floor. Closer to the river's banks, the heavier materials builds up to form natural levees.

Formation of a meander

A meander is a curve in a river's course formed when erosion and deposition take place on opposite river banks. The two sides of the meander eventually meet and create a straight channel.

Inside bend:
Slowest speed
Deposition
Slip-off slope/point bar

Outside bend:
Fastest speed
Erosion
River cliff/undercut

Formation of a V-shaped valley

The river has eroded downwards.

These stones scrape along the bed of the river, eroding it downwards.

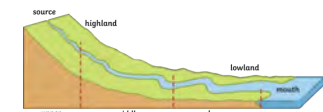
Weathering breaks up this rock. It falls into the river and is used for more erosion.

River long profile

Upper course
Near the source, the river is flows over steep gradient from the hill/mountains. This gives the river a lot of energy, so it will erode the riverbed vertically to form narrow valleys.

Middle course
Here the gradient get gentler, so the water has less energy and moves more slowly. The river will begin to erode laterally making the river wider.

Lower course
Near the river's mouth, the river widens further and becomes flatter. Material transported is deposited.



1.2.1 - Processes & landforms (Coasts)

Formation of bays and headlands

- 1) Waves attack the coastline.
- 2) Softer rock is eroded by the sea quicker forming a bay, calm area causes deposition.
- 3) More resistant rock is left jutting out into the sea. This is a headland and is now more vulnerable to erosion.

Formation of coastal landforms

1. Crack
2. Cave
3. Arch
4. Stack
5. Stump

Wave-cut platform exposed at low tide

1. Hydraulic action widens cracks in the cliff face over time. Abrasion forms a wave cut notch between HT and LT.
2. Further abrasion widens the wave cut notch to form a cave.
3. Caves at both sides of the headland break through to form arch
4. Weather above/erosion below –arch collapses leaving stack.
5. Further weathering and erosion leaves a stump.

Types of coastline

Concordant
A concordant coastline occurs where the bands of differing rock types run parallel to the coast. The outer hard provides a protective barrier to erosion of the softer rocks further inland. Sometimes the outer hard rock is punctured allowing the sea to erode the softer rocks behind. This creates a cove which is a circular area of water with a relatively narrow entrance way from the sea.

Discordant
Discordant coastline occurs where bands of differing rock type run at right angles to the coast. The different resistance to erosion leads to the formation of headlands and bays.

Concordant coast with only 1 rock type

Discordant coast with many rock types

Formation of coastal spits (longshore drift)

Material moved along beach in zig-zag way

Coastline changes direction

Spit curved with change of wind direction

Material deposited in shallow, calm water, so form a spit

Spit

Prevailing winds bring waves in at an angle

- 1) Swash moves up the beach at the angle of the prevailing wind.
- 2) Backwash moves down the beach at 90° to coastline, due to gravity.
- 3) Zigzag movement (Longshore Drift) transports material along beach.
- 4) Deposition causes beach to extend, until reaching a river estuary.
- 5) Change in prevailing wind direction forms a hook.
- 6) Sheltered area behind spit encourages deposition, salt marsh forms.

Mass movement

Mass Movement is the downhill movement of cliff material

Rockfall As the weathering processes weaken the structure of the cliff rock fragments fall away.

Landslide Large blocks of the cliff slide down to the base of the cliff due to erosion weakening the base of the cliff

Slumping When soft rocks like clay become too wet from rainfall and weakened by erosion, the entire cliff face slips down in a curve, making steps in the cliff

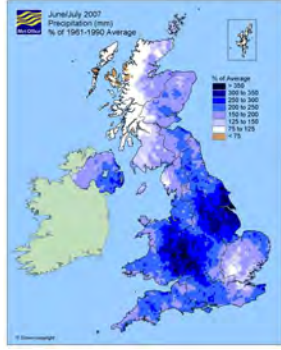
Wave-cut landforms

1. Sea attacks base
2. Wave-cut notch
3. Cliff collapses
4. Wave-cut platform
5. Cliff retreats

1. The sea attacks the base of the cliff between the high and low water mark.
2. A wave-cut notch is formed by erosional processes such as abrasion and hydraulic action - this is a dent in the cliff usually at the level of high tide.
3. As the notch increases in size, the cliff becomes unstable and collapses, leading to the retreat of the cliff face.
4. The backwash carries away the eroded material, leaving a wave-cut platform.
5. The process repeats. The cliff continues to retreat.

1.2.2 - Rates of change

Climate
The rainfall map of the UK shows variations in rain. Less precipitation occurs in low land areas. East England Most precipitation occurs in upland areas. Scotland.



These differences mean...
Uplands experience more weathering, erosion and mass movement.

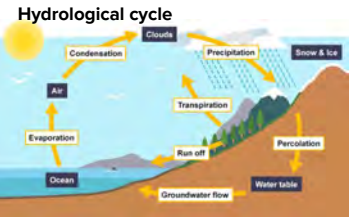
Geology
Some rock types erode faster than others (sedimentary limestone or clays erodes quicker than metamorphic granite). The direction rocks are layered in can also affect this eg. concordant or discordant coastlines



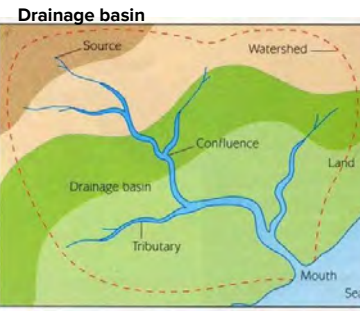
Human activity
Humans can increase rates of change such as footpath erosion on cliffs or building on floodplains but humans can also put management in place is slow erosion or transport processes, like dams, groyne, river dredging & afforestation.



1.3.1 - Drainage basins



Surface runoff- water runs across the ground to a river
Infiltration- water seeps into the soil in the ground
Percolation- water seeps into rock deeper in the ground
Groundwater flow- water flows through the soil and rock in the ground



Condensation- when water vapour cools to form clouds
Evaporation- where water is turned into water vapour (gas)
Precipitation- any water that falls from the sky (rain, snow etc)
Interception- vegetation traps water before it reaches the ground
Transpiration- water is evaporated from the leaves of vegetation

Drainage Basin- is the area of land drained by a river and its tributaries
Watershed- the area of high land forming the edge of a river basin
Source- where a river begins
Mouth- where a river meets the sea
Tributary- a small river or stream that joins a larger river
Confluence- the point at which two rivers meet
Main river channel- main river flow in the drainage basin
Floodplain- flat land on the sides of the river that takes the overflow water

1.3.2 - River flooding

- Factors influencing how rivers flood:**
- Steep Slopes** - If the land surrounding a river is steep, rainfall will run quickly across the ground as surface runoff, increasing the river's discharge
 - Urbanisation** - Roads and pavements are built using a tarmac, an impermeable material. Rainfall flows quickly over tarmaced surfaces as it cannot infiltrate into the ground, leading to rapidly increasing discharge
 - Geology** - If a drainage basin has impermeable rock, water is unable to percolate into the rock. As a result, the rainfall flows into the river via throughflow and surface run off
 - Heavy or prolonged rainfall** - A high volume of rainfall will cause a river's discharge to increase rapidly, increasing the chances of the river bursting its banks
 - Vegetation** - Trees intercept rainfall as it falls from the sky. If there is a lack of vegetation, more rainfall reaches the ground and eventually the river, seeing a large increase in discharge

1.3.3 - Flood management

Hard Engineering - Hard engineering management involves using artificial structures, such as dams and embankments which try to control rivers. They tend to be expensive.

Soft Engineering - Soft engineering management is a more natural approach to manage flooding, it does not involve building artificial structures, but takes a more sustainable approach to managing the potential for river flooding.



River defences

Hard Engineering

Channel straightening Removing meanders, increases velocity to remove flood water.

Artificial Levees Man-made banks heighten river so flood water is contained.

Channel widening Makes river wider to increase capacity for a flood.

Soft Engineering

Afforestation Planted trees soak up rainwater, reduces flood risk.

Managed Flooding Naturally let some areas flood to protect settlements.

Home study questions



DEVELOPING

Describe how tourists can have benefits and negatives to honeypot sites [3 marks]

Explain why a waterfall migrates backwards the source [4 marks]

SECURING

Analyse the pattern of average precipitation (rainfall) in the UK (1 . 2 . 2) [6 marks]

Explain the difference between discordant and concordant coastlines [4 marks]

MASTERING

'Urbanisation is the most significant factor in flooding' **To what extent** do you agree with this statement? [8 marks]

Sketch and annotate the formation of a spit [6 marks]

CHALLENGE

Create a spider diagram to show how all the erosional processes and landforms of rivers and coasts are linked

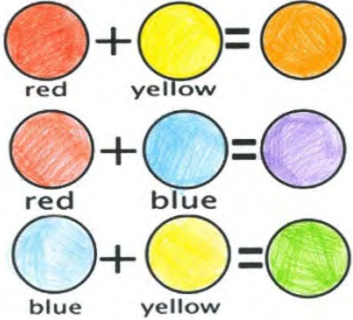
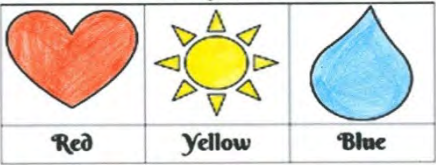
Draw out a river long profile and **label** where the different landforms and processes would usually occur

Graphic Design

COLOUR



Primary Colors:



Manasa Jackson 94

Colour Theory – Logo design

Choose 3 logos to re design using a different colour scheme. Explain how your choice of colours effects the mood of the logo



Colour is the way that a certain mood/feeling is presented to the human mind and body. Colour is all different shades and is more than just black and white. For example purple represents wealth and royalty. The colour wheel I designed is showing all of the primary and secondary colours. In this other piece of work I created it shows all of the different colours on different famous logos such as Fanta, Amazon, Apple etc.

This shows all of the different colours and the way they affect the human body and mind. Here I have shown the way different colours are shown and how they make the body and mind of people feel.

The primary colours mix to create different colours such as green, purple and orange shown in the colour wheel.

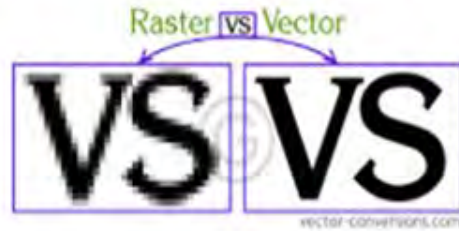


Raster Image

Raster images are made of tiny squares called pixels. Most web based pictures are Raster as are digital photographs

Vector Image

Vector graphics are made of circles, not square like a raster image, this means they do not distort when they are enlarged.



Stock image

Stock images are owned by companies that hold high quality photographs on many different themes. They are often watermarked and you have to buy them to remove the watermark .

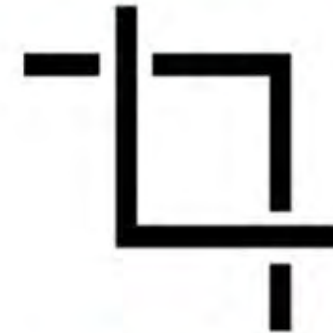


Manage right licence

Manage right licences allow you to use a copyrighted image for a limited amount of times.



Imagery is very important in graphic design. If you get the wrong type of image for your item it will create the wrong impression and ruin the whole thing. There are laws around copying , buying and selling images. Image quality is very important and pixilated images should be avoided by using high resolution images



Pixilated Images

When low resolution raster images are enlarged they pixilate. This means you loose detail and can see everything in squares also called pixilation.

Royalty free licence

This means you do not need to pay anyone to use the image they have designed.

Cropped images

Most graphic programs on computers have a cropping tool. This is to remove unwanted areas of the picture neatly and as accurately as possible.

Copyright

Copyrighted images are protected by law against anyone using an image to add or use in their product. If you used someone's logo for their business/brand for example and used it as your own they could sue you for copyright.

Health and social care

RO33 – Young Adulthood (19-45)



Describe the milestones of growth and development that the individual has experienced during young adulthood (19–45 years), using PIES.

MB1: 1–2 marks	MB2: 3–4 marks	MB3: 5–6 marks
Brief description of growth and development of the individual through the life stage, using PIES.	Sound description of growth and development of the individual through the life stage, using PIES.	Comprehensive description of growth and development of the individual through the life stage, using PIES.

Key Milestones	
University	Bereavement
Marriage	Menopause
Buying first home	Learn a new skills
Moving house	Divorced
Having children	Second marriage
New job	Miscarriage
Promotion	Carer
Train in a new job	New friends

Keyword	Definition
Milestone	A significant stage or event in someone’s development.
Describe	Give an account including all the relevant characteristics, qualities or events
Brief	Work includes a small number of relevant facts or concepts but lacks detail, contextualisation or examples
Sound	Valid, logical, shows the student has secured most of the relevant understanding, but points or performance are not fully developed. Applies understanding and skills to produce the wanted or intended result in a way that would be useable
Comprehensive	The work produced is complete and includes everything required to show depth and breadth of understanding. Applies the understanding and skills needed to successfully produce the wanted or intended result in a way that would be fully fit-for-purpose

RO33 – Young Adulthood (19-45)



PHYSICAL	
Physical	Developments to your body
Gross motor skill	Use large muscles in the body which cause large movements.
Fine motor skill	Use smaller muscles and create small movements.
Mobility	The ability to move freely at the joints.
Body changes	Weight, reactions, senses and strength.
Sexual characteristics	Fertility Sexually mature
Menopause	When a women stops menstruating.
Aging characteristics	Skin, hair and posture

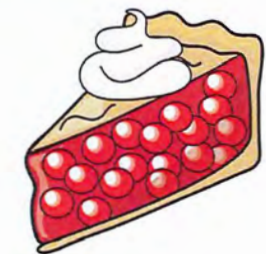
INTELLECTUAL	
Intellectual	Developments in your brain
Language development	Wide range, confident
Sentence construction	Well established
Logical thinking	Analysing a situation and coming up with a sensible solution.
Problem solving	Achieving a goal by overcoming obstacles.
Decision making	Making a choice based on the information provided.
Deterioration of mental abilities	Degeneration of the brain can begin.

EMOTIONAL	
Emotional	Developments to your feelings
Bonding	Close connection which someone.
Attachment	Affection or fondness for someone or something.
Independence	Not reliant on others
Self confidence	A feeling of trust in your abilities
Self image	The ideas of your appearance and personality.
Self esteem	Confidence in your own worth.
Love and Affection	An intense feeling of deep fondness or liking.

SOCIAL	
Social	Developments to your relationships
Relationships	A connection with someone else
Social skills	Interactions with another person
Responsibilities	Being accountable.

Examples

Give examples for each point made. Give an age and link it to PIES.









RO33 – Young Adulthood (19-45)



For the same life stage, explain how the growth and development of the individual has been affected by: □ two environmental factors □ two social factors □ two economic factors.

MB1: 1–3 marks	MB2: 4–6 marks	MB3: 7–9 marks
Limited explanation of how the growth and development of the individual has been affected by two of each of the specified factors.	Adequate explanation of how the growth and development of the individual has been affected by two of each of the specified factors.	Comprehensive explanation of how the growth and development of the individual has been affected by two of each of the specified factors.

Keyword	Definition
Growth and development	Positive or negative factors that affect an individual's journey through life.
Describe	Give an account including all the relevant characteristics, qualities or events
Limited	Work produced is restricted in range or scope and includes only some of the information required. It evidences partial rather than full understanding. Work produced is a starting point rather than a developed process, concept or output.
Adequate	Work includes the appropriate number of relevant facts or concepts but does not include the full detail, contextualisation or examples.
Comprehensive	The work produced is complete and includes everything required to show depth and breadth of understanding. Applies the understanding and skills needed to successfully produce the wanted or intended result in a way that would be fully fit-for-purpose

Growth and Development Factors	
Physical	
Social	
Emotional	
Economic	
Cultural	
Environmental	

ENVIRONMENTAL – your surroundings.	
Housing needs and conditions	Housing and the space available can impact growth and development. If you have your own space to work it is easier to concentrate. If the house is damp it can lead to breathing problems. If there is only one bathroom for lots of people it may result in poor hygiene.
Pollution	Poisonous chemicals in the air and water can easily enter the body. This can have a negative affect on growth and development. Pollution from cars can cause health issues. Pollution can cause headaches, sleep problems and stress.
Neighbourhood	A neighbourhood which has outdoor spaces, parks and gym apparatus will encourage people to exercise and meet socially. It is healthier to meet outdoors to reduce the spread of diseases. If you live in a built up area or with more traffic you are more likely to have ill health. If there are high crime rates you might be afraid to go out this will limit your opportunities to socialise with others.
Home environment	A home that is loving, caring, supportive and considerate will help to ensure growth and development is positive. Arguing, ignoring each other, violence, selfishness, greed and hatred will have a negative affect on physical, mental and or social health.
Access to services	In an ideal world everyone would be able to access medical care, dentists and health screening to ensure they were physically and mentally healthy. However due to restrictions with transport, times of appointments, peoples availability to attend appointments not everyone can access the services available.

