

Knowledge Goals Homework Booklet 3 (Spring Term 2024)

Year 9 and 10

Name: _____



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Art and Design	8
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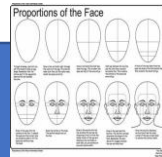
Suggested Homework Schedule
(30 minutes of independent study per subject each week)

	Subjects to Revise	
Monday	Science	Option 2
Tuesday	Mathematics	Option 2
Wednesday	Science	Tier 2 Vocab
Thursday	English	Option 3
Friday	Option 3	Mathematics
Saturday	Option 1	English
Sunday	Option 1	Mathematics

To help you get organised, we have planned out your weekly homework slot for each subject.

Mind mapping

- Mind mapping is simply a diagram to visually represent or outline information.
- Use information gathered from your Knowledge Goals booklet to create mind maps, make sure to use colour and images and keep writing to the bare minimum.



HOW TO MIND MAP VIDEO

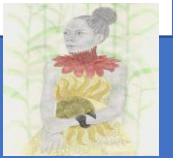
Parent information on knowledge retrieval:



Flash cards

Use your Knowledge Goals booklet to make flash cards. Write the questions on one side and on the other record the answer.

Test yourself or work with a friend to make sure you know all of the key information for each topic.



HOW TO FLASH CARD VIDEO

How should students use the Knowledge Goals booklets?

Your **Knowledge Goals** booklet provide the essential knowledge that you need to learn in each subject this half term.

You are expected to spend **30 minutes per subject per week** 'learning' the content.

You will be assessed during lessons using 'low stake' quizzing.

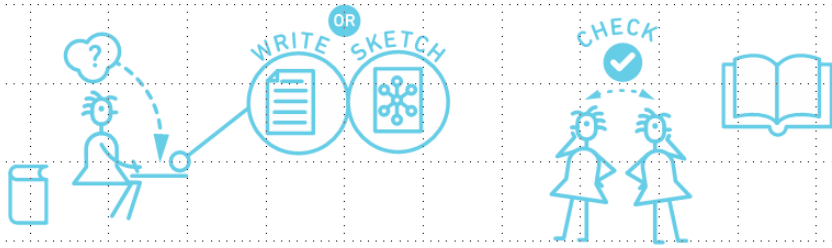
Your teacher may choose to set you additional homework.

How can parents support?

- Read through the booklet with your child – if you don't understand the content then ask them to explain it to you – 'teaching' you helps them to reinforce their learning.
- Test them regularly on the spellings of key words until they are perfect. Get them to make a glossary (list) of key words with definitions or a list of formulae.
- Read sections out to them, missing out key words or phrases that they have to fill in. Miss out more and more until they are word perfect.

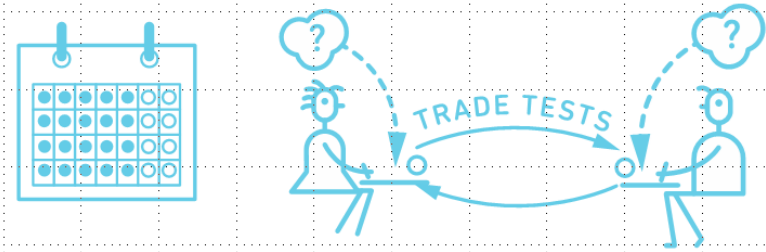
HOW TO DO IT

Put away your class materials, and write or sketch everything you know. Be as thorough as possible. Then, check your class materials for accuracy and important points you missed.



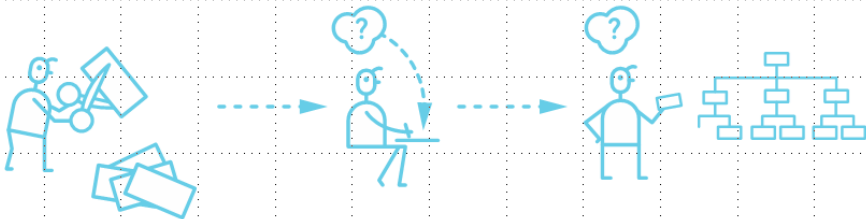
HOW TO DO IT

Take as many practice tests as you can get your hands on. If you don't have ready-made tests, try making your own and trading with a friend who has done the same.



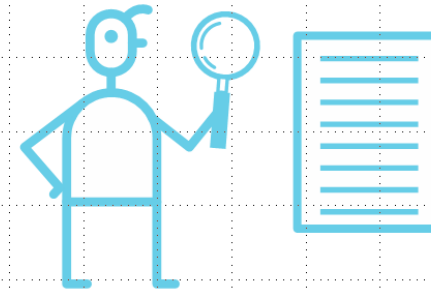
HOW TO DO IT

You can also make flashcards. Just make sure you practice recalling the information on them, and go beyond definitions by thinking of links between ideas.



HOLD ON!

Retrieval practice works best when you go back to check your class materials for accuracy afterward.



Literacy: Tier 2 Vocabulary

Tier 2 Vocabulary		
	Key word	Definition
1	Adjacent	Next to or adjoining something else.
2	Benign	1. Gentle and kind. 2. (of a disease) not harmful in effect.
3	Decipher	To convert or change something into normal language to be able to understand something.
4	Facilitate	Take (an action or process) easy or easier.
5	Pivotal	Of crucial importance to the success of something else; fixed on, or as if on a pivot.
6	Voracious	Wanting or eating large quantities of food; doing something with lots of enthusiasm.

These words are all tier 2 words; in other words, they are seen as 'academic vocabulary' and if you know them, can understand them and use them, you will do better in your exams and be able to communicate more precisely and effectively in life.

Literacy: Tier 2 Vocabulary

Tier 2 Vocabulary		
	Key word	Definition
7	Subsequent	Coming after something in turn; following something.
8	Era	A long and distinct period of history.
9	Analogy	A comparison between one thing and another, typically for the purpose of explanation or clarification.
10	Eccentric	Unconventional or slightly strange.
11	Imperative	<ol style="list-style-type: none"> 1. Of vital importance; crucial 2. Giving a command
12	Insinuate	Suggest or hint (something bad) in an indirect and unpleasant way.

These words are all tier 2 words; in other words, they are seen as 'academic vocabulary' and if you know them, can understand them and use them, you will do better in your exams and be able to communicate more precisely and effectively in life.

Architectural art involves representing or interpreting architecture through artistic means. This can include drawing, painting, sculpture, or mixed media. Artists may explore the visual elements of architecture, such as form, space, texture, and structure.

Themes related to architecture, urban environments, or specific buildings may be explored.

One-point perspective is a drawing technique used in visual art to create the illusion of three-dimensional space on a two-dimensional surface, such as paper or canvas. It is a type of linear perspective that is particularly effective for representing objects or scenes viewed directly from the front.

In one-point perspective, all parallel lines converge to a single vanishing point on the horizon line. The horizon line is an imaginary horizontal line that represents the viewer's eye level or the level of the surface upon which the objects are placed. The vanishing point is the point on the horizon where all the parallel lines seem to meet.

Architectural Styles and Movements:

Modernism: An architectural style that emerged in the early 20th century, emphasizing simplicity and functionality.

Art Deco: A decorative and architectural style from the 1920s and 1930s characterized by geometric shapes and lavish ornamentation.

Postmodernism: An architectural style that emerged in the late 20th century, often characterized by eclectic influences and a playful approach to design.

Here's a simple step-by-step guide to drawing in one-point perspective:

Draw a Horizon Line:

Place a horizontal line across your paper to represent the viewer's eye level. This is the horizon line.

Choose a Vanishing Point:

Decide where you want the vanishing point to be on the horizon line.

Draw Orthogonal Lines:

Draw lines radiating from the vanishing point to the edges of your paper. These are your orthogonal lines.

Place Objects in Perspective:

Draw objects with lines parallel to the edges of your paper. The lines that are not parallel will converge to the vanishing point.

Add Details:

Refine your drawing by adding details and adjusting the convergence of lines based on the perspective.

[One point perspective drawing tip #drawingtutorial #howtodraw #arttutorial #drawing - YouTube](#)

<http://www.sethsclark.com/about>



[Seth Clark | Momentum Gallery](#)

John Piper - Artistic Style:

Piper's work is often associated with modernism and abstraction, but he was versatile in his style and explored various approaches throughout his career.

He is recognized for his depictions of landscapes, architectural scenes, and abstract compositions.

War Artist:

During World War II, Piper served as an official war artist, documenting the effects of the war on Britain. His paintings and drawings from this period captured the landscapes and architecture altered by the conflict.

Stained Glass Windows:

Piper designed numerous stained glass windows for churches, including those at Coventry Cathedral. His work in stained glass often featured bold and vibrant colours, contributing to the modernization of this traditional art form.

[John Piper 1903–1992 | Tate](#)

IAN MURPHY - Artistic Style:

Ian Murphy is recognized for his detailed and intricate drawings of cityscapes and architectural scenes. His works often capture the essence of urban environments with a focus on architectural elements, light, and shadow. Murphy primarily works in drawing and illustration. His pieces often showcase a high level of technical skill, using various drawing tools and techniques to create realistic and atmospheric depictions of urban spaces.



[About Ian Murphy - Ian Murphy Artist](#)

Tier 3 Vocabulary

Key word		Definition
1	Vanishing Point	All parallel lines (that recede into the distance) converge to a single point on the horizon.
2	Horizon Line	The horizon line is a horizontal line that represents the viewer's eye level. It is typically positioned at the viewer's eye level in the scene.
3	Linear Perspective	Linear perspective is a system of creating the illusion of depth on a flat surface using lines. It includes one-point perspective, two-point perspective, and three-point perspective.
4	One-Point Perspective	In one-point perspective, all parallel lines converge to a single vanishing point on the horizon line. This technique is often used when the viewer is looking directly at the front of objects.
5	Two-Point Perspective	In two-point perspective, parallel lines in the scene converge to two different vanishing points on the horizon. This is commonly used when the viewer is looking at objects from an angle.
6	Three-Point Perspective	Three-point perspective involves three vanishing points, with the third point typically placed above or below the horizon line. This is useful when representing objects from extreme angles, such as looking up at a tall building.
7	Positive Space	The area in a work of art that is occupied by the subject.
8	Negative Space	The empty or open space around the subject in a work of art.

Architectural Elements:

Facade: The front or face of a building.

Column: A vertical, cylindrical support structure.

Pillar: A large, usually square or rectangular column.

Portico: A porch leading to the entrance of a building, often with columns.

Dome: A rounded vault forming the roof of a building.

Arch: A curved structure that spans an opening and supports the weight above it.

Skyline:

The silhouette created by a city's buildings against the sky.

Cityscape: An artistic representation of a city's physical appearance.

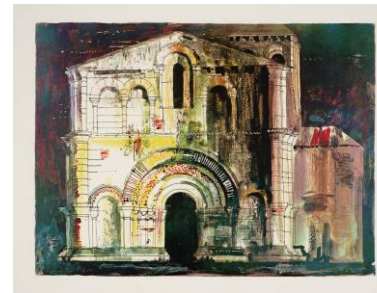
Famous Still Life Artists

Ian Murphy

Seth Clarke

John Piper

Art movements such as Cubism, Futurism, or Surrealism may be explored in the context of architectural representation.

**Quiz QR Code****Quiz Link**

Converting denary (base 10) to binary (base 2)

Converting 30 to binary

Step 1: Write down the binary placeholders.

32	16	8	4	2	1
----	----	---	---	---	---

Step 2: Find the largest placeholder that is less than or equal to the denary number. Write a 1 underneath this placeholder.

32	16	8	4	2	1
	1				

Step 3: Subtract placeholder from the original number

$30 - 16 = 14$

Step 4: Repeat this process with the result until you're left with 0

32	16	8	4	2	1
	1	1			

$14 - 8 = 6$

32	16	8	4	2	1
	1	1	1		

$6 - 4 = 2$

Converting binary (base 2) to denary (base 10)

Converting 100101 to denary

Step 1: Write the placeholders over your binary number (start on the right):

32	16	8	4	2	1
1	0	0	1	0	1

Step 2: List all the placeholders with 1 underneath:

- 32
- 4
- 1

Step 3: Add up your list

$32 + 4 + 1 = 37$

Converting denary (base 10) to binary (base 2) - continued

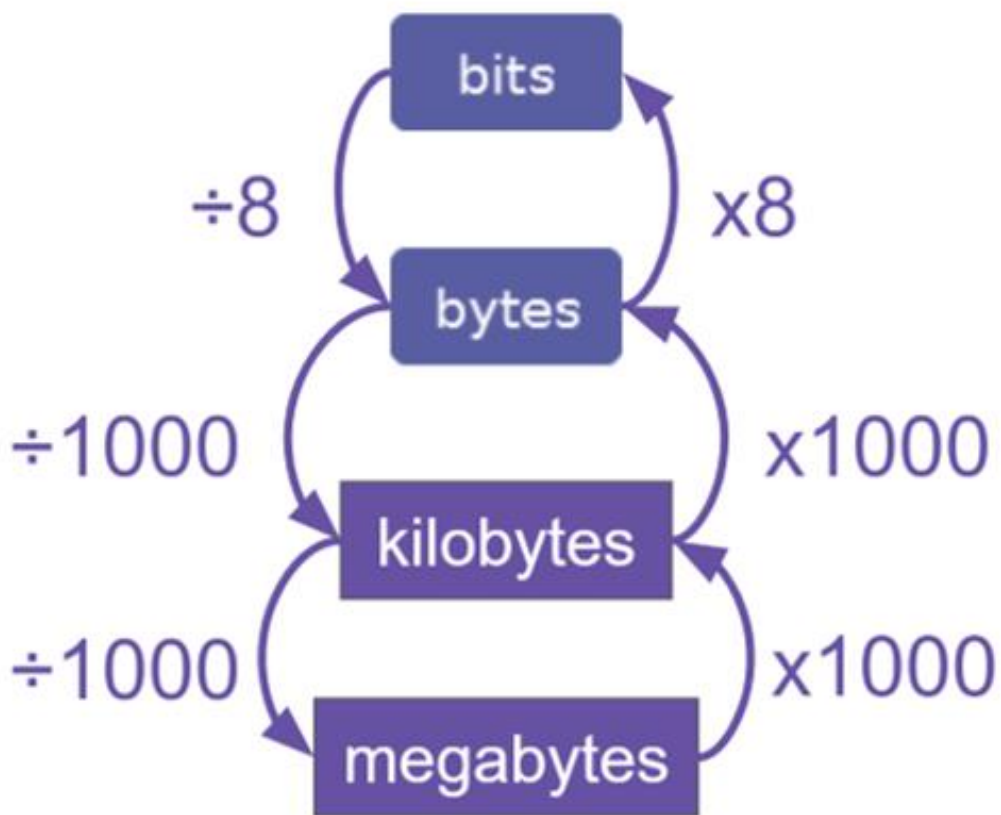
32	16	8	4	2	1
	1	1	1	1	

$2 - 2 = 0$

Step 5: Fill in the remaining placeholders with 0s

32	16	8	4	2	1
0	1	1	1	1	0

Therefore 30 in base 2 is **011110**



How to convert between units of data

In binary, 8 bits (individual 1s and 0s) make up a byte. The prefixes kilo-, mega-, giga-, tera-, ... are used to express increasingly large quantities of bytes.

- 1 kilobyte = 1000 bytes
- 1 megabytes = 1000 kilobytes
- 1 gigabyte = 1000 megabytes
- 1 terabyte = 1000 gigabytes

ASCII TABLE

Decimal	Hexadecimal	Binary	Octal	Char	Decimal	Hexadecimal	Binary	Octal	Char	Decimal	Hexadecimal	Binary	Octal	Char
000	00	0000000	000	(NULL)	048	30	0110000	060	0	096	60	1100000	140	
001	01	0000001	001	(START OF HEADING)	049	31	0110001	061	1	097	61	1100001	141	a
002	02	0000010	002	(START OF TEXT)	050	32	0110010	062	2	098	62	1100010	142	b
003	03	0000011	003	(END OF TEXT)	051	33	0110011	063	3	099	63	1100011	143	c
004	04	0000100	004	(END OF TRANSMISSION)	052	34	0110100	064	4	100	64	1100100	144	d
005	05	0000101	005	(ENQUIRY)	053	35	0110101	065	5	101	65	1100101	145	e
006	06	0000110	006	(ACKNOWLEDGE)	054	36	0110110	066	6	102	66	1100110	146	f
007	07	0000111	007	(BELL)	055	37	0110111	067	7	103	67	1100111	147	g
008	08	0001000	010	(BACKSPACE)	056	38	0111000	070	8	104	68	1101000	150	h
009	09	0001001	011	(HORIZONTAL TAB)	057	39	0111001	071	9	105	69	1101001	151	i
010	0A	0001010	012	(LINE FEED)	058	3A	0111010	072	:	106	6A	1101010	152	j
011	0B	0001011	013	(VERTICAL TAB)	059	3B	0111011	073	;	107	6B	1101011	153	k
012	0C	0001100	014	(FORM FEED)	060	3C	0111100	074	<	108	6C	1101100	154	l
013	0D	0001101	015	(CARRIAGE RETURN)	061	3D	0111101	075	=	109	6D	1101101	155	m
014	0E	0001110	016	(SHIFT OUT)	062	3E	0111110	076	>	110	6E	1101110	156	n
015	0F	0001111	017	(SHIFT IN)	063	3F	0111111	077	?	111	6F	1101111	157	o
016	10	0010000	020	(DATA LINK ESCAPE)	064	40	1000000	100	@	112	70	1110000	160	p
017	11	0010001	021	(DEVICE CONTROL 1)	065	41	1000001	101	A	113	71	1110001	161	q
018	12	0010010	022	(DEVICE CONTROL 2)	066	42	1000010	102	B	114	72	1110010	162	r
019	13	0010011	023	(DEVICE CONTROL 3)	067	43	1000011	103	C	115	73	1110011	163	s
020	14	0010100	024	(DEVICE CONTROL 4)	068	44	1000100	104	D	116	74	1110100	164	t
021	15	0010101	025	(NEGATIVE ACKNOWLEDGE)	069	45	1000101	105	E	117	75	1110101	165	u
022	16	0010110	026	(SYNCHRONOUS IDLE)	070	46	1000110	106	F	118	76	1110110	166	v
023	17	0010111	027	(END OF TRANS. BLOCK)	071	47	1000111	107	G	119	77	1110111	167	w
024	18	0011000	030	(CANCEL)	072	48	1001000	110	H	120	78	1111000	170	x
025	19	0011001	031	(END OF MEDIUM)	073	49	1001001	111	I	121	79	1111001	171	y
026	1A	0011010	032	(SUBSTITUTE)	074	4A	1001010	112	J	122	7A	1111010	172	z
027	1B	0011011	033	(ESCAPE)	075	4B	1001011	113	K	123	7B	1111011	173	{
028	1C	0011100	034	(FILE SEPARATOR)	076	4C	1001100	114	L	124	7C	1111100	174	|
029	1D	0011101	035	(GROUP SEPARATOR)	077	4D	1001101	115	M	125	7D	1111101	175	~
030	1E	0011110	036	(RECORD SEPARATOR)	078	4E	1001110	116	N	126	7E	1111110	176	-
031	1F	0011111	037	(UNIT SEPARATOR)	079	4F	1001111	117	O	127	7F	1111111	177	(DEL)
032	20	0100000	040	(SPACE)	080	50	1010000	120	P					
033	21	0100001	041	!	081	51	1010001	121	Q					
034	22	0100010	042	"	082	52	1010010	122	R					
035	23	0100011	043	#	083	53	1010011	123	S					
036	24	0100100	044	\$	084	54	1010100	124	T					
037	25	0100101	045	%	085	55	1010101	125	U					
038	26	0100110	046	&	086	56	1010110	126	V					
039	27	0100111	047	'	087	57	1010111	127	W					
040	28	0101000	050	(	088	58	1011000	130	X					
041	29	0101001	051	)	089	59	1011001	131	Y					
042	2A	0101010	052	*	090	5A	1011010	132	Z					
043	2B	0101011	053	+	091	5B	1011011	133	[
044	2C	0101100	054	,	092	5C	1011100	134	\					
045	2D	0101101	055	-	093	5D	1011101	135]					
046	2E	0101110	056	.	094	5E	1011110	136	^					
047	2F	0101111	057	/	095	5F	1011111	137	_					

ASCII conversion table - shows characters and their corresponding character codes

Character sets, such as ASCII and Unicode, are used in computers to represent symbols such as letters, numbers and punctuation marks in binary.

