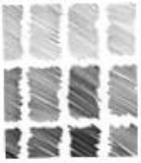
Knowledge Organiser. Year 10 Project 2: **Natural Forms**

LINE	TONE	PATTERN	TEXTURE	FORM	COLOUR
					

This project marks the beginning of **Component 1** of your GCSE. This is coursework, and it will make up **60%** of your grade. In this project, the teacher guides you through the process of completing coursework, showing you how to meet the 4 assessment objectives.

AO1: Research	A02: Experiment	AO3: Record	AO4: Present

What will you learn? (overview of knowledge)

Students will be revisiting and honing important drawing skills to equip them with the standard of observation skills required at GCSE.

What skills will you learn/develop?

- Observational drawing
- Composition of an image
- Detailed tonal work
- Mark-making
- Selecting individual sources to create artwork

Support/Challenge:

https://www.bbc.co.uk/bitesize/subjects/z6hs34j
Your exam board is AQA. You can find information about GCSE Art here: https://www.aqa.org.uk/subjects/art-and-design/gcse/art-and-design-8201-8206

You will also have access to a St John Fisher Art handbook with more useful information.

What will I need to bring to lesson?

Equipment will be provided, but as a bare minimum it is a good idea to have:

- B-6B pencils
- Rubber
- Sharpener
- Ruler
- Access to camera (phone or tablet is also fine)
- Watercolour paint set
- Acrylic paint set

Year 10 Enterprise and Marketing Knowledge Organiser (R067 and R068) Spring term

AIM: This term we will learn cost analysis and pricing, then analyse the cost of a given case study to understand financial viability of a project.

Assessment: Coursework and homework which is set weekly

RO64; Topic Area 3 What makes a product financially viable **(3.1 – 3.5)**

COST

Fixed costs :costs that do not vary with output, i.e. -
rent –
- **loan Interest**
- **insurance**
- **advertising**
- **salaries**
- **utilities**

Variable costs i.e. costs that do vary with output i.e.
- raw materials
- components
- stock
- packaging

Total costs (TR) i.e.
fixed costs + variable costs

BREAK-EVEN is when TR ~~equal~~ TC

Break Even Units Formula

$$\text{Break Even Units} = \frac{\text{Fixed Costs}}{SP - VC}$$

Note: for this qualification: utilities and salaries are fixed cost while wages is variable. Loan repayment is not fixed cost. You may be asked to complete a B.E graph or interpret it. But not to draw it. BE formula will be provided.

REVENUE

Revenue generated by sales of the product or service, i.e.

Total revenue
Selling price per unit x Number of sales

PROFIT formula
Total Revenue (selling price x quantity sold) minus Total costs

A Break Even Chart

- This break-even point can also be shown graphically using a break even chart

Importance of cash

- On time payment.
- Adequate supply

Consequence of lack of cash

- Bank loan - interest.
- Limited supply

Difference between cash and profit
Cash is money received from sales, which is source of revenue. Profit is amount realised after expenses(Total cost) has been removed from total revenue

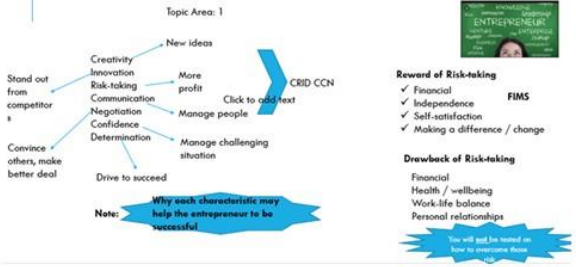
Factors to consider when pricing a product

- **Price of competitor products**
- **Income levels of target customers**
- **Cost of production**
- **Stages of the product life cycle**

Different Pricing Strategies

- Competitive pricing
- Psychological pricing
- Price skimming
- Price penetration

CHARACTERISTICS, RISK AND REWARDS FOR ENTERPRISE



x (4.1 – 4.6)

PUBLIC RELATIONS AND PROMOTION

Public relations
- Product placement
- Celebrity endorsement
- Press / media releases

Advertisement
Non- Digital = Leaflets • Poster • Billboard• Newspapers • Magazines • Radio • Cinema
Digital = social media • website • online banner/ pop-ups• SMS text • Podcast • Vlog/ blogs

Factors that influence choice of advert (+ve and -ve)
- Popularity
- Awareness
- Cost
- Timing – duration of the advert
- Note: social media advert could be business or third party generated

Sales Promotion
- Discounts
- Competitions
- Buy one get one free (BOGOF)
- Point of sale advertising
- Free gifts/product trials
- Loyalty schemes
- sponsorship

Place
- Physical – shops, face to face
- Digital – e-commerce, websites, social media marketplace sites, online auction sites, downloads

NOTE
You must know advantages and disadvantages of each of the marketing mix Also you should be able to make recommendations for best/better strategies suitable to the given case study. Note: social media advert could be business or third party generated. You must know the difference and advantage and disadvantage of each

KEY SKILLS: Research, I.T, Analytical and Evaluative skills

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
0_{10}	0_{16}	0000_2
1_{10}	1_{16}	0001_2
2_{10}	2_{16}	0010_2
3_{10}	3_{16}	0011_2
4_{10}	4_{16}	0100_2
5_{10}	5_{16}	0101_2
6_{10}	6_{16}	0110_2
7_{10}	7_{16}	0111_2

Denary	Hex.	Binary
8_{10}	8_{16}	1000_2
9_{10}	9_{16}	1001_2
10_{10}	A_{16}	1010_2
11_{10}	B_{16}	1011_2
12_{10}	C_{16}	1100_2
13_{10}	D_{16}	1101_2
14_{10}	E_{16}	1110_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.

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 24_{10} to binary.

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

16 + 8=24
The binary value is 11000

Binary to denary conversion
Worked example: Convert 01011001_2 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 + 8 + 1= 89

Hexadecimal to denary conversion
1) Convert the two hex values separately to denary value
2) Make 2 grids (one for each number) and work out the values to make the number

8	4	2	1	8	4	2	1

3) Convert to one larger grid

128	64	32	16	8	4	2	1

4) Add up where the 1s are

Worked example: Covert A3 to denary

8	4	2	1	8	4	2	1
1	0	1	0	0	0	1	1

Convert each number separately

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

Make the larger grid
128+32+2+1 = 163

Denary to hexadecimal conversion
1) Convert to binary using the normal method
2) Split the grid into 2 nibbles
3) Add up where the 1s are

Worked example: Convert 189 to hex

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

8	4	2	1	8	4	2	1
1	0	1	1	1	1	0	1

8+2+1 = 11 = B
8+4+1 = 13 = D

Hexadecimal to binary conversion
1. Do the hexadecimal to decimal, but stop at the 1 and 0 stage.

Binary to hexadecimal conversion
1. Same as decimal to hexadecimal, but you start at part 2.

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.
- 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

$$\begin{array}{rr} & 1\,0\,1\,0\,1\,0\,0\,1_2 \\ & 0\,0\,0\,0\,1\,0\,0\,1_2 \\ + & \underline{0\,0\,0\,1\,0\,1\,0\,1_2} \\ & \underline{1\,1\,0\,0\,0\,1\,1\,1_2} \\ \text{carry} & 1\,1\,1 \quad\quad 1 \end{array}$$

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 1101_2 (13_{10})

Shift	Result	denary
<<1	11010	13 x 2 =26
<<2	110100	13_1x 4_{10} =52
>>1	110	$13_{//}$ 2 =6

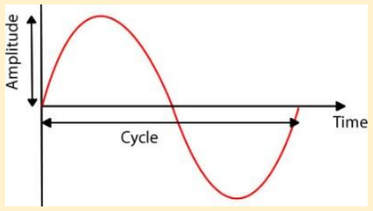
Note that odd numbers are rounded down to the nearest integer when the right shift operator is applied.

Sound

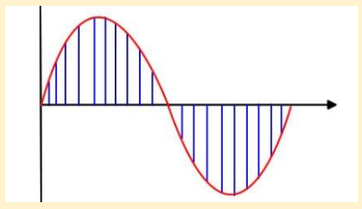
Sample - Measure of the analogue signal at a given point in time
Sample rate - number of samples taken per second and is measured in Hertz.
Sample resolution - number of bits used to represent each sample
The size of sound files can be calculated using:
size of file = length (seconds) x sample rate x 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

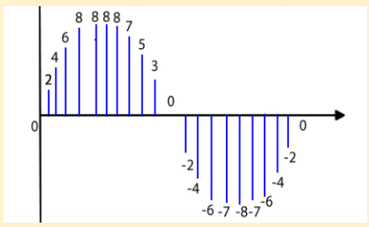
Original analogue signal



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

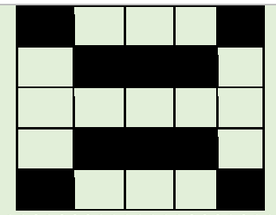
00101 00011 …

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



01110100011111110001011110

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
Calculating the size of a bitmap image
File size in bits = width in pixels x height in pixels x colour depth
File size in bytes = width in pixels x height in pixels x 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:
size = number of characters (including spaces) x 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

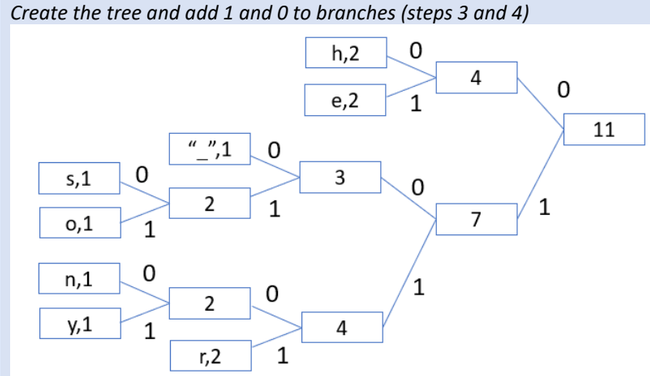
Worked Example: How much smaller is the phrase henry horse encoded using Huffman encoding compared with its uncompressed size.

Calculate the uncompressed size
In the phrase *henry horse* there are 11 characters (including the space). Therefore the uncompressed size is 11 x 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.

TERM 1

Year 10 Drama

Spring Term

Holocaust Memorial Day and Devising Drama

Devising Drama:
This term you will begin to prepare for your devised component. You will be studying a pack of 10 stimuli. You will then pick one to research and devise an original piece of theatre from.

Holocaust Memorial Day
Every year, students from St John Fisher School produce a devised piece of theatre that is to be performed in January in the Cathedral Square. You will carry over your work from the Autumn Term and this will culminate in a performance on 27th January.

Three different components
Devising Drama: Students research and explore a stimulus, work collaboratively and create their own devised drama. They complete a portfolio of evidence during the devising process, give a final performance of their drama, and write an evaluation of their own work. (30% of total GCSE)

Log Book Section 1-This focuses on researching initial ideas for your performance and selecting a stimulus.

Log Book Section 2-This focuses on the work that you have been carrying out in lessons; the practical choices you have made and the way in which you have developed your performance.

Devised Performance-You will perform your finished devised performance to the rest of the class. This will be recorded and sent off for external moderation.

Log Book Section 3-You will write this once you have performed your pieces. You will evaluate the success of your performance.

Useful Dramatic Terminology:
Physical Theatre-Using movement and your body as a tool to create and represent items, objects and motifs on stage.
Epic Theatre-A style of theatre that distances the audience and encourages them to think about the themes and issues within the piece.
Naturalism: A style of theatre that focuses on creating realistic and believable characters and scenarios.
Frantic Assembly: A theatre company that focuses on creating visual performances through the use of stylised movement sequences, lifts and physical theatre motifs.
Stimulus: A starting point for a piece of theatre. It can take the form of a story, title, poem, picture, photograph, piece of art etc.
Devising: The process of creating an original piece of theatre.

Useful Styles to incorporate during your devising:

- Naturalism
- Non-Naturalism
- Physical Theatre
- Stylised sequences
- Frantic Assembly inspired movements
- Anti-gravity exercise
- Chair duets
- Lifts
- Epic theatre

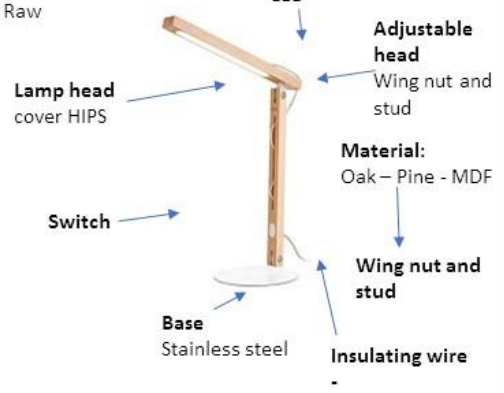
What will I learn Term 2

- Designer and the design
- Designing Repurposed
- Sustainability Design and the Environment
- Social, Moral, Ethical Design
- Manufacturing Processing, Mass, Batch, One off production
- Properties of Materials: Soft and Hard Woods, Manufactured Boards, Stock Materials, Metals and Alloys
- System and Control, Ergonomics and anthropometrics

Task: Sustainability
List the different materials:
Wood, Metal, finishes, Plastics
Are the materials from a Raw Source
Use the 6 R's

Rethink
Reuse
Repair
Reduce
Recycle
Refuse

Sustainable Design



Comprise:

Weekly Exam Questions

Task 3: Storage and Joints

- Lamps
- Modelling.: Templates, Stencils, Smart Materials
- Maths in D/T
- Exam Questions
- Problem Solving – Design Proposals –Modelling 2/3 CAD
- Orthographic and Isometric drawing
- Specification and Testing

Managing Research Data and information

Manufacture boards

AQA English Language Paper 1 Section A

Knowledge Organiser

Reading and Planning (5-10 mins):

Read the source very carefully.
Annotate for key language techniques and key structural techniques.

Q1 (5 mins, 4 marks):

List four things about a section of the source.
Read the question carefully – make sure you answer for the right part.
You can quote from the text but be specific.

Q1: Read again the first part of the source, from lines ____ to _____.

List four things about _____ _____ from this part of the source. [4 marks]

You're marked on AO1 for this question.
The skills being looked at are:

- **Identifying** key information
- **Interpreting** a text
- Being able to understand **explicit** (made obvious) and **implicit** (hinted at or suggested) ideas
- Selecting **key quotes** to support your ideas

4

Repetition	**Repetition is where you repeat a word, phrase or idea again and again.** **E.g. "Run! Run! Run!" she shouted at him.** **Repetition helps to stick an idea in the readers' heads or helps to emphasise a particular idea or feeling.**	**Rhetorical questions**	**This is a question that is asked in order to create a dramatic effect or to make a point rather than to actually get an answer.** **Example: Why had they put me in this place?**
Onomatopoeia	This is incredibly difficult to spell! It is when **words describe sounds**, e.g. Splish! Splash! Splosh! Snap, crackle, pop. Bang! They can be used for **emphasis** or to create particular imagery in the readers' heads.	Tone	This is the way a piece of writing sounds. E.g. it can have a sad tone, or a happy tone. It could sound angry, depressed, energetic, etc. The tone of the writing can change the way a person reads it, so it is very important. **E.g. a newspaper wants to be treated seriously, so its tone will be serious and formal as a result.** **A birthday card wants to be treated humorously, so its tone will be light-hearted and jokey.**
Imagery	This is the umbrella term for all the techniques that create pictures in the readers' heads. **Imagery can be created through personification, metaphor, adjectives, adverbs, alliteration, repetition, etc.** You will almost certainly be asked to talk about why certain images are created in the texts in both your Language and Literature exams.	Hyperbole	Exaggerated ideas that aren't meant to be taken literally or at face value. **Example: This is the worst day of my life.** You see, it probably isn't the worst day of your life, but the use of hyperbole accentuates the point that this was an awful day.