RO33 – Young Adulthood (19-45)



ECONOMIC – Your financial situation.	
Family income	The amount of money a household has after paying bills. The more money available the increased chance they will buy healthy foods which will increase growth and development. If there is less money they will buy cheaper food which are normally high in fat and can lead to obesity.
Employment	Benefits of employment are you have money to support yourself and others, physically fit, intellectually stimulated, sense of satisfaction. Drawbacks of employment are that it can lead to physical and mental stress, little time to socialise, if there is no opportunities for development it can lead to frustration and boredom.
Debt	Debts lead to worry and anxiety about how to pay money back and support family at the same time. This can lead to physical problems such as heart disease and mental problems such as depression. Having debts can lead to arguments and reduce social interactions.
Bills	Learning how to manage bills is an important life skill. If you can pay all your bills you will feel a sense of achievement and can spend money on participating in activities or saving for a holiday.
Wealth	Wealth means people will have money to spend on private health care and can afford to pay to participate in sport and physical activity. They can also afford to pay for activities such as visiting the zoo, music lessons or tutoring.
Education	Education helps people to know where to go when you need help. This means people can be treated quickly and problems resolved.
Health providers	Many services are free and available for everyone. However if you pay for private health care you can be seen and treated quickly which can speed up diagnosis, treatment and recovery.

SOCIAL – The relationships with others. Young adults will have relationships with work colleagues, family, friends.	
Positive and negative relationships	<p>Positive relationships can enhance emotional development, boost confidence, self esteem and overall mental health. Relationships are based on trust and respect, both parties value each other and are there to support each other when needed.</p> <p>Negative relationships can be abusive and lead to poor emotional and physical health. This may lead to neglecting their own needs and those that they care for.</p>
Social inclusion and exclusion	Young adults are more positive when they feel included as they feel valued and are more likely to have positive mental health. Feeling included makes living easier because we worry less and are less conscious about making mistakes. They can be excluded by peers in social media platforms or social gatherings.
Opportunities	Access to services and opportunities that individuals might or might not have. Young adults will chose what activities they want to take part in e.g. a running club. Universities, collages and work places all provide well being activities e.g. the cycle to work scheme
Discrimination	Not including someone based on their disability, race, religion, age, gender identity or sexual orientation. Lack of choice and opportunities to participate in activities can impact physical, mental and social health. Social development will decline as there will not be communication with others.
Bullying	Bullying can take place at any age. It can happen face to face or electronically. It results in anxiety, reduced appetite, eating disorders. This could result in problems with growth and development due to lack of vitamins and minerals.

Define the keyword

Describe how this affects the growth and development of your person

Explain adaptations to help growth and development

History

KQ1: What have been the main causes of crime over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The Tudor period

The Tudor period was a time of great economic, social and political change.

Economic change brought disruption:

- A **growing population** made it harder to find work and put pressure on food supplies. This was especially the case after bad harvests.
- **Rising inflation** also contributed to higher food prices.
- **Landowners increased rents** and poorer tenants could not afford them.
- **The dissolution of the monasteries** by Henry VIII put many people out of work.
- **Enclosure** of land for sheep required fewer labourers.
- **Periodic slumps** in the cloth industry cost workers their jobs.

The number of poor, unemployed people increased. Many left their villages in search for work and became **vagrants**. Some turned to crime e.g., theft. Opposition to enclosure was a cause of Kett's rebellion in 1549.

There were **frequent changes in religion**. Subjects who refused to follow the religion of the monarch were guilty of **heresy** (and if this was accompanied by criticism of the king or queen it might also be classed as **treason**).

- Henry VIII's break with Rome led to **new treason laws** e.g., the leaders of the Pilgrimage of Grace were executed for treason.
- Under **Mary Tudor** heresy became a serious offence and over **250 heretics were burned at the stake**, including Archbishop Cranmer.
- Elizabeth also had to deal with plots and rebellions, e.g., Mary, Queen of Scots.

Other factors also played a part:

- the growing size of towns made policing more difficult.
- rebellions caused instability, e.g., the activities of the Yorkist pretenders Lambert Simnel and Perkin Warbeck, and the Essex Rebellion in 1601.

WELSH EXAMPLE :

Wales did not experience any major rebellions. However, it did have a reputation for lawlessness eg. cattle theft, often encouraged by the marcher lords, who were supposed to keep order but often profited from the crimes.

Religious change also affected Wales. Rawlins White, a Cardiff fisherman, was burned in 1555 for refusing to give up his protestant faith. In Elizabeth's reign, the catholic, Richard Gwyn, was executed in Wrexham for refusing to accept her as Head of the Church. John Penry, a puritan preacher, was also executed for heresy.

INDUSTRIAL PERIOD : c. 1750s - 1800s

Industrialisation and urbanisation in the 18th and 19th centuries

The 18th and 19th centuries **saw rapid population growth**. Existing towns increased in size and new ones like Manchester and Merthyr Tydfil developed rapidly. This increased opportunities for crime, which was often linked to **poverty** and **unemployment**. The end of the Napoleonic Wars in 1815 saw great hardship as the economy struggled to get back to normal after the war.

- **Urban areas** were **overcrowded** and full of **disease**. There was **little planning**. Many people lived in **back-to-back houses** with **open sewers** and rubbish-strewn streets. In hard times many people resorted to crime. **Alcohol was cheap** and easy to obtain so drink-related crime was commonplace.
- In new towns, unlike in farming villages, people tended not to know many of their neighbours; as a result, it was easier to get away with crime. Many criminals (including children) lived in **rookeries** whose narrow winding streets and alleyways made life easy for criminals. Policing was ineffective.
- **Periods of unemployment** or loss of work due to **accidents** were frequent, so destitute families stole to survive. Due to the low life expectancy, many fathers died young and so **orphans** were common in industrial towns. Orphans often turned to crime to survive.
- Workers had **no political rights** and so had no legal way to change their living and working conditions. Even joining a trade union was a criminal offence e.g., the Tolpuddle martyrs. **Violent protest** was not uncommon e.g., the Merthyr rising in 1831 and the Newport rising in 1838.

Poverty was also widespread in **rural areas**.

- Rural workers worked **long hours for low wages**.
- The introduction of **new technology**, e.g., steam-powered threshing machines, led to **loss of jobs**. Rural areas also saw violent protests e.g., the Swing Riots 1830-31.

WELSH EXAMPLE :

In the early 19th century Merthyr was the largest town in Wales. Houses had been built rapidly and living conditions were appalling. Not surprisingly Merthyr had a reputation for crime. Its poor working and living conditions were a major reason for the Merthyr Rising in 1831. Wales also experienced violent rural protest. The Rebecca riots 1839-43 were protests against the toll gates, but also about rising rents, payment of tithes and general rural poverty.

MODERN PERIOD : c.1900s-present day

The 20th and 21st centuries

The 20th century brought rapid technological change. Criminals have used new **technology** to commit crimes – either variants of existing crime or new crimes altogether.

Car crime increased as car ownership became more widespread:

- Laws have been introduced to make driving safer. Most car crimes are committed by drivers who are otherwise usually law-abiding eg. speeding, drunk-driving, driving without insurance etc. There are now over 1 million car-related crimes every year, making it the biggest category of crime by far.
- Cars have also been used by criminals to commit offences. e.g., as getaway vehicles or in ram-raids. More recently they have been used by terrorists to kill people. Crimes are committed on cars e.g., car theft or the theft of personal property left inside cars.

The invention of **computers** has also provided criminals with new opportunities.

- Computers have created new crimes like phishing and other scams to defraud people of money. Criminals have exploited weaknesses in online security to commit credit card and identity theft. This can be done remotely, often from other countries, and to thousands of individuals simultaneously.
- Computers (and social media) have increased the threat to certain individuals e.g., vulnerable children targeted by paedophiles or anonymous personal attacks on social media because of religion or race etc.

Criminal gangs and terrorist organisations have also made use of the computer and internet, hacking companies and organisations (such as the NHS) and targeting them with ransomware. Terrorist organisations have launched cyberattacks against governments or organisations they dislike.

Other causes of crime include **football hooliganism**, **drug-related crime** and more recently **knife crime**. Often these involve gangs in one way or another.

WELSH EXAMPLE :

Wales experienced a number of political disturbances during the 20th century. In 1911, strikes by railwaymen in Llanelli and by miners in Tonypany both ended in riots. There were also serious disturbances during the miners' strike of 1984-5. Criminal acts have also been committed in support of the Welsh language and culture, e.g., the burning of second homes in Wales in the 1980s and 90s.

KQ2: How has the nature of crime changed over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The Tudor period

Vagrancy was a major problem for Tudor monarchs. Economic changes created poverty. Homeless beggars, known as vagrants, travelled the country looking for work. Many joined large groups and gathered in towns, causing problems for the authorities. Some stole ('rufflers') and others pretended to be insane or sick to extort money ('Abraham men').

Ordinary people blamed vagrants for the rise in crime. The government responded with ever harsher punishments (whipping, branding with a V, even hanging), particularly for the able-bodied poor e.g., those fit to work. This shows how seriously monarchs of the time viewed the problem.

Heresy was the crime of **not following the religion of the monarch** and was punishable by death. Frequent religious changes meant that many people were executed for heresy during the 16th century. This was particularly true of **Mary Tudor** who burned 280 protestants during her five year reign in her "**holy bonfires**".

The early 18th century

The 18th century was the "Golden Age" of **smuggling** and **highway robbery**.

- As governments **increased import duties** on goods like tea and brandy, so **smuggling increased**. Highly organised smuggling gangs sold cheap imported goods on the black market. A labourer could earn 6 or 7 times his daily wage for a night's smuggling. With thousands of miles of coastline for "revenue men" to patrol, it was difficult to catch smugglers. Ordinary people did not see smuggling as a crime and would not report on smugglers.
- Highway robbery** became more widespread. As roads improved, so the wealthy began to travel more, carrying their valuables with them. The absence of police and long, open stretches of road made it easy to rob stagecoaches. Guns and horses were cheap and easily obtainable.

WELSH EXAMPLE :

Crimes like cattle theft were common in the Welsh Marches. Henry VIII was concerned that lawlessness would spread and sent Bishop Rowland Lee to restore order.

Wales also had its share of heretics. In 1555 the protestant Bishop Robert Ferrar was burned at the stake in Carmarthen, as was Rawlins White, a fisherman, in Cardiff. The Catholic teacher Richard Gwyn (in 1584) and the Protestant preacher John Penry (in 1593) were both executed during the reign of Elizabeth I.

INDUSTRIAL PERIOD : c. 1750s - 1800s

Industrialisation and urbanisation in the 18th and 19th centuries

Many of the crimes of this period reflect the harsh living and working conditions. As **industrial towns increased** in size, crime became more widespread, particularly during periods of unemployment.

- Theft** and **pickpocketing** were common. The crowded narrow streets of towns were ideal places for pickpockets, particularly when large crowds gathered e.g. for public executions. Many pickpockets were children. Criminals concentrated in areas known as **rookeries** e.g. St Giles in London and "China" in Merthyr, where a maze of narrow streets and alleyways made it easy for thieves to hide.
- In times of unemployment people who were normally law-abiding might **steal money, food and clothes** to survive. In many towns people had to pay for clean water from pipes and taps, so **water theft** was a problem. Poverty also led many women into **prostitution** to earn a living.
- Working conditions** also had an impact on the nature of crime. **New technology** put many people out of work, and some of the newly-unemployed responded violently. For example, between 1811 and 1813 workers known as **Luddites** smashed the weaving machinery that had cost them their jobs. The end of the Napoleonic War in 1815 saw even greater hardship as the economy struggled to get back to normal after the war.
- Political unrest** was ever present, as workers turned to politics to improve their lives. However, their protests sometimes turned violent: for example, the Spa Fields Riots in London 1816 and the Chartist riots of the late 1830.

Crime in **rural areas** was also linked to poverty e.g. poaching to feed a family. In the **Swing Riots** of the early 1830s, farm labourers in the south of England destroyed the machinery that was putting them out of work. Nineteen were hanged and 481 were transported to Australia.

WELSH EXAMPLE :

There were many examples of disorder in Wales in the early 19th century. In the early 1830s the South Wales valleys saw the violence of the Scotch Cattle as they tried to end the Truck system and win higher wages. Other protests were more political: for instance the Merthyr Rising in 1831, which took place during an industrial slump. The disturbances at Llanidloes and Newport in 1839 were both linked to the Chartist Movement, which wanted the vote for all men over 21. From 1839 to 1843 rural areas witnessed the Rebecca Riots against the tollgates.

MODERN PERIOD : c.1900s-present day

The early 20th century

The early 20th century was in many ways similar to the 19th century. Poverty remained a cause of crime, and some economically-deprived urban areas eg. London's East End had a reputation for criminality. Some crimes were motivated by a desire for political rights, e.g. Suffragettes bombing and setting fire to churches in the 1910s, while others were related to working conditions eg. the Tonypandy Riots in 1920.

The post-war years

The crime rate increased in the 20th century, particularly after the 1960s. Many new types of crime emerged due to **economic, social and technological changes**. Many crimes can now be committed or influenced by people living outside the country e.g. cyber crime or terrorism. This was not the case during earlier periods of history.

Car crime is now the **most common crime** in Britain. This can be linked to the huge increase in car ownership. Most crimes are committed by car owners e.g. speeding, drink driving, not wearing a seat belt etc, but cars are also stolen by thieves or are used in other crimes e.g. ram-raiding.

Computer related crime has also seen a huge increase Many traditional crimes (fraud, harassment, child abuse) can now be carried out by computer. New digital crimes have also emerged, such as hacking and phishing. Criminal gangs have hacked into computers of companies and governments and demanded ransom payments.

Drug related crime has also been a feature of the 20th century. Drug trafficking is an international problem, and some drugs are produced in the UK. The sale of drugs is illegal and many drug users have turned to crime eg. theft to feed their addiction.

Terrorism has become a problem. In the 1960s the IRA began its campaign in Northern Ireland. In the 1970s and 80s IRA bombing and assassination occurred on the British mainland. More recently Islamist groups have launched and inspired attacks eg. the London bombings of July 7 2005.

WELSH EXAMPLE :

Wales has experienced periods of industrial unrest during the 20th century, often centred on the coal industry eg. the Tonypandy Riots of 1910 and the Miners' Strike of 1984-5.

Wales has also seen protests in support of the Welsh language and culture. In the 1960s Mudiad Amddiffyn Cymru planted bombs eg. to disrupt the water supply to Liverpool. In the 1980s and 1990s, members of Meibion Glyndŵr burned second homes in Wales.

KQ3: How has responsibility for enforcing law and order changed over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The 16th and 17th centuries

In the 16th and 17th centuries, policing was seen as a **civic responsibility**. Everyone had a duty to help keep law and order in their locality. Governments believed enforcing law and order was a **local responsibility**. The **Justice of the Peace (J.P.)**, the parish **constables** and the town **watchmen** were the people responsible for this. They were all **unpaid amateurs**. The job of J.P. was a prestigious one, and was usually performed willingly. However, the job of constable was unpopular. It had to be done alongside their daily work, so it was often not done well. As well as catching offenders, constables had extra duties that seem strange today e.g. organising road repairs, checking weights and measures, and regulating ale houses.

In 1663 Charles II ordered the creation of a force of paid night watchmen, known as **Charlies**. They were paid from parish rates, but the pay was so low that only the old and decrepit applied. However, the idea of paying officials was new.

The 18th century

In the 18th century the growing population led to a rise in crime. This put a huge strain on the system of policing, but governments still viewed policing as a local responsibility. **Thief-takers**, private law-enforcers, appeared who helped to solve crimes and return stolen property. However, they were often involved in crime themselves e.g. the 'Thief-Taker General' Jonathan Wild, who headed a huge criminal empire.