For example, in 8 bit ASCII, WHEATLEY PARK SCHOOL would be represented as 01010111 01001000 01000101 01000001 01010100 01001100 01000101 01011001 00100000 01010000 01000001 01010010 01001011 00100000 01010011 01000011 01001000 01001111 01001111 01001100

Bitmap images

Bitmap images use a grid of pixels, each with an assigned colour, to represent an image.

00	00	00	00	00
00	11	11	11	00
00	11	11	11	00
00	00	10	00	00
00	00	10	00	00
01	01	01	01	01

A bitmap image with a colour depth of 2 bits and a resolution of 5x6

Vector graphics

An alternative method of presenting images is using vector graphics which works by describing the shapes in the image mathematically. To view the image, a program that can interpret the image code must be used.

```
<circle cx="24" cy="21.5" r="69" class="face"/>
<ellipse cx="24" cy="5.5" rx="6" ry="1.5" class="shine"/>
<ellipse cx="24" cy="45.5" rx="16" ry="1.5" class="shadow"/>
<circle cx="24" cy="21.5" r="20" class="circle"/>
<ellipse cx="36" cy="26.5" rx="2.5" ry="1.5" class="cheeks"/>
<ellipse cx="12" cy="26.5" rx="2.5" ry="1.5" class="cheeks"/>
```

Part of the code for a vector graphic image

Lossy compression

Lossy compression is typically used on data such as images and video. This is because some data about an image or video is lost, although it will reduce the quality of the image or video the viewer can still see/view the image.

Lossless compression

Lossless compression is used when it is critical that, when the data is uncompressed, the original data can be reconstructed. This type of compression is often used to compress text so that all the letters in the text can be reconstructed and the text can be understood.

If lossy compression was used on a text file containing a program, the program would no longer work because characters would be removed by the compression algorithm.

```
planets ['Jpir', 'Sturn',
         'Uns', 'Nptne', 'Vnus',
         'Mas', 'Mry', 'Eah']
sizes 110, 95, 00, 30, 95, 5, 8, 10]
for i in range(len(planets)):
    print(planets[i], sizes[i] | % the se f Eth.")
```

This is what a Python program might look like if you tried to apply lossy compression to it

Hexadecimal numbers

Hexadecimal uses the same first ten digits (0-9) as denary. It then has six more digits (A-F) to represent the numbers 10-16.

Hexadecimal numbers are often used because they're easier for humans to work with.

Hexadecimal numbers take up the same amount of storage space as binary numbers because they're stored as binary in memory.

Converting binary to hexadecimal

Converting the 8 bit binary number 10011100 into hexadecimal:

Step 1: Split the binary number into two four bit nibbles

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

Step 2: Calculate the value of each nibble in binary

$$8+1 = 9$$

$$8+4 = 12$$

Step 3: Translate these values into hexadecimal

$$9 \rightarrow 9$$

$$12 \rightarrow C$$

Step 4: Write down the final hexadecimal number

9C

Converting denary to hexadecimal

Step 1: Convert the denary number to binary using the method above

Step 2: Use the method on the left to convert the binary number to hexadecimal

Converting hexadecimal to binary

Converting 4E to binary

Step 1: Convert each hexadecimal digit to decimal

$$4 \rightarrow 4$$

$$E \rightarrow 14$$

Step 2: Convert each denary number to a four-bit binary nibble

$$4 \rightarrow 0100$$

$$14 \rightarrow 1110$$

Step 3: Write down the final binary number

01001110

Tier 3 Vocabulary		
Key word		Definition
1	Pixel	The smallest identifiable area of an image or computer screen.
2	Bit	A single symbol in a binary number. Either 1 or 0.
3	Bit pattern	Any sequence or more than one bit.
4	Nibble	A bit pattern which is four bits long.
5	Byte	A bit pattern with which is eight bits long.
6	Kilobyte	1000 bytes.
7	Megabyte	1000 kilobytes.
8	Resolution	The number of pixels in an image.
9	Colour depth	The number of bits used to store each pixel.
10	Bitmap	A digital image made up of a grid of pixels.
11	Vector graphic	A digital image made up of lines and shapes described using mathematics.
12	Compression	Reducing the amount of storage needed to represent a file.
13	Lossy compression	Information is lost during the compression of a file.
14	Lossless compression	No information is lost during the compression of the file.

Notes:

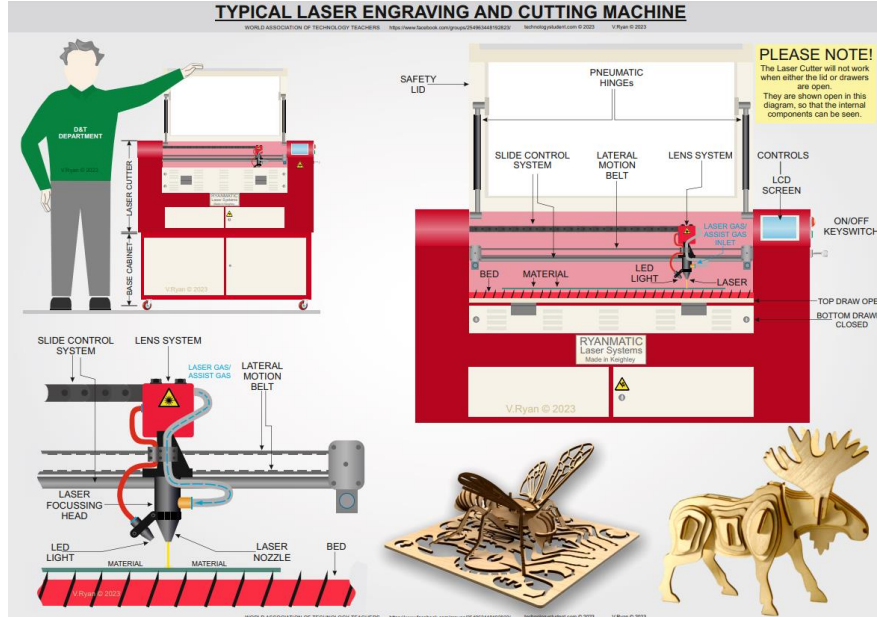
Quiz QR Code



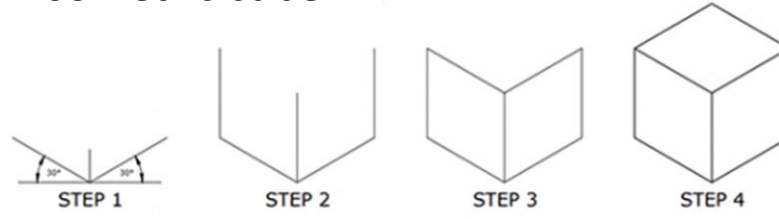
Quiz Link

[QUIZ LINK](#)

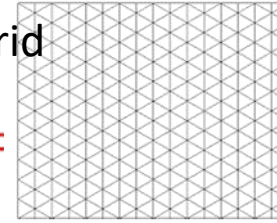
CAD/CAM Desk Tidy



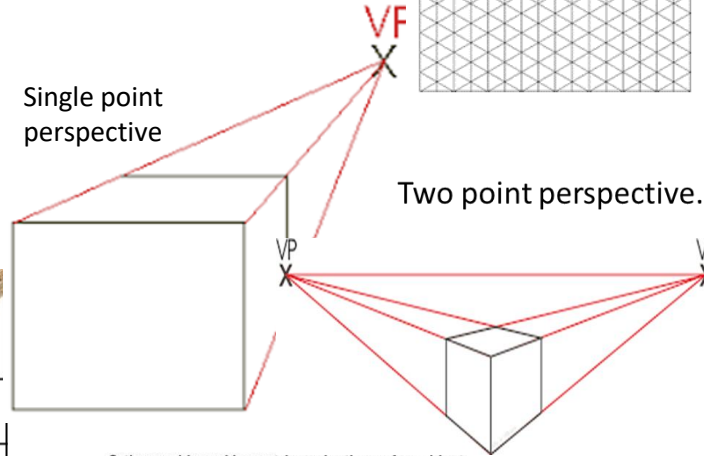
Isometric cube.



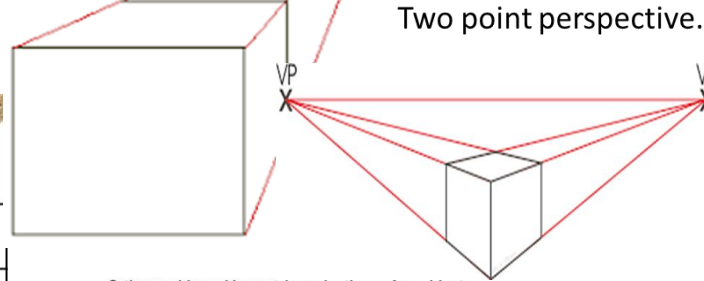
Isometric grid



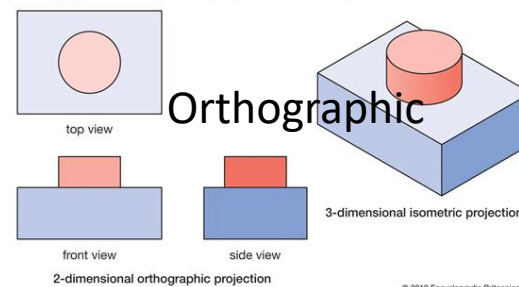
Single point perspective



Two point perspective.



Orthographic and isometric projections of an object



WHICH GLUE SHOULD I USE?

	PVA / CRAFT GLUE	HOT GLUE	WOOD GLUE	FABRIC GLUE	SPRAY ADHESIVE	SUPER GLUE	RUBBER CEMENT	SILICONE ADHESIVE	EPOXY	EXPANSIVE GLUE
PLASTIC	X	X			X*	X		X	X	X
PAPER	X	X		X	X		X			
CERAMICS		X*				X*		X	X	X
WOOD		X*	X				X		X	X
GLASS		X*				X		X	X	X
FABRIC	X	X		X	X		X			
STYROFOAM	X	X*			X		X			
METAL						X		X	X	X
ORGANIC MATERIALS	X	X			X	X	X		X	X

	Hardwood	Softwood	Engineered wood
Origin	Deciduous trees that have leaves and seeds	Conifer trees that have needles and cones	Real timber, waste wood or a combination
Examples	Ash, Beech, Birch, Cherry, Oak, Maple, Walnut, Mahogany, Rosewood, Acacia, Teak, Bamboo, Mango, and Mindi	Cedar, fir, pine, spruce and redwood	CLT, OSB, LML, LSL, Plywood, MDF, Chipboard and Veneered Boards
General Characteristics	Slower growth rate and often higher density	Faster growth rate and often lower density	Large standard sized panels of varying density
Uses	High quality furniture, decorative woodwork, decks, flooring...	Building components, furniture, exterior cladding...	Furniture (shelves and cupboards), walls, counters...
Cost	Typically, higher cost	Typically, lower cost	Lower cost

Tier 3 Vocabulary

Key word		Definition
1	Modelling	The activity of making three-dimensional models.
2	Prototype	A prototype is an early sample or model to test a concept or process.
3	Isometric	Visually representing three-dimensional objects in two dimensions in technical and engineering drawings.
4	Orthographic	A drawing in which a three dimensional object is represented in two dimensions.
5	Perspective	The representation of three-dimensional objects or spaces in two dimensional artworks.
6	Technical drawing	A detailed, precise diagram or plan that conveys information about how an object functions or is constructed.
7	Manufactured board	Also known as engineered board, made from waste or scrap wood.
8	Wood glue	A slow setting bonding agent.
9	Softwood	Wood mainly from coniferous trees.
10	Hardwood	Wood from deciduous trees.

Notes:

Quiz QR Code

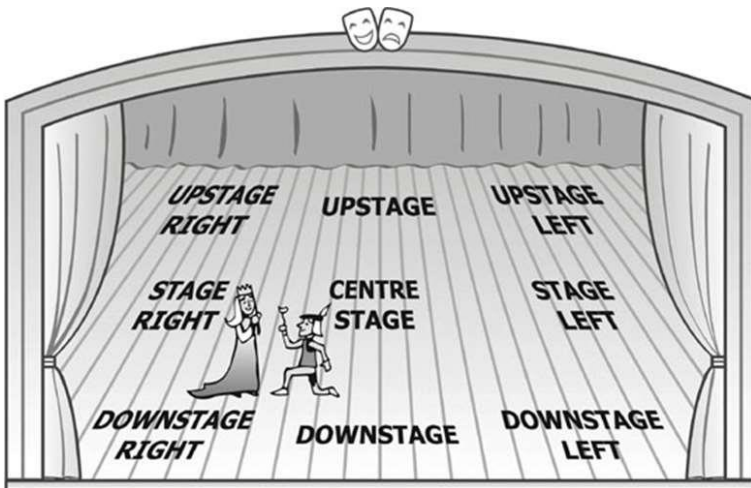


Quiz Link

[QUIZ LINK](#)

Skills & Techniques

1. A drama **technique** is a tool we use make our acting more interesting and engaging to an audience. For example, a flashback or narration.
2. A drama **skill** is a way of communicating verbal and non-verbal communication skills to portray a character and their ideas and/or feelings. For example, vocal tone or facial expressions.

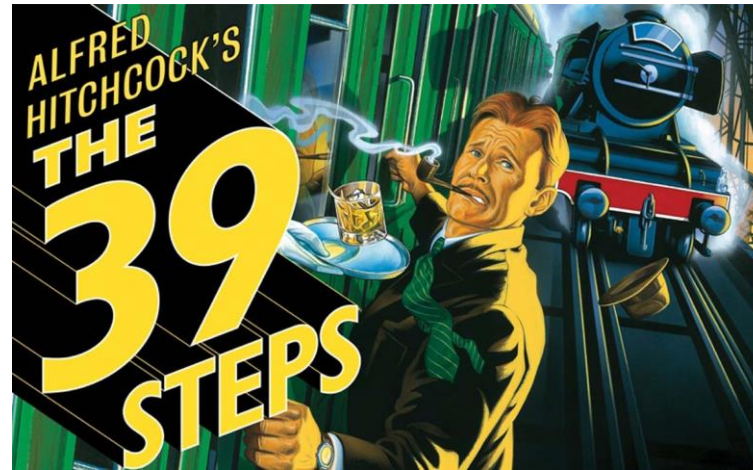


Set Text Analysis

During this unit, you will develop your ability to:

- Interpret texts
- Create and communicate meaning
- Realise artistic intention in text-based drama.

Set Play: The 39 Steps



The Thirty-Nine Steps follows Richard Hannay who is bored with life, and soon finds himself framed for murder and involved in a complex assassination plot. He goes on the run and seems to enjoy himself, despite the perils of being pursued by Scotland Yard and other mysterious enemies.

Tier 3 Vocabulary

Key word		Definition
1	Vocal projection	The strength of speaking or singing whereby the voice is used powerfully and clearly.
2	Facial expressions	A way to show emotions and feelings using your face.
3	Body language	A way to show emotions and feelings using your body.
4	Gait	The way you walk.
5	Stance	The way you stand using your legs and feet.
6	Posture	The way you stand using your body.
7	Intonation	The rise and fall of the voice.
8	Tone	The emotion in the voice.
9	Accent	A distinctive way of pronouncing a language, especially one associated with a particular country, area, or social class.
10	Intention	What is intended to be communicated to the audience.
11	Genre	The type of work/story told.
12	Style	The way a piece of work or story is told.

Notes:

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

Jane Austen – Pride and Prejudice

Biography - Jane Austen was born in the Hampshire village of Steventon, where her father, the Reverend George Austen, was rector. She was the second daughter and seventh child in a family of eight—six boys and two girls. Her closest companion throughout her life was her elder sister, Cassandra; neither Jane nor Cassandra married. Their father was a scholar who encouraged the love of learning in his children. His wife, Cassandra (née Leigh), was a woman of ready wit, famed for her impromptu verses and stories. The great family amusement was acting.

[Jane Austen | Biography, Books, Movies, & Facts | Britannica](#)

Synopsis - The news that a wealthy young gentleman named Charles Bingley has rented the manor of Netherfield Park causes a great stir in the nearby village of Longbourn, especially in the Bennet household. The Bennets have five unmarried daughters—from oldest to youngest, Jane, Elizabeth, Mary, Kitty, and Lydia—and Mrs. Bennet is desperate to see them all married. [Pride and Prejudice: Full Book Summary | SparkNotes](#)

Video - [Jane Austen Explained in Five Minutes | Biography | Bite Sized History - YouTube](#)

Charlotte Bronte – Jane Eyre

Biography - Charlotte Brontë, (born April 21, 1816, Thornton, Yorkshire, England—died March 31, 1855, Haworth, Yorkshire), English novelist noted for *Jane Eyre* (1847), a strong narrative of a woman in conflict with her natural desires and social condition. The novel gave new truthfulness to Victorian fiction. She later wrote *Shirley* (1849) and *Villette* (1853).

[Charlotte Bronte | Biography, Books, Novels, Jane Eyre, & Facts | Britannica](#)

Synopsis - *Jane Eyre* is a young orphan being raised by [Mrs. Reed](#), her cruel, wealthy aunt. A servant named [Bessie](#) provides Jane with some of the few kindnesses she receives, telling her stories and singing songs to her. One day, as punishment for fighting with her bullying cousin [John Reed](#), Jane's aunt imprisons Jane in the red-room, the room in which Jane's [Uncle Reed](#) died. While locked in, Jane, believing that she sees her uncle's ghost, screams and faints. She wakes to find herself in the care of Bessie and the kindly apothecary [Mr. Lloyd](#), who suggests to Mrs. Reed that Jane be sent away to school. To Jane's delight, Mrs. Reed concurs.

[Jane Eyre: Full Book Summary | SparkNotes](#)

Video - [Charlotte Bronte Biography - YouTube](#)

Louisa May Alcott – Little Women

Biography - Louisa May Alcott (born November 29, 1832, Germantown, Pennsylvania, U.S.—died March 6, 1888, Boston, Massachusetts) American author known for her children's books, especially the classic *Little Women* (1868–69).

[Louisa May Alcott | Biography, Childhood, Family, Books, Little Women, & Facts | Britannica](#)

Synopsis - Story begins with the four March girls—Meg, Jo, Beth, and Amy—sitting in their living room, lamenting their poverty. The girls decide that they will each buy themselves a present in order to brighten their Christmas. Soon, however, they change their minds and decide that instead of buying presents for themselves, they will buy presents for their mother, Marmee. Marmee comes home with a letter from Mr. March, the girls' father, who is serving as a Union chaplain in the Civil War. The letter inspires the girls to bear their burdens more cheerfully and not to complain about their poverty.

[Little Women: Full Book Summary | SparkNotes](#)

Video - [Author, Abolitionist & Suffragist: Louisa May Alcott - Freedom's Way NHA Heritage Stories - YouTube](#)

Mary Shelley –Frankenstein

Biography - Mary Wollstonecraft Shelley, (born August 30, 1797, London, England—died February 1, 1851, London), English Romantic novelist best known as the author of *Frankenstein*.

[Mary Wollstonecraft Shelley | Biography, Books, Frankenstein, Parents, & Facts | Britannica](#)

Synopsis - In a series of letters, [Robert Walton](#), the captain of a ship bound for the North Pole, recounts to his sister back in England the progress of his dangerous mission. Successful early on, the mission is soon interrupted by seas full of impassable ice. Trapped, Walton encounters [Victor Frankenstein](#), who has been traveling by dog-drawn sledge across the ice and is weakened by the cold. Walton takes him aboard ship, helps nurse him back to health, and hears the fantastic tale of the monster that Frankenstein created.