Language features
It's really important to know as many language features or techniques as you can, but it's even more important to know how they can affect a reader. You might be able to name 10-15 language features really easily, but if you put "it makes the reader want to read on" then you're not really discussing the effects of the feature on the reader. Go one step beyond and learn the effects of different features!

Simile	Using **like/as** to compare one thing to another. **The man was as tall as a skyscraper.** **She moved like a snail!** Similes help readers to picture a particular object, person or place by **comparing something they don't know to something they do**. They can also be used for **exaggeration.**	Alliteration	This where a number of words begin with the same letter or sound. **The angry, aggressive aardvark ate all the apricots.** **Mr W wrote wildly on the whiteboard.** Alliteration creates a memorable sound in the readers' head that means they notice that particular line more or they can remember it quite well. **This means it can be used to emphasise a particular point, idea or feeling**.
Metaphor	Transforming one thing into another. **He was a *monster truck* on the football field.** **She is *over the moon* about her exam results.** Metaphors help readers to picture a particular object, person or place by **transforming them into something they understand better**. They can also be used for **exaggeration.**	Nouns and Verbs	Nouns are people, places or objects. **E.g. table, window, ceiling, computer, Birmingham, etc.** Verbs are actions or 'doing words'. **E.g. run, skip, jumping, arguing, shouting, cry, crying, etc.** Both can be used carefully to evoke or give off certain emotions or feelings.
Personification	This is a type of metaphor, where something **non-human** is described in a **human way**. **The wind whistled past his face.** **The trees danced in the breeze.** Metaphors help readers to picture a particular object or place by **transforming them into something they understand better**. They can also be used for **exaggeration.**	Adjectives and Adverbs	Adjectives are words that **describe nouns. E.g. tall, short, wide, skinny, ugly, beautiful, amazing, spectacular, boring, etc.** Adverbs are words that describe **verbs.** E.g. quickly, amazingly, powerfully, slowly, shockingly. They usually end in ly. These are both used to add to **descriptions** and help **build specific images or feelings in the readers' heads.** The **terrifying, disgusting, powerful** monster **quickly and sharply** jumped off the building.

Q2 (10 mins, 8 marks):

This is the language analysis question.
Read the question carefully – make sure you answer for the right lines.
Annotate the text for language techniques and sentence forms in the specific section.

Look in detail at this extract, from lines ____ to ____ of the source:

How does the writer use language here to _____? You could include the writer's choice of:

- words and phrases
- language features and techniques
- sentence forms. [8 marks]

You're marked on AO2 for this question. The skills being looked at are:

- **Explaining**, commenting on and analysing how a writer uses **language** in a text to **create effects** and **affect their readers**
- Within analyses, using **key terms** and **language features** to support your ideas
- Using **specific quotes** to support interpretations

Key vocabulary:

Emphasises
Accentuates
Illustrates
Highlights
Exaggerates
Draw attention to
Focuses the reader on…
Maintains
Underscores
Indicates
Affirms
Reiterates
Repeats
Enlarges
Dramatises
Asserts
Reader
Writer
Audience
Effects (Noun)
Affects (Verb)

Success criteria:
A range of points (2 or 3 main ones)
Accurate quotes used to support points
Language techniques described and explained why they are used in the quotes.
'Zooming in' on key words.
Linking back to the task.

Possible sentence starters to use for Q2:

In the extract the writer helps the reader to understand _____

A good example to show this is: "…"

This helps the reader to… because…

The use of [technique] emphasises to the reader…

In particular, the word(s) "…" show us that…

Therefore, the writer makes the reader see…

Try to avoid using common terms like 'it makes the reader want to read on' or 'it is interesting for the reader'. So many students try to use those and they don't really explain or analyse anything.

Angry

Relaxed

Lonely

Fearful
Really quick because it gets across how happy it is.

Dark

Sad

Imagine pace and tone as a battery providing energy. How much does each tone need?

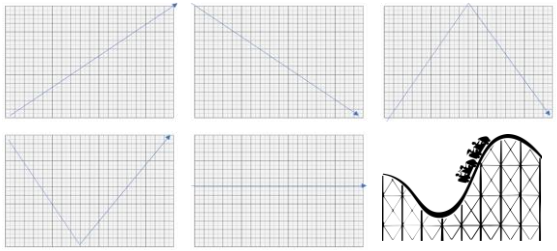
Pace and Tone: A way to think about sentences

Sometimes students can feel a little confused when asked to consider 'sentence forms' in Q2, but there is an easier way to look at them. Every writer wants to establish a pace and a tone to their writing. Pace is how fast or slow a text is meant to be read, and tone is the kind of sound or mood you want to give to a piece of writing.

If you use lots of short sentences together it can build tension, but it can also speed up a text as a reader becomes more desperate to find out what happens as tension builds. Alternatively short sentences can make a reader stop and reflect on specific ideas.

Longer, more complex sentence forms can be used to aid description or to help a reader build up an understanding of character.

So when you read the exam text, think about what kind of tone and pace is created and how the writer uses sentences to achieve that effect on the reader.



If you're not sure how to work out a text's structure, think of it like a graph or a rollercoaster. When the text is more tense or exciting, the graph's line goes up. When it is less exciting or tense, the line goes down. You could even draw a tension graph on the side of your exam text if it helps! Picturing it this way can really help to see what a writer is trying to achieve with their structure.

You're marked on AO2 for this question. The skills being looked at are:

- Explaining, commenting on and analysing how a writer uses structure in a text to create effects and affect their readers
- Within analyses, using key terms and structural features to support your ideas
- Using specific quotes to support interpretations

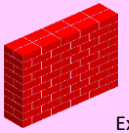
Adding connectives, to add to your initial ideas:	**Contrasting connectives, to show a different perspective or idea:**
Moreover	However
Furthermore	On the other hand
In addition	Alternatively
Additionally	Despite this
Similarly	In contrast
As well as this	Conversely
	In spite of this

Beginnings

How a writer begins and finishes a text is incredibly important. How does a writer engage you right from the start and what kind of thoughts or feelings do they want you to have at the end of the chapter or text? Know these different beginnings and endings so you can discuss which ones are being used in the exam text you have been given **and** what effects you think they have on the reader. Additionally, use can use these techniques in your own writing for Question 5/Section B!

Direct address. Talk directly to your readers as a way of engaging them.

A puzzle! Hook your reader in with something that isn't clear at the beginning, perhaps something unusual has happened?



Q3 (10 mins, 8 marks):

This is the structure question.
Explain how the text starts and **why.**
Explain how the focus changes and **why.**
Think about how the chapter ends **and why.**
You are writing similar paragraphs for language but for structural techniques instead.

Possible sentence starters to use:

In the extract the writer structures the chapter so at the beginning the reader can understand…

The use of zooming in on "…" makes clear to the reader that…

When the writer moves on to the next paragraph they… for the reader because…

As the chapter progresses, the narrator focusses on… This helps the reader to understand that…

By the end of the chapter, the narrator is focussing on… because it has the reader to see that…

Success criteria:

A range of points (2 or 3 main ones)

Structural features described and explained why they are used in the quotes.

Explaining how the chapter changes in terms of focus and **why.**

Linking back to the task.

Visual hook. Use a powerful image or description to engage the reader at the start.

Amusing hook. Use a joke to establish a comedic tone at the beginning of your text.

Dialogue. Have characters talking to each other right from the beginning to establish characters and relationships.

Subtle hook. Hint at what is going to happen in the rest of the text/chapter.

Atmospheric hook. Use your descriptive language to build up a particular tone and atmosphere right at the very beginning.

Here's the kind of Q3 you'll get in the exam:

You now need to think about the whole of the Source.

This text is from the middle of a novel.

How has the writer structured the text to interest you as a reader? You could write about:

- what the writer focuses your attention on at the **beginning**
- how and why the writer changes this focus as the Source develops
- any other structural features that interest you. [8 marks]

Here are some different structural features you could look out for in Q3:

Zooming in from something big to something much smaller (and vice versa).

Shifting between different times and places (you may notice this between paragraphs).

Sudden or gradual introduction of new characters at significant points.

Moving from inside to the wider world outside (and vice versa).

Combining external actions with internal thoughts.

Switching between different points of view.

Developing and reiterating (focusing on a point of view by expanding and repeating it)

Cyclical structure (returning at the end to what happened at the beginning)

Positioning of key sentences and their impact on the whole text.

Endings

Cyclical ending: where the ending returns back to the beginning of the narrative.

Plot twist: a complete change in direction from where the narrative was going.

Uncertain ending: an end which is unclear to the reader – they have to think about it what it means

Converging storylines: where two or more different storylines combine together at the end

Deus ex machina (Latin for 'God within the machine'): where a seemingly unsolvable problem is resolved thanks to the introduction of a new character, place or object.

Tying up loose ends: where all the different strands of a plot are brought together and completed

Sad ending: a very negative and possibly tragic finish

Happy ending: a joyful celebration at the end

Epiphany: a sudden moment of realisation or a sudden idea or emotional change.

Genre

As well as thinking about all the other areas mentioned here, try to consider what genre the text belongs to when you read it in the exam.

A genre is a way of classifying a text based on the key elements or parts it contains. There are many, many different genres and sub-genres. Here are some:

Action/Adventure
Crime/Detective Fiction
Comedy
Fable
Fairy tale
Fantasy
Historical fiction
Horror

Mystery
Science fiction
Suspense/Thriller
Tragedy

It's particularly important for Q4 to think about what genre the text belongs to and why the writer may have chosen that particular genre. How does it make the reader feel? Why?

Q4 (25-30 mins, 20 marks):

This is the evaluation **GRANDDAD** question: Genre, Reader, Atmosphere, Names, Dialogue, Description of character, Archetypes, Description of setting. Use point, analysis, terminology, analysis, zoom and ink to look 'for' and 'against' the argument given to you. **Uses a specific part of the text.**

Success criteria:

A range of points that include both 'for' and 'against' perspectives
A focus on the statement given in the question and **your opinion** on it.
Using evaluative paragraphs to answer the question.
Using **GRANDDAD** to evaluate the text.
Linking back to the task.

Possible sentence starters to use:

One way I agree with the [person is] because… This is best shown when it says: "…" This shows the reader that… because.. The use of the technique _____ helps to emphasise that… because… Therefore the statement is correct because…

Moreover, we learn _____ when we are told: "…" This shows the reader that… In particular the words "…" and "…" work with the technique _____ to make the reader think…

In contrast, the [person] can be said to be wrong because… A good example of this is… The use of [technique] here makes clear to the reader that…
Carry on in this style

Genre: What type of story is it? Is it horror? Romance? A mystery? What conventions does the story include that make it fit into that genre? Why has the writer chosen this genre?

Reader: How is a reader supposed to respond to this text? Are they meant to be scared? Happy? Confused? How does the writer achieve this?

Atmosphere: What type of mood or tone does the writer create in their story? How do they achieve it?

Names: Which characters are named? What are they called? Which characters are **not** named? Why not this be? Why might these names by important?

Dialogue: Do characters speak to each other? Why? Why do they talk about? What does this tell us about character, theme or plot?

Description of character: How are the characters described? What does this information reveal to us about them?

Archetypes: What **types** of characters do we have in this story? Villains? Heroes? Antiheroes? Comedic characters?

Description of setting: How is the setting described? Why is this important? Is setting more important than character?

Language

- **Literary devices**
- **Figurative descriptions**

- **Comparative devices** (simile, metaphor, analogy, personification, hyperbole etc.)
- **Contrasting devices** (contrast, antithesis, paradox, oxymoron etc.)
- **Sonic devices** (alliteration, assonance, consonance, onomatopoeia etc.)
- **Imagery** (diction, sensory imagery, kinaesthetic imagery, organic imagery etc.)

Form

- **Type**
- **Genre**

Poetry

- **Ballad, sonnet, ode, villanelle** etc.
- **Shape** of the poem (concrete poetry, haiku etc.)

Prose

- **Epistolary, diaristic, short story, Gothic novel** etc.
  - **Letter**
  - **Article**
  - **Speech**

Structure

- **Organisation** of the text

Poetry

- **Stanzas** (quatrain, tercet, cinquain etc.)
- **Syntax** (anaphora, hyperbaton, asyndeton, parallelism etc.)
- **Line & sentence length** (enjambment, caesura etc.)
- **Rhyme scheme** (envelope, alternate, end, couplets etc.)
- **Meter & prosody** (rhythm, stress, iambic pentameter, trochaic tetrameter etc.)

Prose

- **Paragraphs, chapters**
- **Sentence & chapter length**
- **Narrative** (linear, flashback, prolepsis, twist ending etc.)
- **POV / perspective** (third-person omniscience, focalisation, interior monologue etc.)

Language Subject Terminology

Word Classes	
Noun	Identifies a person (girl), thing (wall), idea (luckiness) or state (anger).
Verb	Describes an action (jump), event (happen), situation (be) or change (evolve).
Adjective	Describes a noun (**happy** girl, **grey** wall).
Adverb	Gives information about a verb (jump **quickly**), adjective (**very** pretty) or adverb (**very quickly**).

Sentence Structures	
Fragment	An incomplete sentence (no subject verb agreement). *"Nothing." "Silence everywhere."*
Simple	A sentence with one independent clause. *"She went to the shop."*
Compound	A sentence with multiple independent clauses. *"She went to the shop and bought a banana"*
Complex	A sentence with one independent clause and at least one dependent clause. *"Sometimes, when she goes to the shop, she likes to buy a banana."*

Language Techniques	
Diction	The writer's choice of words.
Hyperbole	The use of extreme exaggeration.
Imagery	When the writer provides mental "pictures".
Irony	Like sarcasm, where the opposite is implied.
Juxtaposition	Two ideas together which contrast each other.
List (of three)	A number of connected items (three= effect).
Metaphor	Something is presented as something else.
Oxymoron	Contradictory terms together "*bittersweet*".
Pathos	Language used to appeal to the emotions.
Personification	Giving human traits to something non-human.
Repetition	When a word, phrase or idea is repeated.
Semantic Field	A set of words from a text related in meaning.
Simile	Something is presented as like something else.
Symbolism	An idea is reflected by an object/character etc.
Syntax	The way words and phrases are arranged.