In the 1750s the **Fielding brothers** created the **Bow Street Runners**, a small force of paid officers in the Bow Street area of London. They had some success in reducing crime in their area. They also got government funding to set up the **Bow Street horse patrol**, which cleared the roads around London of highwaymen. This showed the value of policemen as a deterrent, though highwaymen returned when the government stopped the funding. The publication of the **General Hue and Cry** newspaper also showed the value of shared information and became the basis for the Police Gazette. In spite of these successes, governments were reluctant to increase funding to develop policing further.

WELSH EXAMPLE :

The Marcher Lords had done a very poor job of keeping law and order in Wales. In the 1530s, Henry VIII decided to bring Wales under tighter control, taking away the powers of the Marcher Lords. Under the Acts of Union 1536-43, Wales was organised into shires, like England, with JPs and constables given responsibility for law and order.

INDUSTRIAL PERIOD : c.1750s - 1800s

The early 19th century

In 1800, responsibility for enforcing law and order had not changed since Tudor times. In spite of rising crime there was a lot of opposition to an organised **police force**.

- People were concerned about **loss of freedom** and invasion of privacy
- People did not want to pay **higher taxes** to pay for a police force.
- Many liberals feared that the government would use the police to **crush political opponents**.

However, **public opinion was beginning to change:**

- The **rising tide of crime** showed that the existing system was not working.
- **Fear of revolution** and **serious disturbances** eg. the Merthyr Rising, demonstrated the need for a professional organised police force.
- After the Peterloo Massacre of 1819, **the government became increasingly reluctant to use the army** to respond to protests

The Metropolitan Police and later developments

In **1829** the government took a key role in providing law enforcement in Britain for the first time. Home Secretary **Robert Peel** created the **Metropolitan Police**, a **trained, paid, professional force** of 3,300 men, who were responsible for policing an area up to 7 miles from Charing Cross. Though there was some initial opposition, the public soon came to see the value of the Metropolitan Police.

In 1835 boroughs were given the right to organize their own forces, and in 1839 counties were allowed to do the same (although few did). In **1856 the County and Borough Police Act** made it **compulsory for every area to have its own force**. Every area now had a full-time, paid, professional police force. By 1900 there were 243 forces with over 46,000 officers, each inspected regularly by government

WELSH EXAMPLE :

In 1842 Glamorgan became the first Welsh county to set up a paid professional police force. 13 out of its 34 men were stationed in Merthyr which had seen serious disturbances in recent years. In 1843, a force was established in Carmarthenshire in response to the threat posed by the Rebecca Riots. Some boroughs e.g. Cardiff and Swansea also set up forces. However, most Welsh counties did not have forces until the 1856 Act made it compulsory.

MODERN PERIOD : c.1900s-present day

The 20th and 21st centuries

During the 20th and 21st centuries overall responsibility for policing has remained with the government, though the cost of policing is partly paid for from local council tax and partly from government grants.

Though some things have remained the same, there have been important changes in policing in England and Wales during the 20th century.

- **The number of officers increased** from just 46,000 in 1900 to 125,000 by 2017. However, **the number of forces has been reduced** from 243 in 1900 to just 43 by 1917. This was done to **improve efficiency** through **better training**, increased **specialization** and wider **use of technology**.
- Though police officers still patrol the streets to deter criminals and investigate crime, there is now a **greater emphasis on crime prevention**. Every force has **Crime Prevention Officers** who work in the community to achieve this.
- In response to criticism that police officers had become more remote, governments introduced initiatives to **restore community links** – through **Neighbourhood Watch schemes, community liaison officers** and **police community support officers (PCSOs)**.
- In 2012 the government also introduced **elected police and crime commissioners (PCCs)**. These replaced the old police authorities which had supervised individual forces since 1946. PCCs are elected every four years. They are **meant to provide a link between the public and the police** and their role is to ensure that policing is efficient and effective.



WELSH EXAMPLE :

In the late 1960s Welsh police forces were reorganised to make them more efficient. The 12 existing county and borough forces were reduced to four – North Wales Police, Dyfed-Powys Police, South Wales Police and Gwent Police. In 2006 a proposal was put forward that Wales should follow Scotland's example and have just one force for the whole country, but this has yet to happen.

KQ4: How effective have methods of combating crime been over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The Tudor period

During this period the job of combating crime fell upon the shoulders of **JPs, constables** and **watchmen**. These were all untrained, unpaid amateurs.

- **JPs** were appointed by the crown to **supervise law and order in each locality**. Their workload increased to include things like organising road repairs and dealing with the poor.
- **Constables** assisted JPs. They had to **arrest troublemakers, bring them to court** and sometimes also **carry out punishments**, e.g., whipping vagrants. Other duties included reporting to the JP on the state of roads, checking ale houses etc. They were **chosen annually** from among the wealthier men of each parish. The job was **unpaid**, so not surprisingly many constables did not do it with much enthusiasm. Some paid others to do the job for them.
- All able-bodied men were also expected to take their turn to serve at night as **town watchmen**.
- In 1663 Charles II introduced paid night watchman known as **"Charlies."** However, they had little impact because pay was poor so only the old and infirm took the job.

The system was not very successful. JPs were overworked, parish constables hated taking time off from their own work and Charlies were ineffective. The fact that punishments were so harsh indicates that policing was not working very well.

The 18th century

In the 18th century, rapidly growing towns put added stresses on policing. **Thief-takers** appeared but they were often little better than criminals themselves. Far more important were **Henry Fielding** and his **Bow Street Runners** which had some success in reducing crime in that area of London. Fielding's brother John continued his work. He persuaded the government to set up the **horse patrol** which reduced highway robbery and showed the value of police in deterring crime, while the **"General Hue and Cry"** newspaper showed the value of information sharing.

WELSH EXAMPLE :

After the Acts of Union, policing in Wales was reorganised on the English model. JPs were appointed in each Welsh county e.g., Edward Stradling of St Donats Castle, who was JP in Glamorgan for much of the reign of Elizabeth I. They were supported by constables and watchmen. In 1651-2 the constable of the village of Prendergast was given the unusual task of stopping anyone from Haverfordwest from entering the village because of the presence of plague in the town.

INDUSTRIAL PERIOD : c.1750s - 1800s

The early 19th century

The 19th century saw the development of trained, professional police forces, first in London, then across the rest of England and Wales.

In **1829 Peel's Metropolitan Police** was the **first full-time, trained and paid police force**. 3,300 men joined the force, all of whom had to be fit, over 5'7" tall, and able to read and write. They worked seven days a week, wore a **recognizable uniform** and spent their days **'walking the beat'** (a set patrol area on foot) to deter crime. They were successful in reducing crime in London, and many criminals left for other cities.

At first there was some opposition to the new force, especially in working class areas. Some wealthier citizens also objected to the increase in taxation required to fund the police. However, as crime rates fell they came to be accepted. The success of the Metropolitan Police led to the expansion of policing outside London.

- **1835 - the Municipal Corporations Act** gave other towns the power to set up their own police forces. The Borough **1839 County and Police Act** also gave counties the same right. However, few took advantage of these powers.
- **1856 - the County and Borough Police Act** made it **compulsory for every area in England and Wales to set up a police force**.

The 19th century also saw the **beginnings of specialisation** and the **use of technology**:

- The Metropolitan Police set up a plain clothes **detective branch in 1842**, which paved the way for the **Criminal Investigation Department (CID)** in 1878.
- In 1867 Scotland Yard began to use the **telegraph** to improve communication. From 1869 the **Criminal Records Office** compiled records of criminals, suspects and crimes. **Photography** was increasingly used in the late 19th century, first as mug shots of suspects and criminals and later at crime scenes.

By the late 19th century police across the country were having more success in combating crime.

WELSH EXAMPLE :

Events like the Merthyr Rising 1831 and the Newport Rising 1839 highlighted the need for trained police forces in Wales. Some towns like Cardiff, Swansea, Neath and Pwllheli established forces in the 1830s (though Neath and Pwllheli forces consisted of only 1 constable each). The first major force created in Wales was the Glamorgan County Constabulary in 1843.

MODERN PERIOD : c.1900s-present day

The 20th and 21st centuries

In the 20th and 21st centuries policing developed further and, arguably, had more success in fighting crime. As developments in transport and communication have changed society, and criminal behaviour, so the police have had to respond.

- **Developments in personnel** – women police constables WPCs first appeared in 1919. Special constables (1923), traffic wardens (1960) and PCSOs (2002) have been introduced to help police make better use of resources.
- **Specialization** e.g. dog handlers, Organised Crime Squad, the Anti-Terrorism Squad, SOCOs and use of forensic science has allowed expert officers to focus on particular areas of crime.
- **Developments in transport** have changed the nature of policing. The introduction of bicycles in 1909 and especially the **motor car** in 1919 allowed officers to respond to calls quickly and patrol a wider area. By the 1970s the patrol car had replaced the bobby on the beat. There are also more **specialized vehicles** e.g. motorway patrol cars, riot vans. Police have also made use of **helicopters, light aircraft** and **drones** for crowd control, to search for missing persons, etc.
- **Communications** have been revolutionized. The telegraph was already in use in 1900 and in 1902 the telephone was first used, followed by **two way radio in 1922**. These **improved response times** and **kept officers informed**. The introduction of the **"999" emergency number** in 1937 encouraged the public to report incidents. Today all police carry a two-way radio for instant communications with headquarters.
- **Computer technology** has improved record keeping and communication. Since 1974 the **Police National Computer** has held useful data e.g. criminal records, motor car details, missing persons etc. Since most police are now equipped with computer technology, they are able to make use of this data in real time. Photography and CCTV are also used.

In the late 20th century some people began to argue that the police had become too distant and had lost the day to day contact with the public. After the Brixton Riots in London in 1981, the police have worked to rebuild community links.

WELSH EXAMPLE :

In the 1960s police forces across England and Wales were amalgamated into larger units to improve efficiency. In Wales four new forces emerged – North Wales, Dyfed-Powys, South Wales and Gwent.

KQ6: How have methods of punishment changed over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The 16th and 17th centuries

In the early modern era governments and society in general believed in the use of **capital and corporal punishments** carried out **in public**. **Punishments were harsh**, even for minor offences, because it was thought this would **deter crime**.

The most common form of **capital punishment** was **hanging** (though heretics were executed by burning at the stake and traitors by beheading or hanging, drawing and quartering). This was meant to **act as a deterrent** and to show the public that punishment was being carried out.

For **minor offences** there was a variety of punishments – the **stocks, pillory, whipping, ducking stool** etc. – depending on the crime. Vagrants were often whipped or even branded, while drunks went into the stocks or pillory.

Fines were also sometimes used e.g. for not attending church. Few people were sent to prison, apart from debtors and those awaiting trial, as well as vagrants who were sent to houses of correction.

WELSH EXAMPLE :

Local communities in Wales made use of the ceffyl pren for people who had offended against the moral code of the day e.g. adulterers or wife beaters. The guilty person was paraded around the village on the ceffyl pren (wooden horse) by men with blackened faces.

The 18th century

Harsh punishments continued into the 18th century. In fact, the **"Bloody Code"** increased the number of capital offences from 50 to 225. However the rising prison population and the reluctance of juries to give a death sentence for minor crimes forced governments to rethink. **Transportation** was adopted, as a middle punishment between hanging and the stocks and pillory. It had a number of advantages e.g. it reduced the prison population, removed criminals from the UK and helped develop the colonies. It continued in use until 1868

WELSH EXAMPLE :

Only 1-2% of convicts transported to Australia were from Wales. Of the 736 on the first convict ship that sailed in 1788 only 6 were Welsh (4 men and 2 women). However Wales did provide some very high profile convicts as the government used transportation to punish the leaders of popular protests eg. Lewis Lewis of the Merthyr Rising, John Frost and Zephaniah Williams of the Newport Chartists, and John Jones (Shoni Ysgubor Fawr) the Rebecca rioter.

INDUSTRIAL PERIOD : c.1750s - 1800s

The 18th and early 19th centuries

Methods of punishment remained much the same in the early 19th century. Public punishments still existed, while **prisons were in a deplorable state**. Most prisons housed a **mix of inmates** – all ages, male and female, those awaiting trial and hardened offenders. **Poor conditions** and **overcrowding** meant that **disease** was common. Gaolers were not paid, so charged the inmates for food etc.

Some reformers demanded changes. **Sir George O. Paul** designed prisons that were secure, had separate areas for men and women and gave inmates exercise and work. **John Howard** visited prisons and produced a report, "The State of the Prisons in England and Wales" (1777). He recommended better food, hygiene and clean water for prisoners; payment of gaolers; regular inspection and work and time for prisoners to reflect on their crimes. **Elizabeth Fry** focused on female prisoners and Newgate prison in particular. She improved conditions and taught inmates skills eg. knitting and set up a chapel and a school. She founded the 'Association for the Reformation of the Female Prisoners in Newgate'. Fry also gave evidence to a House of Commons committee on prison conditions.

As the 19th. century progressed methods of punishment changed:

- There was **less emphasis on corporal punishments** e.g. the pillory was abolished in 1837 and public hanging and transportation ended in 1868.
- Instead, there was **far greater use of prisons**. The **Gaols Act** (1823) began to bring prisons under government control. Incarceration now became the normal method of punishment for serious crimes.

New prisons were constructed and **new prison systems** were tried – the **separate and silent systems**, which were meant to make inmates reflect on their crimes. However, they failed to lower the reoffending rate and there was an increase in suicides. In the late 19th century these were abandoned and more emphasis was placed on welfare of prisoners. The **1856 Act** introduced **"hard labour, hard fare and hard board"**, as the emphasis swung back to punishment rather than reform. The Prisons Act 1877 placed all prisons under government control.

WELSH EXAMPLE :

New prisons were built in Wales after the Gaols Act e.g. in Beaumaris in 1830, Cardiff in 1832 and Swansea in 1861. The last public execution in Wales was Robert Coe in Swansea in 1866. A crowd of 15,000 gathered for the event, including women and children; over 100 were injured in the crush. As he was about to be hanged, four women armed with knives tried to attack Coe and had to be removed by the police. It was incidents like this that led to the end of public executions.

MODERN PERIOD : c.1900s-present day

The 20th and 21st centuries

The 20th century has seen the greatest change in methods of punishment. There is now a greater emphasis on rehabilitation and on restitution. This can be seen in the way in which punishment has changed.

- **Fines are now the main form of punishment** e.g. for motoring offences, while for more serious offences prison is the norm.
- The few remaining corporal punishments were abolished. The crank and treadmill were abolished in 1902; flogging in prisons did not end until 1948.
- The **death penalty was abolished in 1965**. It was seen by many as barbaric, unchristian and an ineffective deterrent. A number of high profile cases e.g. Derek Bentley and mistakes in sentencing e.g. Timothy Evans also led to its abolition.
- **Prisons** have seen many changes. Prisoners are treated more humanely e.g. they can wear their own clothes and more education is provided. **Prisoners are categorised** (A, B, C or D) according to their crime and placed into the relevant type of prison. **Open prisons** (Category D) have a more relaxed regime and prepare offenders for life back in the community
- An expensive and over-crowded prison system has also led to **alternative methods of punishment**. Some have been used to try to keep offenders out of prison e.g. **probation** (1907), **suspended sentences** (1967), **community service** (1972) and **electronic tagging** (1999). Others methods e.g. **parole** (1967) offer a reduced sentence for good behaviour.
- In the early 20th century **young offenders** were for the first time separated from adult criminals. The first **borstal** opened in 1902, followed in 1932 by Approved Schools. This aimed to limit the influence of older offenders. Due to high levels of reoffending, borstals were replaced by Youth Detention Centres in 1982; nevertheless, reoffending remains high.

Increasingly prisons have been seen as a punishment in themselves. Several schemes are in place to rehabilitate prisoners and give them the skills to find employment after their release. However, some people now feel that many sentences are too lenient and that they have failed to punish or reform criminals.

WELSH EXAMPLE :

The first borstal in Wales was opened in 1939 in Prescoed, near Usk. Since 2000 it has been a Category D open prison. Berwyn prison in Wrexham (opened 2017) is the largest in the UK with room for over 2,000 prisoners.

KQ5: Why have attitudes to punishment changed over time?