[Frankenstein: Full Book Summary | SparkNotes](#)

Video - [Mary Shelley: A Biography | Frankenstein | National Theatre at Home - YouTube](#)

Tier 3 Vocabulary

	Key word	Definition
1	Ambition	a strong desire to do or achieve something
2	Domesticity	home or family life.
3	Gothic	used to <u>describe</u> writing or <u>films</u> in which <u>strange</u> things <u>happen</u> in <u>frightening places</u>
4	Industrial Revolution	the <u>period</u> of <u>time</u> during which <u>work</u> <u>began</u> to be done more by <u>machines</u> in <u>factories</u> than by <u>hand</u> at <u>home</u>
5	Morality	a set of <u>personal</u> or <u>social</u> <u>standards</u> for good or <u>bad</u> <u>behaviour</u> and <u>character</u> :
6	Realism	a way of <u>thinking</u> and <u>acting</u> <u>based</u> on <u>facts</u> and what is <u>possible</u> , <u>rather</u> than on <u>hopes</u> for things that are <u>unlikely</u> to <u>happen</u> :
7	Romanticism	<u>describing</u> things in a way that makes them <u>sound</u> more <u>exciting</u> or <u>mysterious</u> than they really are
8	Social Commentary	the <u>act</u> of saying something about <u>subjects</u> that <u>affect</u> <u>society</u> , or a <u>film</u> , <u>book</u> , <u>piece</u> of <u>art</u> , etc. that does this :
9	Symbolism	the use of <u>symbols</u> in <u>art</u> , <u>literature</u> , <u>films</u> , etc. to <u>represent</u> <u>ideas</u> :
10	Narrator	The <u>character</u> who <u>tells</u> you what is <u>happening</u> in a <u>book</u> or <u>film</u>
11	Dialogue	<u>conversation</u> that is written for a <u>book</u> , <u>play</u> , or <u>film</u> :

Wilkie Collins – The Woman in White

Biography - Wilkie Collins, (born Jan. 8, 1824, London, Eng.—died Sept. 23, 1889, London), English sensation novelist, early master of the mystery story, and pioneer of detective fiction.

[Wilkie Collins | Victorian era, detective fiction, novels | Britannica](#)

Synopsis - Walter Hartright, a young drawing teacher who lives in London, needs a job and an escape from the city for the autumn months. One night he goes to visit his mother and sister, Sarah, and is surprised to find his friend Professor Pesca, a cheerful Italian whom Walter once saved from drowning, waiting for him at the Hartright's family home. Pesca tells Walter that he has found a job for him teaching art to a pair of young ladies in Cumberland, at a place called Limmeridge House, in the employment of a man named Mr. Fairlie. Walter is somewhat uneasy about the job but accepts.

[The Woman in White by Wilkie Collins Plot Summary | LitCharts](#)

Video - [Wilkie Collins Biography - English Novelist and Playwright Life Story - YouTube](#)

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

Year 9 and 10 Knowledge Goals: Modern Short Stories and Imaginative Writing

Short Story Structure	
1	Narrative hook, dramatic hint or intriguing question.
2	Exposition or opening – who, what, where, when?
3	Rising Action - build up and development
4	Climax or dramatic peak – description
5	Falling Action – leading to the resolution
6	Resolution or denouement

Direct Speech

There are several rules that need to be followed when quoting direct speech (spoken words).

	Explanation	Example
1 ▶ Speech Marks	Speech marks are used to indicate direct speech. They enclose the spoken words.	"What do you want to do this weekend?" asked Abby.
2 ▶ Exact Words	Only use speech marks when quoting the exact spoken words. Indirect speech does not need speech marks.	Abby asked us what we wanted to do this weekend. ✗ no speech marks needed
3 ▶ Capital Letters	Use a capital letter at the start of direct speech, unless the speech is a continuation of an existing sentence.	"Stay there!" he shouted. "You can't leave now!" "We are going to France," he said, "but not until March."
4 ▶ Punctuation (inside speech marks)	Place any punctuation that belongs to the direct speech inside the speech marks.	"When are we having lunch?" asked Toby. "Get out!" shouted the teacher.
5 ▶ Punctuation (outside speech marks)	Place any punctuation that does not belong to the direct speech outside the speech marks.	Did Arnold really say, "I'll be back"?
6 ▶ Commas	Use a comma if the text continues after the direct speech. You also need to use a comma when introducing direct speech.	"That's an iconic movie quote," said Mike. Beth replied, "Yes, I know."
7 ▶ New Paragraphs	Start a new paragraph every time there is a new speaker.	"Do you like apples?" asked Will. "I always wondered." "Yes. Why do you ask?" replied Tomek.

FIGURATIVE LANGUAGE

Simile A simile is a type of figurative language which is used to compare one thing against another. Similes compare the likeness of two things and often feature the words 'like' or 'as': "As strong as an ox/ As brave as a lion."	Metaphor A metaphor is a phrase describing something as something it is not in reality. It is used to compare two things symbolically. A metaphor literally describes something as something it is not. "Love is a battlefield"
Oxymoron An oxymoron is a term which features two words which appear to contradict each other but make sense of the situation overall. • For example: That woman is pretty ugly.	Hyperbole A hyperbole is a figure of speech which exaggerates the meaning of a sentence. • For example: My granddad is as old as time.
Idiom An idiom is a phrase which bears no literal meaning to the situation it is describing but it implies the facts or story behind it. • For example: There is a silver lining in every cloud.	Personification Personification is a type of figurative language. It is used to give an inanimate object or item a sense of being alive. The speaker would talk to the object as if it could understand and was intelligent. • For example: Why are you so heavy, suitcase?
Symbolism Symbolism is another form of figurative language which is used to express an abstract idea using an item or words. • For example: We had to put out a red alert.	Alliteration Alliteration is a type of figurative speech in which the repetition of letters or sounds is used within one sentence. • For example: Eagles end up eating entrails.
Onomatopoeia Onomatopoeia is a form of figurative language in which words which are used to describe a sound actually resemble the sound they are referring to. • For example: The ghost said boo.	Puns Puns are a form of figurative language which create a play on words. They add an extra meaning to a subject and are often seen as a form of joke or to be humorous. • For example: A horse is a very stable animal.
Irony A form of figurative speech is irony. This is when a statement made is directly contradictory to the reality. It is also used to convey a style of sarcasm. For example: • I posted on Facebook about how bad Facebook is. • I won the lottery on my retirement day.	



Picture Story Structure

Zoom in on a fine detail in the present; a certain aspect of a character, setting, etc.

Zoom out/ link back to your opening, go back to a particular detail about the weather and describe how it has changed/stayed the

'Drop' the reader right into the scene, describe the weather to create a particular atmosphere

Shift the focus to a different time using a flashback

Vocabulary Continuum

angry

miffed irritated displeased annoyed cross raging irate furious livid incandescent

+ _____ -

strolled ambled wandered rambled trudged plodded staggered stomped prowled

walked

Year 9 and 10 Knowledge Goals: Modern Short Stories and Imaginative Writing

CREATIVE SENTENCE STRUCTURES TO LEARN:

1. Comma Sandwich

The expanse of trees, which shifted in darkness, fully surrounded me.

The sun, which had been absent for days, shone steadily in the sky.

2. Colon Clarification

There was the faintest of sounds that seemed to touch the space between the trees; it was my own breathing.

A strange hint of something filled my nostrils and made my stomach lurch; it was blood.

3. Three Verb Sentence

The hot air balloon billowed, swelled, rose up and up, high into the sky.

I pushed, crashed, smashed my way through the army of nettles.

4. Adjective Attack

Steep and intimidating, the sudden rise of the forest floor ahead of me caused me to pause.

Cold and hungry, I waited for someone to take pity on me.

5. Three Adjective Punch

Fraught, tired, confused, I was no longer the same person who walked innocently into the forest.

Ruthless, dangerous, lethal, the animal leaps for its prey.

6. Present participle start (-ing)

Having no possibility of getting back to where I came from, the way ahead seemed suddenly less daunting.

Knowing I had no choice about it, I decided to agree with her.

7. Past participle start (-ed)

Wracked with fear, I crept slowly towards the door.

Scared for her life, I searched frantically for the key.

8. Simile Start

Like a bird knocked out of the sky, I was thrown to the ground as though for the last time.

Like a ghost caught in a fan, I spun round and round on the roundabout.

9. Double Adverb Snap

Slowly, carefully, I scrambled down the sheer rockface.

Cautiously, apprehensively, I opened the official looking letter.

10. Double Simile Sentence

It could have been Esther's, as black as jet, as dark as the night.

It's hard to describe how I felt - like an object no longer of use, like a parcel packed up in string and brown paper.

Sentence Types

- | | |
|---|---|
| 1 | <p>Minor or fragment sentence.
An incomplete sentence without a verb and/or subject.
Nothing. Silence.</p> |
| 2 | <p>Simple Sentence
A main clause with a verb and subject.
She was gone. It was over.</p> |
| 3 | <p>Compound Sentence
Two simple sentences linked by co-ordinating conjunctions.
She was gone <u>but</u> it was not over.</p> |
| 4 | <p>Complex Sentence
A sentence which contains a main clause and a subordinate clause.
Although she was gone, it was not over.</p> |



Sylvia Plath (1955)

'Paula Brown's Snowsuit'

Why should you read Sylvia Plath?

<https://www.youtube.com/watch?v=wCWI8ZlgCHk>

PDF of story

https://settlebeckorg-my.sharepoint.com/:w:/g/personal/astbury-smithf_settlebeck_org/EXJbqFhu4uhFkinLsbjyd88Bjt_etIBX30-HMb4pjW2U8g?e=B5n0FI



Michele Roberts (1993)

'Your Shoes'

PDF of story

https://settlebeckorg-my.sharepoint.com/:b:/g/personal/astbury-smithf_settlebeck_org/EVudLxuXK25Er50HInoNOIQBCCH0-OfiuKD2euXYJ5i9Bg?e=kTIWNR



Alice Walker (1973)

'The Flowers'

PDF of story

https://settlebeckorg-my.sharepoint.com/:w:/g/personal/astbury-smithf_settlebeck_org/EVxgrPcsy2tAj986cajpRJgBe07rivflwUmTOoTAbzeoEg?e=4AiMaH

What is lynching?

<https://www.youtube.com/watch?v=MKz5BV7k0Tw>



Jean Rhys (1976)

'I used to live here once'

PDF of story

https://settlebeckorg-my.sharepoint.com/:w:/g/personal/astbury-smithf_settlebeck_org/EZhqNbuaXdROrVliqJjQQRUBgVrBJA7rsM1CZGnt2AIJ9g?e=melkl

What makes this story great?

https://www.youtube.com/watch?v=0XRrj_0H2KU&t=108s

Year 9 and 10 Knowledge Goals: Modern Short Stories and Imaginative Writing

Tier 3 Vocabulary

Key Word		Definition
1	First person narrative	A type of writing where the storyteller tells events from their point of view using 'I' or 'We'.
2	Third person narrative	A type of writing where the storyteller tells events from a more distant position using 'He', 'She' or 'They'.
3	Protagonist	The main character or hero.
4	Antagonist	The enemy of the main character.
5	Narrative hook	A device at the start of the story which draws readers into the narrative.
6	Foreshadowing	A literary device in which the author hints at or suggests future events in the story.
7	In medias res	Beginning a narrative in the middle of the action perhaps by using direct speech.
8	Exposition	The introduction or beginning of a story that reveals important background information.
9	Rising action	All the events that happen in the story before the climax or dramatic peak.

Tier 3 Vocabulary

Key Word		Definition
10	Climax	The point in the narrative where the tension, excitement, or stakes reach the highest level.
11	Falling action	Everything that happens after the climax of the story and leads to the resolution.
12	Resolution	The conclusion of a story's plot
13	Dénouement	A synonym for resolution
14	Cyclical ending	The end of the story mirrors the opening in some way.
15	Dialogue	Direct speech or when character speak in a narrative
16	Sensory language	Language that appeals to the five senses: sight, sound, touch taste and smell
17	Figurative language	A collect term for non-literal phrases like similes, metaphors and personification.

Year 9 and 10 Knowledge Goals: Modern Short Stories and Imaginative Writing

Tier 2 Vocabulary

	Key word	Definition
1	Flaunted	To show off.
2	Perpetual	Never ending or changing, endless.
3	Incognito	Concealing your true identity, in disguise.
4	Solemn	Not cheerful, serious.
5	Crude	Rude, vulgar, rough or unpolished.
6	Truancy	Non-attendance at school.
7	Gloat	To boast or brag, to be self-satisfied.
8	Vulgar	Rude, crude, lacking in sophistication.
9	Suburb	An outlying district of a city.
10	Benign	Kind, caring, friendly, harmless.

Tier 2 Vocabulary

	Key word	Definition
11	Fragrant	Having a pleasant or sweet smell.
12	Debris	Rubbish or remains.
13	Felled	To cut down a tree..
14	Instinctively	Without conscious thought, by natural instinct

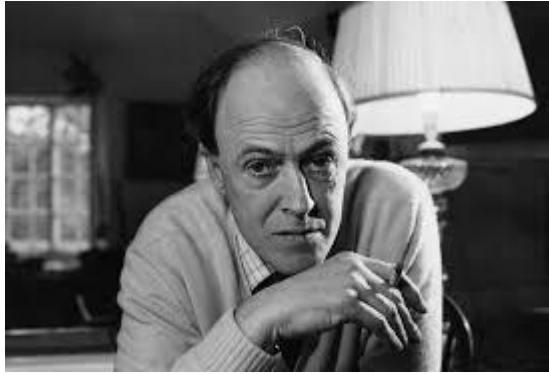
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QUIZ LINK

[QUIZ LINK](#)

Other great short stories to read and enjoy...



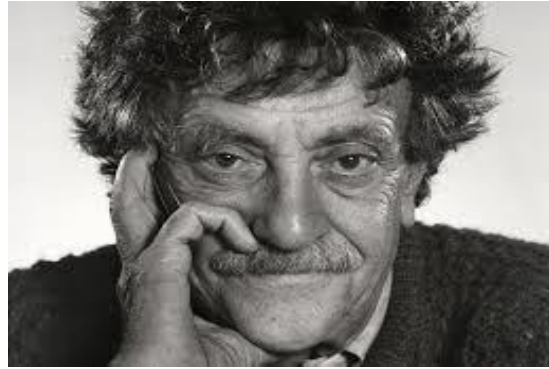
Roald Dahl (1953)
'Lamb to the Slaughter'

PDF of the story

<https://theshortstory.co.uk/devsitegkl/wp-content/uploads/2015/06/Short-stories-Roald-Dahl-Lamb-to-the-Slaughter.pdf>

Audiobook of the story

<https://www.youtube.com/watch?v=fpyVI3XKVls>



Kurt Vonnegut (1961)
'Harrison Bergeron'

PDF of the story

<https://www.tnellen.com/westside/harrison.pdf>

Reading of the story

https://www.youtube.com/watch?v=uP_YwwwlScU

Film version

<https://www.youtube.com/watch?v=sU3myZ3H6u0>



Kate Chopin (1894)
'The Story of an Hour'

PDF of the story

<https://www.uptonhigh.co.uk/attachments/download.asp?file=1938&type=pdf>

Audiobook of the story

<https://www.youtube.com/watch?v=D9S4btsmp70>



Elizabeth Taylor (1972)
'The Fly Paper'

Audio Version of the Story

<https://www.youtube.com/watch?v=v96F4bW74Kk>

The Fly Paper TV Version

<https://www.dailymotion.com/video/x3muppg>

Year 9 and 10 Knowledge Goals: English (Macbeth)

Plot

1. While returning from battle, Macbeth meets three Witches who predict that he will become King of Scotland.
2. Macbeth tells his wife of the Witches' predictions and she encourages him to murder the current king, Duncan, who is staying with them as a guest.
3. After Macduff discovers the murder, Duncan's sons flee the country, leaving the way clear for Macbeth to become king.
4. Banquo, Macbeth's best friend, becomes suspicious of what his friend has done so Macbeth has him murdered too.
5. Macbeth pays a second visit to the Witches and receives more predictions.
6. In England, Malcolm and Macduff, plan to invade Scotland to win back the throne. An enraged Macbeth has Macduff's wife and children killed; Macduff swears revenge.
7. Lady Macbeth suffers from guilt for what she has done and eventually commits suicide.
8. Malcolm's invasion is successful and Macduff kills Macbeth. Malcolm becomes the new King of Scotland and the country counts the cost of Macbeth's short but bloody reign.

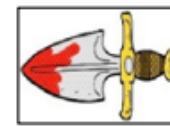
Characters

- **Macbeth:** A brave warrior and leader at the start of the drama but he falls victim to the Witches' predictions.
- **Lady Macbeth:** Lady Macbeth is even more ambitious than her husband. She persuades Macbeth to kill Duncan but she later becomes unable to deal with the guilt of what she has done.
- **Banquo:** Another general in King Duncan's army and Macbeth's best friend. While both men have ambitious thoughts, Banquo is more cautious.
- **Macduff:** The Thane of Fife, is Macbeth's deadly enemy. According to the Witches' prediction, Macduff is the only one who can stop Macbeth. The two men meet face-to-face on the battlefield and Macduff kills Macbeth.
- **The witches:** Their predictions lead to Macbeth killing King Duncan. They plant ideas in Macbeth's mind and let his ambition do the rest.
- **King Duncan:** The good King of Scotland whom Macbeth murders. Duncan is the model of a virtuous, compassionate, and farsighted ruler.
- **Malcolm:** The son of Duncan, whose restoration to the throne signals Scotland's return to order following Macbeth's reign of terror.



Themes

- Ambition, power and greed
- Loyalty and kingship
- Guilt
- Death, violence and conflict
- Light and dark
- Blood and water
- Masculinity/Manliness
- The supernatural



Context

Unrest: The early 17th century was a time of unrest, suspicion and superstition. A new king had just come to power and the future of the country seemed quite uncertain.

Monarchs: A king in Shakespeare's time was thought to rule by 'divine right'. This meant that God had chosen that person directly. The killing of a king (regicide) was considered to be the worst crime that anyone could commit.

Gunpowder Plot: The new King James I was paranoid about assassination attempts. This was unsurprising, since the infamous Gunpowder Plot to blow up the King had taken place just months before Macbeth was first performed.

Supernatural: King James believed in the supernatural. He wrote a book called Daemonologie in which he encouraged the trials of witches. Many in his audience would have believed in these things. This is one of the reasons that Shakespeare included the characters of the witches.

Women: Women had a much lower status than would be the case today. Wives were little more than the property of their husbands and had no legal rights.



Ambition, Power and Greed

- Macbeth's ambition is contrasted to Banquo's loyalty
- Lady Macbeth is ambitious to be Queen
- Macbeth kills King Duncan because of his ambition
- Macbeth orders the deaths of Banquo, and Macduff family
- Lady Macbeth, no longer powerful, dies off stage
- With the death of Macbeth, rightful power is restored at the end of the play



Loyalty and Kingship

- Macbeth named Thane of Cowdor for being loyal to King Duncan.
- Macbeth says he cannot kill Duncan out of loyalty
- Macbeth betrays King Duncan and murders him
- Malcolm tests Macduff's loyalty to him
- Macduff kills Macbeth out of loyalty to Malcolm
- Malcolm, the rightful heir, is King at the end of the play



Guilt

- Lady Macbeth persuades Macbeth to kill King Duncan as the guard will "bear the guilt" of the murder
- After murdering Duncan, Macbeth becomes consumed with guilt
- Lady Macbeth says not to worry about the death
- Macbeth sees Banquo's ghost – highlighting his guilt
- Lady Macbeth sleepwalks seeing blood on her hands
- Consumed with guilt, Lady Macbeth commits suicide



Death, Violence and Conflict

- Violence in battle is celebrated at start of the play
- Macbeth and Lady Macbeth argue about killing King Duncan
- Macbeth suffers internal conflict of conscience
- Macbeth murders King Duncan
- Macbeth orders the death of Banquo
- Conflicted, Lady Macbeth dies
- Macduff kills Macbeth and his death is celebrated



Themes

Light and Dark

- Macbeth asks the "stars to hide their fires"
- Following Duncan's death the sun doesn't rise as the world is in chaos "night strangles light"
- Before Banquo's murder, his torch goes out
- At the end of the play, Lady Macbeth had to have a light by her side
- Macbeth reacts to Lady Macbeth's death by saying "out brief candle" – showing he felt she brought light



Blood and Water

- Macbeth sees visions of a blood covered dagger
- Macbeth is scared by Duncan's blood – he says it would turn all of the seas red
- L. Macbeth says that they can wash the blood away
- Macbeth celebrates Banquo's blood being on the murderer's face
- The ghost of Banquo is covered in blood
- Lady Macbeth later sees blood on her hands



Masculinity/Manliness

- Macbeth describes his wife as his "partner of greatness"
- L. Macbeth worries Macbeth will not kill Duncan
- L. Macbeth says he's not a man unless he kills Duncan
- L. Macbeth guides Macbeth after Duncan's murder
- Macduff is upset at the death of his wife and children and wants revenge against Macbeth
- At the end, we are reminded of Macbeth's bravery



The Supernatural

- The witches open the play at set the atmosphere
- Macbeth has complete belief in their prophecies
- L. Macbeth asks for the evil spirits help to persuade her husband to murder Duncan
- Macbeth sees visions of a dagger and Banquo's ghost
- After Duncan's death, the world is thrown into chaos
- Macbeth is so consumed, he returns to the witches
- Lady Macbeth's sleep is haunted and she kills herself



Macbeth: [Live Lesson](#)

History behind the play: [Link](#)

The real Macbeth: [Link](#)

James I: [Link](#)

Year 9 and 10 Knowledge Goals: English (Macbeth)

Macbeth: A brave warrior and leader at the start of the drama but he falls victim to the Witches' predictions.