This Quotation/ Reference…		
Achieves	Advances	Affects
Allows	Alludes to	Builds
Concludes	Confirms	Conveys
Denotes	Develops	Demonstrates
Displays	Justifies	Exaggerates
Encourages	Enhances	Establishes
Exemplifies	Explains	Explores
Exposes	Forces	Generates
Highlights	Hints	Identifies
Ignites	Illustrates	Impacts
Implies	Identifies	Indicates
Initiates	Introduces	Involves
Justifies	Juxtaposes	Kindles
Launches	Leads to	Maintains
Manifests	Notifies	Offers
Portrays	Presents	Produces
Progresses	Promotes	Prompts
Provokes	Questions	Represents
Reveals	Shows	Signifies
Sparks	Suggests	Supports
Symbolises	Transforms	Triggers
Typifies	Upholds	Underscores
Validates	Verifies	Yields

Effect on the Reader		
Believe	Consider	Decide
Discover	Realise	Understand
Appreciate	Conclude	Visualise
Sympathise	Empathise	Sense
Wish	Assume	Track
Build	Question	Picture
Compare	Focus	Perceive
Contrast	Clarify	Know
Discover	Think	Feel
Examine	Note	Imagine
Identify	Pity	Consider

Structural Subject Terminology

Types of Narrator	
Limited 3rd person	External narrator with knowledge of one character's feelings (he).
Omniscient 3rd person	External narrator- knowledge of more than one character's feelings (he).
1st person	Told from a character's perspective (I).
2nd person	Directed to the reader (you).
Unreliable narrator	When the perspective offered makes us question the narrator's credibility.

Narrative Styles	
Linear	Events are told chronologically.
Non-Linear	Events are not told chronologically.
Dual	Told from multiple perspectives.
Cyclical	Ends the same way it begins.

Explaining the Extract.	
Introducing	An idea or character is first shown.
Focusing	Our attention is aimed somewhere.
Building	When an idea/tension is increased.
Developing	An earlier point is extended.
Changing	A shift is created for an event/idea.
Concluding	Ideas/ events are drawn to a close.

Structural Techniques	
Atmosphere	The mode or tone set by the writer.
Climax	The most intense or decisive point.
Dialogue	The lines spoken by characters.
Exposition	The start where ideas are initiated.
Flashback	(Analepsis) Presents past events.
Flash-forward	(Prolepsis) Presents future events.
Foreshadowing	Hints what is to come(can mislead).
Motif	A recurring element in a story.
Resolution	The answer or solution to conflict.
Setting	A geographical/historical moment.
Spotlight	Emphasis is placed on something.
Shift	A switch or change of focus.
Tension	The feeling of emotional strain.

Name: Date:

Energy and activity

Y 10 Term2

Energy is the power to do work.
Energy is essential for life, and is required to fuel many different body processes, growth and activities.

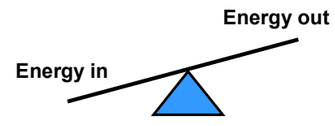
These include:
- keeping the heart beating;
- keeping the organs functioning;
- maintenance of body temperature;
- muscle contraction.

Different people need different amounts of dietary energy depending on their:

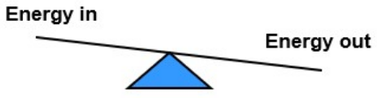
- age;
- gender;
- body size;
- level of activity;
- genes.

The figures determined are known as Estimated Average Requirements (EAR) for energy.

Energy balance
To maintain body weight it is necessary to balance energy intake (from food and drink) with energy expenditure (from activity).



Energy in > Energy out = Weight gain



Energy out > Energy in = Weight loss

Body Mass Index (BMI) can be used to identify if an adult is a correct weight for height.

$$\text{BMI} = \frac{\text{weight (kg)}}{(\text{height in m})^2}$$

Recommended BMI range (adults)	
Less than 18.5	Underweight
18.5 to 25	**Desirable**
25-30	Overweight
30-35	Obese (Class I)
35-40	Obese (Class II)
Over 40	Morbidly obese

Energy from food
- Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).
- Different macronutrients, and alcohol, provide different amounts of energy.

	Energy per 100g
Carbohydrate	16kJ (3.75 kcals)
Protein	17kJ (4 kcals)
Alcohol	29kJ (7kcals)
Fat	37kJ (9 kcals)

Energy intake is measured in joules (J) or kilojoules (kJ), but many people are more familiar with Calories (kcal).

1 kilojoule (kJ) = 1,000 joules
1 megajoule (MJ) = 1,000,000 joules
1 kilocalorie (kcal) = 1,000 calories

To convert from one unit to another: 1 kcal = 4.184 kJ

For more information, go to:
https://bit.ly/36KUnji

Basal metabolic rate (BMR)
Basal metabolic rate (BMR) is the rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest, such as:
- breathing;
- keeping warm;
- keeping the heart beating

Physical activity level (PAL)
In addition to their BMR, people also use energy for movement of all types, expressed as PAL.
The amount of energy a person uses to perform daily tasks varies.

Energy requirements vary from person to person, depending on BMR and PAL.

Total energy expenditure = BMR x PAL

Undernutrition and obesity
Managing energy intake and expenditure, and maintaining energy balance can help reduce the risk of overweight/obesity and being underweight.

People who are obese are more likely to suffer from coronary heart disease, type 2 diabetes, gall stones, arthritis, high blood pressure and some types of cancers, i.e. colon, breast, kidney and stomach.

Being underweight is also linked with health problems, such as osteoporosis (low bone mass), infertility (difficulty to conceive) and even heart failure.

Benefits of physical activity
Physical activity is beneficial because it can:
- help to manage the balance between energy in and energy out, to maintain a healthy weight;
- improve heart health and strengthen muscles and bones;
- improve sleep, relieve stress and lift mood.

Moderate activity

Vigorous activity

Muscle strengthening activities

Activity recommendations
We are all advised to minimise inactivity. In addition, there are specific age-related recommendations.

Pre-schoolers (3 to 4 years): 180 minutes (3 hours) spread throughout the day, including at least 60 minutes of moderate-to-vigorous intensity physical activity.

Children and young people (5-18 years): At least 60 minutes of physical activity every day and engage in a variety of types and intensities of physical activity across the week.

Adults (19-64 years): At least 150 minutes each week (moderate intensity), or have 75 minutes of vigorous activity a week and do muscle strengthening activities on two days or more each week.

Key terms
Basal metabolic rate (BMR): The rate at which a person uses energy to maintain the basic functions of the body when it is at complete rest.
Body Mass Index (BMI): An equation that can be used to identify if an adult is a correct weight for their height.
Dietary reference values: Estimated dietary requirements for particular groups of the population.
Energy: The power the body requires to stay alive and function.
Physical activity level (PAL): The amount of energy a person uses to perform daily tasks varies.
Estimated Average Requirements (EAR): An estimate of the average requirement of energy or a nutrient needed by a group of people.

Physical activity
Physical activity should be an important part of our daily energy expenditure.

Many different types of activity contribute to our total physical activity, all of which form part of everyday life.

Inactivity
It is also important that the amount of time being sedentary is reduced.

Over time, sedentary behaviour can lead to weight gain and obesity, which can increase the risk of developing chronic diseases in adulthood.

1 in 4 women and 1 in 5 men are classified as inactive (<30 mins per week).

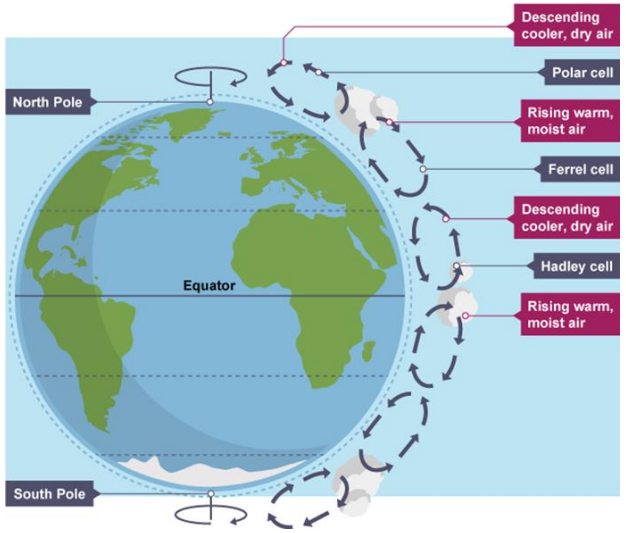
Tasks
1. Create an infographic on either energy or physical activity.
2. Keep a food diary for four days and calculate the energy provided per day. http://explorefood.foodafactoflife.org.uk

This resource meets the ***Guidelines for producers and users of school education resources about food***.

Geography - Year 10 Term 2 – Weather and Climate

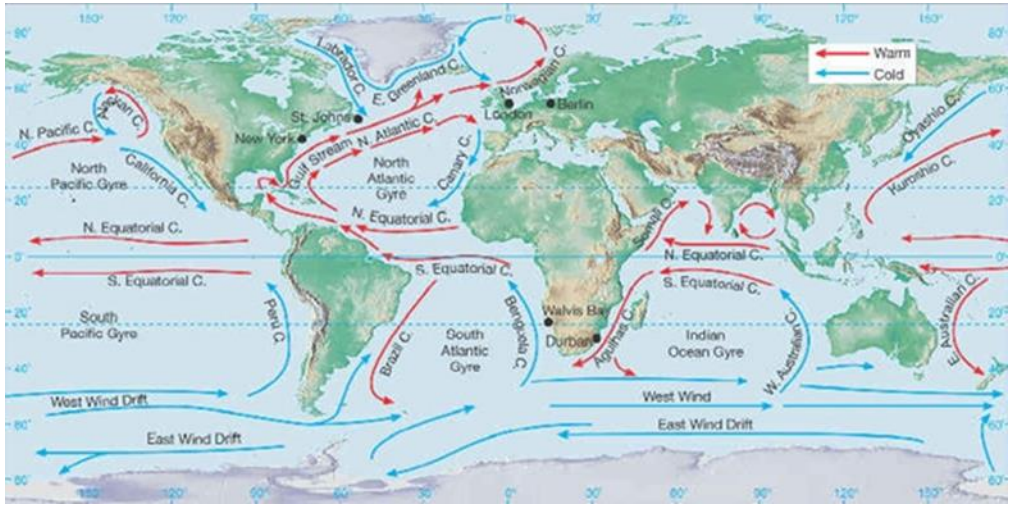
Indicators of Climate Change

1. Ice Cores
2. Pollen Records
3. Tree Rings
4. Historical Sources

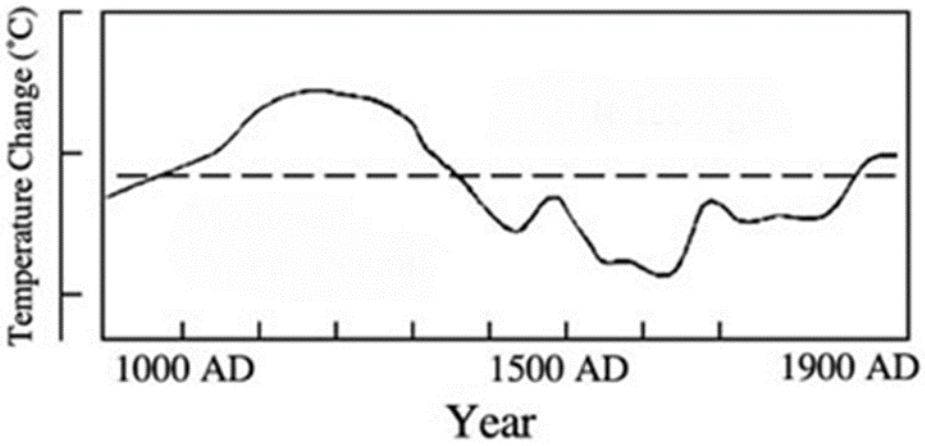


The key features of global atmospheric circulation are:

- The transfer of heat from the Equator to the poles.
- The 3 cells, Hadley, Ferrel and Polar
- Jet streams impact on the movement of heat energy.
- The spin of the Earth creates the Coriolis effect



The UK has experienced climate change over the last 1000 years.



The oceans transfer 20% of the total heat that is transferred from the tropics to the poles. Each Ocean has a circular pattern of surface currents, known as a gyre.

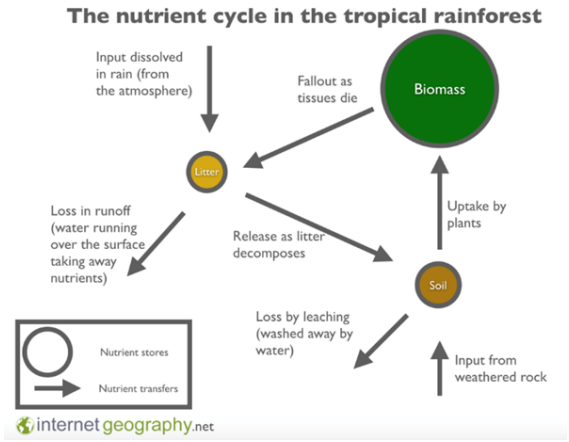
A drought is a period of below average precipitation resulting in prolonged shortages of water supply.

An intense low pressure weather system that is known as cyclone in the Indian Ocean, a typhoon in the western Pacific, a hurricane around Central and North American coasts or a willy-willy near Australia.

Milankovitch Cycles (the sun)

- The sun's appearance can change.
- The orbit can be circular or if it becomes elliptical.
- The earth's axis tilts at an angle of 23.5º away from the sun but it changes.
- The earth can wobble on its axis.

Geography - Year 10 Term 2 – Ecosystems, Biodiversity and Management



Ecosystem	Climate Characteristics	Vegetation Characteristics
Tropical Rainforest	Hot all year 27-30º. Wet all year 2000mm+	Huge variety of broadleaved plants. Trees dominate with other species competing for light.
Tropical Grassland	Hot all year 25-30º. 500-1000mm of rain with a distinct dry season.	Tall grasses with scattered drought adapted trees.
Desert	Very hot all year 30º+, <200mm of rain.	Plants have water storage features, spines not leaves, extended root systems.
Temperate Grassland	Hot in summer 25º. Cold in winter. 500-900mm of rain.	Grass with few trees and shrubs.
Temperate Forest	Warm summers 18º. Cool winters 5º, rainfall all year 1000mm.	Deciduous trees, which drop leaves in autumn.
Boreal (Coniferous) Forest	Warm summers 20º. Very cold winters<0º. <500mm of rain mainly in summer.	Coniferous trees with needles to survive cold and water loss.
Tundra	Temperatures <0º for most of year. Max of 10º in summer. <250mm of rain.	Very few plants live here, mostly lichens and moss. Rare and stunted trees.

To know how the biosphere provides resources for people.