THE EARLY MODERN PERIOD : c. 1500s – 1700s

The 16th and 17th centuries

In the 16th and 17th centuries, attitudes to punishment were dominated by ideas of **retribution** and **deterrence**. This attitude, which continued into the 19th century, led to **harsh punishments** in which the criminals suffered **pain, humiliation or death**.

- **Retribution** was meant to **make the criminal suffer**. For serious crimes, such as murder, this often meant **capital punishment**, usually by hanging. Those who committed lesser crimes such as begging received corporal punishment e.g. branding, whipping, the stocks, the pillory. These were meant to be painful and humiliating.
- **Harsh punishments** were also seen as a **deterrent**, a way to discourage others from crime, especially when they were **carried out in public**. Ordinary people liked the idea of **seeing justice being done**. Little use was made of prisons, and most prisoners were only temporary inmates awaiting trial or execution.

WELSH EXAMPLE :

In rural Wales, wrongdoers were paraded around a village on a "ceffyl pren" or "wooden horse". This was meant to humiliate them before the community.

Serious crimes were also punished publicly. In 1555 Bishop Robert Ferrar was burned at the stake for heresy in the market square in Carmarthen. The Catholic Richard Gwyn was hung, drawn and quartered in the Beast market in Wrexham in 1584, while the puritan John Penry was hanged in London in 1593.

The 18th century

Attitudes hardened during the 18th century. The number of capital offences were increased from 50 in 1658 to 225 by 1819. The list of capital offences included some minor crimes e.g. poaching. Parliament represented rich landowners and was determined to protect property rights at all costs. Juries, however, often refused to give a death sentence for minor offences so **transportation was introduced** as a lesser punishment. Transportation also had a number of advantages for the government. It reduced the prison population, removed criminals from the UK and helped develop the colonies. This practice continued until 1868.

WELSH EXAMPLE :

Following the Battle of St Fagans in 1648, 240 Welsh royalist captives were found guilty of treason and transported to the West Indies. Over the next 200 years over 2,200 Criminals were transported from Wales. The vast majority of these were men and fewer than 300 were women. Most of them had committed offences against property e.g. sheep stealing or burglary.

INDUSTRIAL PERIOD : c.1750s - 1800s

The 19th century

At the end of the 18th century and the start of the 19th century, prison reformers helped change attitudes. Ideas of retribution and revenge began to give way to the idea **that prisoners could be reformed**.

- **John Howard** wrote a report on "**The State of the Prisons in England and Wales**". He observed that prisoners were not separated by gender or type of crime; that many were dying of disease; and that gaolers were not paid and corrupt.
- **George O. Paul** designed a **new prison** that was based on four key principles – security, health, separation and reform. It had separate areas for male and female prisoners, as well as a chapel, workrooms and exercise yards.
- **Elizabeth Fry** campaigned for better conditions for female prisoners at **Newgate Prison** and taught skills to inmates. She convinced many people that prison conditions were inhumane and uncivilised.

There was also a growing feeling that **punishments should fit the crime**. In 1823 **Peel abolished the death penalty** for over 180 crimes; by 1861 only five crimes still carried the death penalty. The pillory was abolished in 1837 and the stocks in 1872. Public executions ended in 1868, showing the reduced emphasis on revenge and deterrence. 90 new prisons were built during the mid-19th century. Two new systems were used.

- The **separate system** kept **prisoners isolated** in their own cells, often for weeks on end. They were made to work machines like the crank. This was meant to make them reflect on their crimes and be reformed.
- The **silent system** was meant to **break prisoners** through a regime of harsh discipline e.g. doing monotonous tasks such as walking on a treadmill.

These systems were extremely harsh. Many prisoners committed suicide and there was little evidence that the systems were successful in reforming criminals. The 1865 Prisons Act introduced "hard labour, hard fare and hard board". It was a return to the idea of strict punishment rather than the attempts at reform.

WELSH EXAMPLE :

John Howard visited two Welsh gaols, Caernarfon and Swansea. In Caernarfon the inmates were housed in insanitary conditions in tiny cells without windows. In the mid 19th century new prisons were built in Beaumaris in 1830, Cardiff in 1832, and Swansea in 1861. In the 1860s a four story wing was added to Ruthin Prison, based on the design for Pentonville prison, and used the separate system for its inmates.

MODERN PERIOD : c.1900s-present day

The 20th and 21st centuries

There were **significant changes in attitudes to punishment** during the 20th century.

The idea that some people were born criminals was replaced by a belief that **prisoners could be reformed** by better treatment and education. **Prisons became more humane** e.g. 1902 hard labour ended and solitary confinement in 1922, teachers were employed, and prisoners no longer had to wear prison uniforms. In 1936 the first open prison was built to prepare inmates for life outside.

Young offenders were treated differently – e.g. 1908 the first **borstal** was opened (to keep them away from experienced criminals); 1908 the "Children's Charter" ended prison sentences for under 14s; 1982 borstals were replaced by detention centres (for short sentences) or **Youth Custody** (for longer sentences, often for violent offenders) to take offenders out of a bad environment. Young offenders can also be given community service, ASBOs or tagged.

The **death penalty was abolished** in 1965 (Murder Act). Capital punishment was considered inhumane and it was felt the state had no right to take a life. Mistakes had been made and it was not an effective deterrent. Life imprisonment replaced hanging for murder.

Alternatives to prison were introduced, partly to try to stop offenders getting into the system and becoming career criminals but also to reduce prison populations. Examples include **probation** (1907), **suspended sentences** (1967), **community service** (1972), and **electronic tagging** (1990s). Also **parole** (1967) gave reduced sentences for good behaviour.

However, not all members of the public shared these ideas. Newspaper polls often show that many people want longer sentences for certain offences or the return of the death penalty. Governments have also been inconsistent in their attitudes.

WELSH EXAMPLE :

One of the last people to be executed was the Welshman Timothy Evans. He was hanged in 1950 for the murder of his wife and daughter, but it was later proven that it was a neighbour, John Christie, who had committed the crime. This was one of the cases which made people question the death penalty.

Since 1992 the UK government has allowed private firms to run some of Britain's prisons. In Wales a new privatised prison, Parc Prison near Bridgend, opened in 1997. However, the idea of private firms running prisons remains controversial.

Interactive Media

R093: Audience demographics and segmentation

The target audience is the set of people who media products are aimed at.

Location

If a local cake shop is only able to deliver cakes up to 10 miles away, the target audience's location would be people who live within 10 miles of the shop. Products may have a target audience that is local, national or international.

Occupation

An occupation is the type of job that an audience does. When segmenting by occupation and audience, the category may be broad, for instance, middle income earners who work in an office.

Education

Audiences are often segmented by the highest level of education they have achieved such as GCSEs, A Levels or degrees. Some publications may specifically aim at an audience with specialist knowledge in an area.

Ethnicity

Ethnic groups are defined as a group of people who have common culture, country, religion or language. Media products may focus on a particular ethnicity. It is important not to offend or alienate anyone which the content of a media product.

Interests

By understanding the hobbies and interests of an audience, media producers can identify what engages them. For instance, an outdoor adventure company has established that most of their customers enjoy horse riding, this is something they might promote on a leaflet.

Age

Age groups may be clearly defined, such as 18-24, or use descriptive terms such as 'teenagers' or 'retired people'.

Gender

Media products may be aimed more towards one gender than another. It is important that advertising and designs do not stereotype gender roles even if the target audience for a product is more likely to be one gender.

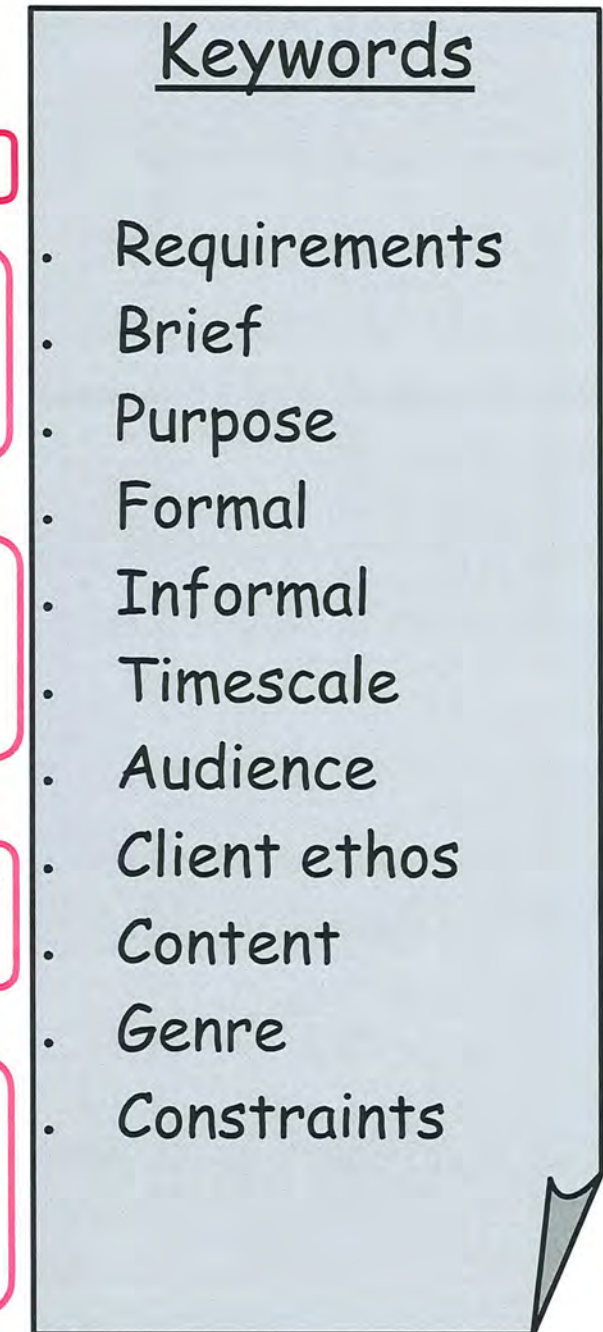
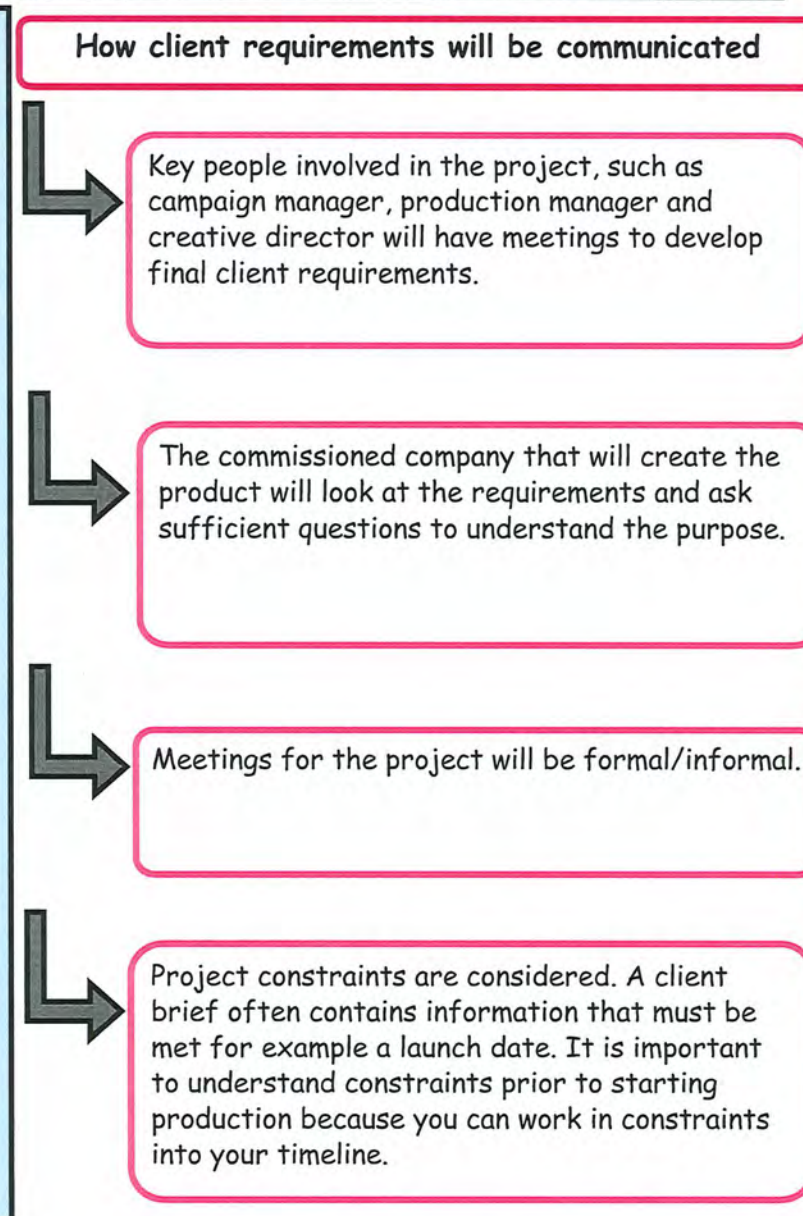
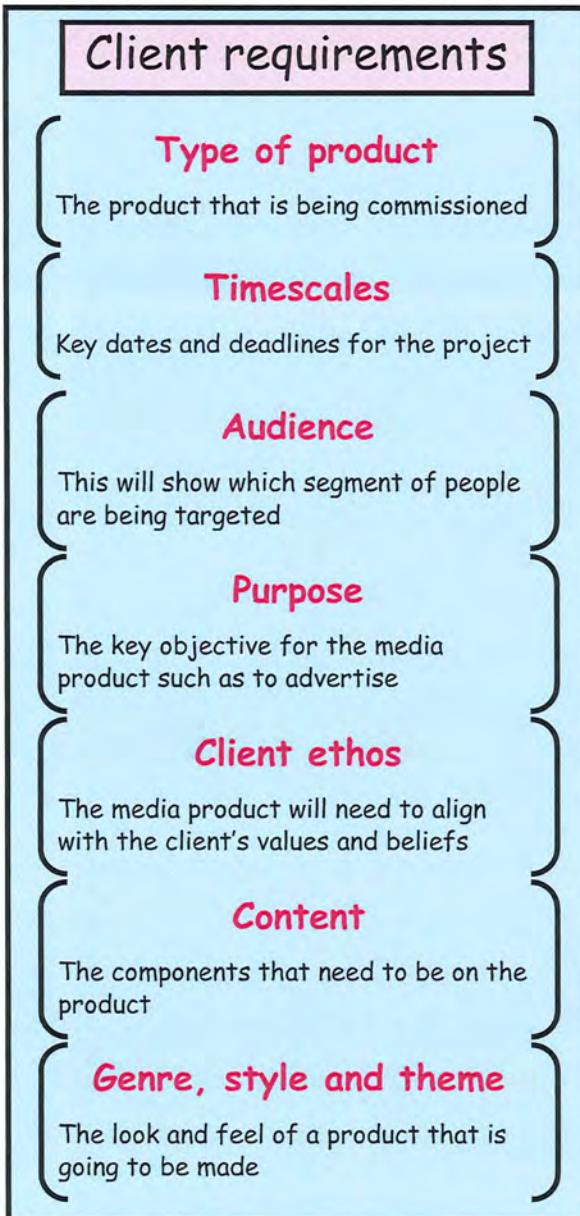


Keywords

- Target audience
- Segment
- Occupation
- Ethnicity
- Education
- Interests
- Age groups
- Gender

R093: Client requirements and how they are defined

Before creating a media product, it is important that everyone involved understands the client requirements of the project. These requirements will be given in the client brief.



R093: Colour in media products

The content, style and layout will be adapted to meet the particular purpose of a media product. Colour choices may be used to create mood or feeling from a media product. They might also be used to make certain objects stand out or draw attention to a particular element.

Warm shades are associated with the sun, fire and heat. They work well in creating a warm inviting feel. Reds may be used to attract the eye to key messages.

Warm colors



Cool colours are associated with water and ice and can be calming and peaceful. Shades of green are often used for products that are environmental, natural or related to money.

Cool colors



CREATING MOOD



Harmonious colours

Harmonious

Harmonious colours also known as analogue colours are found next to each other on the colour wheel, for example purple, blue and blue. These colours create a feeling of calm.



Complementary

Complementary colours are known as opposite colours, are found directly opposite each other on the colour wheel, for example purple and yellow. Placing complementary colours next to each other gives a vivid, vibrant and exciting feel which adds drama to a product.