Lady Macbeth: Lady Macbeth is even more ambitious than her husband. She persuades Macbeth to kill Duncan but she later becomes unable to deal with the guilt of what she has done.



Points (words to describe Macbeth)

- | | |
|---------------|-------------|
| • Ambitious | Courageous |
| • Honourable | Admired |
| • Malleable | Manipulated |
| • Calculating | Violent |
| • Naive | Feared |

Points (words to describe Lady Macbeth)

- | | |
|----------------|--------------|
| • Manipulative | Calculating |
| • Ambitious | Deceitful |
| • Supernatural | Evil |
| • Controlling | Unscrupulous |
| • Fragile | Possessed |

Top 10 quotations

1. "brave" "Signs of nobleness, like stars, shall shine on all deservers" 1.2
2. "I have no spur to prick the sides of my intent" 1.3
3. "stars hide your fires! Let not light see my black and deep desires" 1.4
4. "we will proceed no further in this business" 1.7
5. "False face must hide what the false heart doth know" 1.7
6. "Is this a dagger I see before me, Come, let me clutch thee" 2.1
7. "Sleep no more! Macbeth does murder sleep!" 2.2
8. "To be thus is nothing but to be safely thus. Our fears in Banquo stick deep" 3.1
9. "devil," "hellhound" "abhorred tyrant" "rarer monster" and "follower of Satan" 5.6 (Macduff and others)
10. "Yet I will try the last: before my body I throw my warlike shield" 5.8

Top 10 quotations

1. "my partner of greatness" (Macbeth 1.5)
2. "I fear thy nature; It is too full o' th' milk of human kindness" (1.5)
3. "Come, you spirits... unsex me here/And fill me from the crown to the toe top-full/Of direst cruelty." (1.5)
4. "Look like th' innocent flower, but be the serpent under 't." (1.5)
5. "I would, while it was smiling in my face, have plucked my nipple from his boneless gums and dashed the brains out" (1.7)
6. "a little water clears us of this deed" (2.2)
7. "My hands are of your colour, but I shame to wear a heart so white." (2.2)
8. "Be honest of the knowledge dearest chuck" (Macbeth 3.2)
9. "Yet here's a spot...Out, damned spot! out, I say!" (5.1)
10. "What, will these hands ne'er be clean?" (5.1)

Macduff: The Thane of Fife, is Macbeth's deadly enemy. According to the Witches' prediction, Macduff is the only one who can stop Macbeth. The two men meet face-to-face on the battlefield and Macduff kills Macbeth.



The witches: Their predictions lead to Macbeth killing King Duncan. They plant ideas in Macbeth's mind and let his ambition do the rest.



Points (words to describe Macduff)

- Brave
- Honourable
- Loyal
- Righteous
- Feared
- Courageous
- Admired
- Selfless
- Powerful
- Antithesis of Macbeth

Top 10 quotations

1. *"oh horror, horror, horror"* 2.3 (finding Duncan's body)
2. *"O gentle lady, 'Tis not for you to hear what I can speak"* (to L. Macbeth)
3. *"The untimely emptying of the happy throne"* 4.3 (Macbeth murdering Duncan)
4. *"bleed, bleed, poor country"* 4.3 (when he thinks Malcolm will be a bad king)
5. *"I must feel it as a man"* 4.3 (finding out about his wife and children)
6. *"tyranny show thy face"* 5.7 (calling out for Macbeth)
7. *"from his mother's whom untimely ripped"* 5.8
8. *"turn, hellhound, turn!" "rarer monster"* (to Macbeth)
9. *"I have ne words, my voice is in my sword"* 5.8 (to Macbeth)
10. *"Hail, King! Hail, King of Scotland!"* 5.8 (to Malcolm)

Points (words to describe the witches)

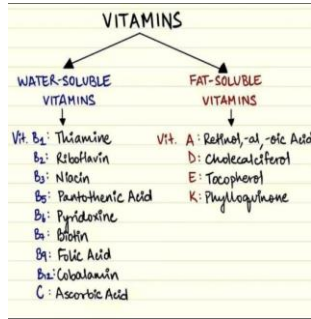
- Manipulative
- Controlling
- Supernatural
- Wicked
- Tormenters
- Calculating
- Deceitful
- Evil
- Prophetic
- Despicable

Top 10 quotations

1. *"when shall we three meet again? In thunder, lightning or in rain?"* 1.1
2. *"there to meet with Macbeth"* 1.1
3. *"fair is foul and foul is fair"* 1.1
4. *"Hail Macbeth...thou shall be king hereafter"* 1.3
5. *"Lesser than Macbeth and greater"* 1.3 (to Banquo)
6. *"imperfect speakers"* 1.3 (Macbeth)
7. *Double, double toil and trouble; Fire burn, and cauldron bubble* 4.1
8. *"By the pricking of my thumbs, something wicked this way comes"* 4.1 (about Macbeth)
9. *"you secret, black, and midnight hags"* 4.1 (Macbeth)
10. *"Beware Macduff"* 4.1



Watch video to learn how to preserve nutrients when cooking



•Why do we cook Food?

- Cooking makes food easier to eat.
- It makes food more appetizing and palatable.
- It makes food easier to digest.
- It makes food safe to eat. Cooking destroys many harmful micro-organisms or germs in the food.
 - Some foods keep longer when cooked. ...
 - Cooking improves the appearance of food.

Simple carbohydrates
 Monosaccharides – Glucose in fruit and vegetables, Fructose found in honey and Galactose in milk
 Disaccharides – Sucrose known as cane sugar or sugar beet. Used in cooking and drinks

The common 'sugar' (sucrose) used is made up from glucose and fructose and is extracted from sugar cane or sugar beet. Sugar cane is grown in tropical and sub-tropical parts of the world, including South Africa, Brazil, India, Mauritius and the West Indies

Functions of sugar

1. Flavour Balance

A small amount of sugar is added to nutritious foods such as flavoured yogurts and whole grain products to balance out sour and bitter flavours.

Sugar is also added to tomato and vinegar based sauces, dressings, and brines to balance out spicy, salty, and acidic flavours. Without sugar, these foods would not be as enjoyable.

2. Preservation

When making jams, jellies, preserves, sauces, and dressings, sugar absorbs extra moisture and stops bacteria from growing, delaying spoilage.

In bread products and baked goods, sugar's ability to retain moisture helps to extend shelf life. Without sugar, these foods would spoil sooner and mould would grow much faster.

Type of Vitamin	Function	Examples of Ingredients
Calcium	Bone health, normal blood pressure, muscle contraction	Broccoli, dairy products, salmon
Chloride	Maintains fluid and electrolyte balance	Baking soda, bread, cheese, eggs
Chromium	Carbohydrate metabolism	Cheese, fish, meat
Copper	Electron carrier	Cocoa, organ meat, seafood
Fluorine	Bone and tooth health	Organ meat, legumes, nuts
Iron	Part of haemoglobin, a red protein that carries oxygen in the blood	Cereals, breads, egg yolks, fish, fruits
Magnesium	Muscle activity, and fat, protein and carbohydrate metabolism	Brown rice, cocoa, seafood, vegetables
Manganese	Brain function, energy metabolism, building proteins and bone structure	Fruits, vegetables, nuts
Molybdenum	Purine degradation and formation of uric acid	Peas, bread, grains, nuts
Phosphorus	Bone and tooth health	Bananas, citrus fruits, meat, milk
Potassium	Maintains fluid and electrolyte balance	Bananas, citrus fruits, potatoes
Selenium	Antioxidant	Dairy products, fruits, fish
Sodium	Maintains fluid and electrolyte balance	Milk, salt, spinach
Zinc	Taste perception	Red meat, seafood, legumes

3. Texture and Mouthfeel

Sugar lowers the freezing point of ice cream, preventing the formation of large ice crystals, which helps make it soft, smooth and easy to scoop.

The gel-like consistency found in jams and jellies is created when sugar is mixed with fruit fibre (pectin) and acids such as lemon juice.

Sugar helps provide the soft structure in baked goods by softening starch gels or gluten networks in puddings and doughs. Too much gluten formation will cause the dough or batter to become rigid and tough. When the correct proportion of sugar is added in the recipe, an appropriate amount of gluten develops and optimum elasticity results.

4. Volume

Sugar acts as the food for yeast, which helps bread products and other baked goods rise, giving them an airy texture.

Sugar also adds volume to egg white foams, such as meringues, by stabilizing the foam structure and allowing air to be incorporated. Without sugar, these products would not be as tall, fluffy, or soft.

5. Colour

When heated, sugar caramelizes or undergoes a Maillard reaction (browning) if proteins are present. Both of these processes result in the characteristic golden brown colour and pleasing aromas of bread products, baked goods, and seared meats.

6. Taste

A small amount of sugar can improve the taste of high fibre sources, such as bran cereals and plain oatmeal.

Tier 3 Vocabulary

Key word		Definition
1	Milliard reaction	Chemical reaction between proteins and carbohydrate which changes the flavour of food i.e when meat is cooked.
2	Caramelisation	When sugars melt at a high temperature and change colour to a shade of brown and release sweetness.
3	Simple carbohydrates	Simple carbohydrates are broken down quickly by the body to be used as energy. Simple carbohydrates are found naturally in foods such as fruits, milk, and milk products. They are also found in processed and refined sugars such as candy, table sugar, syrups, and soft drinks.
4	Monosaccharides	Called simple sugars as made of small molecules that are easily broken down during digestion. Provide energy quickly. Glucose, Fructose and galactose.
5	Disaccharides	These are double sugars made from two monosaccharides. Sucrose, Lactose and Maltose.
6	Mouthfeel	Mouthfeel refers to the physical sensations in the mouth caused by food or drink, making it distinct from taste
7	Fat soluble vitamins	Small amounts of vitamins are required in the diet to promote growth, reproduction, and health. Vitamins A, D, E, and K are called the fat-soluble vitamins, because they are soluble in organic solvents.
8	Water soluble vitamins	Water-soluble vitamins are those that are dissolved in water and readily absorbed into tissues for immediate use. the B vitamins -- folate, thiamine, riboflavin, niacin, pantothenic acid, biotin, vitamin B6, and vitamin B12 -- and vitamin C.
9	Micro-nutrients	Micronutrients are vitamins and minerals needed by the body in very small amounts.
10	Dental carries	Tooth decay, also known as cavities or caries, is the breakdown of teeth due to acids produced by bacteria. The cavities may be a number of different colors from yellow to black.

Notes:

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

Theme 3 Education and Future careers

- Et ton collège, c'est comment ?
- Quels sont les avantages et les inconvénients de ton collège ?
- Qu'est-ce que tu aimerais changer au collège ?
- Tu aimes ton uniforme scolaire ?
- Idéalement qu'est-ce que tu voudrais porter
- Tu aimes quelles matières ?
- Et hier, qu'est-ce que tu as fait au collège ?

- à l'avenir, après le collège, tu voudrais continuer tes études ?

- Et comme profession, qu'est-ce que tu voudrais faire?

- Tu as fait une visite scolaire récemment ?

**Work out what
these questions
are and
practice them for
homework**

Year 9 and 10 Knowledge Goals: French

Tier 3 Vocabulary

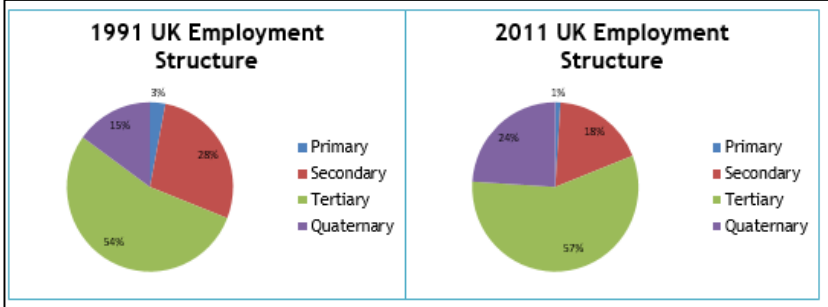
Key word		Definition
1	Pronunciation	The way in which a word is pronounced
2	Fluency	The ability to speak or write a foreign language easily and accurately. Fluency is not speed.
3	Phonics	A method of teaching people to read by correlating sounds with symbols in an alphabetic writing system.
4	Past Participle	The form of a verb typically ending in é/u/i
5	Stem	The root or main part of a word, to which inflections or formative elements are added.
6	Infinitive	The basic form of a verb, without an inflection binding it to a particular subject or tense.
7	Auxiliary verbs	Avoir and être used in the Past tense

Languagenut
Exam skills
KS4

Notes:



[QUIZ LINK](#)



Science parks (We study Southampton University's)

- Science parks are typically located on the edge of university cities. They can be found in Cambridge, Oxford and Southampton. They have good transport links and usually have attractive environments. Sometimes, science parks are located close to or within university grounds.
- Graduates are often employed to apply their knowledge and experience to innovative businesses. Businesses often link closely to local universities and tap into their research and development.
- Over 100 science parks in the UK employ around 75,000 people. The map below shows the location of science parks across the UK.

Business parks (We study Colbalt Business park near Newcastle)

Business parks are areas with a small group of businesses in the same land area. There are many hundreds of business parks across the UK. Business parks are often located on the edge of major urban areas where there are good communications, and the land is cheap.

Business parks can contain a range of businesses, from small-scale manufacturing to research and development. Businesses can benefit from supplying goods and services to each other.

Impacts of Industry on the environment:

- Habitat destruction.
- Wastewater and water pollution
- Air pollution
- scarring of landscape

Transport improvements in the UK:

Roads: Increase in dual carriage ways and new motorways, smart motorways to reduce congestion.

Rail: London's Crossrail (Elizabeth line) across London to reduce volume of commuters on the tube – 200 million passenger annually and £14.8 to build. HS” to link the North and London - £80 billion to build – to reduce commuting time and spread wealth more evenly.

Airports: expansion of Heathrow to have third runway, costs 198.6 billion and increase Heathrow to carry 73 million passengers. Development of extra terminals to increase capacity at Manchester, Liverpool, Gatwick, Stanstead and Luton.

Ports: to increase ease of Trade building new and deeper ports to host larger vessels in London and in Liverpool.

Changing rural landscape:

Population decline in traditional farming communities as a result of **rural to urban migration** of younger people. Leading to loss of housing, loss of transport links, loss of educational facilities and an ageing population. Places such as Sedbergh.

Population growth in commuter towns and villages with easier access to larger cities this is as a result of **counter-urbanisation**. This leads to higher house prices, building on greenfield sites , increased congestion and habitat destruction.

The North-South Divide		
	North	South
Life expectancy	79	85
Average salary	£22,260	£37,600
Adult literacy	91%	99%
Unemployment levels	9%	3%

Solutions to the North-South divide:

- Improved transport links (HS2, M62 highway)
- Devolved governments and councils.
- Investment in Science and innovation e.g. science and business parks
- Grants and financial incentives for companies to move from London to Manchester, Liverpool, Leeds and Newcastle.
- Lancashire LEP.

UK's relationship with the world:

Trade, culture, transport and electric communication. Close ties with the EU, USA and the commonwealth

Tier 3 Vocabulary

Key word		Definition
1	Commonwealth	The Commonwealth is a voluntary association of 56 independent and equal sovereign states, which were mostly territories of the former British Empire. It is home to 2.5 billion citizens
2	De-industrialisation	The decline of a country's traditional manufacturing industry due to exhaustion of raw materials, loss of markets and increasing competition from NEEs.
3	European Union	An international organisation of 27 European countries, formed to reduce trade barriers
4	Industrial structure	The relative proportion of the workforce employed in different sectors of the economy (primary, secondary, tertiary and quaternary).
5	North-south divide (UK)	Economic and cultural differences between Southern England and Northern England.
6	Post-industrial economy	The economy of many economically developed countries where most employment is now in service (tertiary) industries.
7	Science and business parks	Business Parks are purpose built areas of offices and warehouses, often at the edge of a city and on a main road. Science parks are often located near university sites, and high-tech industries are established.
8	Service industries (tertiary industries)	The economic activities that provide various services – commercial, professional, social, entertainment and personal.
9	Transnational Corporation (TNC)	A company that has operations (factories, offices, research and development, shops) in more than one country.
10	Information technologies	Computer, internet, mobile phone and satellite technologies – especially those that speed up communication and the flow of information.

Notes:

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

The Propaganda machine in Germany

Joseph Goebbels

- Minister for Public Enlightenment and Propaganda
- He believed Hitler was the Saviour of Germany
- Decided what the public should/should not hear through media censorship
- Used all resources to build loyalty in the people to Hitler and the Nazi Party
- Controlled Radio, newspapers, rallies etc.

Examples of Propaganda

"Triumph of Will": Film produced by the Nazis that showed the Nuremberg Rally. One million attended the rally - it made the Nazis look powerful, displaying flags, lights, banners and leading Nazi officials.

Nazification of the Education System: School textbooks were rewritten to make Germans look successful. Children were taught to believe in the Nazi doctrines, the Hitler Myth and that the Jews were the enemy.

PROPAGANDA

Methods of Propaganda

Rallies
Goebbels organised the Nuremberg Rallies every summer for a week. Bands, marches, speeches and flying displays. It was used to demonstrate the military might of Germany. The SS and Hitler Youth did this often.

The Berlin Olympics (1936)
Goebbels was convinced it was good propaganda nationally and internationally, to show off Aryan superiority. There was pressure from other countries to boycott, so Nazis put one Jew in their team. Huge stadiums were built, which helped with unemployment. It was also the first televised Olympic games so it was groundbreaking for Germany to hold them.

Cinema
All films had to be pro-Nazi (regardless of genre). Newsreels full of the greatness of Hitler and Nazi achievements. Foreign films were censored. Over 1000 films made during Third Reich around Nazi ideas e.g. Jud Siss about an evil Jew. "Triumph of the Will" was created about Nuremberg Rally. (Leni Riefenstahl director) to show off the power of the Nazi Party.

Music
Jazz was banned because it was black music and came from the West. Musicians had to be members of Reich Chamber of Culture. Goebbels could take membership away. Folk songs and classical music were allowed.

Art
Only approved paintings were allowed. Modern art was labelled as 'degenerate' and un-German. Most art portrayed heroic Nazis, military figures or ideal Aryan families. Albert Speer was employed to create monumental public buildings to show off the success of Germany under the Nazis.

Radios
Goebbels loved this new technology. He made radios cheap so Nazi messages could reach more people, and called it 'the People's Receiver'. Listening to BBC was punishable by death. 6000 loudspeakers also placed in bars and streets for those without radio. Hitler's speeches (and other speeches) repeated over and over. People started to believe what they heard - inferiority of Jews and German expansion to the east. The Reich Radio Company was established.

Newspapers
All newspapers were controlled by Goebbels and banned anti-Nazi ideas. Jewish editors and journalists were put out of work and anti-Nazi newspapers shut down. Newspapers were local not national in 1933 and by 1944 there were only 1000 papers. Propaganda ministry ordered that pictures showing members of the Reich at dinner with bottles in front of them mustn't be published because it looked like they were 'living it up'.

Books
Writers and publishers needed permission of Goebbels to publish. Any book that did not fit with Hitler's ideals were not allowed to be published and authors could face punishment. The best selling book at the time was Mein Kampf. In 1933, book burning of anything unacceptable to Nazi ideology was undertaken, especially Jewish books.