Food	Fish from the sea and meat from the land. Replacement of natural vegetation with crops. Sustainable harvesting of nuts, berries and game.
Medicine	The periwinkle plant used to treat leukaemia. The aloe plant used as a soothing cream. Poppies to create the painkiller morphine.
Building Materials	Timber from trees for construction. Animal dung to make wattle and daub. Straw for roofing and insulation.
Fuel	Wood from trees. Animal dung is dried and burned. Biofuels made from processing vegetation or recycling waste food.

Sustainable Management of the The Wyre Forest

1. Woodland Management
2. Wildlife Management
3. Community Management
4. Leisure and Recreation Management
5. Education

To understand the structure of a deciduous woodland.

Canopy Layer 20-30m - Trees such as oak and ash.

Sub Canopy Layer 3-20m - Trees such as rowans and dogwoods, and shrubs such as rhododendrons.

Field or Herb Layer 0 – 1.5m - Plants in this layer flower early in the year before the trees in the canopy have grown their leaves, which block out the sunlight.

Ground Layer 0m - This area is dark and damp; mosses and lichens grow here.

Goods	Services
Timber for furniture making	Public access for recreation
Timber for construction	Venues for business such as GoApe and Paintballing
Fuel for wood burning stoves	Health benefits from encouraging exercise.
Fuel for biomass power stations	Produce oxygen
	Absorb CO_2
	Prevent runoff, flooding and soil erosion

Topic 1 the Weimar Republic 1918-1929

1.The Weimar Republic 1918-29

- The origins of the Republic 1918-1929
- Early challenges
- Recovery of the Republic (Stresemann)
- Changes in society

Key dates
1918 Kaiser Abdicates
1918
1919
1919 Weimar Constitution established Ebert as President
1919 Treaty of Versailles signed
1920
1923
1923
1923
1924
1925
1926
1928 Kellogg -Briand Pact
1929 Young Plan
1929

Topic 2 Hitler's rise to power 1919-33

Key dates
1918 Kaiser Abdicates
1918 Armistice signed
1919 Weimar Constitution established Ebert as President
1919 Treaty of Versailles signed
1920 25 Point Programme
1921 Hitler becomes leader of the Nazi Party
1923
1924
1925 Mein Kampf published
1926 Bamberg Conference
1932 Nazi Party largest party in the Reichstag
1933 January

2.Hitler's rise to power 1919-33

- Early development of the Nazis
- The Munich Putsch and the 'lean years'
- Growth in Nazi support
- How Hitler became Chancellor

Topic 3 Nazi control and dictatorship

3. Nazi control and dictatorship

- The creation of the dictatorship (Reichstag fire, Enabling Act Night of the Long Knives, Death of Hindenburg)
- The police State (the SS, Gestapo)
- Controlling and influencing people(propaganda, the Church)
- Opposition to the Nazis

Key dates
1933 30 January
1933 February
1933 March
1933 July
1933 Gestapo established & Dachau set up
1933 Concordat with the Catholic Church
1934 June
1934 2nd August Death of Hindenburg. Oath of Loyalty from the Army
1934 19 August Weimar Republic officially ended

Topic 4 Life in Nazi Germany

Role of Women	Young people
Employment & living standards	Minority groups & the Jews

4. Life in Nazi Germany

- Nazi policies and women
- Nazi policies and the young
- Employment and living standards
- Persecution of minority groups and the Jews

Key Individuals

Person	Linked to
Kaiser Wilhelm	
Ebert	
Spartacists	
Freikorps	
General Kapp	
Stresemann	
Anton Drexler	
Adolf Hitler	
Rudolf Hess	
Hermann Goering	
Ernst Rohm	
Joseph Goebbels	
Heinrich Himmler	
Bruning, Von Schleicher, Von Papen, Paul Von Hindenburg	

Creative i-Media R093 part 2

What we are Learning This Term

R093 Creative iMedia in the media industry

In this unit you will learn about the:

- Media Sectors
- Job Roles
- Legal
- Intellectual Property
- Regulations
- Health and Safety
- Distribution Platforms
- Properties and Formats (images, Audio, moving images, Compression)

Job Roles

Creative	Animator Content Creator Copy Writer Graphic Designer Illustrator/Graphic Artist Photographer Script Writer Web Designer
Technical	Camera Operator Games Programmer/Developer Sound Editor Audio Technician Video Editor Web Developer
Senior roles	Campaign Manager Creative Director Director Editor Production Manager

Lossless vs. lossy compression

	Lossless	Lossy
WHAT IT DOES	Restores, rebuilds compressed file data in original form.	File data removed during compression and not restorable to original form.
USED TO COMPRESS	Files where data loss is unacceptable or information loss could pose a problem (e.g., fnaicial data).	When file information loss is acceptable.
APPLICATIONS	Images, audio, text	Images, audio, video
FORMAT EXAMPLES	Image: GIF, RAW, BMP, PNG Audio: WAV, FLAC General: ZIP	Image: JPEG Audio: MP3, AAC Video: AVC, HEVC, MPEG
ALGORITHMS USED	Run Length Encoding Lempel-Ziv-Welch Huffman Coding Arithmetic Encoding	Transform Coding Discrete Cosine Transform Discrete Wavelet Transform Fractal Compression
ADVANTAGES	Retains file quality in smaller size	Significantly reduced file size Supported by many tools, plugins, software Can choose preferred degree of compression
DRAWBACKS	Larger compressed file sizes	Result in file quality loss, degradation Original file quality cannot be recovered with decompression

Rasters / Bitmap	Vectors
_Made of Pixels	_Made of Mathematical calculations from objects and lines
Advantages • Represents and edits photo elements better than vector programs with the use of continuous tones. The use of different color pixels allows for smooth blends of colors.	**Advantages** • Can be scaled to any size without losing quality. • Resolution-independent: Can be printed at any size/resolution. • Number of colors can be easily increased or reduced to adjust printing budget. • A large dimension vector graphic can maintain a small file size. • Vector art is required by many service providers. • Can be easily converted to raster
Disadvantages • It is contrained by the number of pixels in the image. It cannot be scaled up without losing quality. • Large dimensions & detailed images equal large file size. • Some service providers like engravers, stencil-cut signs, etc, must have vector art. • It is more difficult to print raster images using a limited amount of spot colors. • Depending on the complexity of the image, conversion to vector may be time consuming.	**Disadvantages** • It is not the best format for photographs or photo-like elements with blends of color.

Key words

Location Recce	**Genre**	**Pixel**	**Wire Frame**	**Assets**
Short for reconnaissance. A visit to a location to check it's suitability and requirements for producing media.	A way of describing the theme or style of creative work, i.e. Horror or Romance.	The Smallest part of a digital image, each with a unique colour.	A plan using basic lines and shapes to show where items would be placed in a design.	The different images collected that will be used to make the final product.
Typography	**Visual identity**	**Workflow**	**DPI / PPI**	**Interface**
The style and arrangement of letters in a particular way to make sure that it can be read and fits the style of the document it is used in.	A combination of elements that summarise a business or organisation, which can be recognised within the market	The order that tasks and activities are completed in, including which activities must be finished before other can begin and which can be completed at the same time as each other.	Dots per inch (where a print product typically needs 300 and a web graphic 72). / Pixels per inch (technically the correct way to state the resolution of a digital graphic but otherwise the same as DPI).	The System that allows the user to interact with the product.
Gantt Chart	**Primary / Secondary Source**	**Intellectual Property**	**Ambient (Diegetic) / Non-Diegetic**	**Export**
A type of horizontal bar chart used to plan a project schedule (what needs to be done and when). It is a good way to monitor whether a project is within its deadlines, what work has been completed and what is still to be done.	Those from which you obtain information 'first-hand' from an original source and are typically more reliable. / Those where the information is obtained 'second-hand' or where somebody else has already put their own interpretation on the original information. The accuracy of information might need to be checked when using secondary sources.	Something unique that is created or developed in a person's mind, which can be an idea, story, game, artistic work, symbol or invention. This can be protected for the creative person's own benefit, through copyright, trademarks or patents.	Sounds that are part of the action and heard by the characters in a scene. i.e. dialogue, ambient noise. / Sound that is outside the action captured on film and is not heard by the characters in the scene, i.e. background music, voice over, narration.	The process of changing the image properties and saving a file for use by the client in a suitable file format. This should be a format that is not specific to your image editing software. Examples would be JPG, PNG or PDF.

Command word in the question	What it means you should do
Identify	Your answer might select the relevant part or state what it is.
Explain	Your answer must include reasons why, so aim to include the word 'because ...'.
Describe	Your answer must be detailed, using words to express an overall concept, idea or need so that it is clear for the reader/listener.
Discuss	Your answer must give both sides of the argument with some analysis and evaluation.
Outline	Your answer should state the key points with a brief description.

YEAR 10 – DELVING INTO DATA...

@whisto_maths

Collecting, representing and interpreting

What do I need to be able to do?

By the end of this unit you should be able to:

- Construct and interpret frequency tables and polygon, two-way tables, line, bar, & pie charts
- Find and interpret averages from a list and a table
- Construct and interpret time series graphs, stem and leaf diagrams and scatter graphs

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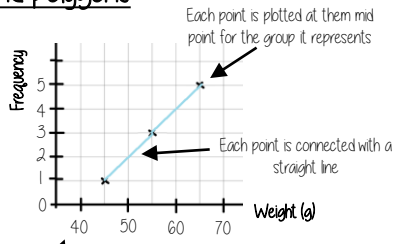
Population: the whole group that is being studied
Sample: a selection taken from the population that will let you find out information about the larger group
Representative: a sample group that accurately represents the population
Random sample: a group completely chosen by change. No predictability to who it will include.
Bias: a built-in error that makes all values wrong by a certain amount
Primary data: data collected from an original source for a purpose.
Secondary data: data taken from an external location. Not collected directly.
Outlier: a value that stands apart from the data set

Frequency tables and polygons

x Weight(g)	Frequency
$40 < x \leq 50$	1
$50 < x \leq 60$	3
$60 < x \leq 70$	5

We do not know from grouped data where each value is placed so have to use an estimate for calculations

MID POINTS
Mid-points are used as estimated values for grouped data. The middle of each group



Mid-point
Start point + End point
2

Two way tables R

60 people visited the zoo one Saturday morning. 26 of them were adults. 13 of the adult's favourite animal was an elephant. 24 of the children's favourite animal was an elephant.

Extract information to input to the two-way table

Subgroups each have their own heading

	Adult	Child	Total
Elephant	13	24	37
Other	13	10	23
Total	26	34	60

Needs subgroup totals

Overall total

Draw and interpret Pie Charts R

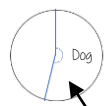
Type of pet	Dog	Cat	Hamster
Frequency	32	25	3

There were 60 people asked in this survey (Total frequency)

$\frac{32}{60}$ "32 out of 60 people had a dog"

This fraction of the 360 degrees represents dogs

$\frac{32}{60} \times 360 = 192°$



Use a protractor to draw. This is 192°

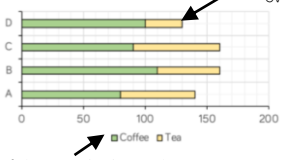
Multiple method
60 goes into 360 – 6 times.
Each frequency can be multiplied by 6 to find the degrees (proportion of 360)

Comparing Pie Charts:
You NEED the overall frequency to make any comparisons

Bar and line charts

Compare the bars green compared to yellow. The size of each bar is the frequency. Overall total easily comparable

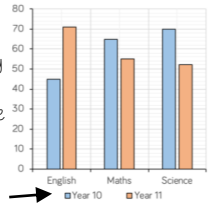
Composite bar charts



Categories clearly indicated

Dual bar charts

Bars are compared side by side
Easier to compare subgroups



Categories clearly indicated

Averages from a table R

Non-grouped data

Number of Siblings	0	1	2
Frequency	6	8	6
Subtotal	0	8	12

Overall Frequency: 20

Total number of siblings: 20

The data in a list: 0,0,0,0,0,0,1,1,1,1,1,1,1,1,2,2,2,2,2,2

Mean: $\frac{\text{total number of siblings}}{\text{Total frequency}} = 1$

Grouped data

x Weight(g)	Frequency
$40 < x \leq 50$	1
$50 < x \leq 60$	3
$60 < x \leq 70$	5

Mid Point	MP x Freq
45	45
65	195
65	325

Overall Frequency: 9
Overall Total : 565

Mean: 62.8g

The data in a list: 45, 55, 55, 55, 65, 65, 65, 65, 65

Averages from lists R

The Mean

A measure of average to find the central tendency... a typical value that represents the data

24, 8, 4, 11, 8,

Find the sum of the data (add the values)

55

Divide the overall total by how many pieces of data you have

$55 \div 5$

Mean = 11

The Mode (The modal value)

This is the number OR the item that occurs the most (it does not have to be numerical)

24, 8, 4, 11, 8,

This can still be easier if it the data is ordered first

Mode = 8

The Median

The value in the center (in the middle) of the data

24, 8, 4, 11, 8,

Put the data in order: 4, 8, 8, 11, 24

Find the value in the middle: 4, 8, 8, 11, 24

Median = 8

NOTE: If there is no single middle value find the mean of the two numbers left

For Grouped Data

The modal group – which group has the highest frequency

YEAR 10 – DELVING INTO DATA...

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Stem and leaf

A way to represent data and use to find averages

This stem and leaf diagram shows the age of people in a line at the supermarket.

0	7 9
1	4 5 6 8 8
2	1 3
3	0

Key: 1|4 Means 14 years old

Stem and leaf diagrams:
Must include a key to explain what it represents
The information in the diagram should be ordered

Back to back stem and leaf diagrams

Girls		Boys
5	14	
7, 5, 5, 5, 4	15	3, 8, 9
8, 4, 2, 1, 0	16	2, 5, 7, 7, 7, 8, 8, 9
9, 8, 7, 6, 6, 4, 2, 1, 1, 0, 0	17	0, 2, 3, 6, 6, 7, 7
	18	0, 1, 4, 5

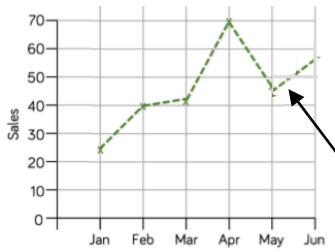
15 | 3,
Means 153 cm tall

Back to back stem and leaf diagrams
Allow comparisons of similar groups
Allow representations of two sets of data

Time-Series

R

This time-series graph shows the total number of car sales in £1000 over time



Look for general trends in the data. Some data shows a clear increase or a clear decrease over time.

Readings in-between points are estimates (on the dotted lines). You can use them to make assumptions.

Comparing distributions

Comparisons should include a statement of average and central tendency, as well as a statement about spread and consistency.