Keywords

- Colour
- Mood
- Warm colours
- Cool colours
- Complimentary colours
- Harmonious colours
- Analogous
- Opposite colours
- Combinations

R093: Distributing Media Products

Media products need to be distributed to customers. This may take place through an online platform, such as a television streaming service, or through physical media such as a DVD.

Physical media

Certain media products might be distributed via physical media such as compact discs (CD), Digital Versatile Discs (DVD) and Blu-Ray. Removable media such as memory sticks may be used to share large files within a media organisation without the need to upload and download.



Physical platforms

Physical platforms are the specific devices that are used to play or show media products. They include computers, interactive TV information kiosks and mobile devices.

Online

Media products such as games are downloaded as apps from an app store or marketplace. They are then installed onto devices such as tablets or smartphones. Some apps will stop working if the internet connection to a device is lost.

Multimedia content is distributed through several methods. For instance, music may be purchased to download or stream through services such as iTunes, Amazon Music, Spotify etc. Video formats are distributed via apps such as BBC iPlayer, Netflix, Amazon Prime, Disney + etc.



Websites are also used to distribute media products. For example a car manufacturer may offer a brochure to be downloaded from their website. Music, video and multimedia may all be distributed via websites. One advantage of companies using their own websites is that they will be in complete control of the media product and how it is presented. However, they will usually have a much smaller audience.



Keywords

- Physical platforms
- Computers
- Interactive TV
- Mobile
- CD
- DVD
- Memory stick
- Apps
- Multimedia
- Websites

QR codes

Media products may make use of media codes and conventions that help convey meaning, create impact and engage audiences.

Symbolic code	Technical code	Written code
<p>SYMBOLIC CODES</p> <ul style="list-style-type: none"> OBJECTS convey meaning SETTING shows time & place COLOUR suggests a mood COSTUME clothing, hair & makeup BODY LANGUAGE emotion & movement 	<p>TECHNICAL CODES</p> <ul style="list-style-type: none"> CAMERA MOVEMENTS track, pan, zoom... SHOT SIZES close-up, long shot... LIGHTING creates a mood CAMERA ANGLES eye-level, high & low 	<p>WRITTEN CODES</p> <ul style="list-style-type: none"> HEADLINES title of story in large type TITLES the name of a book, film... CAPTIONS popular below an image SPEECH BUBBLES used in comics, cartoons...
<p>Symbolic codes are created by acting, colour and mise-en-scene (arrangement of the set, props, costume and actors)</p>	<p>Technical codes are created by camera techniques, transitions, movement, lighting and audio</p>	<p>Written codes are created by style of language, dialogue and typography</p>

- Keywords
- Symbolic codes
 - Technical codes
 - Written codes
 - Colour
 - Graphics
 - Typography
 - Emphasis
 - Sans-serif
 - Serif

Colour

Colour helps to give media products mood and feeling.

The image to the right from Breaking bad, is split into two. The colours that have been used are lighter to the left and darker to the right to show his downfall in his life.



Media products may make use of media codes and conventions that help convey meaning, create impact and engage audiences.

Typography refers to the style and size of the lettering used in design. Designers will spend a long time choosing or designing a font that conveys a certain meaning or creates an impact. Emphasis is created using specific font types along with bold and italic variations.

- Keywords
- Symbolic codes
 - Technical codes
 - Written codes
 - Colour
 - Graphics
 - Typography
 - Emphasis
 - Sans-serif
 - Serif

Serif

A serif is a small decorative flourish on the end of the strokes that make up letters and symbols



Times New Roman serif font

Sans Serif

"Sans" (to be without) Serif fonts do NOT have any flourishes at the end of strokes.



Helvetica sans serif font

Decorative typography allow the designer to give additional meaning or impact to words. They are often harder to read so only used occasionally, such as for a title or logo.



R093: Media industry sectors

The media industry can be divided into two broad sectors, traditional media and new media.

Traditional Media

Traditional media includes film, television, radio and print publishing such as posters, billboards, magazines and newspapers. It refers to industries that existed before computers and the internet.



New Media

New media is any method of communication which makes use of digital technologies for publication and distribution. It reflects the growth of technology in the media industry and includes computer games, interactive media, websites delivered via the internet and digital publishing. This type of media is usually accessed via the internet through computers, portable devices and internet enabled televisions.

Interactive media covers any type of media that the user is able to interact with. Examples include a website that allows a user to find information and photos about a product, an animated advert asking the user to click to find out more, or an augmented reality smartphone game which enables users to find virtual monsters lurking in the real world.



Keywords

- Traditional media
 - Film
 - Television
 - Radio
 - Print Publishing
- New media
 - Computer Games
 - Interactive media
 - Digital publishing
 - Internet

R093: Media industry products

There are a wide range of media products that are produced by and used in the media industry.

Video

Video includes any product that makes use of moving images.

AR

Augmented reality superimposes images and information onto a live view from a smartphone or tablet. It is used in gaming and modelling.

Digital games

Digital games cover a wide range of products from online games to console games. They are mostly designed to entertain.

Audio

Audio is used for voice overs in advertisements and podcasts. An important part of video or film is the sound effects such as window breaking.

VFX

VFX are created in post-production using computers. VFX are used to create footage that is too dangerous, expensive or difficult to create in real life.

Graphics

Graphics are images that are created using computers, tablets or digital cameras. They include digital photography, logos and graphic design.

Music

Music includes artist albums and singles sold on CDs, streamed or broadcast on radio. It also includes soundtracks to video and film.

SFX

SFX includes any effects that happen live on set when filming. E.g. pyrotechnics, explosions and rain.

Comics

Comics are a form of image-based storytelling. Comics tend to contain several shorter stories.

Print

Print products are paper-based products produced by printers. They include magazines, physical books, newspapers, leaflets and brochures.

eBooks

eBooks are non-editable digital books that are viewed using an eReader or app on a smartphone.

VR

VR uses a headset to show a user a 360 degree game or video. The image will alter as the user moves their head.

Stop-motion

Stop-motion animation is animation that is created using clay and uses single frames captured on a camera.

Animation

Animation is a series of still images that are combined together one after the other to create an illusion of movement.

Keywords

- Video
- Animation
- Stop-motion
- Audio
- Music
- Print
- eBooks
- SFX—Special effects
- VFX—Visual effects
- Augmented Reality (AR)
- Virtual reality (VR)
- Digital imaging
- Graphics
- Digital games
- Graphic novels
- Websites
- Multimedia products

Music

JS Bach: Badinerie

Form and structure:

The piece is in **Binary** form (**AB**).
Section A is 16 bars long.
Section B is 24 bars long.
Each section is repeated (**AABB**).

Dynamics:

Mostly **forte** throughout, although no markings appear on the score.
On some recordings, **terraced dynamics** (sudden changes) are included.

Background details:

Composed by **Johann Sebastian Bach** (1685 – 1750), one of the main composers of the **Baroque** era in music.
Badinerie is the last of seven movements from a larger piece called **Orchestral Suite No.2**.
The piece was composed between **1738-1739**.

Tonality:

Section A begins in **B minor** (tonic) and ends in **F# minor** (dominant minor).
Section B begins in **F# minor** (dominant minor) and ends in **B minor** (tonic).
Section A modulates from B minor through **A major** before arriving at F# minor.
Section B modulates from F# minor through **E minor**, **D major**, **G major** and **D major** before arriving at B minor.

Harmony:

Diatonic; mixture of root position and inverted chords; uses V7 chords and a Neapolitan sixth chord.
Imperfect and perfect cadences are clearly presented throughout. Both sections end with a **perfect cadence**.

Metre and rhythm:

Simple duple time – 2/4 – with two crotchet beats in every bar.
Uses **ostinato rhythms** which form the basis of two short musical ideas (X and Y), consisting almost totally of **quavers and semi-quavers**.

Instrumentation:

Flute, string orchestra and harpsichord.
The score has five parts (flute, violin 1, violin 2, viola and cello). The harpsichord player reads from the cello line and plays the notes with their left hand whilst filling in the chords with their right hand.

Melody:

The movement is based on **two musical motifs**.



Both motifs begin with an **anacrusis**. Motif X is entirely **disjunct** whilst motif Y **combines disjunct and conjunct** movement.
Typical **ornaments and compositional devices** of the period are used including **trills, appoggiaturas** and **sequences**.

Texture:

Homophonic: melody and accompaniment.
The flute and cello provide the main musical material; however, the 1st violin participates occasionally.
The 2nd violin and viola provide harmony with less busy musical lines.

Tempo:

The tempo is **Allegro** (quick, lively, bright), although not marked on the score.

Toto: Africa

Soft rock

Form and structure:

The piece is in **strophic** or **verse-chorus** form.

Intro	Verse 1 / Verse 2	Chorus 1 / Chorus 2	Link 1 / Link 2	Instrumental	Chorus 3	Outro
1 - 4	5 - 39 / 14 - 39	40 - 57	58 - 65	66 - 82	40 - 92	93 - 96
4 bars	35 bars / 26 bars	18 bars	8 bars	17 bars	22 bars	4 bars

Metre and rhythm:

Simple duple time - 2/2 (split common time) - with two minim beats in every bar.

Uses distinctive **ostinato rhythms** for both riffs, consisting almost totally of **quavers**, with constant use of **syncopation**.

Vocal rhythm looks complex but follows the natural rhythm of the lyrics.

Background details:

Composed by band members **David Paich** and **Jeff Porcaro**.

Recorded by the American rock band Toto in **1981** for their fourth studio album entitled **Toto IV**.

Released in **1982** and reached number one in America on 5 February **1983**.

Genre: **soft rock**.

Instrumentation:

Rock band: drum kit with additional percussion, lead and bass guitars, synthesisers, male lead vocals and male backing vocals.

Harmony:

Diatonic; mixture of root position and inverted chords.

Riff a can be heard during the intro, verses, link sections, instrumental and outro. This riff uses a three-chord pattern: **A - G[#]m - C[#]m**.

Choruses use a standard chord pattern: **vi** (F[#]m) - **IV** (D) - **I** (A) - **V** (E).

The **harmonic rhythm** (the rate of chord change) is mostly once per bar.

Dynamics:

Most of the song is **mezzo-forte** (moderately loud) whilst the choruses are **forte**.

Melody:

Mostly **conjunct** (moving in step) with a **wide vocal range**.

Riff b uses the **pentatonic scale** (interpreted through E major):

Vocal improvisations occur towards the end of the song.

Texture:

Homophonic: melody and accompaniment.

Tonality:

The majority of the song is in **B major** whilst the choruses are all in **A major**.

Tempo:

The tempo is **moderately fast**.

FORM AND STRUCTURE ...

is how the music is organised to give it shape and balance.



Each section in the music is usually labelled with a capital letter, i.e. A, B, C, and so on.

Binary: A B

Strophic: A A A

32 bar song:
A A B A

Ternary: A B A

Theme and Variation:

Main theme
Variation 1
Variation 2
Variation 3
etc.

Minuet and Trio:

]: A B :]: C D :]: A B

Rondo:

A B A C A

12 bar Blues:

A repeated chordal pattern

I	I	I	I
IV	IV	I	I
V	IV	I	I

Some structural sections:

Introduction (Intro) - Opening of a piece which introduces the main ideas.

Outro - Last part of a piece used in 'pop' music.

Coda - Final section of a piece of music.

Bridge - Piece of music that links two other sections together.

Break - Section that offers a contrast or 'break' from the rest of the piece/song.

Verse - Section of a song which has the same music but different lyrics when repeated.

Chorus - Section of a song which has the same music and lyrics when repeated.

Middle 8 - Eight bars in the middle of a song which provide a contrast.

Some structural devices:

Regular phrasing - Melody divided up into balanced, symmetrical phrases.

Irregular phrasing - Melody divided up into unbalanced phrases.

Riff - Catchy idea in 'pop' music which is repeated.

Fill - Idea that fills in the 'gaps' at the end of phrases.

Ostinato - Continuously repeated phrase or idea.

Call and response - Short musical idea followed by an answering phrase.

Loop - An idea continuously repeated by technical means.

Repetition - When an idea is repeated.

Contrast - A change in the music which offers a difference in the musical elements to provide contrast to the initial material.

HARMONY is...created
through chords in music.

CONSONANT HARMONY:

when the notes sound 'good' together.

DISSONANT HARMONY:

when the notes 'clash'.

DIATONIC HARMONY

is based on the major / minor scale system - triads are built on every note of the scale:



CHROMATIC HARMONY

Chromatic harmony is far more complex and includes accidentals not belonging to the home key.

Every one of the 7 notes, (or DEGREES) of the scale is given a name:

- 7th note: **LEADING NOTE**
- 6th note: **SUBMEDIANT**
- 5th note: **DOMINANT**
- 4th note: **SUBDOMINANT**
- 3rd note: **MEDIANT**
- 2nd note: **SUPERTONIC**
- 1st note: **TONIC**

A **CADENCE** is a progression of two chords, found at the end of a musical phrase.

PERFECT CADENCE: Uses chords **V → I**

Sounds complete and always stops on the tonic chord. Both chords are major.

IMPERFECT CADENCE: Lands on chord **V**, e.g. **I → V; ii → V; IV → V; vi → V**

Sounds incomplete. The 2nd chord is always chord **V** of the key, which is major.

The chord before may be major or minor.

PLAGAL CADENCE: Uses chords **IV → I**

Sounds complete and finishes on chord **I**. Both chords are major.

It is sometimes known as the 'Amen' cadence because it is often found at the end of a hymn.

INTERRUPTED CADENCE: Uses chords **V → vi**

Sounds incomplete. In a major key, it involves a major chord moving to a minor chord. It is sometimes known as a 'surprise' cadence, because it seems as if chord **V** will resolve to chord **I**, but it does not - stopping instead on a minor chord.

MELODY is...

a line of musical notes with varying pitches that is satisfying to listen to.

Anacrusis:

a note (or notes) that come before the first strong beat in a piece. Sometimes called the 'up-beat' or 'pick-up'.

Motif:

a short melodic or rhythmic idea.

Leitmotif:

a recurrent musical idea representing a person, place, feeling or idea.

Countermelody:

a 2nd melody played at the same time as the main theme.

Pitch:

whether the musical notes are high, middle-sounding or low.

Range:

the distance from the lowest sounding note to the highest sounding note in a piece of music.

Ornaments:

used to 'decorate' the music, e.g. trill, mordent, turn.

Chromatic:

when the tune moves in semitones (like a chromatic scale).

Pentatonic:

a musical scale based on 5 notes.

Intervals:

distance between 2 pitches

Microtone

smaller than a semitone

Semitone



Tone / major 2nd



Major 3rd



perfect 4th



Perfect 5th



Major 6th



Major 7th



Perfect 8th
(Octave)



Question and answer phrases:

an initial idea (the questioning phrase) balanced by a 2nd idea (the answering phrase).

Theme:

the main musical idea in a piece of music.

Sequence:

repetition of a musical idea at a higher or lower pitch.

Imitation:

when a musical idea is copied in another part.

Repetition:

when musical ideas are repeated.

Contrast:

when there is some type of difference in the music.

Fanfare:

a musical 'announcement', based on the pitches of a chord.

Blue notes:

the flattened notes in a Blues scale.

Types of scales:

Major, Minor, (up to 4 sharps and flats), Pentatonic, Blues.

Useful terms and their meanings

Conjunct:

Stepwise movement in a melody (scalar).

Disjunct:

When the melodic movement includes lots of leaps or intervals.

Arpeggio / broken chord:

When the notes of a chord are played separately and in succession.

Anticipation note:

When a note of the next chord is played early, preparing for the intended pitch in the chord.

Triadic:

Musical movement that uses the notes of a triad.

Pentatonic melody:

Melody based on a 5-note scale.



METRE

Simple Time

counts crotchet beats in every bar.

 = 2 crotchet beats in a bar 

 = 3 crotchet beats in a bar 

 = 4 crotchet beats in a bar 

Compound Time

counts dotted crotchet beats in every bar.

 = 1 dotted crotchet beat in a bar 

 = 2 dotted crotchet beats in a bar 

 = 3 dotted crotchet beats in a bar 

 = 4 dotted crotchet beats in a bar 

MUSICAL STYLES

...are the different types of music



AOS 1: Musical Forms and Devices



BAROQUE ERA
(1600 - 1750)



CLASSICAL ERA
(1750 - 1810)



ROMANTIC ERA
(1810 - 1910)



AOS 2: Music for Ensemble



JAZZ AND BLUES



MUSICAL THEATRE



CHAMBER MUSIC

AOS 3: Film Music

Music to accompany film or television scenes
- appreciating how musical elements are used
to create the mood and atmosphere through
engaging with the story.