Nazi Beliefs vs. Christian Beliefs

Nazi Beliefs	Christian Beliefs
Hitler as all-powerful leader	God as the ultimate authority
Aryan racial superiority	Everyone equal in the eyes of God
War, military discipline & violence important	Peace is what everyone should strive for
Dominance of the strong over the weak	The strong should look after the weak
Mein Kampf should be read and preached by the people	The Bible should be read and preached by the people

The Catholic Church

Hitler worried that the Catholic Church would oppose him because Catholics:

- Were loyal to the Pope
- Usually support the Catholic Centre Party
- Sent their children to Catholic schools and the Catholic youth organisations.

The Concordat 1933
Hitler agreed with the Pope that Catholics were free to worship and run their own schools, in return for staying out of politics.

The Protestant Church

The Reich Church
Found in 1933 and was made up of about 2000 protestants. They supported the Nazis and was led by Ludwig Muller. Some members wore Nazi uniforms and called themselves German Christians.

Vs

The Confessional Church
Found in 1934 and was made up of about 6000 Protestant churches. It opposed the Nazis and was led by Martin Niemoller. It was repressed by the Nazis and its members were punished in work camps.

Opposition to the Nazis
The Nazification of the church faced opposition from religious individuals such as: Martin Niemoller, Dietrich Bonhoeffer, Ludwig Muller and the Pope.

Key	
The Justice System	
The Enabling Act	An act that allowed Hitler to pass laws without parliament.
Law for Reconstruction of the Reich	A law that gave the Nazis total power over local government
People's Court	A Nazi controlled court which held trials of political crimes.
SD (<u>Sicherheitsdienst</u>)	A Nazi intelligence service run by <u>Reynhard Heydrich</u> .
The Police State	
SS "Schutzstaffel"	Hitler's private bodyguards that were totally loyal Nazis.
Gestapo 'Secret Police'	Police that interrogated/imprisoned people without trial
Heinrich Himmler	The head of the SS and in charge of the Gestapo.
Informers	People who reported disloyalty towards the Nazis.
Concentration Camps	A camp that contained political enemies of the Nazis.
Death Camps	The use of concentration camps to kill minority groups.
Propaganda	
Dr Joseph Goebbels	The Minister for Public Enlightenment and Propaganda for the Nazi Party from 1933 - created Nazi propaganda campaigns
'Hitler Myth'	Goebbels' strategy to make Hitler seem like a god and the saviour of Germany. This was the 'cult of the Fuhrer'.
Censorship	A method to stop people from seeing or hearing anything different or challenging to the Nazis.

Notes:

Use the information on the other side of this sheet to focus your home learning. This is a guide to the unit that we are currently studying in school. If you miss any lessons, or feel that you didn't understand any of the topics on here, then you can see more for more guidance, or use this as a basis for more independent learning.

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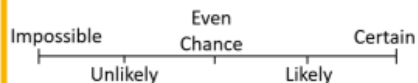


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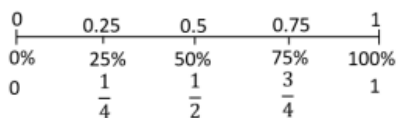
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Key Concept

Chance



Probability



Probabilities can be written as:

- Fractions
- Decimals
- Percentages

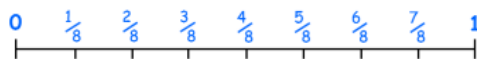
Examples



- 1) What is the probability that a bead chosen will be **yellow**. Show the answer on a number line.

$$\text{Probability} = \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$

$$P(\text{Yellow}) = \frac{2}{8} = \frac{1}{4}$$



- 2) How many **yellow** beads would you **expect** if you pulled a bead out and replaced it 40 times?

$$\frac{1}{4} \times 40 = \frac{1}{4} \text{ of } 40 = 10$$

Key Concepts

Experimental probability differs to theoretical probability in that it is based upon the **outcomes from experiments**. It may not reflect the outcomes we expect.

Experimental probability is also known as the **relative frequency** of an event occurring.

Estimating the number of times an event will occur:

$$\text{Probability} \times \text{no. of trials}$$

Examples

Colour	red	blue	white	black
Prob	x	0.2	0.3	x

A spinner is spun, it has four colours on it. The relative frequencies of each colour are recorded. The relative frequency of red and black are the same.

- a) What is the relative frequency of red?

$$1 - (0.2 + 0.3) = 0.5$$

$$x = \frac{0.5}{2} = 0.25$$

- b) If the spinner is spun 300 times, how many times do you expect it to land on white?

$$0.3 \times 300 = 90$$

Key Concepts

Probabilities can be described using **words** and **numerically**.

We can use **fractions, decimals or percentages** to represent a probability.

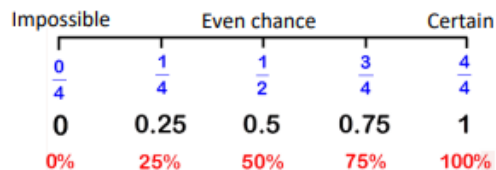
Theoretical probability is what should happen if all variables were fair.

All probabilities must **add to 1**.

The probability of something **NOT** happening equals:

$$1 - (\text{probability of it happening})$$

Probability scale:



There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	3	5	2

- 1) What is the probability that a blue counter is chosen? $\frac{3}{19} = \frac{\text{number of blue}}{\text{total number of counters}}$
- 2) What is the probability that red is **not** chosen? $\frac{10}{19} = \frac{\text{number of all other colours}}{\text{total number of counters}}$

Examples

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	$3x$	$x-5$	$2x$

A counter is chosen at random, the probability it is red is $\frac{9}{100}$. Work out the probability it is black.

$$9 + 3x + x - 5 + 2x = 100$$

$$6x + 4 = 100$$

$$x = 16$$

Number of black counters = $16 - 5$

$$= 11$$

Probability of choosing black = $\frac{11}{100}$

Key Concepts

Venn diagrams show all possible relationships between different sets of data.

Probabilities can be derived from Venn diagrams. Specific notation is used for this:

$P(A \cap B)$ = Probability of A **and** B

$P(A \cup B)$ = Probability of A **or** B

$P(A')$ = Probability **of not** A

Key Concepts

Two way tables are used to tabulate a number of pieces of information.

Probabilities can be formulated easily from two way tables.

Probabilities can be written as a **fraction, decimal or a percentage** however we often work with fractions. You do not need to simplify your fractions in probabilities.

Estimating the number of times an event will occur

$$\text{Probability} \times \text{no. of trials}$$

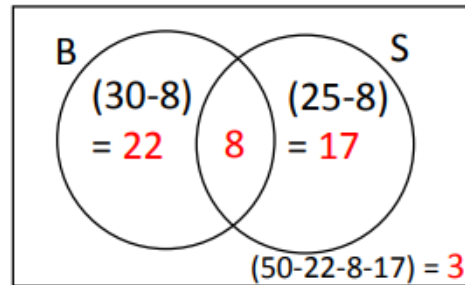
Example

Out of 50 people surveyed:

30 have a brother

25 have a sister

8 have both a brother and sister



a) Complete the Venn diagram

b) Calculate:

$$\begin{array}{lll} \text{i) } P(A \cap B) & \text{ii) } P(A \cup B) & \text{iii) } P(B') \\ = \frac{8}{50} & = \frac{47}{50} & = \frac{20}{50} \end{array}$$

iv) The probability that a person with a sister, does not have a brother.

$$= \frac{8}{25}$$

Examples

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	3x	x-5	2x

A counter is chosen at random, the probability it is red is $\frac{9}{100}$. Work out the probability it is black.

$$\begin{aligned} 9 + 3x + x - 5 + 2x &= 100 \\ 6x + 4 &= 100 \\ x &= 16 \end{aligned}$$

$$\begin{aligned} \text{Number of black counters} &= 16 - 5 \\ &= 11 \end{aligned}$$

$$\text{Probability of choosing black} = \frac{11}{100}$$

80 children went on a school trip. They went to London or to York.

23 boys and 19 girls went to London. 14 boys went to York.

	London	York	Total
Girls	19	24	43
Boys	23	14	37
Total	42	38	80

What is the probability that a person is chosen that went to London? $\frac{42}{80}$

If a girl is chosen, what is the probability that she went to York? $\frac{24}{38}$

Key Concepts

Independent events are events which do not affect one another.

Dependent events affect one another's probabilities. This is also known as **conditional probability**.

Key Concepts

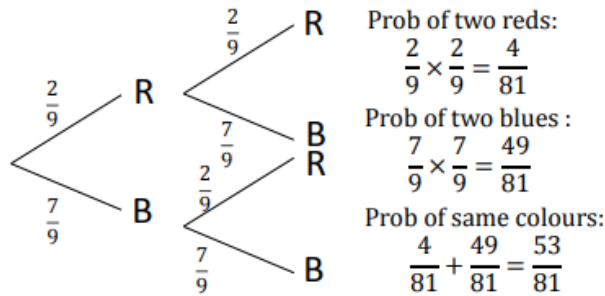
When there are a number of different possible outcomes in a situation we need a **logical** and **systematic** way in which to view them all.

We can be asked to **list** all possible outcomes e.g. choices from a menu, order in which people finish a race.

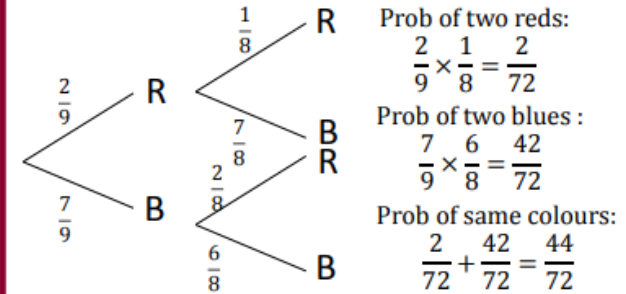
We can also use a **sample space diagram**. This records the possible outcomes of two different events happening.

Examples

There are red and blue counters in a bag. The probability that a red counter is chosen is $\frac{2}{9}$. A counter is chosen and **replaced**, then a second counter is chosen. Draw a tree diagram and calculate the probability that two counters of the same colour are chosen.



There are red and blue counters in a bag. The probability that a red counter is chosen is $\frac{2}{9}$. A counter is chosen and **not replaced**, then a second counter is chosen. Draw a tree diagram and calculate the probability that two counters of the same colour are chosen.



Examples

Starter	Main
Fishcake	Lasagne
Melon	Beef
	Salmon

List all of the combinations possible when one starter and one main are chosen.

F, L M, L
 F, B M, B
 F, S M, S

Note: You can write the initials of each option in a test. You do not need to write out the full word.

Two dice are thrown and the possible outcomes are shown in the sample space diagram below:

	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

1) What is the probability that 2 numbers which are the same are rolled?

$$\frac{6}{36} = \frac{\text{outcomes where numbers are the same}}{\text{total number of outcomes}}$$

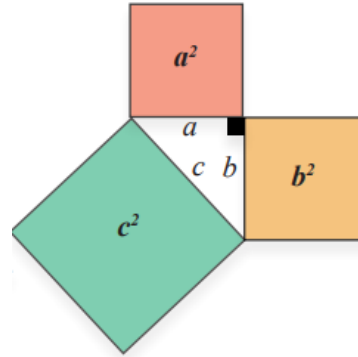
2) What is the probability that two even numbers are rolled?

$$\frac{9}{36} = \frac{\text{outcomes where numbers are both even}}{\text{total number of outcomes}}$$



Pythagoras of Samos 570 BC – 495 BC

Pythagoras was a Greek philosopher and mathematician. He discovered that if you were to draw squares on each of the sides of a right-angled triangle the sum of the area of the two smaller squares would equal the area of the largest square.



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

Where c is the hypotenuse, the longest side that lies opposite the right-angle, and a and b are either of the shorter sides.

Remember to label the sides of your triangle. It's important that the hypotenuse is labelled c but it doesn't matter which of the shorter sides is labelled a or b .

Finding the hypotenuse

1) Find the length of x .

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

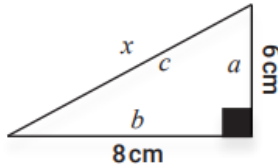
$$6^2 + 8^2 = x^2$$

$$36 + 64 = x^2$$

$$100 = x^2$$

$$\sqrt{100} = x$$

$$10\text{cm} = x$$



2) Find the length of y .

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

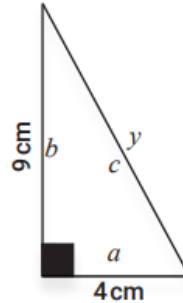
$$4^2 + 9^2 = y^2$$

$$16 + 81 = y^2$$

$$97 = y^2$$

$$\sqrt{97} = y$$

$$9.8\text{m (to 1 d.p.)} = y$$



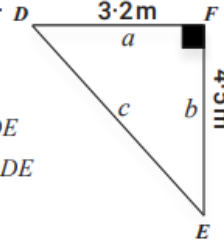
3) Find the length of DE .

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

$$3.2^2 + 4.5^2 = DE^2$$

$$\sqrt{(3.2^2 + 4.5^2)} = DE$$

$$5.5\text{m (to 1 d.p.)} = DE$$



In example 1, you don't actually need a calculator, just use your knowledge of square numbers and square roots. This is an example of a Pythagorean triple where the sides are all whole numbers. Can you think of any other Pythagorean triples?

Finding a short side

To find the length of a or b ,

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

can be re-arranged to give either:

$$c^2 - b^2 = a^2 \quad \text{or} \quad c^2 - a^2 = b^2$$

Examples

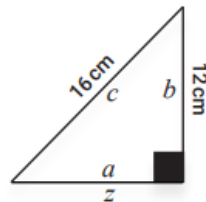
1) Find the length of z .

$$c^2 - b^2 = a^2$$

$$16^2 - 12^2 = z^2$$

$$\sqrt{(16^2 - 12^2)} = z$$

$$10.6\text{cm (to 1 d.p.)} = z$$



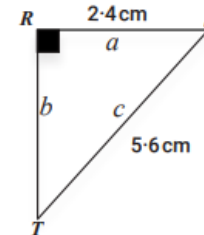
2) Find the length of RT .

$$c^2 - b^2 = a^2$$

$$5.6^2 - 2.4^2 = RT^2$$

$$\sqrt{(5.6^2 - 2.4^2)} = RT$$

$$5.1\text{m (to 1 d.p.)} = RT$$



Remember!

- Check what side you are trying to find. When it's the longest side c , you need to **ADD** the squares and when it's one of the shorter sides a or b , you need to **SUBTRACT** the squares.

- Pythagoras' theorem can only be used to find length of sides, take care to not confuse it with a trigonometry question which involves length of sides and angle size in right-angled triangles.

Labelling the right-angled triangle

Each side of the triangle must be labelled.

Hypotenuse (H) – This is the longest side in a right-angled triangle.

Opposite (O) – This is the side that lies directly opposite the marked angle.

Adjacent (A) – This is the side that lies next to the marked angle.

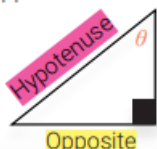


Once we know what sides and angles we know or are looking for we can then choose the correct ratio to use.

The sine ratio (SOH)

When working with the angle θ and the opposite and hypotenuse sides, we use the sine ratio.

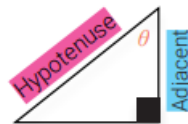
$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$



The cosine ratio (CAH)

When working with the angle θ and the adjacent and hypotenuse sides, we use the cosine ratio.

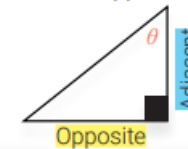
$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$



The tangent ratio (TOA)

When working with the angle θ and the adjacent and opposite sides we use the tangent ratio.

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

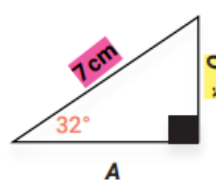


- SOH CAH TOA is used to help us remember which ratio connects which sides.
- θ ('theta') is the symbol used in trigonometry to represent the unknown angle.

Finding a side

To find the length of a side in a right-angled triangle, you must know the length of one other side and the size of an angle (other than the right angle!)

E.g. 1) Find the length of x .



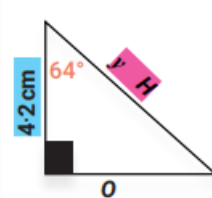
SOH CAH TOA

$$\sin \theta = \frac{o}{h} \quad \sin 32^\circ = \frac{x}{7}$$

$$7 \times \sin 32^\circ = x$$

$$x = 3.7 \text{ cm (to 1 d.p.)}$$

E.g. 2) Find the length of y .



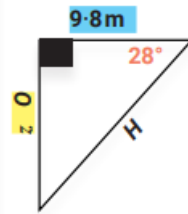
SOH CAH TOA

$$\cos \theta = \frac{a}{h} \quad \cos 64^\circ = \frac{4.2}{y}$$

$$y = \frac{4.2}{\cos 64^\circ}$$

$$y = 9.6 \text{ cm (to 1 d.p.)}$$

E.g. 3) Find the length of z .



SOH CAH TOA

$$\tan \theta = \frac{o}{a} \quad \tan 28^\circ = \frac{z}{9.8}$$

$$9.8 \times \tan 28^\circ = z$$

$$z = 5.2 \text{ m (to 1 d.p.)}$$

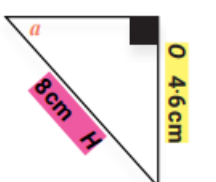
Steps to success

1. Label the sides of the triangle **H**, **O** and **A**. What side do you know and what side do you need?
2. Use **SOH CAH TOA** to determine the correct trig ratio to use.
3. Substitute your values into the correct equation.
4. Solve the equation and give your answer to an appropriate degree of accuracy

Finding an angle

To find the size of an angle in a right-angled triangle you must know the length of two sides.

E.g. 1) Find the size of the angle a .



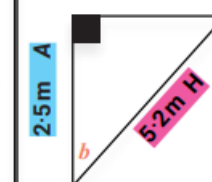
SOH CAH TOA

$$\sin \theta = \frac{o}{h} \quad \sin a = \frac{4.6}{8}$$

$$a = \sin^{-1} \frac{4.6}{8}$$

$$a = 35.1^\circ \text{ (to 1 d.p.)}$$

E.g. 2) Find the size of the angle b .



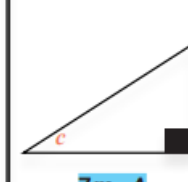
SOH CAH TOA

$$\cos \theta = \frac{a}{h} \quad \cos b = \frac{2.5}{5.2}$$

$$b = \cos^{-1} \frac{2.5}{5.2}$$

$$b = 61.3^\circ \text{ (to 1 d.p.)}$$

E.g. 3) Find the size of the angle c .



SOH CAH TOA

$$\tan \theta = \frac{o}{a} \quad \tan c = \frac{3}{7}$$

$$c = \tan^{-1} \frac{3}{7}$$

$$c = 23.2^\circ \text{ (to 1 d.p.)}$$

Steps to success

1. Label the sides of the triangle **H**, **O** and **A**. What side do you know and what side do you need?
2. Use **SOH CAH TOA** to determine the correct trig ratio to use.
3. Substitute your values into the correct equation.
4. Solve the equation and give your answer to an appropriate degree of accuracy.

Tier 3 Vocabulary

Key word		Definition
1	Probability	Used to describe the chance of something happening.
2	Probability scale	A scale used to describe probabilities. All probabilities must lie between 0 (impossible) and 1 (certain).
3	Impossible	Describes an event that can never happen. An impossible event has a probability of 0.
4	Certain	Describes an event which will always happen. A certain event has a probability of 1.
5	Theoretical probability	A number between 0 and 1 to represent the probability of something occurring. We can write probabilities using P(event) notation.
6	Experimental probability	An estimated probability based on the results of an experiment. The more trials are performed, the more reliable the results.
7	Hypotenuse	The longest side of a right-angled triangle.
8	Adjacent	The side next to the marked angle
9	Opposite	The side opposite the marked angle
10	Sin/Sine	The ratio of the length of the opposite side to the length of the hypotenuse
11	Cos/Cosine	The ratio of the length of the adjacent side to the length of the hypotenuse
12	Tan/Tangent	The ratio of the length of the opposite side to the length of the adjacent side

Notes:

Quiz QR Code



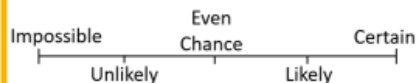
Quiz Link

<https://forms.office.com/e/GUEsiMNLUj>

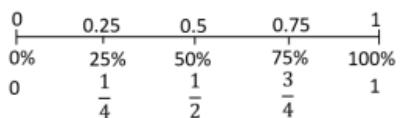
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Key Concept

Chance



Probability



Probabilities can be written as:

- Fractions
- Decimals
- Percentages

Examples



- 1) What is the probability that a bead chosen will be **yellow**. Show the answer on a number line.

$$\text{Probability} = \frac{\text{Number of favourable outcomes}}{\text{Total number of outcomes}}$$

$$P(\text{Yellow}) = \frac{2}{8} = \frac{1}{4}$$



- 2) How many **yellow** beads would you **expect** if you pulled a bead out and replaced it 40 times?

$$\frac{1}{4} \times 40 = \frac{1}{4} \text{ of } 40 = 10$$

Key Concepts

Experimental probability differs to theoretical probability in that it is based upon the **outcomes from experiments**. It may not reflect the outcomes we expect.