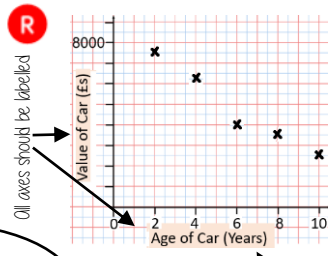
Mean, mode, median – allows for a comparison about more or less average
Range – allows for a comparison about reliability and consistency of data

Draw and interpret a scatter graph

R

Age of Car (Years)	2	4	6	8	10
Value of Car (£s)	7500	6250	4000	3500	2500

- This data may not be given in size order
- The data forms information pairs for the scatter graph
- Not all data has a relationship



All axes should be labelled

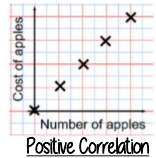
The axis should fit all the values on and be equally spread out

"This scatter graph show as the age of a car increases the value decreases"

The link between the data can be explained verbally

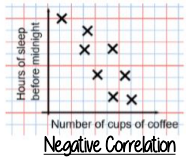
Linear Correlation

R



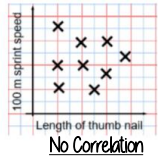
Positive Correlation

As one variable increases so does the other variable



Negative Correlation

As one variable increases the other variable decreases



No Correlation

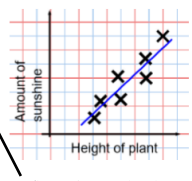
There is no relationship between the two variables

The line of best fit

R

The Line of best fit is used to make estimates about the information in your scatter graph

Things to know:
- The line of best fit **DOES NOT** need to go through the origin (The point the axes cross)
- There should be approximately the same number of points above and below the line (It may not go through any points)
- The line extends across the whole graph



It is only an estimate because the line is designed to be an average representation of the data

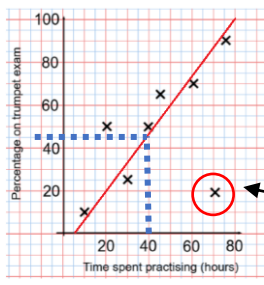
It is always a **straight line.**

Using a line of best fit

R

Interpolation is using the line of best fit to estimate values inside our data point.

e.g. 40 hours revising predicts a percentage of 45.



Extrapolation is where we use our line of best fit to predict information outside of our data.
This is not always useful – in this example you cannot score more that 100%. So revising for longer can not be estimated

This point is an "**outlier**"
It is an outlier because it doesn't fit this model and stands apart from the data

PSHE- Knowledge organiser- Y10- Term 2

Living in the wider world	Citizenship: extremism	• The benefits of living in a diverse society are: it promotes tolerance and understanding between different cultures; it enriches our community through shared experiences with different people; it attracts more money to our economy through the growth of different businesses; it relieves skills shortages • Extremism: holding extreme political, social or religious views. • Violent extremism: acts of violence that are justified by, or associated with, an extreme religious, social or political ideology. • Radicalisation: a process causing someone to support radical political, social or religious beliefs, often leading to association with terrorist organisations.
RSE	Life to the full	• Sex bonds two people together and it can lead to pregnancy. • Dignity: the state or quality of being worthy of honour or respect. • Modesty: the quality or state of being unassuming in the estimation of one's abilities. • Belief: something that you believe or accept as true. • Values: the things that you believe are important in the way you live and work. They (should) determine your priorities, and, deep down, they're probably the measures you use to tell if your life is turning out the way you want it to. • Attitude: a mental position with regard to a fact or state. • Declaration of the rights of a child: legally-binding international agreement setting out the civil, political, economic, social and cultural rights of every child, regardless of their race, religion or abilities. • Parental responsibility: the legal rights and duties relating to your children's upbringing. • Abortion: a procedure to end a pregnancy. The pregnancy is ended either by taking medicines or having a surgical procedure. • Healthy relationship: involve honesty, trust, respect and open communication between partners and they take effort and compromise from both people. There is no imbalance of power. Partners respect each other's independence, can make their own decisions without fear of retribution or retaliation, and share decisions. • Unhealthy relationship: Some of the common characteristics often seen in unhealthy relationships include controlling behaviours, mistrust, disrespect, and poor communication. • Abuse: when someone causes us harm or distress; the four main categories are physical abuse, emotional abuse, sexual abuse and neglect.

Marriage

Catholics believe: marriage was created by God to build and preserve **society**; it is a **sacrament**; it is the right setting for **sexual relationships** and starting a **family**.

The purpose of marriage is: to live in a **life-long** and **faithful** relationship where a couple can support each other; to enjoy a **sexual relationship** as God intended; **to have children** (procreation) and bring them up as members of the Church

Catholics believe marriage: can only be between one man and one woman (**monogamy**); **joins a couple together for life**; is not for everyone - some choose a **celibate** life.

Many non-religious people believe that couples can choose to live together (**cohabit**) or get married but should be faithful to their partner. A legal marriage can provide stability and legal protection for children. Many people to choose to have a sexual relationship and cohabit before they get married. Today marriage can be between same-sex couples.

The Catholic Church teaches that couples should wait until they are married before having sex or living together. Research suggests many Catholics today would allow pre-marital sex and accept cohabitation.

Sexual relationships

The Catholic Church believes that sex in marriage is unitive (a source of joy and pleasure, bringing the couple closer together) and procreative (open to the possibility of having children).

The Catholic Church teaches that sex-outside marriage is wrong because: the **Bible** says it is sinful; the **Catechism** says it is wrong; adultery breaks the **wedding vows**; adultery is prohibited in the **10 Commandments** and condemned by **Jesus**.

The Catholic Church says that **being homosexual is not a sin** but homosexual sex is a sin. The Church does not accept same-sex marriage or civil partnerships. This is because: the **Bible** condemns homosexual activity; sex should be open to the possibility of **new life**; the **Catechism** teaches marriage is for a man and a woman.

The Church teaches that **it is sinful to harass or attack homosexuals** because: people cannot help their sexual orientation; the Bible teaches that all people should be respected because we are all made in God's image and likeness.

Most non-religious people **accept consensual sexual relationships** and see **no problem with same-sex relationships** if it does not affect other people's human rights.

Families

The Catholic Church teaches that parents have a duty to: provide for their **children's needs**; teach them **moral values**; bring them up in the **Catholic faith**.

Family life is important because: it is one of the purposes of marriage; the family was **created by God** as the basic unit of society; it is where children learn right from wrong; it is **where faith is introduced and nurtured**.

The main family types today are: **nuclear** families; **single-parent** families; **same-sex** families; **extended** families; **blended** families.

The Catholic Church: gives its blessing to nuclear and extended families as living within the law of the Church; recognises that single-parent families need support and are not sinful; disapproves of same-sex and blended families as they involve same-sex marriage and re-marriage following divorce; believes parents should be married and the Church should make it easier for cohabiting couples to marry.

Most **non-religious people** believe that the family is an important part of society for bringing up children in a stable setting, providing for their needs, keeping them safe, passing on moral values and teaching them to be responsible citizens.

Support for the family in the local parish

The Catholic parish supports family life by: providing Catholic education (**schools**) where faith, worship and moral teaching is part of daily life; **being family-friendly**, welcoming children and helping children share in worship through Children's liturgies; help parents prepare their children to receive the sacraments by **running First Communion and Confirmation classes**; the priest **teaching about the importance of family life and marriage**, offering **marriage guidance and support** when it is needed; providing contact with charities and groups who can support family life e.g. Catholic Marriage Care; run events which **bring families together** to help them feel part of the parish family and to offer support to one another.

Parishes help families because: they have a duty to **support baptised children**; to **support parents** in bringing their children up in the Catholic faith; by doing so they are helping **build a better society for all**; in this way **it helps the Church to grow** from generation to generation.

Parish support is important to families because: bringing up children in the Catholic faith involves taking them to Church regularly; teaching them about the faith requires knowledge and expertise parents may not have; taking part in the sacraments is essential; praying and supporting one another gives families strength.

GCSE Religious Studies Unit 3 Philosophy and Ethics 3.2 Relationships and Families in the 21st Century (Key sources of wisdom & authority are included on the back of the sheet)

Contraception

The **Catholic Church** teaches that: sex should be **unitive** and **procreative**; Catholics may use **natural family planning (NFP)** as a way to regulate the size of their family.

Catholics believe this because: the encyclical '**Humanae Vitae'** (Pope Paul VI) **condemned artificial contraception** and declaring NFP acceptable; NFP does not separate the unitive and procreative purpose of sex; artificial methods do, which is not God's intention; some contraceptives cause an early abortion; artificial contraception can lead to promiscuity.

NFP uses the natural pattern of a woman's fertility cycle to help a couple decide when to have sex.

Other Christians accept artificial contraception within marriage because: it can improve **women's health**; it allows **couples to grow closer through sex**; the **Bible** does not forbid it; **Church leaders** have declared it acceptable.

Non-religious people accept artificial contraception because: it **reduces abortions**, it reduces the spread of **STIs/HIV**; it improves the **health** of women and children.

Divorce and remarriage

The **Catholic Church does not allow divorce** because: **Jesus** taught it was wrong and that marriage is for life; the couple have made a **covenant** with God through their marriage which cannot be broken; the **Catechism** teaches that marriage cannot be dissolved **.**

The **Catholic Church** can grant an **annulment** which recognises that a couple were never truly married. These couples are then free to marry. This could be granted if: the marriage was **never consummated**; it was **never a truly Christian marriage**; a partner **hid important information** e.g. they already had children.

Catholics can get a civil divorce but cannot get remarried.

Most **non-Catholic Churches allow divorce** because: Jesus allowed it for **adultery**; people should be allowed **forgiveness and given a fresh start**; it is **better to divorce than live in hatred**. These Churches **allow remarriage**.

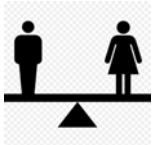
Atheists and Humanists allow divorce and believe: people should be **treated justly**; **partners/children should be cared for**; partners should be **allowed to remarry**; they believe people should **act in the best interests of all people involved**.

Equality of men and women in the family

The **Catholic Church** teaches that: **men and women have equal status in God's eyes**; men and women have **different qualities** e.g. women have the ability to bring new life into the world and have a caring capacity giving them a crucial role in family life; women should have equal roles in work and politics; women must discern the balance of work, community and family.

Many **Evangelical Protestants** believe that **women: have a duty to look after children and the home**; should **not speak in Church**; should **submit to their husband's authority**. These beliefs are based on: St Paul's teaching that 'women should not speak in Church'; the creation of Eve after Adam as his 'helpmate' (Genesis 2.); Jesus choosing only men to be Apostles.

Liberal Protestants believe: **men and women are equal**; they should have **equal roles**. These beliefs are based on: St Paul's teaching that 'in Christ there is neither male or female'; the creation of both Adam and Eve in God's 'image and likeness' (Genesis 1); Jesus treated women as equals.



Atheists believe in equality. **Humanists believe in equal rights for men and women** (many suffragettes and feminists were humanists).

Gender prejudice and discrimination

The **Catholic Church** opposes gender prejudice and discrimination because: **God made men and women in his image and likeness**; St Paul taught we are **all equal in Christ**; the **Catechism** teaches we should have equal rights in life and society.

Following pressure from women, **Vatican II** allowed: women to teach in theological colleges, to be extraordinary ministers of communion; to read at Mass; to take some funerals

Evangelical Protestants teach that: **men and women have separate roles**; women should **not speak in Church**; must **submit to their husbands** because this is the **Bible's teaching**.

Liberal Protestants oppose gender discrimination and **allow women to be ministers, priests and bishops**.

Most **atheists and Humanists believe gender discrimination is wrong** and that Churches that refuse to ordain women or have women leaders should be made illegal.

The **Catholic Church** is accused of discrimination for not ordaining women. The Church teaches: the **priest represents Jesus** who was a man; **men and women are equal but have their own unique gender; Jesus chose 12 men to be his apostles**.

		SOURCES OF WISDOM AND AUTHORITY	
	Topic	**Quote/Reference**	**Source**
1	**Marriage**	Sex should happen within marriage.	Catechism
2	**Sexual Relationships**	Sex should be both unitive and procreative.	Catechism
3	**Families**	Catholics should not live in same-sex parent families, blended families or families headed by cohabiting parents.	Pope John Paul II
4	**Support for families in the parish**	Jesus said, ‘let the children come to me.”	Mark’s Gospel
5	**Contraception**	Only natural method’s of contraception are acceptable.	Humanae Vitae (Pope Paul VI)
6	**Divorce and remarriage**	A marriage between baptised persons can never be dissolved.	Catechism
7	**Equality of men and women**	God made mankind his own image and likeness, male and female he created them.	Genesis 1
8	**Gender prejudice and discrimination**	Inequalities between men and women are sinful; Christians should promote equality.	Catechism

GCSE Philosophy and Ethics Knowledge Organiser **Unit 1: Relationships and Families**

Relationships and Marriage		✓
Commitment	To dedicate one's self to another. Most Christians believe that marriage is a very important statement of ***life-long*** commitment between a man and a woman. In the Bible it talks of men and women ***'becoming one flesh'*** and '***two becoming one.'***	
Vows	During the marriage ceremony, the husband and wife will make promises to each other	
Fidelity	This means '***faithfulness***' and is very important to Christians. This belief is supported by the 7th Commandment ***"Do not commit adultery".***	
Adultery	Adultery happens when a married person enters a sexual relationship with someone who is not their husband/wife. Children growing up in a home where the parents' faithfulness to each other is seen as so important are likely to feel more secure.	
Cohabitation	When a couple live together in a relationship but without being married. Some Christians (e.g. C of E) may accept that a couple can live together in a meaningful relationship and see '***co-habitation***' as a step towards marriage.	
Pre-marital sex	Many Christians believe that the only place a sexual relationship should take place is within a marriage and, therefore, they believe that sex before marriage is wrong. The R.C. denomination believes that the only place that sex should take place is within a marriage. R.C. Christians believe that sexual relationships between a man and wife serve two purposes: (i) To communicate committed love between a man and wife. (ii) To create the possibility for new life to be created.	
Civil Partnership/Same Sex Marriage	In December **2005** UK law was changed to make it legal for a man to start a civil partnership with another man, or for a woman to start a civil partnership with another woman. The C. of E. and the R.C. Church do not perform civil partnerships or same sex marriages, as they believe that marriage is the only place for a true relationship to take place, in which children should be born. In **2014** the law in England and Wales was changed so that people of the same sex could be legally recognised as married in the eyes of the law. Some religious denominations in the UK, like the Quakers, will perform ceremonies to allow a same sex couple to be legally married. In **2015** the American Episcopal Church (part of the C. of E. overseas) voted to change its rules so that it now carries out same sex marriage ceremonies.	