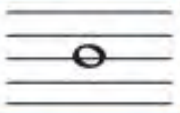

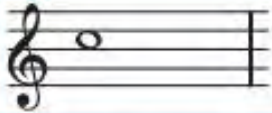
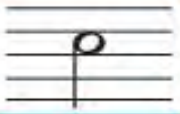

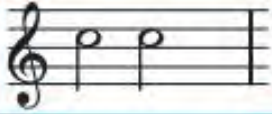









AOS 4: Popular Music

Rock Hip-Hop
Pop Ballad
Soul Reggae
Fusion Minimalism Bhangra



Rhythm is ...

the way the time values and patterns of notes are organised and used.

Note	Note name	Rest	
	Semibreve (4 crotchet beats)		
	Minim (2 crotchet beats)		
	Crotchet (1 crotchet beat)		
	Quaver (½ crotchet beat)		
	Semiquaver (¼ crotchet beat)		

Syncopation / 'off-beat'

...is when the strong accent is placed on a normally weak beat.

On the beat

...is when the accents are on the strong beats, e.g. the first beat of the bar.

Dotted notes

...a dot placed after a note adds half the original value to the note.

Triplets

...when 3 equal note values are played in the time of 2 note values.

CHAAL is an 8 note dotted rhythmic pattern found in **BHANGRA**.



Tied notes ... are two notes of the same pitch joined together by a short curved line called a tie.

Swing rhythms give a dotted / triplet rhythm feel to the beat.

Driving rhythms are energetic, 'driving' the music on.

Dance rhythms are typical rhythms of any kind of dance.

Rock rhythms are rhythmic riffs and patterns associated with 'rock' music.

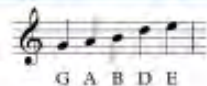
SCALES

MAJOR sounds are happy / bright.

Key	Scale
C major	
G major	
D major	
A major	
E major	
F major	
Bb major	
Eb major	
Ab major	

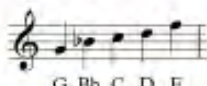
MINOR sounds are sad and rather mournful.

Key	Scale
A minor	
E minor	
B minor	
F# minor	
C# minor	
D minor	
G minor	
C minor	
F minor	



G A B D E

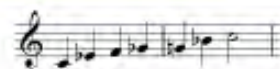
The **major pentatonic** uses notes 1,2,3,5 and 6 of a major scale.



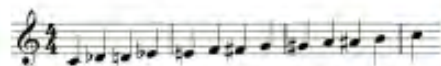
G Bb C D F

The **minor pentatonic** uses notes 1,3,4,5,7 of the natural minor scale.

Blues scale in C



Chromatic scale on C



SONORITY...

is all about the quality of sounds in music – the types of voices, instruments and technology and how they are used.

Percussion: Timpani, Drum Kit, Snare Drum, Cymbal, Hand Held Percussion, Glockenspiel, Xylophone, Tabla, Dhol

- Rim shot** – when the rim and head of the drum are hit at the same time.
Drum roll – beats played in a rapid succession.

Brass: Trumpet, French Horn, Trombone, Tuba

- Muted** – when mutes are used to 'dampen' the sound.

Woodwind: Flute, Oboe, Clarinet, Saxophone, Bassoon

- Slurred** – joining notes 'smoothly'.
Tongued – notes are separated, sounding 'defined'.

Voices: Soprano, Alto, Tenor, Bass

- A cappella** – without accompaniment.
Humming – vocal sound made with closed mouth.
Syllabic – one note for each syllable.
Melismatic – each syllable has a number of notes.
Vibrato – rapid, slight variation in pitch.
Falsetto – male voice in a higher range than usual.
Belt – lower, more powerful part of voice range.
Rap – words spoken in a rhythmical way.
Scat – jazz singing, no words or nonsense words.
Backing vocals – singers providing extra harmonies.

Strings: Violin, Viola, Cello, Double Bass, Harp

- Pizzicato** – 'plucked'.
Double stopping – one instrument playing 2 notes at the same time.
Tremolo – rapid bowing to give a dramatic effect.
Divisi – 2 parts in the same musical line.
Arco – 'bowed'.
Mutes – used to 'dampen' the sound.

Guitars: Classical / Spanish, Electric + Bass guitars, Sitar, Saranga, Tumbi

- Distortion** – effect which 'distorts' notes.
Hammer-on – finger brought down sharply on a string.
Slap bass – bouncing strings against the fret board.
Pitch bend – altering pitch of a note very slightly.

Keyboards: Piano, Organ, Harpsichord





TEMPO is...

the speed of the beat.

**Allegro
Vivace**

Fast / Lively / Quick

**Moderato
Andante**

Not too slow / at
a moderate pace, a
'walking' speed

Allegretto

Moderately fast

**Adagio
Lento**

Slow / Leisurely

Accelerando gradually getting faster.

Ritardando / Rallentando slowing down.

Rubato a 'freer' interpretation of the tempo.

Pause a symbol which means the note
must be held for longer than its original value.



Some other useful terms:

Presto - very quick

Largo - very slow

A tempo - in the original tempo

Ritenuato - in slower time

TEXTURE is...

the way that the melody, chords and musical ideas have been woven together to achieve different effects - the 'layers' of music and how they relate to each other.

Monophonic



A single melodic line with no harmonies or other melodies. It may be sung or played by more than one voice or instrument.

Homophonic



A chordal style, or a melody plus chords, which sometimes provide a rhythmic contrast.

Polyphonic



A more complex style which presents the melody (or melodies) in imitation or in counterpoint.

Unison:

When all parts are playing the same music at the same pitch

Chordal:

When parts move together creating a succession of chords

Drone:

Constantly repeated or sustained note(s)

Stab chords:

Short, 'staccato' chords that add impact and 'punch' to the music

Imitation:

When one part 'copies' another

Counter-melody:

A new melody, combined with the theme

Descant:

A decorative (higher) line added to the main tune

Round:

A short (vocal) canon

Canon:

When the melody is repeated exactly after the first, with some overlapping

Alberti Bass:

A type of accompaniment figure that uses broken chords

Walking bass:

A steady, continuous, mainly stepwise bass line

2-part texture:

Music written for 2-part voices or instruments



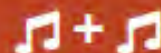
3-part texture:

Music written for 3-part voices or instruments



4-part texture:

Music written for 4-part voices or instruments



Tonality

is... the key of the music – it depends on the types of scales used.



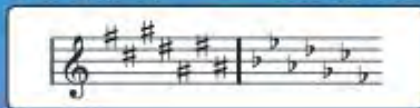
You must know the key signatures in all the major and minor keys up to four flats and four sharps. These scales are what the music is based on.

THE PENTATONIC SCALE

This type of scale is made up of five notes within the range of an octave.

order of sharps

order of flats



For example:



order of sharps →

F C G D A E B

← order of flats

MODULATION is when the music changes key.

Modulation to the dominant is when the music moves from the tonic to the dominant key. The dominant key is based on chord V of the original key, e.g. from C major to G major.

Modulation to the relative minor key is when the music moves from the tonic major key to the relative minor key. The relative minor key is the minor key which shares the key signature with the home key, e.g. the relative minor of C major is A minor.

Modulation to the relative major key is when the music changes from the tonic minor key to the relative major key. The relative major key is the major key which shares the key signature with the home key, e.g. the relative major of A minor is C major.

Key signature	Major keys	Minor keys
No flats or sharps	C major	A minor
1 sharp (F#)	G major	E minor
2 sharps (F#, C#)	D major	B minor
3 sharps (F#, C#, G#)	A major	F# minor
4 sharps (F#, C#, G#, D#)	E major	C# minor
1 flat (Bb)	F major	D minor
2 flats (Bb, Eb)	Bb major	G minor
3 flats (Bb, Eb, Ab)	Eb major	C minor
4 flats (Bb, Eb, Ab, Db)	Ab major	F minor

Performing Arts

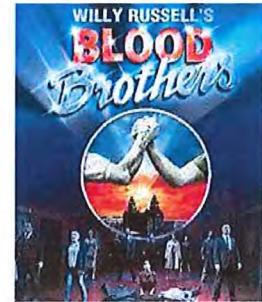
Script synopsis

Description of storyline and what happens in the work

Initial thoughts and First Impressions

Write about the moments you found interesting, moving and enjoyable

(Avoid making negative points; demonstrate an appreciation for the professional work and why it would reach a large audience)



Style / Genre – Originally a play, but adapted into a musical; in style of Epic Theatre (could link also to genre of tragedy)

Explain **all** terms book musical, epic theatre, tragedy – what are the general features of these styles?

eg. a musical usually has a story that is punctuated by songs and features dialogue in between the songs.

Practitioners influences - Brecht

Give a brief outline of who Brecht was and how and why he created this style of theatre. What were his beliefs? What did he want his audiences to feel? How did he intend to do this? He was against naturalism and believed that if the audience became emotionally engaged with the characters onstage, then they lost the ability to think and judge. He wanted audiences to remain objective and not get emotionally involved so they could make considered and rational judgement about the social or political issues in his work - *verfremdungseffekt*.

Links to Repertoire – An important section!

Just from opening the script and looking at the format... What links can you make to the style / genre section?

Explain in detail how elements of the work link to the style

- Use of a narrator (reminds people they are watching a play and breaks fourth wall. Narrator often tells audience what happens before they see it)
- Start of play reveals fate of twins (starts with the ending) – removes the what ifs from the play, allowing audience to focus on themes and issues of social class rather than storyline)
- Lots of detail in stage directions
- Minimal props
- Actors change costumes on stage
- Political / social message (nature versus nurture)
- Stereotypical characters – representations of characters from different classes and adults playing the young boys
- Multi-rolling narrator sometimes plays the milkman, catalogue man etc
- Is Spass included via use of Mickey's monologue?

Themes & Context

- Social class, Education, Nature vs Nurture, Fate and destiny, Growing up, Men and Women, money, superstitions, relationships between characters (links with the brief)
- When / where is it set? – what was it like in Liverpool during 1950s – 70s (culture / education / employment / social classes etc – try to explain where Willy Russel got inspiration from and what he based ideas on

Staging / Lighting / Costume Design

Add a range of images and explain / annotate each one – why has director chosen this? Connect it to style / genre

Performance Purpose

- Give info about the background – why was it written, when, who for? How did it develop? Where did inspiration come from?
- Purpose: To educate, inform, entertain, provoke, challenge viewpoints, raise awareness, celebrate?
- What is the audience supposed to feel: excited, thrilled, scared, educated, entertained, emotionally moved, relaxed etc

Roles and Responsibilities (A2)

- Explain the job roles required for Blood Brothers and describe the responsibilities and skills required for each one (use specific examples from the work)

Participate in workshops and classes to develop knowledge and understanding of the processes, techniques and approaches that contribute to performance material.

(Focus on the journey that the work takes from the initial ideas to the performance)

In the beginning....

- Describe the process Blood Brothers followed from being an idea to becoming a hit musical on Broadway and West End: The script was written by Willy Russell for a school play at Fazakerley Comprehensive School in Liverpool November 1981 and then he wrote a score (music) and developed it into a musical in 1983 for first performance at the Liverpool Playhouse.
- Explain how it went from this performance in Liverpool (home town of scriptwriter) to major world wide success! What is it about this play / musical that appeals to audiences / actors? Any facts or figures about numbers of performances / quotes from reviewers?
- For each production or tour, there would be auditions and casting, Read through of the script with actors, then rehearsals probably in chronological order. (Explain what happened at each stage of rehearsal)
- Different rehearsals (production stage (decide on props, costume, staging), technical rehearsal, dress rehearsal, performance, post-performance evaluation / review)

TIP: show your knowledge of each stage (what happens and why?)

TIP: Explain the skills and responsibilities used at each stage by the various roles (director – what is their role during read through / rehearsals and recordings?

Actors – what are they expected to have done prior to scene rehearsals for stage musical? Need to be physically fit, have good singing voices and vocal skills, good breath control, and learn any blocking / choreography quickly

Where to start?

-Describe our **process** – read through whole script, pausing at times to discuss storyline and characters (Some of you have studied this also is English – mention this and what you have done, some of you have researched / watched more clips in your own time – mention this and why you did it, what you gained? Watched stage version (recorded at The Venice Theatre under direction of Allan Kollar (look up on You Tube for list of production team (job roles and names) **Give own opinions about this performance and individual actors' portrayal of their characters, especially sections where men play boys (links to Brecht's epic theatre)**

- Nature versus Nurture lesson (**exploration of themes in the play**). Practical activities using levels to show authority (master and servant) – links to social class; discussion of how Mickey's and Eddie's lives are different and why- links to idea of nature versus nurture, read through and rehearsal of monologue (Mickey and Eddie or Mrs Johnstone and Mrs Lyons to show idea of social class and task was to use levels to show authority and social class.) – performance, film, and evaluate.

- **Casting and read through of chosen scenes- discussion with actors about characters. (OR completed role on the wall sheets for Mickey and Eddie and Mrs Johnstone and Mrs Lyons to show costume and how this could be used to show social class (why? – responded to stimulus (script) to get ideas for performance – how did you try to keep your performance close to Brecht's idea of Epic Theatre?**

Performed the scenes to teacher (**every director will have a different interpretation**) **What is the role of the teacher / director here? Did anyone else direct?** (explain what is needed for a rehearsal - stage and space laid out correctly and constant use of script and stage directions)

(explain what is required of actors – learning lines, use of correct mannerisms, use of props and staging, good vocal, singing and dance skills)

- **(Compare our version of this scene to the professional one (staging/ set / props / acting skills / choreography required and success!)**

Linking back to the Brief – Relationships

Consider how the relationships are presented by writer / director / actors themselves or you (use of spatial awareness / blocking in song, use of staging / specific words – don't forget to give examples)

PROCESS

ROLES, RESPONSIBILITIES, SKILLS



BLOOD BROTHERS



<p>Script (book) is written Music was added to the script</p>	<p>Willy Russell wrote the script based on a story he read as a child "about two babies switched at birth" as a school play for pupils at Fazakerley Comprehensive School in Liverpool 1981. He later wrote and added the music and lyrics and this was first performed at the Liverpool Playhouse in 1983.</p>
<p>Auditions and casting sessions</p>	<p>Actors would prepare for an audition by rehearsing parts of a script and learning a song. The Director and Musical Director would audition the actors and then make casting decisions. They would consider actor's experiences, skills, actual audition pieces, chemistry between actors, ability to use a Liverpool accent</p>
<p>Research</p>	<p>The Director would begin breaking down the script and analyse and explore content. Director would research Liverpool in the 1960s (clothes, employment etc). The Director would begin to develop a vision of how he wanted the production to look. Actors would also begin to research their role.</p>
<p>Production Meeting</p>	<p>Director shares his vision with the team consisting of the creative team (set and props design, costume and make up designers) and technical team (the lighting and sound designers).</p>
<p>A rehearsal schedule is organised and planned and given to whole company (cast and crew)</p>	<p>The Director plans out the rehearsals. Rehearsals would be conducted scene by scene in chronological order so everyone can see how the story develops / ends. Dates for technical and dress rehearsals would also be planned ahead of the first performances.</p>
<p>Read through</p>	<p>The cast, Director and Musical Director gather at first rehearsal; a read through of the entire script from beginning to end. This is the first opportunity for everyone to meet and begin to form bonds. Each actor reads their lines, for example the character playing Mickey would read all of Mickey's lines out loud. The actors use some of their research when reading the lines, for example ... The Director shares his vision of Blood Brothers with the cast. Some Directors use Brecht's influence (multi-rolling, eg narrator plays milk man, catalogue man and changes happen on stage.</p>
<p>Rehearsals</p>	<p>Rehearsals are usually organised in chronological order so that everyone sees story develop. Some rehearsals would require the whole cast, for scenes like the beginning where we see the end of the play in the courtroom with the song 'Tell me it's not true' and some may just need one or two actors eg Mickey and Eddie. Actors would use their scripts in rehearsal to start with but would then go 'off book' after a few weeks. Lines would be given by stage manager if forgotten. The Director blocks the scenes (tells the actors where to stand / where to move to, and gives advice on how to say lines or how to react. After full cast rehearsal the Director reads out his notes to the entire cast and explain what was good and what needs to improve or change. The Musical Director would run separate musical rehearsals so actors can learn the songs / harmonies before trying to act and sing together in a full rehearsal on stage. Dance and Music rehearsals may be held in different places such as dance studios.</p>
<p>Costume fittings</p>	<p>During the rehearsal period actors would attend costume fittings in order to check that sizes of costumes fit the actors. It would then be the costume designers' job to make adjustments / amendments to the costumes before the next fitting.</p>
<p>Technical Rehearsal</p>	<p>The full cast and crew walk through the entire show in performance order making sure that every lighting cue, sound effect and microphone is working properly and is used at the correct time. The actors do not act or sing as this rehearsal is just for the technical team (lighting and sound). The cast will be in costume so that lights and microphones can be adjusted if necessary. Usually lots of things go wrong at technical rehearsals and it's the job of the tech team to problem solve and fix issues.</p>
<p>Dress Rehearsal</p>	<p>This is a full run of the show before the first performance. The show is performed from start to finish with no stops. Sometime an audience is invited in order to provide feedback to the Director before the first performance. The Director watches the show from the theatre seats and makes notes. These are read to the whole company at the end of the performance.</p>

PE



Year 10 PE Autumn Knowledge Organiser

Head



Leadership

Qualities of a good sports leader

1. Set an example
2. Awareness
3. Passion
4. Enthusiasm
5. Ability
6. Communication
7. Motivational skills
8. Visionary



Head



Key Rules

Use the QR codes to look at the rules for the activities you are taking part in this term.