Experimental probability is also known as the **relative frequency** of an event occurring.

Estimating the number of times an event will occur:

$$\text{Probability} \times \text{no. of trials}$$

Examples

Colour	red	blue	white	black
Prob	x	0.2	0.3	x

A spinner is spun, it has four colours on it. The relative frequencies of each colour are recorded. The relative frequency of red and black are the same.

- a) What is the relative frequency of red?

$$1 - (0.2 + 0.3) = 0.5$$

$$x = \frac{0.5}{2} = 0.25$$

- b) If the spinner is spun 300 times, how many times do you expect it to land on white?

$$0.3 \times 300 = 90$$

Key Concepts

Probabilities can be described using **words** and **numerically**.

We can use **fractions, decimals or percentages** to represent a probability.

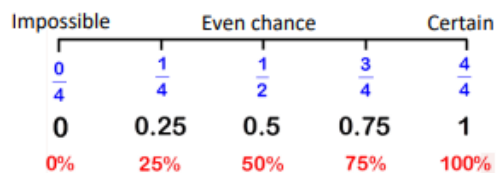
Theoretical probability is what should happen if all variables were fair.

All probabilities must **add to 1**.

The probability of something **NOT** happening equals:

$$1 - (\text{probability of it happening})$$

Probability scale:



Examples

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	$3x$	$x-5$	$2x$

A counter is chosen at random, the probability it is red is $\frac{9}{100}$. Work out the probability it is black.

$$9 + 3x + x - 5 + 2x = 100$$

$$6x + 4 = 100$$

$$x = 16$$

Number of black counters = $16 - 5$

$$= 11$$

Probability of choosing black = $\frac{11}{100}$

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	3	5	2

- 1) What is the probability that a blue counter is chosen? $\frac{3}{19} = \frac{\text{number of blue}}{\text{total number of counters}}$
- 2) What is the probability that red is **not** chosen? $\frac{10}{19} = \frac{\text{number of all other colours}}{\text{total number of counters}}$

Key Concepts

Venn diagrams show all possible relationships between different sets of data.

Probabilities can be derived from Venn diagrams. Specific notation is used for this:

$P(A \cap B)$ = Probability of A **and** B

$P(A \cup B)$ = Probability of A **or** B

$P(A')$ = Probability **of not** A

Key Concepts

Two way tables are used to tabulate a number of pieces of information.

Probabilities can be formulated easily from two way tables.

Probabilities can be written as a **fraction, decimal or a percentage** however we often work with fractions. You do not need to simplify your fractions in probabilities.

Estimating the number of times an event will occur

$$\text{Probability} \times \text{no. of trials}$$

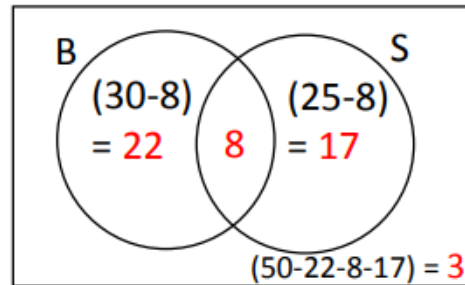
Example

Out of 50 people surveyed:

30 have a brother

25 have a sister

8 have both a brother and sister



a) Complete the Venn diagram

b) Calculate:

$$\begin{array}{lll} \text{i) } P(A \cap B) & \text{ii) } P(A \cup B) & \text{iii) } P(B') \\ = \frac{8}{50} & = \frac{47}{50} & = \frac{20}{50} \end{array}$$

iv) The probability that a person with a sister, does not have a brother.

$$= \frac{8}{25}$$

Examples

There are only red counters, blue counters, white counters and black counters in a bag.

Colour	Red	Blue	Black	White
No. of counters	9	$3x$	$x-5$	$2x$

A counter is chosen at random, the probability it is red is $\frac{9}{100}$. Work out the probability it is black.

$$\begin{aligned} 9 + 3x + x - 5 + 2x &= 100 \\ 6x + 4 &= 100 \\ x &= 16 \end{aligned}$$

$$\begin{aligned} \text{Number of black counters} &= 16 - 5 \\ &= 11 \end{aligned}$$

$$\text{Probability of choosing black} = \frac{11}{100}$$

80 children went on a school trip. They went to London or to York.

23 boys and 19 girls went to London. 14 boys went to York.

	London	York	Total
Girls	19	24	43
Boys	23	14	37
Total	42	38	80

What is the probability that a person is chosen that went to London? $\frac{42}{80}$

If a girl is chosen, what is the probability that she went to York? $\frac{24}{38}$

Key Concepts

Independent events are events which do not affect one another.

Dependent events affect one another's probabilities. This is also known as **conditional probability**.

Key Concepts

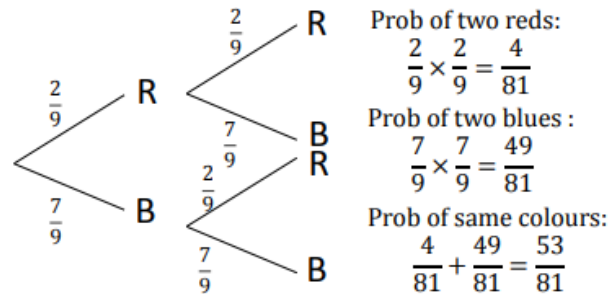
When there are a number of different possible outcomes in a situation we need a **logical** and **systematic** way in which to view them all.

We can be asked to **list** all possible outcomes e.g. choices from a menu, order in which people finish a race.

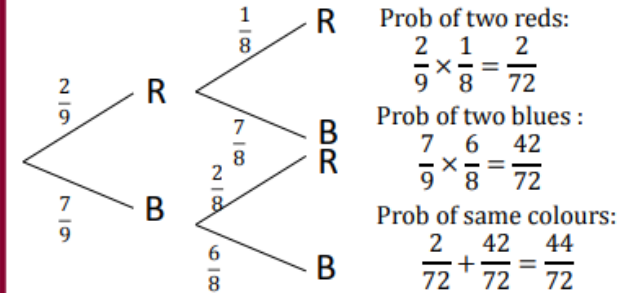
We can also use a **sample space diagram**. This records the possible outcomes of two different events happening.

Examples

There are red and blue counters in a bag. The probability that a red counter is chosen is $\frac{2}{9}$. A counter is chosen and **replaced**, then a second counter is chosen. Draw a tree diagram and calculate the probability that two counters of the same colour are chosen.



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Fishcake	Lasagne
Melon	Beef
	Salmon

List all of the combinations possible when one starter and one main are chosen.

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Two dice are thrown and the possible outcomes are shown in the sample space diagram below:

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3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

1) What is the probability that 2 numbers which are the same are rolled?

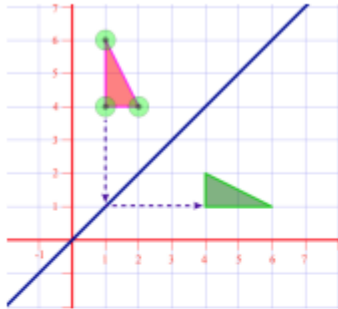
$$\frac{6}{36} = \frac{\text{outcomes where numbers are the same}}{\text{total number of outcomes}}$$

2) What is the probability that two even numbers are rolled?

$$\frac{9}{36} = \frac{\text{outcomes where numbers are both even}}{\text{total number of outcomes}}$$

Reflection The points on the reflected image are the same distance from the line of reflection as the corresponding point on the original object.

E.g. Draw a reflection of the red triangle in the line $y = x$.



Draw the line $y = x$.

Choose a point on the triangle and follow a path along the gridlines to the line of reflection.

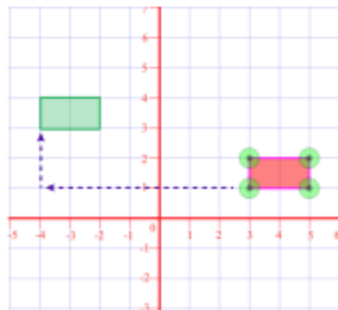
Draw the same path on the other side of the line of reflection.

Repeat for all other points and complete the triangle.

Top tip! Turn the line so that it's vertical and facing you to make it easier to see the points of reflection.

Translation Each point on the object moves the same distance in the same direction. This can be described in words or as a vector i.e. $\begin{pmatrix} 2 \\ 5 \end{pmatrix}$ or 2 units to the left and 5 units up, $\begin{pmatrix} 4 \\ -3 \end{pmatrix}$ or 4 units to the right and 3 units down.

E.g. Translate the red rectangle by $\begin{pmatrix} -6 \\ 2 \end{pmatrix}$.

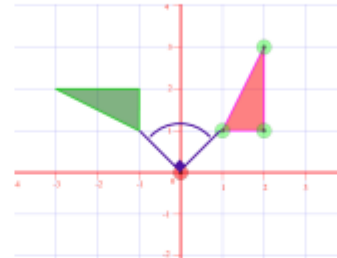


Choose a point on the rectangle and move it 6 units to the left and then 2 units up.

Repeat for all other points and complete the rectangle.

Rotation Each point on the object turns clockwise or anticlockwise around the **centre of rotation** by the same number of degrees. One of the easiest ways to rotate an object is with the use of tracing paper.

E.g. 1) Rotate the red triangle 90° anti-clockwise about the origin.

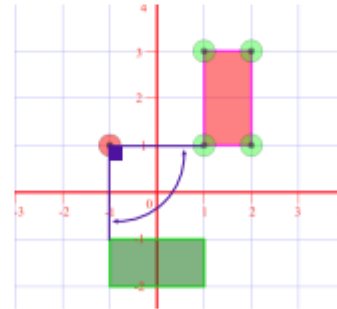


Trace the triangle.

Hold down the tracing paper with a pencil at the origin i.e. $(0, 0)$.

Rotate the paper anti-clockwise and for 90° ($\frac{1}{4}$ turn) around $(-1, 1)$ to find the position of the image.

E.g. 2) Rotate the red rectangle 90° clockwise about $(-1, 1)$.



Trace the rectangle.

Hold down the tracing paper with a pencil at the point $(-1, 1)$.

Rotate the paper clockwise and for 90° ($\frac{1}{4}$ turn) around $(-1, 1)$ to find the position of the image.

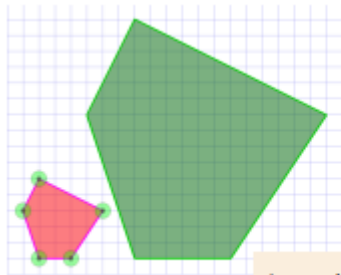
Draw the image.

Enlargement The scale factor tells us how many times bigger (or smaller) the image of the original shape is. This is what we multiply the sides of the shape by.

Positive scale factor

Scale factor > 1 The size of the original shape is increased.

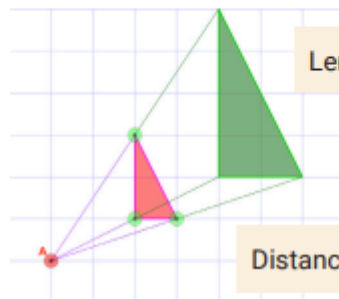
E.g. Draw an enlargement of the given shape when the scale factor is 3.



Length of all sides $\times 3$.

Centre of enlargement The distance of each point on the original object from this point is also multiplied by the scale factor.

E.g. Enlarge the triangle by scale factor 2 and using the point A as the centre of enlargement.

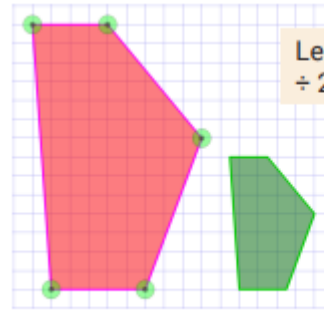


Length of all sides $\times 2$.

Distance from the centre $\times 2$.

Scale factor is a fraction The size of the original shape is reduced.

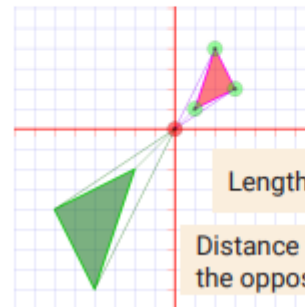
E.g. Draw an enlargement of the given shape when the scale factor is $\frac{1}{2}$.



Length of all sides
 $\div 2$ or $\times \frac{1}{2}$.

Negative scale factor The image is inverted, i.e., upside down and appears on the opposite side of the centre of enlargement.

E.g. Enlarge the triangle by scale factor -2 with the centre at the origin.

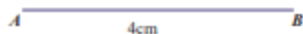


Length of all sides $\times 2$.

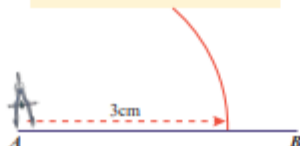
Distance from the centre $\times 2$ but on the opposite side and upside down.

Constructing a SSS triangle (side, side, side) E. g. Draw the triangle ABC with sides $AB = 4\text{cm}$, $BC = 2\text{cm}$ and $AC = 3\text{cm}$.

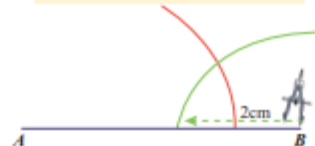
1) Draw the longest line 4cm and label the ends A and B .



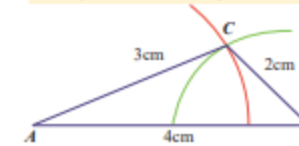
2) Place the compass at the end labelled A and draw an arc with a radius of 3cm .



3) Place the compass at the end labelled B and draw an arc with a radius of 2cm .



4) Mark the point at which both arcs meet and label it C . Connect A to C and B to C to complete the triangle.



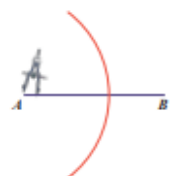
Perpendicular bisector

This creates a 90° angle to a line and splits the line in half.

1) Draw the line AB .



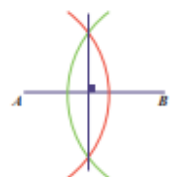
2) Place the compass on A and open it to more than halfway between A and B . Draw an arc.



3) Without altering the opening of the compass, place the compass on B and draw another arc.



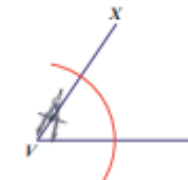
4) The arcs will meet above and below the line. Mark these two points and then join them with a straight line.



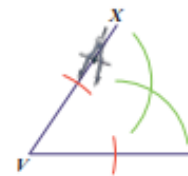
Bisector of an angle

This splits an angle into two equal parts.

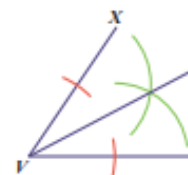
1) Place the compass on the vertex of the angle V . Draw an arc of any size that crosses both arms of the angle.



2) Without altering the opening of the compass, draw an arc from each of the points.



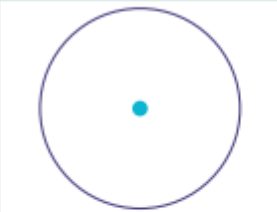
3) Mark the point where the arcs meet then join this point to the vertex of the angle with a straight line.



Loci A locus is all the possible positions of a point according to a certain rule.

Locus of points a constant distance from a point

Draw a circle with radius = the constant distance.



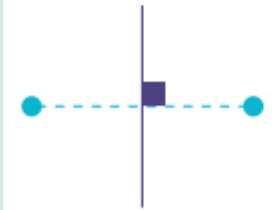
Locus of points a constant distance from a line

Draw a parallel line above and below the line, the given distance away from the line. Then draw arcs with radius = distance given, from the end points of the line.



Locus of points an equal distance from two points

Draw the perpendicular bisector.



Locus of points an equal distance from two lines

Draw the bisector of an angle.

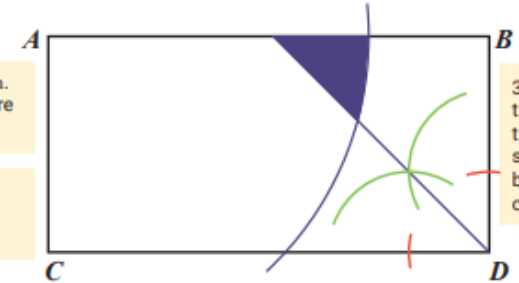


E.g. Shade the region within the rectangle $ABCD$ that satisfies the following conditions.

- It is **less than 7.5 cm from A** .
- It is **closer to BD than CD** .

1) Draw a circle/arc from the point A and with a radius=7.5cm. The region within the circle/arc contains all the points that are less than 7.5cm from A .

2) Draw the bisector of the angle BDC to give the points that lie halfway between BD and CD . The region above the line contains all the points that are closer to BD .



3) Shade the region that satisfies both conditions.

Constructing angles

We can construct some angles without the need of a protractor.

60°

Draw an equilateral triangle (all sides equal) using SSS triangle method. All angles will equal 60°.

30°

As above, draw an equilateral triangle to form an angle of 60°. Then draw the bisector of the angle to split the angle into two equal halves.

45°

Draw a perpendicular bisector to form a 90° angle and then draw the angle bisector to split the angle into two equal halves.

Tier 3 Vocabulary

	Key word	Definition
1	diameter	a straight line passing from side to side through the centre of a body or figure, especially a circle or sphere.
2	circumference	the enclosing boundary of a curved geometric figure, especially a circle
3	scale drawing	A scale drawing is an enlargement of an object.
4	bisector	The line that divides something into two equal parts.
5	perpendicular	at an angle of 90° to a given line, plane, or surface or to the ground
6	loci	a curve or other figure formed by all the points satisfying a particular equation of the relation between coordinates, or by a point, line, or surface moving according to mathematically defined conditions.
7	Probability	Used to describe the chance of something happening.
8	Probability scale	A scale used to describe probabilities. All probabilities must lie between 0 (impossible) and 1 (certain).
9	Impossible	Describes an event that can never happen. An impossible event has a probability of 0.
10	Certain	Describes an event which will always happen. A certain event has a probability of 1.
11	Theoretical probability	A number between 0 and 1 to represent the probability of something occurring. We can write probabilities using P(event) notation.
12	Experimental probability	An estimated probability based on the results of an experiment. The more trials are performed, the more reliable the results.

Notes:

Quiz QR Code



Quiz Link

<https://forms.office.com/e/GUEsiMNLUj>
<https://forms.office.com/e/vKKvvV3kVv>

Year 9 and 10 Knowledge Goals: Media (Luther)

Luther: a **contemporary and diverse** drama that was initially broadcast on **BBC1**, then made available to download or stream via **iPlayer**. It was then available to buy on DVD boxset and then later sold to **Netflix**

Idris Elba – established as crime actor from his role in The Wire.

Conventions of TV Crime Drama

Luther is a **hybrid** of crime drama and other **genres** too, such as:

- **Film noir** (Luther's long coat, Alice as the red lipped femme fatale).
- Intense non-diegetic music and dramatic cross-cutting links to **thriller** genre.
- **Police procedural**

Crime Drama tend to include Binary Oppositions:

Crime vs Justice
 Good vs Bad
 Police vs Criminals
BUT Luther plays on this as season unfolds – showing audience that things aren't always as black and white as they appear.

- Luther is a British crime drama television series starring **Idris Elba** as the title character **DCI John Luther**. Written by Neil Cross.
- The first series comprised six episodes which ran in May 2010 on BBC1 in the 9pm timeslot
- BBC Studios handles the distribution of the series.
- The series has been highly successful receiving numerous awards and critical acclaim for the production, writing and the stars of the show.