Relationships and Marriage- continued		✓
Celibacy	A person who chooses to live an unmarried life, without sexual relationships, is known as **celibate**. Some Christians choose to practise celibacy as a lifestyle so that they can fully focus their lives on serving God. In the Bible the apostle Paul encouraged believers to be celibate, but also said that if this was too difficult then they should be encouraged to get married.	
Contraception	This is sometimes called 'birth control' and it is practised by a couple who want to be in control of how many children they have. In general, there are two types: ***Artificial contraception***: e.g. the use of a device such as a condom, the choice to have a vasectomy (a surgical procedure), the taking of a contraceptive pill etc. ***Natural contraception***: e.g. when the couple plan to have sex during the woman's monthly cycle when she is least fertile. Because the R.C. church teaches that sexual relationships between a man and wife should always include the possibility of procreation, the only method of contraception they will allow is natural contraception (sometimes called 'the natural method').	
Abstinence	Some Christians choose to abstain from all sexual relationships until they are married. Some organisations such as *Teen-Aid* promote the practice of abstinence through campaigns. Often they will promote the idea of love and life-long commitment of marriage between a man and a woman, and they will also point out the health benefits of choosing abstinence. Other organisations who promote abstinence are *Love Waits*, and, *The Silver Ring Thing*.	
Divorce	Divorce is the ***legal ending of a marriage***, and over the last few decades there has been an increase in the number of marriages that end in divorce. When a Christian marriage experiences difficulty, however, most denominations will offer some sort of counselling and support to help the couple get back on track. The church may also recommend a secular counselling service such as ***Relate***. The R.C. Church believes that marriage is for life and that it cannot be ended, and the couple cannot be separated. The Roman Catholic Church will also refuse to re-marry divorcees.	
Annulment	If a couple who were married as R.C.s can prove that the marriage was never real in the first place (e.g never consented to (forced) or never consummated, then the church may allow the marriage to be **annulled**.	

Raising Christian Children		✓
Procreation	The continuation of the human race. In the Bible, Christians are told to '***be fruitful and multiply***' and so having children is seen as a direct order from God. They are also told to ***'raise their children in the way of the Lord'*** and see having children as a way of extending the Christian family.	
Discipline	Teaching children to obey and follow rules. Disciplining children so that they grow up into responsible individuals, who have their own faith in God, is seen as an important part of raising children within the Christian family. The Bible teaches that children should '***honour their parents***' and that parents should respect their children.	
Infant Baptism	The R.C. Church and the C. of E. both practise **infant baptism** and, therefore R.C. and C. of E. babies are baptised/christened, usually within their first year.	
God Parents	During an infant baptism service, the child's parents will have appointed godparents who will make public promises to bring the child up in the Christian faith. They will also commit to pray for the child as he or she grows up.	
Confirmation	When a C. of E. or R.C. Christian develops his or her own faith, he or she may want to make a public commitment of faith. In many other denominations such a public demonstration of faith is achieved by an ***adult baptism*** service. However, because C. of E. and R.C. Christians have already had a baptism service (when they were infants) they may choose instead to **get confirmed** in a special confirmation service.	
Nurturing	Care for and protect children whilst they are growing. Christians believe that they should bring their children up with a strong understanding of the Christian faith and Christian parents will try to *practise* what they *believe* at all times. For example, Christian parents may pray before meals (this is called "saying grace"), and they will take their children with them to church on Sundays. Also, if one parent makes a mistake towards the other (in a disagreement for example) then they will also demonstrate their '**repentance**' by saying sorry. On such an occasion, the previously offended person will also demonstrate forgiveness. On a more practical level, the family may choose to demonstrate their Christian faith by supporting a charity (e.g. Tear Fund or Christian Aid), and the children may even be encouraged to give a percentage of their pocket money to help others too.	

Equality-Men and Women		✓
Complementarianism	The R.C. Church believes in **complementarianism,** a belief that the **different** roles that God has given to men and women, mean that they can complement (help) each other as **equally** loved children of God. R.C. Christians believe that men and women are equally precious to God **but** have different roles. God made women to give birth, but this does not make them more or less important than men, just different. This belief means that they do not allow women to be leaders in the R.C. Church and may expect a more traditional role from their women, as mothers and as helpers to their husbands.	
Egalitarianism	The idea that God made men and women in His image and therefore they are seen as ***equal*** in authority and responsibilities. For centuries the C. of E. did not recognise women as leaders in the Anglican church. However, after a vote of the **Synod** in 1990 women were allowed to be ordained as vicars.	

C4 Chemical Changes

Displacement reactions and metal extraction

potassium	most reactive	K
sodium		Na
calcium		Ca
magnesium		Mg
aluminium		Al
carbon		C
zinc		Zn
iron		Fe
tin		Sn
lead		Pb
hydrogen		H
copper		Cu
silver		Ag
gold		Au
platinum	least reactive	Pt

Reactivity depends on tendency to form metal ion

A and C are Cations (Positive Ions)
B and D are Anions (Negative Ions)

Double Displacement Reaction

HT: OILRIG
Oxidation **I**s **L**oss of electrons
Reduction **I**s **G**ain of electrons

Metal + Oxygen → Metal Oxide

Metal + Water → Metal Hydroxide + hydrogen

Metal + acid → Metal salt + Hydrogen

Reactions of acids

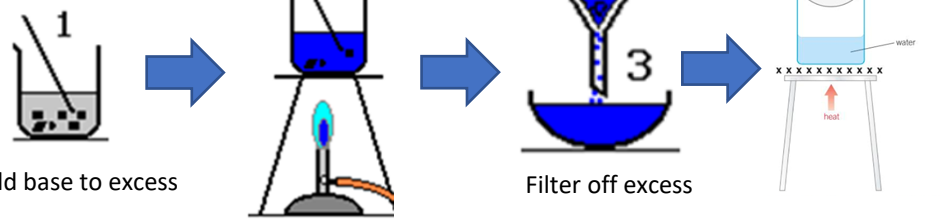
Acid+metal → salt + hydrogen
Acid + alkali → salt + water
Acid + insoluble base → salt + water
Acid + carbonate → salt + water + carbon dioxide

HT: OILRIG
e.g. $2HCl + Mg \rightarrow MgCl_2 + H_2$
Magnesium is oxidised
$Mg \rightarrow Mg^{2+} + 2e^-$

Hydrochloric Acid → Chlorides
HCl
Nitric Acid → Nitrates
HNO_3
Sulphuric Acid → Sulphates
H_2SO_4

RP: Preparation of a dry sample of a soluble salt

Choose correct acid

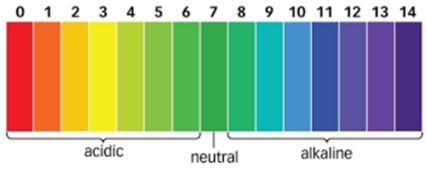


Add base to excess

Filter off excess

Evaporate off water

Neutralisation

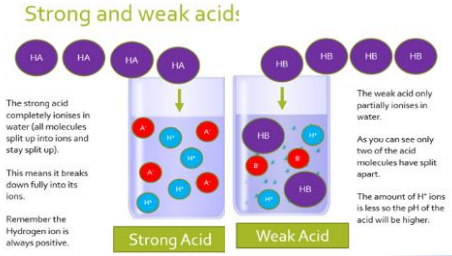


Acids produce H^+ ions
Alkalis produce OH^- ions

$H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$

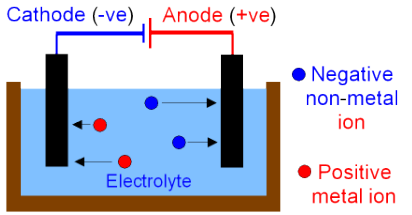
HT: Strong and Weak acids

Concentration of hydrogen ions in mol/dm³	pH
0.10	1.0
0.010	2.0
0.0010	3.0
0.00010	4.0



Electrolysis

..of molten:

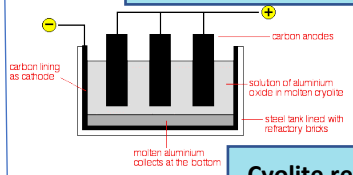


Higher:
At the cathode
$Pb^{2+} + 2e^- \rightarrow Pb$

Higher:
At the anode
$2Br^- \rightarrow Br_2 + 2e^-$
or
$2Br^- - 2e^- \rightarrow Br_2$

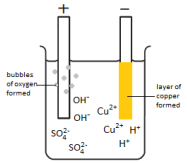
..to extract aluminium:

Oxygen goes to anode → CO_2 (needs replacing)



Cyolite reduces the melting point

..of solutions:

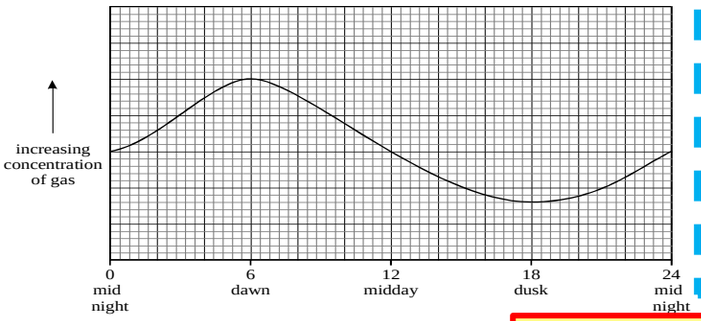


At the anode:
Halide (Gp7)
Oxygen

At the cathode:
Least reactive

Photosynthesis

Carbon dioxide + Water → Glucose + Oxygen



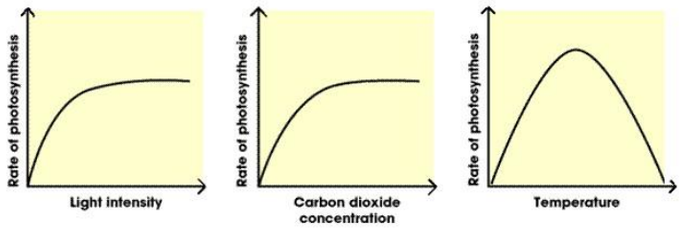
Plants produce glucose by a process called photosynthesis. The plant uses glucose to grow. The graph shows the change in concentration of carbon dioxide in a glasshouse full of plants over 24 hours.

Describe what the plant needs for photosynthesis, where these things come from and why the concentration of carbon dioxide changes over 24 hours.

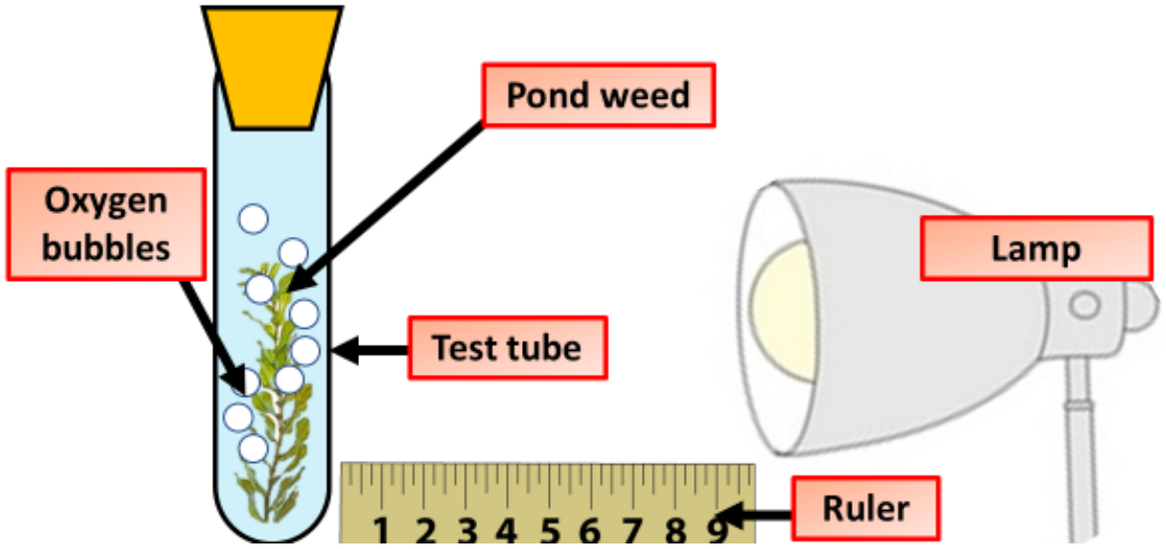
Describe what the plant needs for photosynthesis, where these things come from and why the concentration of carbon dioxide changes over 24 hours.

There are three main factors light. intensity carbon dioxide concentration and also temperature these factors are called limiting factors light is essential for photosynthesis as it. provides the energy to split the water and therefore enable carbon dioxide and water to react no light. no photosynthesis increasing

Limiting Factors



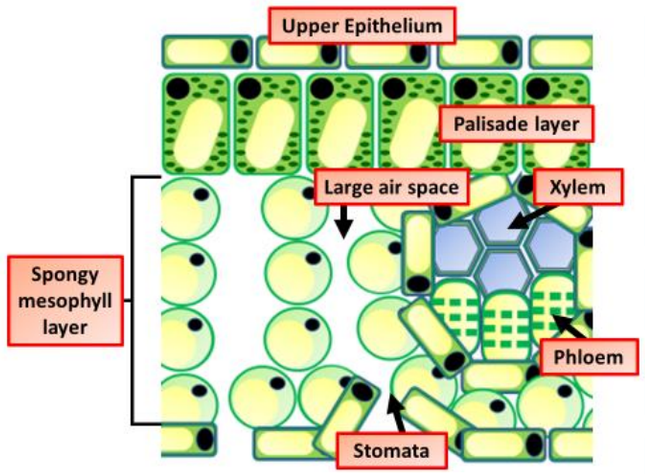
Investigating Photosynthesis



Method

1. Set up a boiling tube containing 45 cm^3 of sodium hydrogencarbonate solution (1%). Allow the tube to stand for a few minutes and shake to disperse any air bubbles that might form.
2. Cut a piece of the pondweed, *Cabomba*. The pondweed should be 8 cm long.
3. Use forcepts to place the pondweed in the boiling tube carefully. Make sure that you don't damage the pondweed, or cause the liquid to overflow.
4. Position the boiling tube so that the pondweed is 10 cm away from the light source. Allow the boiling tube to stand for five minutes. Count the number of bubbles emerging from the cut end of the stems in one minute. Repeat the count five times and record your results.
5. Calculate the average number of bubbles produced per minute. Repeat the experiment at different distances away from the light source.

Leaf structure



Waxy cuticle: See through layer which lets light through and stops the leaf from becoming water logged.

Palisade layer: Cells have lots of chloroplasts so can carry out lots of photosynthesis.

Spongy mesosphere layer: Rounded cells which, creates large air spaces within the leaf.

Guard cells: Open and close the air holes on the underside of the leaf so control the rate of transpiration.

Air spaces: Enable movement of carbon-dioxide into the leaf and oxygen out.