Badminton



Football



Rugby



Netball



Gymnastics



Basketball



Heart



Respect

It is important to be respectful to others at all times but can be even more important when working with others in PE. To be respectful to others you must;

- Treat others as you wish to be treated
- Follow instructions
- Use equipment properly
- Play fairly
- Accept that everyone is different

Self Motivation

- Stay positive
- Set small targets
- Reward yourself for your achievements
- Remember the why

Hands



Consistent skills

Skills are physical movements that are performed during physical activity.

When you participate in physical activity it is important to perform skills **consistently** even when under pressure during competition.

A skill will be consistent when you can;

- Repeat the skill over and over again.
- Perform the skill with confidence.
- Perform the skill under control.



Can you name 6 skills for the activity your are completing?

Here are some examples to start you off;

Badminton – serve

Football – short passing

Netball – shooting

Rugby – receiving

Gymnastics – forward roll

Basketball – dribbling

Can you describe how skills would change during competition?

For example serving in badminton can be short and low or long and high so you can outwit your opponent.

Component 2 Energy Use, Diet, Nutrition and Hydration

Diet and Energy Balance

Balanced diet - Eating the right foods in the right amounts. This will allow us to exercise and work properly

Varied diet - If we don't eat a variety of foods in the correct proportions, we won't get all the nutrients we need to make up a balanced diet



The Eatwell guide shows us what foods we should be eating and in what quantities. E.g. the largest parts of the diet should come from:

- Fruit & Vegetables
- Starchy carbohydrates

Variety is important to get all the necessary nutrients.

There are seven nutrients.

- Carbohydrates
- Fats
- Proteins
- Vitamins
- Minerals
- Fibre
- Water

Macronutrients

Carbohydrates

Function:

- Provide us with energy in both aerobic and anaerobic activities
- Eaten in large quantities compared to other macronutrients

Found in:

- Bread, rice, pasta, potatoes



Fats

Function:

- Provide us with energy, is stored in the body and can lead to weight gain
- Should be the smallest percentage of macronutrients in the diet

Found in:

- Butter, oil, fatty meats, fried food



Proteins

Function:

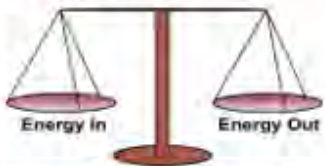
- Used for growth and repair, it can provide us with energy
- May be used by athlete for growth and repair of muscles

Found in:

- Cheese, milk, eggs, lean meat, fish



Energy Balance



The energy balance makes sure the calories we take in is equal to the number of calories we expend.

- If we take in more calories, we will gain weight
- If we take in too little calories, we will lose weight
- We need to have a balance so we have the correct nutrients for energy

Micronutrients

Vitamins & Minerals

- Vitamins and minerals keep our body healthy and can improve your immune system.
- Vitamins are found in fresh fruit and vegetables
- Minerals are found in vegetables and meat

Vitamin D: Found in dairy products and helps the body absorb calcium

Calcium: Found in milk and other dairy products and helps keep our bones strong



Water

- Water prevents dehydration and is found in most liquids and many foods



Fibre

- Fibre aids the digestive system and is found in foods such as cereals, vegetables and nuts



Bone Structure

Some people have longer and wider bones which will make them heavier, this is important for contact sports such as: rugby and football

Height

How tall you are will affect your weight, height is important for activities and sports such as: basketball and high jump

Sex

Male tend to be heavier than females. This provides men with an advantage in activities that require speed and power. Females and males compete separately such as athletics and rugby

Optimum Weight

Muscle Girth

People with bigger muscles weigh more. Bigger muscles are an advantage in events that require speed and power such as sprinters and power lifters

Dietary Manipulation

Protein intake:

Protein should be consumed as soon as possible after exercise; this increases protein synthesis and therefore muscle growth. This is used by performers such as sprinters, shot putters and power lifters

Carbohydrate loading:

This strategy involves eating foods high in carbohydrates 1 to 4 days before an event. This increases glycogen stores in the muscle. This is used by endurance athletes such as marathon runners

Hydration:

Water prevents dehydration, dehydration causes: dizziness, fatigue, heat stroke, muscle cramps, nausea and the thickening of blood. Water should be consumed before during and after exercise

Component 2 Physical, Emotional and Social Health, Fitness and Well-Being

Health is defined as:

A state of complete **emotional**, **physical** and **social** wellbeing and not merely the absence of disease.



Physical Health

Benefits of regular exercise	Achieved health benefits
Burns calories	Reduce chance of obesity
Strengthens bones	Reduced chance of osteoporosis
Reduces blood pressure and cholesterol	Reduced chance of stroke & CHD

Negative effects of training on physical health

Over exertion can cause an increase in blood pressure which can lead to a heart attack or stroke

Overuse injuries such as tennis elbow may prevent you from taking part in physical activity for several weeks

Emotional Health

Benefits of regular exercise	Achieved health benefits
Takes your mind off your problems	Relieve stress
Increases serotonin levels	Feel better and prevent depression
Can be enjoyable and fun	Reduce boredom
Can provide a challenge	Provide competition
Can make you feel part of something	Can improve confidence & self esteem
Can involve watching skilful performances	Aesthetic appreciation

Negative effects of training on emotional health

An injury can lead to depression as they may not be able to train

Sport can lead to frustration, anxiety and anger if emotions are not controlled

Social Health

Regular exercise allows us to meet new people and make new friends

Regular exercise allows us to meet and socialise with our current friends

Regular exercise can improve our cooperation skills

Regular exercise can increase our social activities

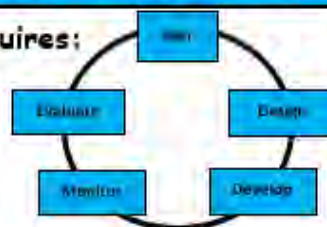
Social benefits may differ between age groups. A child may develop their social skills and an elderly person may prevent loneliness from regular exercise

Negative effects of training on social health

Some performers may spend too much time training and less time with their families. This could be due to an elite performer needing to train or someone obsessed with training

A training programme requires:

- Planning (aims and design)
- Developing
- Monitoring
- Evaluating



Aim	A clear aim is needed to ensure you know what you want to improve and you create a personal exercise programme (PEP)
Design	Once you have an aim you can plan your PEP using the various principles of training. E.g. Improve speed using interval training
Develop	Once you have started your PEP it can be developed as long as the aim is still the same. E.g. increase training by 10 minutes
Monitor	The PEP should be monitored so necessary adjustments can be made. E.g. if sessions are getting too easy increase the intensity
Evaluate	It is important the PEP is evaluated regularly. E.g. you may have met the initial aim in the first couple of weeks so you may set another aim

Work/Rest/Sleep Balance Level

Lack of sleep can lead to tiredness.

The Government recommends teenagers get 8 to 10 hours sleep per night.

Does your lifestyle prevent you from getting the right balance between work, rest and sleep?

Activity level

The Government recommends that 5 - 18-year olds get one hour of exercise every day, four days doing cardiovascular, three days improving muscle and bone growth.

Recap benefits of physical exercise on the: Cardiovascular, respiratory, muscular & skeletal System

Diet:



Anorexia

Eating disorder where a person keeps their weight as low as possible.

Effect on performance:

Little energy, tired easily, very weak, poor fitness



Obesity

Describes a person that is very overfat. Can lead to many health problems.

Effect on performance

May prevent strenuous activity, tired easily, lack of mobility, joint problems



Diseases caused by a lack of nutrients

Rickets - Vitamin D

Scurvy - Vitamin C

Osteoporosis - calcium

Government guidelines state daily calorie intake should be:

Men 2500 calories

Women 2000 calories

Alcohol

Negative effects on health

- Heart failure
- Increase in blood pressure
- Increased weight
- Liver disease & cancer

Negative effects on performance

- Slower reaction times
- Less mobile due to excess weight
- Loss of coordination
- Loss of concentration

Smoking

Negative effects on health

- Stroke
- Bronchitis
- Heart disease
- Blood clots
- Emphysema
- Lung cancer

Negative effects on performance

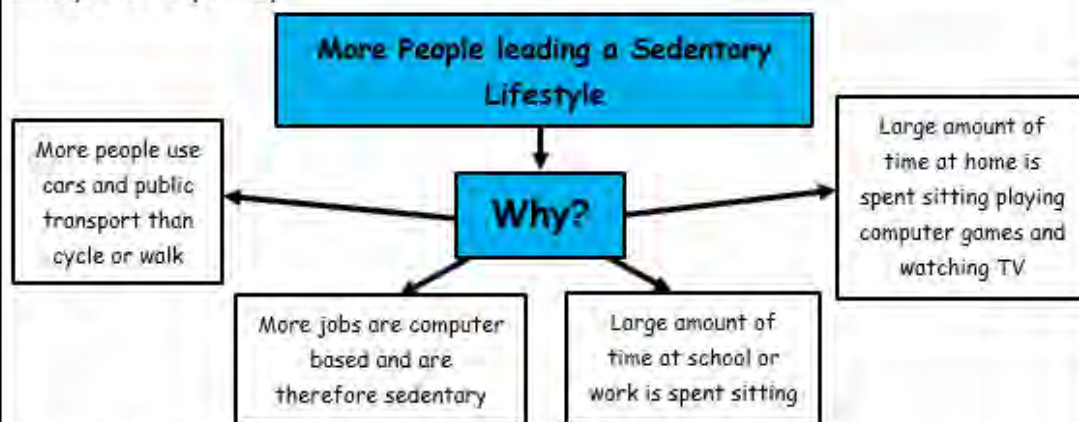
- Causes breathlessness
 - Reduces oxygen carrying capacity
- Smoking reduces the elasticity of the alveoli. This means there is less oxygen can get to the working muscles. This will affect performance in aerobic activities

Component 2 The Consequences of a Sedentary Lifestyle

The consequences of a sedentary lifestyle

Sedentary lifestyle = A lifestyle is a lifestyle where there is little or no exercise

A sedentary lifestyle is doing less than 30 minutes physical activity per week. Sedentary behaviour refers to activities that use little energy such as watching Tv, playing computer games or sitting down. It is reported that British people on average sit for nearly 9 hours per day.



Health risks associated with a sedentary lifestyle

Health risk	Explanation
Obesity	Due to inactivity and a reduction in metabolic rate
Depression	Being overweight or obese can lead to poor self-esteem and lack of confidence
Osteoporosis	Due to lack of weight bearing exercise
Poor muscle tone & posture	Due to inactivity muscles are weak
Type 2 diabetes	Being overweight can increase the risk of developing type 2 diabetes
Heart disease and stroke	High blood pressure and cholesterol increase the risk of a heart attack and a stroke



Impact on sedentary Lifestyle on weight

Overweight

- The term overweight means you weigh more than the expected weight for your height and sex
- You can be overweight but not over fat. Elite athletes may be overweight due to muscle girth and bone density
- Being overweight it not harmful unless it is accompanied with being overfat



Overfat

- The term overfat means you have more body fat than you should have
- It is possible to be overfat but not overweight. Inactive people may have little muscle girth and a low bone density
- Being overfat can lead to health problems such as: high blood pressure and high cholesterol levels



Obese

- The term obesity is used to describe people who are very overfat
- Body fat has increased to a level that is seriously unhealthy
- High levels of body fat can lead to: mobility issues, lack of flexibility, stress on bones and joints, heart disease, type 2 diabetes, depression and a low self-esteem



The Impact on sustained involvement in physical activity

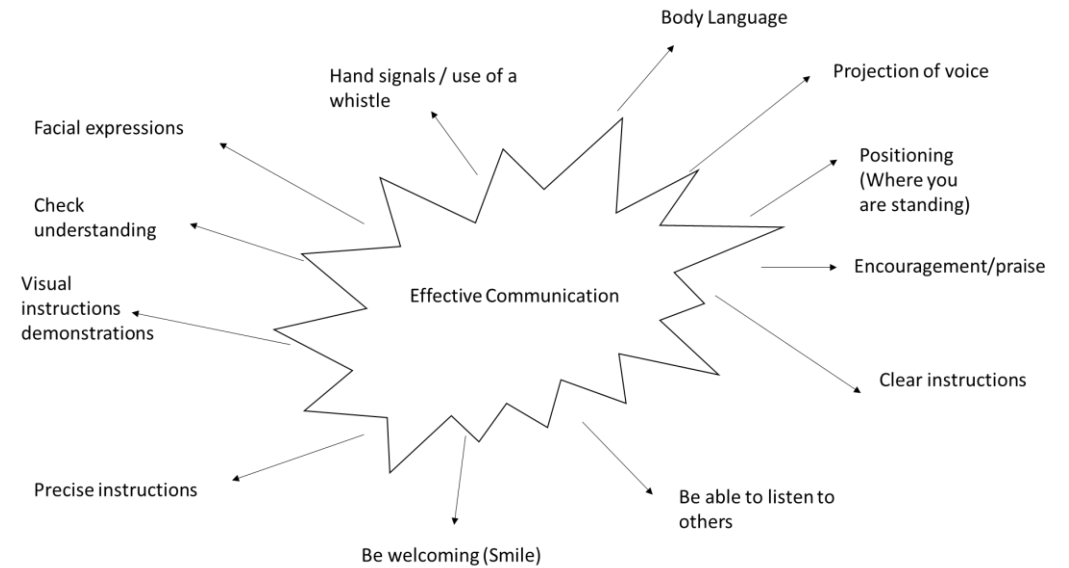
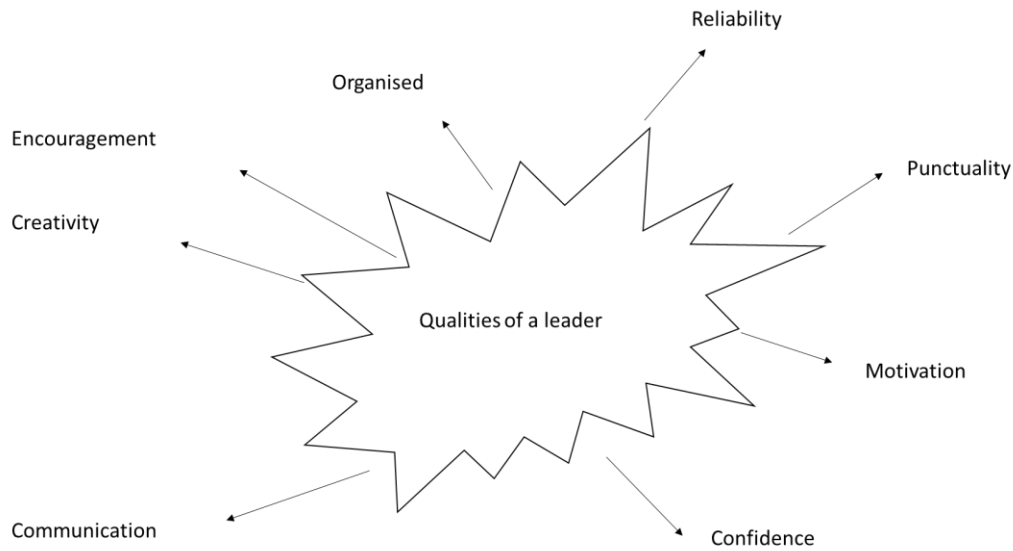
- Health problems such as heart disease will prevent you from taking part in strenuous exercise
- If you become too tired, immobile, or have difficulty walking or running, this will affect your ability to take part in physical activity



Sports Studies



Year 10 CNAT Sport Autumn Knowledge Organiser



Democratic Style:

The leader will facilitate decision making and goal setting with the input of the athlete. The athletes will have input but the coach/leader will have the final decisions.