Opening scene –
Setting: Alice's home produces a **verisimilitude**; a conventional home of a middle-class older couple.
Body language and facial expressions: suggest she is a **damsel in distress**.
Performance: voice is shaky, crying & seems terrified. Tricks audience; she is a victim.

REPRESENTATION & CONTEXT:

ETHNICITY: **Luther challenges stereotypical representations of black men in crime drama which is typically negative.** This is further reflected in Luther's highly educated, successful mixed-race wife. This reflects the diverse, multi-cultural setting of this contemporary drama.

GENDER: Masculinity is represented in a very complex way; Luther is represented as an aggressive, alpha male, yet also vulnerable through his psychological instability. Typical masculine stereotypes are challenged through characters such as Justin who is openly admirable of Luther; and **Mark who is gentle and represented as a 'sensitive' contrast to Luther.** The representation of femininity challenges stereotypes in all lead female characters; **Alice subverts expectations** as a manipulative, intelligent villain, **Rose Teller is a powerful, authority figure**, and while **Zoe Luther is the most typically 'feminine' representation** (vulnerable, weak, lead by love), she is also represented as a highly successful humanitarian lawyer. These female representations reflect the contemporary context of the setting.

CRIME & THE POLICE: Crime is represented as dark & sinister and **Luther is represented as a vigilante, rule-breaker** who will stop at nothing to stop criminals. Rose is the calm, steady influence who encourages him to stay on the right track.

Crime is seen as dark and sinister and Luther as a **vigilante** – breaking the rules to stop the criminals.

PROPP CHARACTER FUNCTIONS:

HERO: John Luther, troubled but brilliant detective; a rule-breaker who will do anything to bring criminals to justice.

VILLAIN: Alice Morgan, femme fatale, highly intelligent, manipulative and an obsession with Luther.

HELPER/SIDE-KICK: Justin Ripley is faithful and idolises Luther and is eager to learn. Ripley asks questions that the audience need to follow Luther's thoughts and processes of detection.

DISPATCHER: Rose Teller, Luther's boss, keeps him focused; tough but fair –see's Luther's brilliance and willing to put her job on the line for him.

DONOR: Both Ripley and Benny provide Luther with the means to achieve his goal

ESTABLISHING SHOT –industrial setting, implies 'gritty'

TRACKING SHOTS on Luther pursuing Henry Madsen

LOW ANGLE SHOTS –intimidating, powerful

CROSS-CUTTING: Between scenes at the crime scene and the chase implying they are **happening simultaneously**, the music is used to convey a sense of urgency –a race against time Our initial impression is that Luther is the villain –dark, hooded figure pursuing the smart businessman. We initially don't see Luther's face creating enigma. Low angle **foreshadows** the height from which Marsden will fall.

Tier 3 Vocabulary

	Key word	Definition
1	Eponymous	A person who gives their name to something
2	Verisimilitude	The appearance of being real or true
3	Critical acclaim	Favourably reviewed by the critics (people whose judgement is respected)
4	Femme fatal	Mysterious and dangerous female who uses her sexuality to control/have power over men
5	Code and conventions	The expected elements included in products from particular forms of media
6	Film noir	A genre: emerged in 1940/50. Narrative focused on crime and stylish visual conventions such as low-lighting. Characters such as the world-weary detective and femme fatale.
7	Foreshadowing	Warning or indication of a future event in the narrative
8	Establishing shot	Sets up context for scene ahead (where the action will take place)
9	Cross cutting	Action occurring at the same time
10	Vigilante	Someone taking law enforcement into their own hands
11	Alpha male	A man who assumes dominant role; controls the situation
12	Tracking shots	When camera moves forward, backwards or at the side of subject

Notes:

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Quiz Link


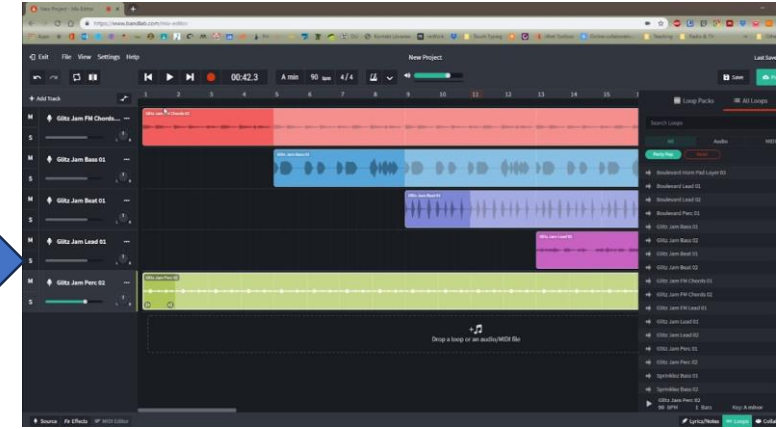
[QUIZ LINK](#)

Music Technology

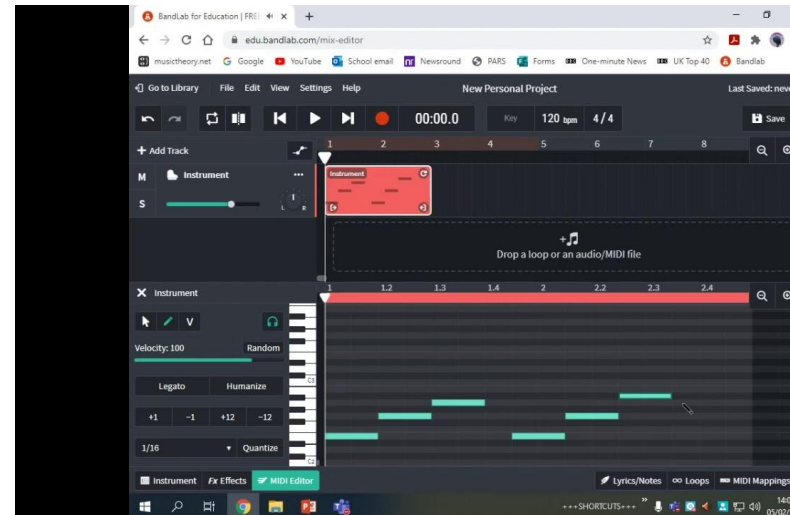
1. A DAW or Digital Audio Workstation is a piece of computer software used to create, compose and record music.
2. Loops are prerecorded short pieces of music that can be put together to create a larger piece of music.
3. You can create a rock song by doing the following:
 - Add loops together for 'rock band' instruments like electric guitar, bass guitar and drums.
 - Put these instruments together to create a 'verse' section for a song.
 - Repeat these steps with different loops to create a 'chorus' section for a song.

BandLab Overview

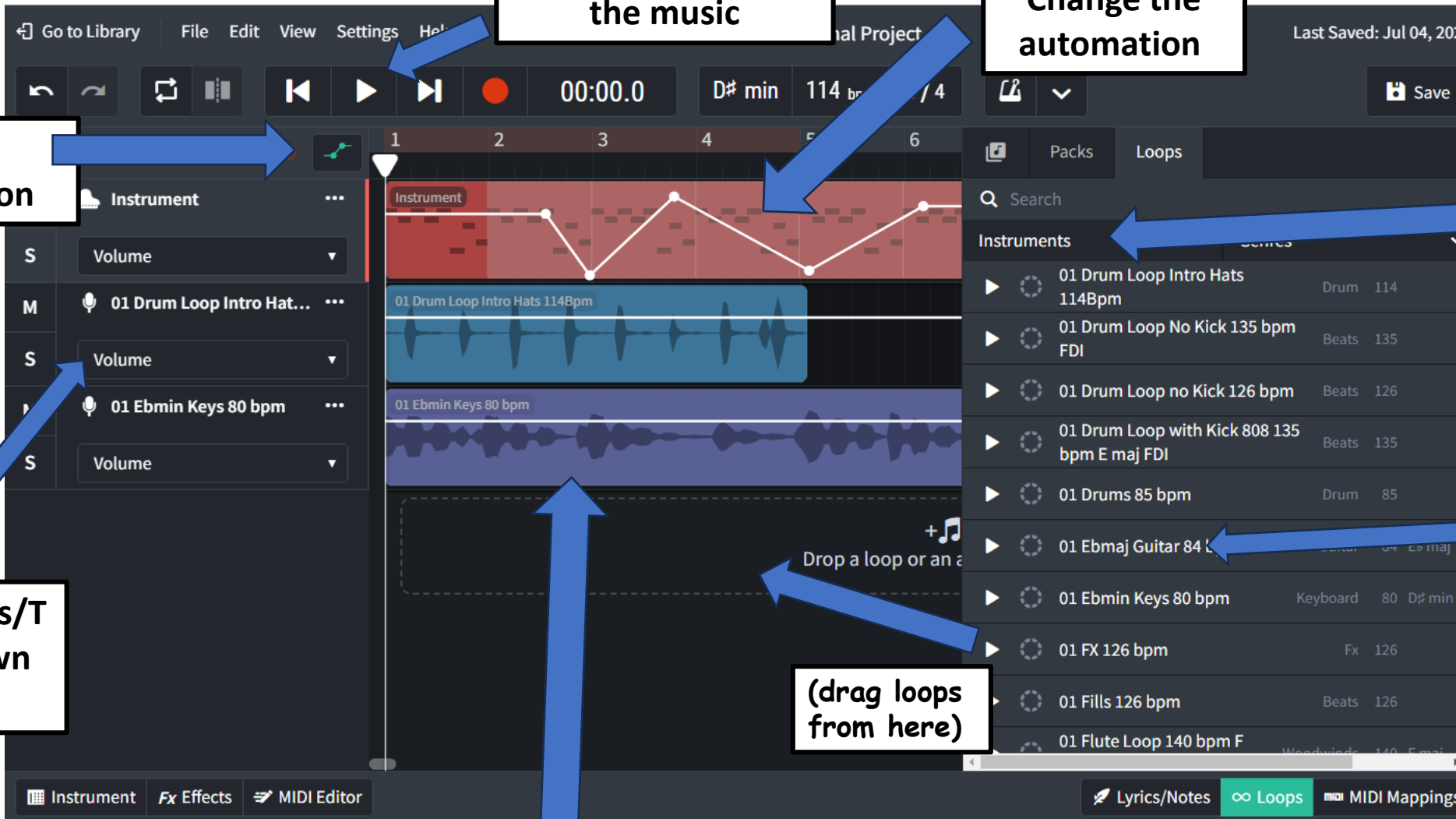
Using loops to create music

Using sequencing to create music

Year 9 and 10 Knowledge Goals: Music How to use BandLab)



Play/pause/stop the music

Change the automation

Access automation

Select different instruments/loops

Instruments/T racks shown here

Click on different loops to hear them

(drag loops from here)

Change to MIDI editor for sequencing

DRAG LOOPS HERE TO HERE CREATE A SONG

Loop Library

Tier 3 Vocabulary

	Key word	Definition
1	DAW	A 'Digital Audio Workstation', e.g. BandLab.
2	Loops	Short pieces of recorded music used together with others to create a song.
3	Composing	Creating music.
4	Bars	A short section of music, usually lasting 4 beats.
5	Beats	Beats go inside a bar of music, often 4 beats are counted together in one bar.
6	Automation	Automatically performing tasks, e.g. changing the volume or panning.
7	Volume	How loud or quiet the music is.
8	Panning	Changing the stereo spread of the music from left to right speaker.
9	Sequencing	A way to write/compose/program your own notes and rhythms instead of using prerecorded loops.
10	Verse	Typically a section of a song with repeated music but different lyrics.
11	Chorus	Typically a section of a song with repeated music and lyrics.

Notes:

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

Spring half-term 1 DANCE

Overview

-Dance is all about moving our bodies to a musical rhythm. There are many different types of dance.

-In dance, we explore space, and consider how we can use our bodies to show ideas, moods, characters and feelings.

KS 3-4 dance, we learn the basic skills of travelling in different ways. We also consider how to dance can be used to show different things. We use counts of 8 to keep ourselves in time.

-We should learn how to perform movements safely, and begin giving and receiving feedback using the correct key words.



Planning

Decide on the theme of your dance and give it a title.

Accompaniment

A dance is usually performed to musical accompaniment. Choose a costume that will add to the ambience of your dance.



Movement

Experiment with the 5 basic actions: travel, jump, turn, gesture and stillness.



Motifs

Using the 5 basic actions, create and develop motifs. Expand and combine motifs to create phrases.



Relationships

When performing a solo, consider how you will relate to the accompaniment, e.g. question and answer rhythms.



Group

If you are performing a duo, trio or group dance, vary the formations to add variety and interest to the dance.



Quality

The quality of the performance will depend largely on clarity of shape, use of personal space, and the rhythm/flow of the dance.



REHEARSE, REHEARSE, REHEARSE, & EVALUATE!

Section 1

Spring half-term 1 DANCE

1

TRAVELLING

Includes stepping, transferring body weight and sliding.



2

JUMPING

There are various ways of jumping: 2 feet to 2 feet, 2 feet to 1 foot etc.



3

TURNS

1/4, 1/2, 1/3 or full turns. Turns can be performed as a jump.



4

GESTURES

A body movement that portrays a concept or mood.



5

STILLNESS

A motionless pose during the dance sequence.



Section 1

Y9 and Y10 Knowledge Goals: Physical Education (Dance and Gymnastics)


Section 2

Spring Term 1: DANCE Tier 3 Vocabulary

1	Choreography:	The art of creating and arranging dance sequences or routines. Choreographers design the movements, steps, and patterns that dancers perform.
2	Movement:	The physical actions and gestures performed by dancers, which can vary in speed, range, and intensity.
3	Rhythm:	The pattern of beats and timing in dance movements and music. Rhythm is crucial in various dance styles to create a sense of flow and musicality.
4	Performance:	A live presentation of dance before an audience. Dance performances can take place on stages, in theatres, or at various venue.
5	Routine:	In dance, a routine is a structured sequence of dance steps and movements performed in a specific order. Routines are often designed for performances or practice.
6	Sequence:	In dance, a sequence is a series of steps and movements that are performed in a specific order. Sequences contribute to the overall structure of a dance routine.
7	Tempo:	Tempo refers to the speed or pace of the music and, consequently, the dance movements. It can vary from slow to fast, influencing the energy and mood of the dance.
8	Sequence	In dance, a sequence is a series of steps and movements that are performed in a specific order. Sequences contribute to the overall structure of a dance routine.
9	Balance:	Balance is the ability to maintain stability and equilibrium while performing dance movements. It is crucial for executing movements that require control and poise.
10	Flexibility	Flexibility is the range of motion in the joints and muscles. In dance, it allows for increased freedom of movement and the ability to perform movements with greater ease.
11	Extension	Extension refers to the lengthening or stretching of the limbs and body. Dancers strive for full extension to create beautiful lines and lines in their movements.
12	Turnout:	Turnout is the outward rotation of the legs and hips from the hip joints. It is a fundamental element in classical dance forms like ballet.

Notes:

Section 3

Quiz QR Code	Quiz Link
	QUIZ LINK

Spring half-term 2 GYMNASTICS

Section 1

Overview

-Gymnastics is a sport in which we do exercises that need strength, balance, flexibility and control.

-In gymnastics, we may use lots of different skills, for example running, jumping, balancing, stretching, bending and tumbling.

KS 3-4 gymnastics, we learn the basic skills of travelling in different ways. We also consider how to balance, roll and jump with control. We put our ideas together into sequences.

-We should learn how to perform movements safely, build our confidence and respond to feedback given by others.



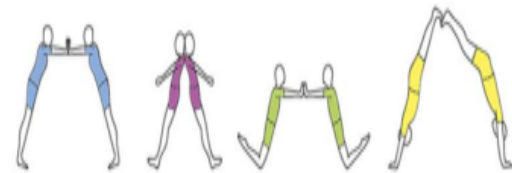
Counter-tension A balance in pairs in which each partner is supporting the other's weight by pulling against each other.

COUNTER TENSION



Counter-balance A balance in pairs in which each partner is supporting the other's weight by pushing against each other.

COUNTER BALANCE

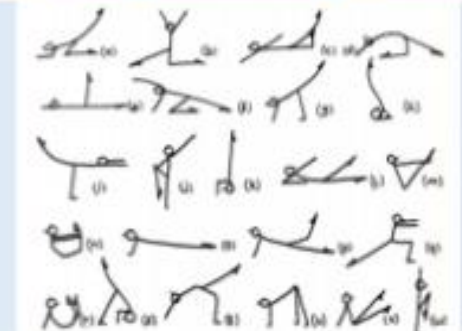


Spring half-term 2 GYMNASTICS

Section 1




The Basic Shapes in Gymnastics



Physical Education Knowledge Goals – Dance & Gymnastics

Spring Term 1: DANCE Tier 3 Vocabulary		
Section 2	1	Gymnastics: A sport that involves a combination of strength, flexibility, balance, and coordination, with athletes performing a series of exercises and routines on various apparatuses.
	2	Apparatus: The equipment used in gymnastics, including the balance beam, uneven bars, vault, parallel bars, and rings.
	3	Floor Exercise: A gymnastics event that involves a choreographed routine performed on a padded floor mat, combining tumbling passes, dance elements, and jumps.
	4	Dismount: The final element of a gymnastics routine or apparatus performance, where the gymnast leaves the apparatus or floor with a controlled landing.
	5	Bridge: A bridge is one of the most basic skills in gymnastics. To do a bridge, the gymnast lies flat on the floor, and then pushes up so that she is supported by her hands and feet. It's easier to understand by looking at the picture.
	6	Form: The proper alignment and technique of gymnastic movements and skills, emphasizing correct body positions and execution.
	7	Flexibility: The range of motion and suppleness of a gymnast's joints and muscles, which is essential for performing various skills and movements.
	8	Spotter: An individual, often a coach or instructor, who assists gymnasts during training by providing support and guidance to ensure their safety.
	9	Mount: A mount is the skill used to get on the apparatus. Mounts are needed for Balance Beam and Uneven Bars.
	10	Vault: An apparatus in gymnastics consisting of a springboard and a stationary platform, used for performing powerful jumps and various flips and twists.

Notes:

Section 3	
Quiz QR Code	Quiz Link
	QUIZ LINK

Relationships – Intimate Relationships

CONSENT

Freely Given
Reversible
Informed
Enthusiastic
Specific

Planned Parenthood*

Watch this video to help you understand about consent



Types of STIs

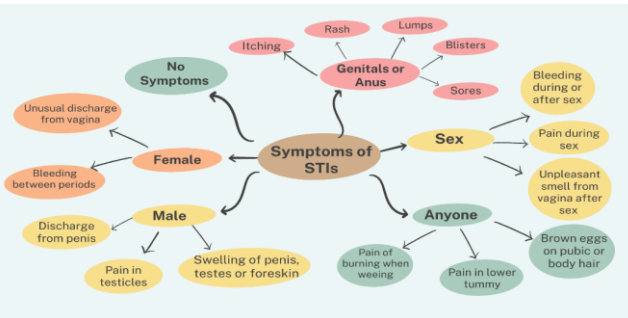
Chlamydia Gonorrhea Genital herpes Hepatitis B

HIV HPV Syphilis Trichomoniasis

Contraception methods

Condom Female condom Oral contraception Hormonal ring IUD Contraceptive injection Surgical sterilization

Implant Coitus interruptus Calendar rhythm method Vaginal douche Contraceptive patch Diaphragm/cap



Method	Advantages	Disadvantages ^a
Condoms (male)	<ul style="list-style-type: none"> STI/HIV protection 	<ul style="list-style-type: none"> Partner cooperation needed Requires correct technique Inconvenient/may interfere with sexual intercourse Pregnancy prevention = 85%
Condoms (female)	<ul style="list-style-type: none"> STI/HIV protection Can be controlled by the woman 	<ul style="list-style-type: none"> Requires correct technique Inconvenient/may interfere with sexual intercourse Pregnancy prevention = 79% Price and availability
Oral contraceptive pill	<ul style="list-style-type: none"> Effective Less blood loss Can be controlled by the woman Pregnancy prevention = 92% 	<ul style="list-style-type: none"> Drug-drug interactions Possibly increased viral shedding No STI/HIV protection
Patch, ring, injectable combination	<ul style="list-style-type: none"> Effective Less blood loss Can be controlled by the woman Pregnancy prevention = patch: 92%; ring: 92% 	<ul style="list-style-type: none"> Drug-drug interactions? Lack of data Increased viral shedding? No STI/HIV protection
DMPA	<ul style="list-style-type: none"> Low maintenance Effective Can be controlled by the woman Pregnancy prevention = 97% 	<ul style="list-style-type: none"> No STI/HIV protection Possibly increased risk of HIV acquisition
Copper intra-uterine device	<ul style="list-style-type: none"> Convenient Effective Can be controlled by the woman Pregnancy prevention = 99.2% 	<ul style="list-style-type: none"> Blood loss Increased pelvic infection No STI/HIV protection
Levonorgestrel-releasing intra-uterine system (LNG-IUS)	<ul style="list-style-type: none"> Long lasting Convenient Can be controlled by the woman Pregnancy prevention = 99.8% 	<ul style="list-style-type: none"> Blood loss No STI/HIV protection Minimal research available in HIV
Cervical barrier	<ul style="list-style-type: none"> Some STI protection Good contraceptive effectiveness if used correctly Can be controlled by the woman Pregnancy prevention = 84% 	<ul style="list-style-type: none"> Increased urinary tract infections Requires correct technique No STI/HIV protection
Sterilisation	<ul style="list-style-type: none"> Low maintenance Effective Can be controlled by the woman Pregnancy prevention = 99.5% 	<ul style="list-style-type: none"> Irreversible Expensive Invasive No STI/HIV protection

STI, sexually transmitted infection; HIV, human immunodeficiency virus.
^aPregnancy prevention: The percentage of women who did not experience an unintended pregnancy during the first year of typical use of contraception in the USA.