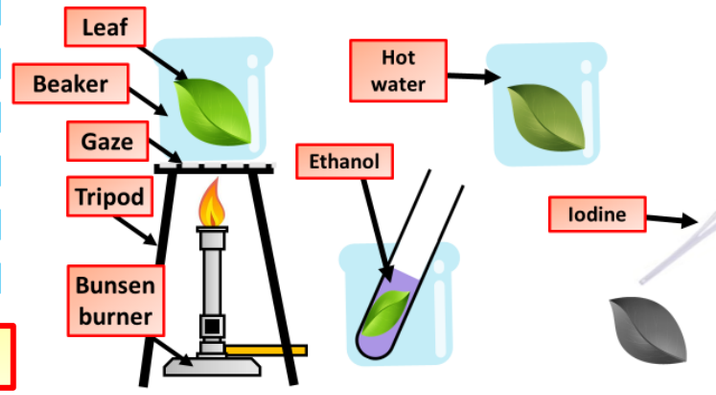
Phloem: Carries away glucose

Xylem: Gives a good supply of water to the leaf so increases the rate of photosynthesis

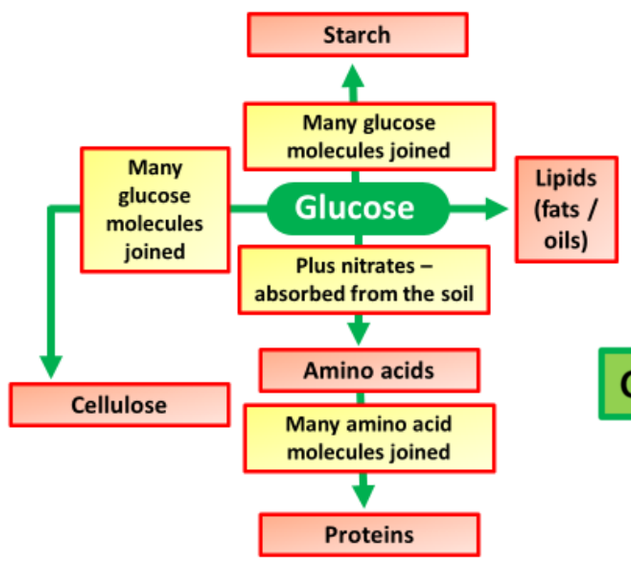
Method

1. The leaf of a variegated Pelargonium is dropped in boiling water to kill and preserve it
2. The leaf is left for 10 minutes in hot ethanol in a boiling tube. This removes the chlorophyll
3. The leaf is dipped in boiling water to soften it
4. The leaf is spread out in a Petri dish and covered with iodine solution
5. The areas that had the chlorophyll stain blue-black. The areas that had no chlorophyll remain pale

Testing leaves for starch



Uses of Glucose



Metabolism is the term used for all the chemical reactions that go on inside an organism's body. These reactions build up molecules, and break them down. They are controlled by enzymes.

Aerobic Respiration

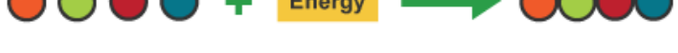
Glucose + Oxygen → Carbon dioxide + Water

Anaerobic Respiration

Glucose → Lactic Acid + Energy

Metabolism

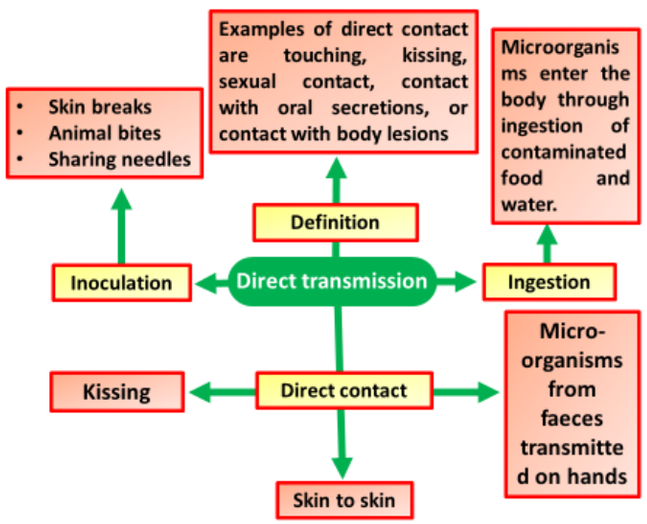
Anabolic



Catabolic

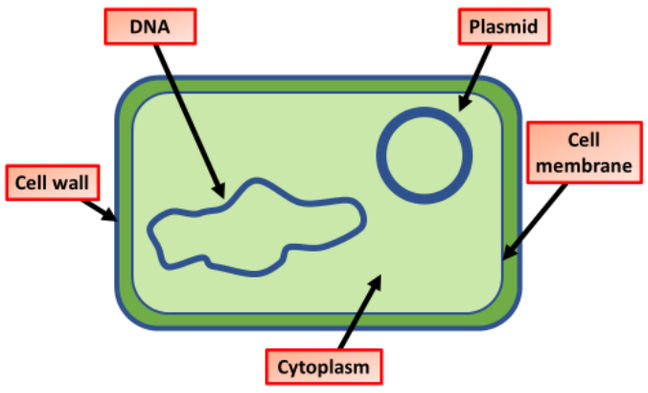
Communicable diseases

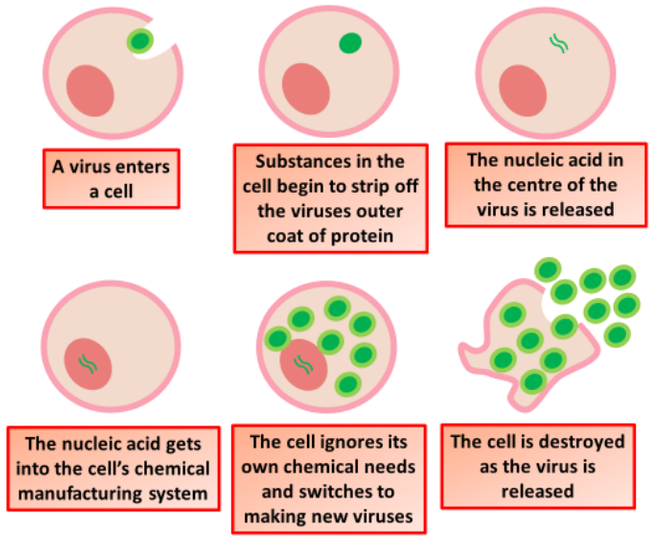
All types of pathogen have a simple life cycle. They infect a host, reproduce themselves or replicate if it is a virus, spread from their host and infect other organisms. They also all have structural adaptations that make them successful at completing their life cycles, which enable them to cause further disease.



Pathogens

A pathogen is an organism that causes a disease..
Bacteria are all single-celled. The cells are all prokaryotic . This means they do not have a nucleus or any other structures which are surrounded by membranes. Bacteria can have one or more flagella
A virus is a biological agent that reproduces inside the cells of living hosts. When infected by a virus, a host cell is forced to produce thousands of identical copies of the original virus at an extraordinary rate
Pathogenic fungi have an enormous impact on human health. Most people are aware of some of the superficial infections caused by fungi. These include skin and nail infections such as athlete's foot and ringworm, predominantly caused by dermatophytes





Life Cycle of a Virus

The life cycle of a virus is the same as other pathogens. They can often survive outside a host for long periods of time. When they have infected a suitable host cell or cells, they replicate themselves within the cell thousands of times. They do not divide and reproduce, but replicate their DNA and protein coats. These are then assembled into new virus particles. The host cell or cells then burst and other nearby cells can be infected with the virus.

Gonorrhoea

Gonorrhoea is a sexually transmitted disease (STD) caused by a bacterium. It is a common infection, especially amongst people aged 15-24.
Gonorrhoea causes a burning pain when urinating and often forms a thick yellow or green discharge from an infected person's penis or vagina. If untreated it can result in infertility. To prevent infection, people can abstain from having anal, oral or vaginal sex or use a barrier-type of contraception like a condom. Gonorrhoea is treated by antibiotics, though some scientists believe that these antibiotics may one day stop working.

Salmonella

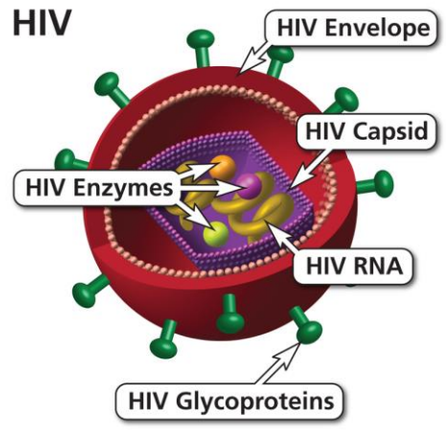
Salmonella is a genus of bacteria that causes food poisoning. This often means abdominal cramps, vomiting and diarrhoea. It is often found in unhygienic kitchens, undercooked foods such as meat, eggs and poultry, or the same foods that have not been reheated properly. To prevent the spread of salmonella in the UK, all poultry are vaccinated against it. Cooking food thoroughly, after preparing it in hygienic conditions, is the best way to avoid illness.

Tobacco Mosaic Virus

The tobacco mosaic virus infects tobacco and lots of other closely related species, such as tomatoes and peppers. It is transmitted by contact between plants, either naturally or through the hands of farmers. It infects the chloroplasts of plant leaves and changes their colour from green to yellow or white in a mosaic pattern. It can also make leaves crinkle or curl up.
This reduces the plant's ability to photosynthesise and grow properly, which reduces the crop yield for farmers.

HIV & Aids

HIV stands for human immunodeficiency virus. This infection is transmitted by body fluids, often during unprotected sex, but also through cuts and injecting drugs using shared needles. Immediately after infection, people often suffer mild flu-like symptoms. These pass and for a period of time infected people might not know they are infected.
AIDS stands for acquired immune deficiency syndrome. Months or years after the infection of the HIV virus, it becomes active and starts to attack the patient's immune system. HIV at this point has become AIDS.



Measles

Measles is a very infectious viral disease that is often caught by young children. It is transmitted through the air in tiny droplets after an infected person sneezes. It causes a fever and skin rash. Many children in developed countries are given vaccines against measles, but sadly this is not the case throughout the world. Infection can cause more serious effects like infertility in adults who did not catch the disease as children.

Rose Black Spot

Rose black spot is caused by a fungus which infects roses. It infects leaves and causes black or purple spots on the leaves. The rest of the leaves often turn yellow and can drop off the plant. This reduces that plant's ability to photosynthesise and reduces growth. It can be transmitted in air or water, as well as through direct contact by gardeners. It is treatable using fungicides and by removing and destroying infected leaves.

Athletes Foot

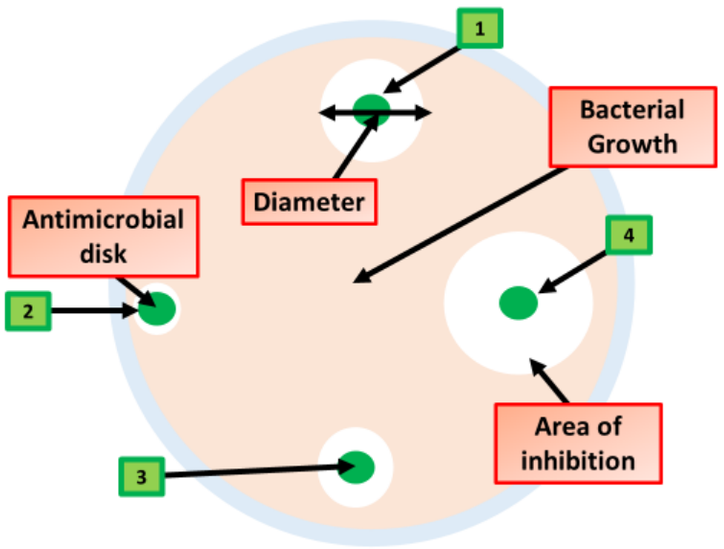
Athlete's foot is a rash caused by a fungus that is usually found between people's toes. It causes dry, red and flaky or white, wet and cracked skin. It is often found in communal areas like swimming pool changing rooms or gyms. It is transmitted by touching infected skin or surfaces that have been previous contaminated. It is treated by antifungal medication.

Semmelweis

Ignaz Semmelweis (1818-65) Ignaz Semmelweis was a Hungarian physician whose work demonstrated that hand-washing could drastically reduce the number of women dying after childbirth. This work took place in the 1840s, while he was Director of the maternity clinic at the Vienna General Hospital in Austria.

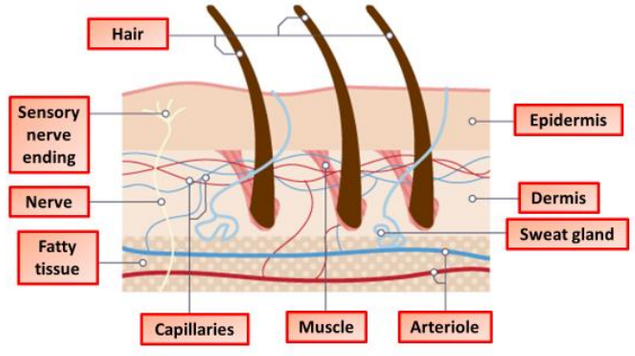
Investigating Pathogens

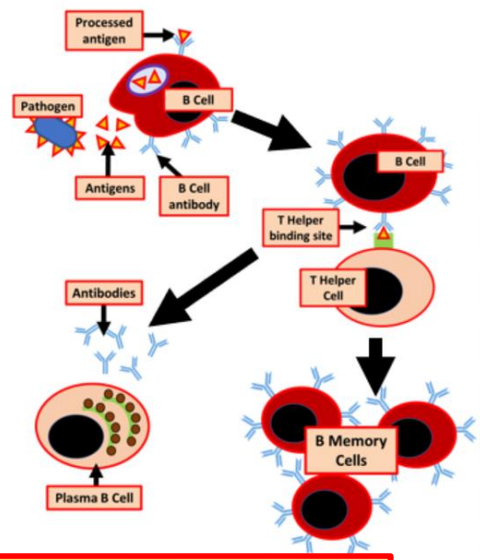
1. Glass Petri dishes and agar gel must be sterilised before use in an autoclave, or pre-sterilised plastic Petri dishes can be bought.
2. Pour the sterile agar plates and allow to set fully.
3. Sterilise the inoculating loop, by heating it in the Bunsen burner flame.
4. Dip the inoculation loop into the microorganism solution and make streaks on the surface of the agar plate.
5. Replace the lid as soon as possible, secure with tape. Label and invert the plate, and store upside down.
6. Incubate at a maximum temperature of 25°C in schools and colleges.



Malaria

The symptoms of malaria include a fever, sweats and chills, headaches, vomiting and diarrhoea. Of the 200 million people infected each year, up to half die from this disease. There is no vaccination for malaria. Infection can only be prevented by stopping individuals from being bitten. People sleep under mosquito nets and wear insect repellent to avoid bites. Antimalarial drugs are also taken, which treat the symptoms and can prevent infection.



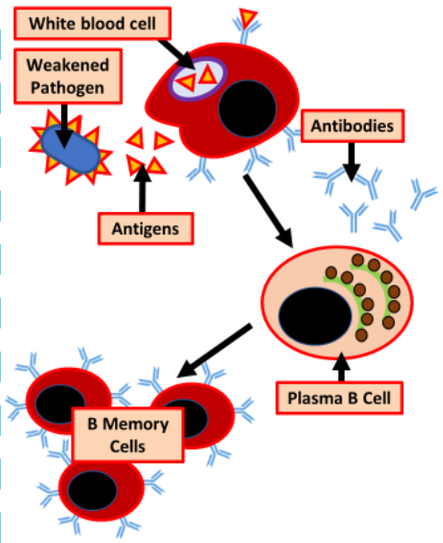


Immune Response

If pathogens pass the non-specific first line of defence they will cause an infection. However, the body has a second line of defence to stop or minimise this infection. This is called the immune system. As a part of this there are two types of white blood cell called phagocytes and lymphocytes.