Laissez-faire Style:

The leader will make only a few decisions which gives the participants freedom to make the decisions about their learning and development within the session.

Leadership Styles

Autocratic Style:

The leader gives the instructions and the participants follow the instruction. Used especially when safety needs to be considered. E.g. throwing a javelin, refereeing a football game where decisions need to be made quickly and stuck to



Year 10 CNAT Sport Autumn Knowledge Organiser

Leadership roles and opportunities in sport

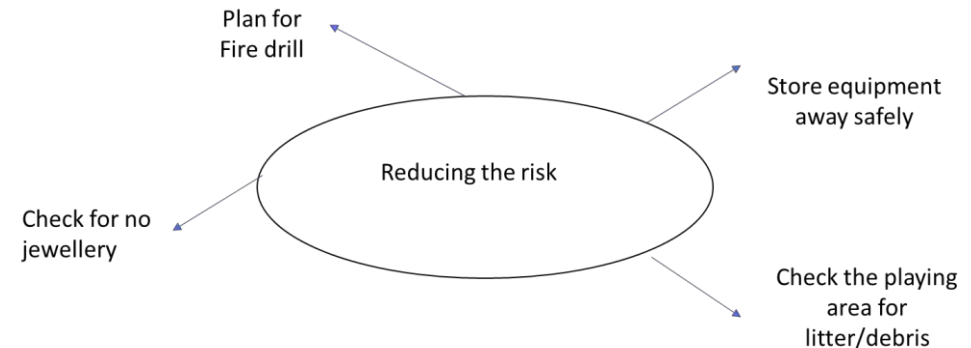
<p>Captains</p> <p>Help to make decisions for their team and influence and motivate people around them. A good captain will listen to the viewpoints of others but will make decisions when required.</p> <p>Coaches</p> <p>Coaches can work on a 1-1 basis or may coach large groups. Their leadership role is to guide and help performers to reach their potential. Coaches usually have official coaching qualifications.</p>	<p>Managers</p> <p>Help to manage the processes and procedures, tactics and strategies that a team or sports performer uses. In football, managers play a key role and have many media duties to fulfill.</p> <p>Expedition leaders</p> <p>Expedition leaders may well hold responsibilities for the group they are leading, such as guiding them down a mountain. An example would be someone leading an activity for the Duke of Edinburgh award.</p>	<p>Teachers</p> <p>Are in a position of authority and have the opportunity to lead and guide those they are teaching. PE teachers often lead extra-curricular sports teams.</p> <p>Role models</p> <p>Role models can be positive or negative. Sports men and women, managers and PE teachers can all be role models. Sports people should act as positive role models, however this does not always happen.</p>
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Role-related responsibilities

<p>Knowledge of activity</p> <p>Any sporting leader must fully understand the rules. Sports leaders should understand how to plan appropriate training sessions.</p>	<p>Enthusiasm for activity</p> <p>A sports leader has to show an appropriate amount of motivation and enthusiasm for the activity. An uninterested sports leader is unlikely to get the best out of their group.</p>	<p>Knowledge of safety</p> <p>Sports leaders should have knowledge of:</p> <ul style="list-style-type: none"> How to reduce risks. What clothing and footwear is appropriate. The techniques to be used. What equipment is deemed safe. 	<p>Knowledge of child protection</p> <p>Children should feel safe and supported when playing sport. Coaches and teachers, for example, have to have a DBS check before coaching children.</p>	<p>Knowledge of basic first aid</p> <p>Sports leaders often attend first aid courses so they know what to do if someone gets injured.</p>
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Factors to consider when planning a session:

- Facilities available
- The number of players in a group
- Equipment available
- The sport/activity you will be doing
- The aim of the session (What do you want to improve)
- How long you have for the session
- Activities (Warm up, skill practice, game & cool down)



Statistics

GCSE STATISTICS FORMULAE (9-1 EDEXCEL)

Formula in green boxes are given in exam.

Refer to your Revision Guide for all topics.

Petersen capture-recapture $\frac{M}{N} = \frac{m}{n}$

M = original marked
 m = new marked
 n = new population
 N = total population

$$\text{Mean } (\bar{x}) = \frac{\sum x}{n}$$

$$\text{Weighted mean} = \frac{\sum(\text{value} \times \text{weight})}{\sum(\text{value} \times \text{weight})}$$

$$\text{Skew} = \frac{3(\text{mean} - \text{median})}{\text{standard deviation}}$$

Standard deviation (not table):

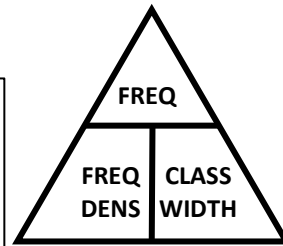
$$= \sqrt{\frac{\sum(x-\bar{x})^2}{n}} \text{ or } = \sqrt{\frac{\sum x^2}{n} - \left(\frac{\sum x}{n}\right)^2}$$

Standard deviation (frequency table):

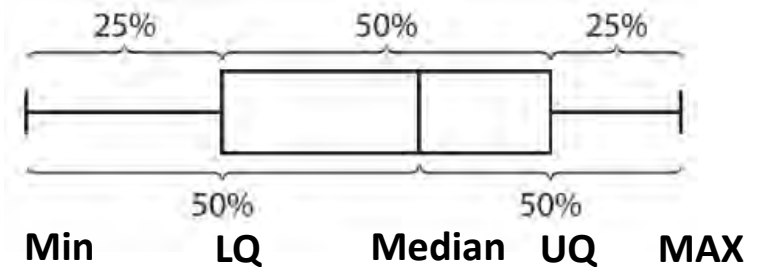
$$= \sqrt{\frac{\sum f(x-\bar{x})^2}{\sum f}} \text{ or } = \sqrt{\frac{\sum fx^2}{\sum f} - \left(\frac{\sum fx}{\sum f}\right)^2}$$

Histograms → frequency is area of the bar

$$\text{Frequency density} = \frac{\text{frequency}}{\text{class width}}$$



BOX PLOT



Spearman's rank correlation coefficient:

$$r_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)}$$

Small **outlier** is less than $LQ - (1.5 \times IQR)$
 Large outlier is greater than $UQ + (1.5 \times IQR)$
 OR $\text{mean} + 3\sigma$ (σ = standard deviation)

For a set of data:

- mean > median > mode = positive skew
- mode > median > mean = negative skew

Line of best fit should go through the mean point (\bar{x}, \bar{y})

The equation of the line $y = ax + b$

- has gradient a
- intercept on the y axis is $(0, b)$

Seasonal variation at a point = actual value – trend value

Estimated mean seasonal variation for any season = mean of the seasonal variations for that season

Predicted value = trend line value + estimated mean seasonal variation

Probability of an event (if possible outcomes are equally likely)

$$= \frac{\text{number of successful outcomes}}{\text{total number of possible outcomes}}$$

Expected frequency of event A = $P(A) \times$ number of trials

Estimated probability =

$$\frac{\text{number of trials with successful outcomes}}{\text{total number of trials}}$$

$$\text{Risk of event} = \frac{\text{number of trials in which event happens}}{\text{total number of trials}}$$

$$\text{Relative risk for the group} = \frac{\text{risk for those in the group}}{\text{risk for those not in the group}}$$

Mutually exclusive, A and B: $P(A \cup B) = P(A) + P(B)$

Exhaustive events: $P(A) + P(\text{not } A) = 1$ or $P(\text{not } A) = 1 - P(A)$

General addition law (for not mutually exclusive):

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

Independent events, A and B:

$$P(A \cap B) = P(A) \times P(B); P(A \cap B \cap C) = P(A) \times P(B) \times P(C)$$

Conditional probability, probability of B given A:

$$P(B|A) = \frac{P(A \cap B)}{P(A)}$$

$$P(A \cap B) = P(B|A) \times P(A)$$

Two independent events A and B: $P(A) = P(A|B)$

$$\text{Index numbers} = \frac{\text{price}}{\text{base year price}} \times 100$$

$$\text{Weighted index numbers} = \frac{\text{current weighted mean price}}{\text{base year weighted mean price}} \times 100$$

$$\text{Chain base index numbers} = \frac{\text{price}}{\text{last year's price}} \times 100$$

Normal distribution:

68% ± one standard deviation of the mean

95% ± two standard deviation of the mean

99.8% ± three standard deviation of the mean

Normal distribution $N(\mu, \sigma^2)$

Mean (μ) and variance (σ^2)

Variance = (standard deviation – σ)²

Warning limits set at $\mu \pm 2\sigma$
Action limits set at $\mu \pm 3\sigma$

$$\text{Standardised score} = \frac{\text{score} - \text{mean}}{\text{standard deviation}}$$

Binomial distribution = $B(n, p)$

Binomial expansion = $(p + q)^n$

Mean of binomial expansion = np

Travel and Tourism

**Pearson BTEC Level 1/Level 2 Tech Award in Travel and Tourism
Component 1A Knowledge Organiser**



Travel Agents provide information; foreign exchange (swapping British money for Foreign Money); sales and booking service for package holidays, accommodation flights, transfers and ground transport, excursions, tickets, insurance, ancillary services (car-hire).

- **Independent:** Small privately owned business with fewer than 5 outlets or shops, e.g. Brunlea & Dalescrest Travel in Burnley.
- **Multiples:** companies with a number of branches/shops throughout the country, e.g. _____
- **Online:** Companies that only operate on the internet, e.g. _____



Tour operators are companies that organise package holidays. Their role is to put together different parts of holidays as a package for retail travel agents or direct sales.

- **Domestic Tour Operators:** these companies put together UK holidays for people living in the UK, e.g. _____
- **Outbound Tour Operators:** these companies put together holidays for UK residents wanting to go on holiday overseas, e.g. _____
- **Inbound Tour Operators:** these companies provide for overseas tourists who want to travel to the UK, e.g. _____



Transport Operators provide transport between destinations, to ensure safety.

- **Road:** Most domestic tourism takes place using road transport. People taking day trips usually go by car. Coach Holiday companies also plan their holidays using major road routes.
- **Rail:** Travelling by rail is a popular form of transport for both long and short journeys. Train stations are found in central locations that link regional (one area).
- **Air:** This is the fastest way to travel long distances and is provided by lots of different airlines.
 - **Scheduled Airlines:** these are also known as full serviced airlines, this means that the price of the ticket includes a baggage allowance, food, drinks and entertainment on board e.g. _____
 - **Low-Cost scheduled airlines:** the ticket price is low but extra fees are charged for each sector for items such as pre booked seats, luggage allowance, food and drinks and priority boarding, e.g. _____



Attractions are providing entertainment, education, recreation, hospitality, special events, and facilities for visitors e.g. parking.

- **Natural Attractions:** natural attractions such as, _____
- **Purpose-built Attractions:** built or constructed by humans e.g. _____
- **Heritage Attractions:** constructed by humans in the past and are now attractions e.g. _____
 - Museums are also heritage as they preserve history.

Purpose of Visitor Attractions:

- **Entertainment:** many purpose built visitor attractions are designed to give people a fun experience e.g. _____
- **Education:** some purpose built visitor attractions are there to educate people about the past, present or future e.g. _____
- **Leisure & Recreation:** the natural environment creates a place for outdoor activities e.g. _____
 - Some leisure places are built for relaxation or healthy activities e.g. _____
- **Conservation:** attractions designed to protect the natural environment. They can also provide education and enjoyment e.g. _____



Accommodation is providing different accommodation options

- **Non-serviced Accommodation (room only):** accommodation which includes only a room with a bed, bathroom, desk, wardrobe etc. There may be tea and coffee making facilities e.g. _____
- **Self-Catering Accommodation:** accommodation which includes a kitchen so you can cook for yourself e.g. _____
- **Serviced Accommodation:** accommodation with facilities and services that can be included in the price of a room e.g. _____



Ancillary services are organisations provide supporting services for tourists or travellers. Types of ancillary services are: car hire, travel insurance, foreign exchange, airport services (e.g. airport lounge), event booking and product information services.

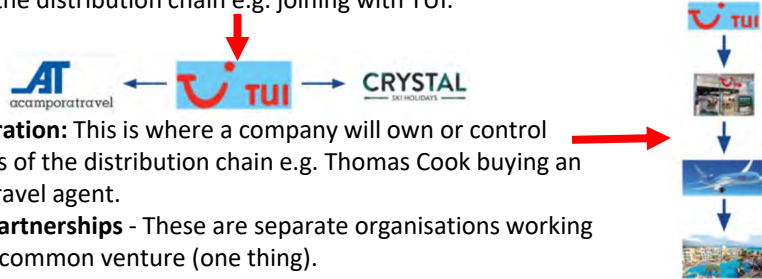


Tourism promotion is when a range of different organisations promote tourism to raise awareness of a place or region, to encourage more people to visit a place or region by using adverts. They provide information, advice and guidance to visitors.e.g. VisitLancashire.com or VisitBritain.com.



Travel & Tourism Organisations – Working Together

- **Chain of Distribution:** -The means of getting the product or service to the consumer.
- **Interrelationships** – defined as ‘organisations that work together to benefit them both’.
- **Interdependencies** – defined as ‘organisations that rely on each other to enable them to provide a better product or service to the customer’.
- **Interrelate** – how two or more things are connected to each other.
- **Integration** – this is the bringing together of two or more organisations.
- **Horizontal Integration:** This is where a company owns or controls businesses at the same level of the distribution chain e.g. joining with TUI.



- **Vertical Integration:** This is where a company will own or control different levels of the distribution chain e.g. Thomas Cook buying an airline and a travel agent.
- **Commercial Partnerships** - These are separate organisations working together on a common venture (one thing).

Examples of how organisations work together:

- Hotels offering reduced admission to visitor attractions.
- Tour operators working with hotels and airlines to arrange holiday packages.
- Tour operators working with tourist boards to promote destinations.

Reasons for working together:

- Marketing and promotion can be carried out jointly
- Customer care can be provided centrally which can lead to;
 - increased sales and income.
 - cutting costs e.g. shared resources, economies of scale.
- access to customer database may lead to a wider customer base / new markets.



Types of Ownership:

- **Private Organisation** – owned and controlled by private individuals or share holders. Their **objective** is to make profit.
- **Public Organisation** – owned and funded by the government. Their **objectives** are to educate, provide a service and promote.
- **Voluntary Organisation** – independent organisations; funded by membership, donations, grants and sales of products. Their **objectives** are to provide a service, promote a particular cause and educate and inform.



Technology in travel and tourism

Consumer technology is technology designed to be used by customers.

Technology for communication, booking and promotion:

Technology specific to different organisations:

- **visitor attractions** - multimedia presentations, animatronics, interpretation, fast-track tickets, webcams.
- **Transport hubs and gateways** -
- **Accommodation** -
- **Travel agents, tour operators and transport principals** -



Financial Aims:

- Selling Goods and Services to make a profit.
- Controlling their costs.
- Increasing Sales Revenue.
- Managing their assets (things they own).
- Increasing the number of sales.



Strategic Aims:

- Diversifying (doing something completely different).
- Providing High Quality Service and Products.
- Generating Customer Loyalty.
- Raising Brand Awareness.
- Expanding.



Ethical and Social Aims:

- **Ethics** - acting in ways that are both fair and honest.
- **Social Responsibility** - the idea that businesses should balance profit-making activities with activities that benefit society and the environment.



CEIAG Link: For this topic we can make links to a variety of professions:

Airline customer service agent, Air traffic controller, Bus and coach drivers, Cabin crew, Events manager, Hotel manager, Museum attendant, Resort representative, Road transport manager, Leisure centre assistant, Travel consultant, Tour guide, Tourist information centre assistant, Visitor attraction manager.

If you are interested in the above careers, don't forget you can do some research and speak to Mrs Ackroyd.