Vaccination

Pathogens are microbes that cause diseases. Vaccines allow a dead or altered form of the disease causing pathogen to be introduced into the body, which contain a specific antigen. This causes the immune system, specifically the white blood cells, to produce complementary antibodies, which target and attach to the antigen. When a white blood cell engulfs and digests a pathogen it is called phagocytosis.



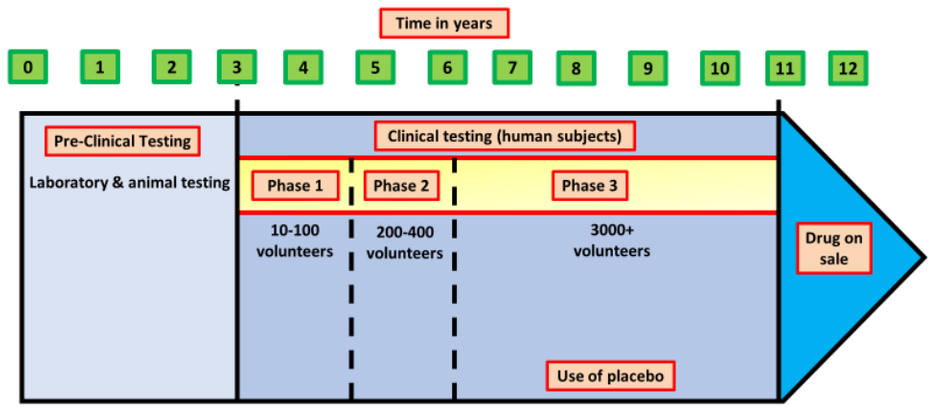
Antibiotics

Antibiotics are substances that slow down or stop the growth of bacteria. They are commonly prescribed medicines, examples include penicillin and amoxicillin. These can be taken to cure the disease by killing the pathogen, but only cure bacterial diseases and not viral ones.

Physical Barriers to Infection

The body is constantly defending against attacks from pathogens. The first line of defence against infection stops the pathogens from entering your body. These first lines are general defences, and are not specific to fight against certain types of pathogen. They are called non-specific, and they can be physical or chemical barriers.

Drug Development



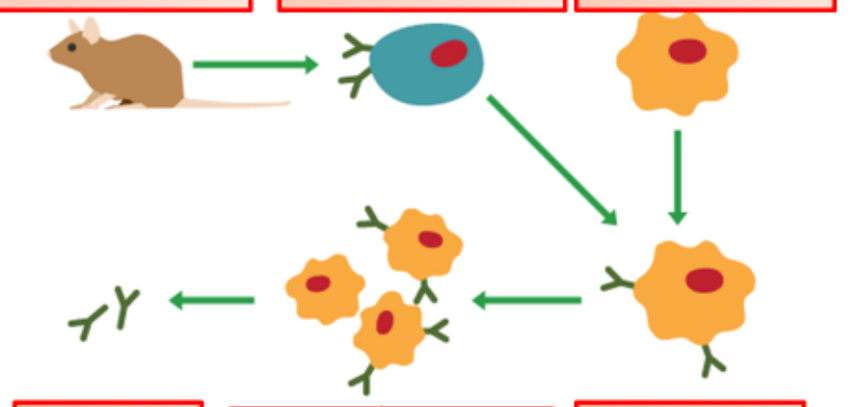
Monoclonal Antibodies

Antibodies bind to specific antigens on pathogens. This means that only one type of antibody will bind to a matching antigen. Scientists discovered that we could make antibodies to bind to antigens on other substances, and not just those on pathogens.
Once bound, the antigens - and the substances they are found on - are merged tightly together. This makes them easier to identify and deal with

A mouse is vaccinated to start the formation of antibodies

Spleen cells that form antibodies are collected from the mouse

These are fused with tumour cells called myeloma cells



Antibiotic Resistance

Bacteria can evolve quickly because they reproduce at a fast rate. Mutations in the DNA of bacteria can produce new characteristics. A random mutation might cause some bacteria to become resistant to certain antibiotics, such as penicillin. Antibiotics usually kill bacteria, but in this case the mutation means the bacteria cannot be destroyed by the antibiotic. This evolution of antibiotic resistance in bacteria is an example of natural selection leading to evolution.

C5 Energy Changes

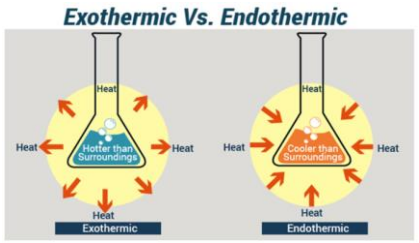
Exothermic vs Exothermic

Exothermic

In some reactions more energy comes OUT than goes in

The reactants have more energy than the products.

e.g. combustion, oxidation, neutralisation.



Endothermic

In some reactions more energy goes IN than comes out.

The products have more energy than the reactants.

e.g. thermal decomposition

Uses

Exothermic

Self heating cans, hand warmers

Chemicals react in an exothermic reaction and give OUT heat energy.

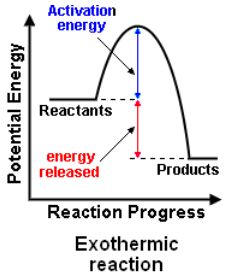
Endothermic

Cool packs for sports injuries

Chemicals react in an Endothermic reaction and take IN heat energy – therefore cooling the surroundings.

Reaction Profiles

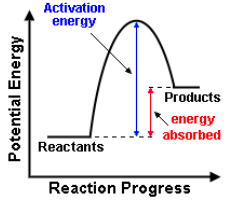
Exothermic



Exothermic reaction

Products at LOWER energy than reactants

Endothermic



Endothermic reaction

Products at HIGHER energy than reactants

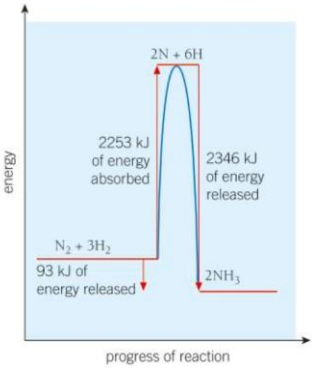
Activation Energy is the energy needed to start a reaction.

Bond energy Calculations (HT)

BINMIX
Bond Breaking Is eNdothermic
Bond Making Is eXothermic

Exothermic

More energy comes OUT making bonds



Endothermic

More energy goes IN breaking bonds

AQA GCSE Chemistry – Quantitative Chemistry
Knowledge Organiser

Conservation of Mass and Quantitative Interpretation of Chemical Equations	
State the law of Conservation of Mass	No atoms are lost or made during a chemical reaction so **mass of reactants = mass of products**
Describe how to calculate the Relative Formula Mass (M_r)	It is the sum of the **relative atomic masses** of the atoms in the numbers shown in the formula *e.g. M_r of $CaCO_3$ = (1 x 40) + (1 x 12) + (3 x 16) = 100*
Describe how the balanced chemical equation proves the Conservation of Mass law	Total relative formula mass of reactants = Total relative formula mass of products
Explain why the mass of a substance would appear to increase after a reaction	During the reaction **the substance will react with a gas** *e.g. Metal + Oxygen ⟶ Metal oxide*
Explain why the mass of a substance would appear to decrease after a reaction	During the reaction a **gas will be produced** and **escape into the atmosphere** *e.g. in thermal decomposition of metal carbonates*
Moles (Higher only)	
State what a mole is	The mole is a chemical quantity. **One mole** is defined as **6.022×10^{23} particles.**
State the how to calculate the number of moles of a solid	Moles = Mass ÷ M_r
State how to calculate the number of particles present	**Number of particles** = number of moles x 6.02×10^{23}
Limiting Reactants (Higher only)	
What is the limiting reactant in a chemical reaction?	The reactant that is completely used up in the reaction. It limits the amount of products that can be made.
What is the excess reactant in a chemical reaction?	The reactant that has not been used up at the end of the reaction
Describe how chemists determine which chemical should be in excess / the limiting reactant	The **limiting reactant** should be the chemical which is **more expensive/in short supply**. The **excess reactant** should be the chemical which is **easier to remove**.
Concentration of Solutions	
What is a concentrated solution?	A solution containing **many solute particles** in a given volume
What is a dilute solution?	A solution containing **few solute particles** in a given volume
State how to calculate the concentration of a solution (in g/dm³)	Concentration g/dm³ = $\frac{\text{Mass (g)}}{\text{Volume (dm}^3\text{)}}$
State how to convert a volume from cm³ to dm³ and vice versa	$cm^3 \underset{\times 1000}{\overset{\div 1000}{\rightleftharpoons}} dm^3$
Describe how the concentration of a solution can be decreased	To decrease the concentration you would use a **smaller mass of solute** in the **same volume of solution**
Describe how the concentration of a solution can be increased	To increase the concentration you would use a **larger mass of solute** in the **same volume of solution**

TERM 2

R185 | PERFORMANCE AND LEADERSHIP IN SPORTS ACTIVITIES

TOPIC AREA 2

Applying practice methods to support improvement inna sporting activity

Strength and weaknesses

Basic skills needed in netball

Catching
Chest Pass
Coordination
Footwork

Basic tactical skills needed

Defending
Attacking
Awareness
Decision making

Strengths

One of my strengths is my footwork as I am ab to land both one and two footed while maintaining balance with the ball.

Weakness

One of my weaknesses is my defending as I get too close to attacking players (>0.9m), giving away a penalty to the other team.

Different types of practices and progressive drills

Whole

The whole skill is performed at once (e.g. full sprint start).

Part

The skill is broken down into parts which are practised separately (e.g. just the 'set' phase in the sprint start)

Variable

The skill is practised in the range of different situations that could be experienced in a performance e.g. adding defenders and goal keepers in a shooting drill.

Fixed

A specific skill or technique is repeatedly practised in the same way e.g. A chest pass drill with a partner.

Progressive practices/drills

Drills/practices that show a clear increase in difficulty, dependent on the ability of the performer. For example a progressive practice/ drill in basketball could be:

1. A basic chest passing drill

2. Passing while on the move

3. Passing with a defender

Alternating the context

Alternating the context of performance

Changing the circumstances in which a performer is training e.g. Training with more experienced players to increase skill or knowledge. The context can also be changed by adding defenders into practices.

Measuring improvement

Video analysis

To identify weaknesses and how performance can be improved.

Other assistive technology

To improve performance, such as quantitative activity trackers.

Monitoring competition results

Over a period of time.

Tools selected will be dependent on the chosen activity and the ability level of the performer.

Key Terms

- **Skill** – the ability to do something well
- **Tactical** – an action or strategy carefully planned to achieve a specific end.
- **Progressive drill** – a person looked to by others as an example to be imitated.
- **Part practice** – the action of providing or supplying something for use.
- **Variable practice** – knowledge or perception of a situation or fact.
- **Fixed practice** – the publicising of a something to raise public awareness.
- **Trends** – a general direction in which something is developing or changing.
- **Emerging/New sport** – Refers to non-tradition sports.

TERM 2

R185 | PERFORMANCE AND LEADERSHIP IN SPORTS ACTIVITIES

TOPIC AREA 3

Organising and planning a sports activity session

Organisation of a sports activity session

A session must be planned effectively in order for it to be a success. If the planning is thorough and detailed, the session is easier to follow and deliver.

Appropriate venue (location/size/weather)

The venue must have enough working space for the activity and for the number of people taking part. For example, a large 3G hall for multi-skills session with 30 primary ages students. You must also have a contingency plan for if the activity cannot take place outside.

Equipment (type/amount)

The type of equipment will depend on the activity and the participants e.g. Size 2 footballs for under 4s and 5s, Size 5 footballs for under 14s and above.

The amount will depend on what skills/techniques are being taught and how many participants their are. E.g. If practicing passing technique in football then 1 ball between 2 or 3 would be ideal.

Timing (appropriate/allowing for progression)

Allowing enough time for the participants to practice skills is important in order to improve. Not spending too much time on skills that they can already perform so they get bored is also important

Allowing skills/drills to progress will improve players as the drills will become more advanced or harder. For example in passing in basketball can be progressed by:

Supervision (Number of participants/size of group)

Different activities require different levels of supervision for example the CPSU require their 1 adult per 8 children (ages 9-12) and 1 adult per 10 children (ages 13-18).

The size of group depends of the the activity. You can have a large group of experienced with less supervision but a group a beginner swimmers would have more.

Contingency plan

This is a back up plan for anything that might need to change during a sporting activity. For example, if you have planned a cricket session outside but it is raining then having a back up (contingency) plan is important to have. You may choose to do coaching session indoors.

You may also need a back up plan if the participants are not responding or interested in the activities that you have planned.

Safety considerations

Risk assessment and corrective action

Risk assessment completed before an activity take place and are used to identify and eliminate risks where possible, protecting participants from harm. Risks include those posed by the **facilities** (goal posts in sports hall), the **equipment** used , the **clothing** and **footwear** worn (suitable trainers for the activity) and any **activity-specific risks** such as, boots and shin pads for football when on a 3G astroturf pitch.

Checking of equipment

All equipment and areas should be checked. For example, rugby tackle bags should be checked that they are in good working order before tackling.

Basic First aid & child protection

There should be somebody that is qualified in basic first at a sports activity session. This is to help given to a sick or injured person until full medical treatment is available.

It is also important for a leader to have an understand about protecting children. This is to ensure that children are safe from abuse and neglect

Emergency procedures

It is important to have emergency procedures in a session. For example, calling 999, if the equipment breaks and how to complete emergency action plans.

Objectives

Objectives

The group can be at different levels or experience so planning a session to meet the needs is important. An example objective is to improve your forehand serve in badminton. Activities may need to be adapted depending on the size, experience, number of participants, gender, age, facilities, equipment.

Introduction and conclusion of a session

The introduction should include a brief introduction from the leader, aims of the session and checking for any injuries.

A conclusion should be a brief summary of what has been learnt or develop throughout the session.

Basic warm-up and cool-down

Warm-ups should include a pulse raiser, stretching exercises and activity specific tasks.

Cool-downs should allow the pulse to decrease slowly and to include stretches.

Skills and technique development

Start with basic skills in basic practices, progress the drills to show more challenge, then incorporate some competition into the practices. These practices will also need have some simplifications for participants who are struggling.

Key Terms

- **Contingency plan** – a plan designed to take account of a possible future event or circumstance
- **Appropriate** – suitable or proper in the circumstances.
- **Supervision** – the action of supervising someone or something.
- **Experienced** – having gained knowledge or skill in a particular field over time.
- **Risk assessment** – a systematic process of evaluating the potential risks that may be involved in a projected activity or undertaking
- **Procedures** – an established or official way of doing something.
- **Objectives** – a thing aimed at or sought; a goal.