Tier 3 Vocabulary

Key word		Definition
1	Intimacy	The state of being intimate, which is marked by the consensual sharing of deeply personal information
2	Sexual intercourse	Sexual contact between individuals involving penetration, especially the insertion of a man's erect penis into a woman's vagina, typically culminating in orgasm and the ejaculation of semen .
3	Masturbation	Erotic stimulation especially of one's own genital organs commonly resulting in orgasm
4	Penetrative sex	Sexual penetration is the insertion of a body part or other object into a body orifice, such as the mouth, vagina or anus, as part of human sexual activit
5	Ejaculation	Ejaculation is the discharge of semen from the male reproductive tract as a result of an orgasm.
6	Virginity	The state of never having had sexual intercourse
7	Orgasm	Orgasm or sexual climax (or simply climax), is the sudden discharge of accumulated sexual excitement during the sexual response cycle
8	Penis	The male genital organ of higher vertebrates , carrying the duct for the transfer of sperm during copulation . In humans and most other mammals it consists largely of erectile tissue and is used also for urination
9	Vagina	The muscular tube leading from the external genitals to the cervix of the uterus in women and most female mammals
10	Consent	Permission for something to happen or agreement to do something.
11	Contraception	The deliberate use of artificial methods or other techniques to prevent pregnancy as a consequence of sexual intercourse
12	Sexually Transmitted infection (STIs)	A sexually transmitted infection may pass from person to person in blood, semen, or vaginal and other bodily fluids. Spread usually by having unprotected sex.

Notes:

- <https://www.nhs.uk/live-well/sexual-health/where-can-i-get-sexual-health-advice-now/>
- <https://www.brook.org.uk/>

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

- Christians worship God in different ways.
- Worship is any act that shows devotion or love for God.
- Praying at home to attending a church service.
- Examples of activities are readings from the Holy Bible, prayers and the Eucharist.

Pilgrimage:
 Lourdes, Iona, Jerusalem

Liturgical worship = a church service that follows a set pattern of prayers and readings, usually found in a printed book. Christians who participate in liturgical services may feel connected to other worshippers as they are following the same traditions. As a **congregation**, Christians often participate together, repeating key information and singing hymns.

Non-liturgical worship = more informal and less structure. For example, the sermon could be on a topical theme, and prayers could be in the service leader's own words rather than those written in a book.

Informal worship = focuses on the adoration of God and is not always carried out in a church. Frequently the music used during informal worship is popular and modern in style. People often believe the **Holy Spirit** is present during worship. Evangelical Christians usually worship in this style and may clap or shout during a service at any point, as they worship God with their whole body, not just their minds.

Private worship = informal and often takes place at home, but it can be liturgical or non-liturgical. Some examples of private worship are saying **grace** before a meal or reading a passage from the Bible each day. Worshipping **alone** can allow a person to feel close to God. An opportunity for Christians to explore a **personal, individual connection** with God.

Charismatic worship = is a kind of informal worship. Although Charismatic services have recognisable Christian features, such as prayers and readings, they are very free-flowing services.

Quakers' worship = is different as they hold meetings that last about an hour and have no set hymns, prayers or sermons. There is **no leader** in the meeting house and the chairs are usually arranged in a circle. Everyone worships as an **equal**. Quakers spend most of the meeting in **silence** as this kind of worship is seen as a time for **connection with God** and with others, but if someone wishes to stand up and speak, they are free to do so as part of this informal worship.

The **Eucharist (Holy Communion)** commemorates the **Last Supper**. Not all Christians celebrate this sacrament. Bread and wine are Jesus's flesh and blood, but there are varying beliefs these items.

Charity: *Christian Aid *CAFOD *Salvation Army

Charity - helping to make the community a better place to live

Mission - a person spreading the Christian message abroad through their actions

Evangelism - spreading God's message to convert people to Christianity

Prayer is how Christians communicate with God, through both talking and listening and being open to the guidance of the **Holy Spirit**. It gives comfort to believe God is listening. Jesus spoke often about the importance of prayer, as he felt it deepened a person's relationship with God.

Christians often use formal written prayers, which are often memorised in order to be recited both publicly and privately. An example of this is the **Lord's Prayer**, this can be found in the **Anglican Book of Common Prayer**.

Christians also use informal prayers, which are personal and allow individuals to connect with God.

The five basic forms of prayer = the **acronym ACTS and I** is used to remember four key components found in many formal prayers.

- Adoration - Praising God "Dear God, I know that you are all-loving..."
- Confession - Saying sorry "Please forgive me for..."
- Thanksgiving - Thanking God "Thank you for the food on our table..."
- Supplication - Asking for something "Give me strength to..."
- Intercession - Praying for someone else "Please remember my cousin..."

Easter commemorates **Holy Week**, which signifies **Jesus's victory over death**

A **sacrament** is a ceremony through which Christians believe they receive God's grace or are brought closer to God. A sacrament is something that people can **engage in with their senses** but that has a deeper meaning too.

For both Protestants baptism and the Eucharist are sacraments.

All four of the gospels (Matthew, Mark, Luke & John) mention Jesus carrying out both baptisms and the Eucharist.

Many Christians believe that baptism is important because **Jesus was baptised.**

"No one can enter the kingdom of God unless they are born of water and the Spirit". (John 3:5)

John the Baptist was the first Jew to use baptism to symbolise the forgiveness of sins.

It was John who baptised Jesus. Many Christians believe that **baptising cleanses people from original sin.**

Baptism is practised by nearly all Christian denominations as it is seen as an instruction from God and a way of following Jesus' example. However, the denominations practice baptism in different ways.

Tier 3 Vocabulary

	Key word	Definition
1	Congregation	A group of people gathered together for worship
2	Sacrament	Religious ceremony or ritual, such as a baptism or a wedding
3	Eucharist	Sacrament commemorating the Last Supper
4	Baptism	A sacrament that welcomes someone into the Church and where water is used to purify
5	Holy week	The week surrounding Jesus's trail, crucifixion & resurrection
6	Liturgical	A service that follow set patterns
7	Protestant	A follower of western Churches that have separated from the Roma Catholic Church
8	Catholic	A member of the Roman Catholic Church, who believes in a succession of Popes who hold divine leadership.
9	Charismatic worship	Free-flowing and usually informal services that can include music. Strong emphasis on the presence of the Holy Spirit.
10	Holy Spirit	Third person in the trinity; God as spirituality. Active holiness
11	Informal	Relaxed, friendly and unofficial
12	Intercession	To do something of behalf of someone else

Notes:

Quiz QR Code



Quiz Link

[QUIZ LINK](#)

Year 9 And Year 10 Knowledge Goals: Science (Waves)

What is a wave?

Oscillations which **transfer energy** without transferring any matter.

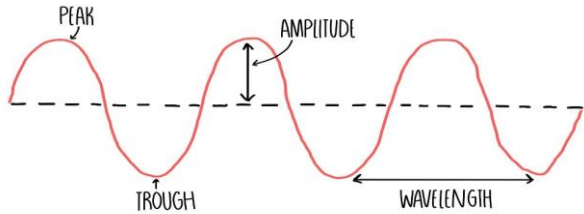
Longitudinal or transverse?

In **longitudinal** waves the oscillations are parallel to the direction of wave travel. Whereas in a **transverse** wave the oscillations are perpendicular to the direction of wave travel.

Mechanical or electromagnetic?

Mechanical waves causes oscillations in a solid, liquid or gas (they need a medium to travel through).

Electromagnetic waves cause oscillations in electrical and magnetic fields.



Parts of a wave that you should be able to label are on the diagram above. Use the glossary to learn these key definitions.

Wave speed

Frequency is a measure of how many waves pass a point each second, it is measured in Hertz (Hz).

Period is measure of how long it takes to complete one wave cycle.

$$\text{Time period} = \frac{1}{\text{frequency}}$$

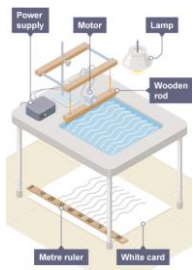
For all waves you can use the equation below to calculate the speed of the wave. Make sure all units are converted correctly – quite often you will need to be able to use **standard form** (see further material).

$$\text{WAVE SPEED} = \text{FREQUENCY} \times \text{WAVELENGTH}$$

(m/s) (Hz) (m)

Measuring wave speed - liquids

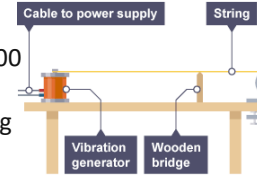
Set up the apparatus like shown



1. Adjust the height of the wooden rod so that it just touches the surface of the water.
2. Switch on the lamp and motor and adjust until low frequency waves can be clearly observed.
3. Measure the length of a number of waves then divide by the number of waves to record wavelength. It may be more practical to take a photograph of the card with the ruler and take measurements from the still picture.
4. Count the number of waves passing a point in ten seconds then divide by ten to record frequency.
5. Calculate the speed of the waves using: wave speed = frequency × wavelength.

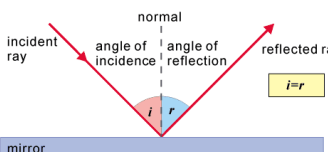
Measuring wave speed - solids

1. Attach a string or cord to a vibration generator and use a 200 gram (g) hanging mass and pulley to pull the string taut as shown in the diagram. Place a wooden bridge under the string near the pulley.
2. Switch on the vibration generator and adjust the wooden bridge until stationary waves can be clearly observed.
3. Measure the length of as many half wavelengths (loops) as possible, divide by the number of half wavelengths (loops). This is half the wavelength, doubling this gives the wavelength.
4. The frequency is the frequency of the power supply.
5. Calculate the speed of the waves using: wave speed = frequency × wavelength.



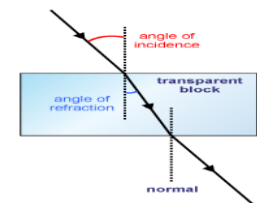
See further materials to watch videos of these practical's.

Reflection is when a wave bounces back off the boundary between two different materials. When a sound wave reflects we here an **echo**.



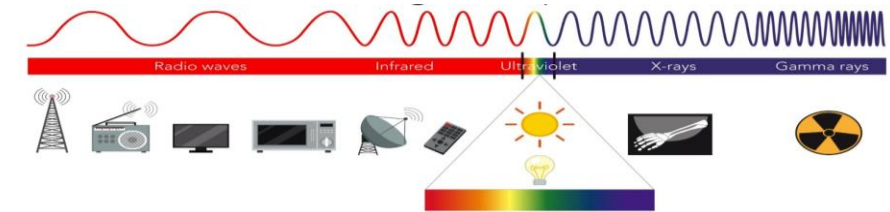
The **law of reflection** states that the angle of incident is equal to the angle of reflection. Specular reflection happens off smooth surfaces that appear shiny whereas diffuse reflection scatters light off a rough surface so it appears dull.

Refraction happens when waves pass from one medium to another. Due to a change in **density** the wave travels at a different speed. The higher the density the slower the speed. If a light ray passed from air into glass (more dense) it would slow down and bend towards the normal.



See further materials to view this practical.

The electromagnetic spectrum



A spectrum of electromagnetic waves of varying wavelengths and frequencies. They all share the following properties:

- Transverse waves
- Transfer energy from a source to an absorber
- Can travel through a vacuum
- Travel at 3,000,000 m/s in a vacuum (this is called the speed of light)

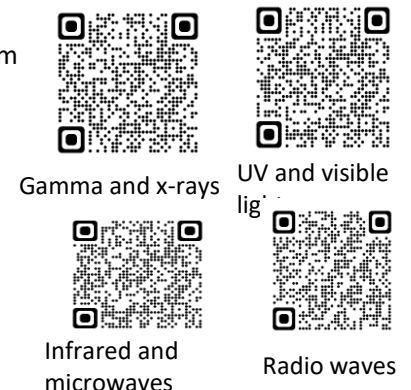
In order of highest frequency:

- Gamma**
- X-ray** (ionising)
- Ultraviolet**
- Visible**
- Infrared** (non-ionising)
- Microwaves**
- Radio waves**

For each part you need to know:

- Uses
- Dangers
- Wave lengths

Scan the QR codes to learn more



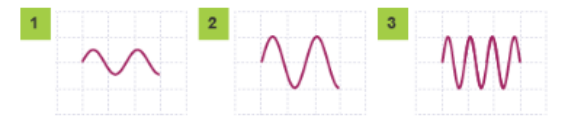
See further materials to watch a video of the practical into infrared.

Sound waves are longitudinal waves that travel through a medium. Depending on the amplitude and frequency of the wave they make a different sound.

Amplitude affects loudness.

Frequency affects pitch.

1. Quiet, low pitch
2. Loud, low pitch
3. Loud, high pitch



Year 9 and 10 Knowledge Goals: Science (Waves)

Spring Term: Tier 3 Vocabulary

Key word		Definition
1	Amplitude	The maximum displacement of a wave from its rest position. You can see this as the distance between rest position and peak.
2	Compression	When the peaks of waves are very close together.
3	Displacement	The distance that a certain point in the medium has moved from its rest position.
4	Electromagnetic spectrum	A spectrum of transverse waves with different wavelengths and frequencies.
5	Ionising	Radiation which transfers enough energy to knock electrons off atoms. This can lead to tumours growing in organisms.
6	Medium	The matter that a wave is travelling through (solid, liquid or gas).
7	Peak	The highest point above the rest position.
8	Rarefaction	When the peaks of waves are spread apart.
9	Rest position	The undisturbed position of particles or fields when they are not vibrating.
10	Trough	The lowest point below the rest position.
11	Wavelength	Distance covered by a full cycle of a wave. Usually measured from peak to peak, in metres.

Further material

Using standard form

[What is Standard Form \(also known as Scientific Notation\)? \(Part 1/4\) #23 – YouTube](#)

There are four videos – these links take you to video one.

Measuring wave speed

[Wavespeed - GCSE Science Required Practical - YouTube](#)

Refraction of a light wave practical

[Refraction & TIR - GCSE Science Required Practical \(Triple\) - YouTube](#)

Infrared practical

[Infra-Red Absorption & Emission - GCSE Science Required Practical - YouTube](#)

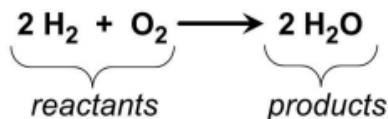


Notes

Paper 2 - Chemistry Knowledge Organiser – Rate of reaction

Rate of Reaction

The rate of a reaction means how quickly reactants are turned into the products.



If this happens quickly then you have a high rate of reaction, if it takes a long time then you have a slow rate of reaction.

An example of a slow reaction could be rusting
An example of a fast reaction could be an explosion.

Calculating the Rate of Reaction

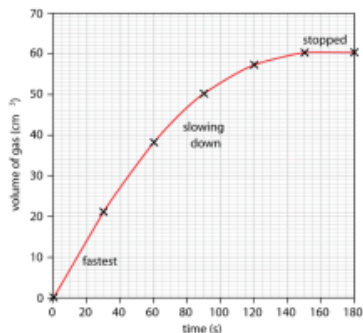
The rate of a reaction can be found by the equation below.

$$\text{mean rate of reaction} = \frac{\text{quantity of reactant used}}{\text{time taken}}$$

$$\text{mean rate of reaction} = \frac{\text{quantity of product formed}}{\text{time taken}}$$

This is the same as saying on a graph like the one shown that

the change in Y / the change in X = the rate of a reaction.



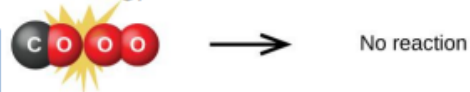
The line is curved.
This means that the rate of reaction changes as it progresses.

Collision theory

Why do things react in the first place?

Things will only react if the particles collide with enough energy to cause a effective collision. This is best illustrated in the diagram to the right. A faster reaction will have a higher frequency of collisions with sufficient energy

Low energy collision



High energy collision



Factors effecting the rate of a reaction

There are several factors that can effect the rate of a chemical reaction, however it essentially boils down to increasing the amount of successful collision.

These factors are.

Temperature

The hotter the particles are, the faster they move and therefore the frequency of successful collisions is greater.

Pressure and concentration

More particle in the same space means that collisions happen with greater frequency.

Surface area

If there are more particles exposed to the reactants then the frequency of successful collision is greater.

Catalysis

See the box below.

Catalysts

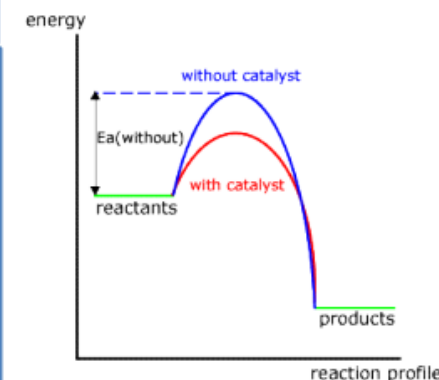
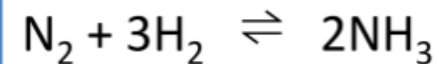
Catalysts are substances that speed up the rate of a reaction without being used up themselves. They work by lowering the activation energy. This is the amount of energy needed to get a reaction going. Just like striking a match, you need to put some energy into it, the match will not just burst into flames by itself. The graph to the right shows an energy profile of a catalysed reaction when compared to the same one that is not catalysed.

Reversible Reactions

Reversible reaction are ones that will react in both directions.

This means that as quickly as products are formed they can be turned back into reactants.

Reversible reactions are identifiable by the arrow in the middle of the reaction.



Ways to measure the rate of reaction

Volume of gas produced	
Formation of a solid product	
Change in mass	

Factors affecting rate of reaction

Factor	Change	Effect on rate	Reason
Temperature	Increase	Increase	The particles are moving faster so collide more often and with a greater proportion of successful collisions
Concentration	Increase	Increase	There are more particles so collisions are more frequent
Surface area	Increase	Increase	There are more particles available so more collisions
Catalyst	add	Increase	The lower activation energy means more particles can successfully collide

Keywords

Rate of reaction	Amount of reactant used or product formed ÷ time
Collision theory	Idea that for a reaction to occur the particles have to hit each other with enough energy
Activation energy	The minimum energy needed for a collision to cause a reaction
Catalyst	A substance which speeds up a chemical reaction by lowering the activation energy
Reversible reaction	A chemical reaction that can go in either direction
Equilibrium	When the forwards and backwards reactions happen at the same rate

Hydrocarbons: Are fuels that are made of just hydrogen and carbon atoms only, joined together by single chemical bonds called covalent bonds.

Alkanes: Are **saturated hydrocarbons** – This means that their carbon atoms are joined to each other by **single C-C bonds** and that they can have as many hydrogen atoms as possible. **Alkanes have the formula:** $C_nH_{(2n+2)}$

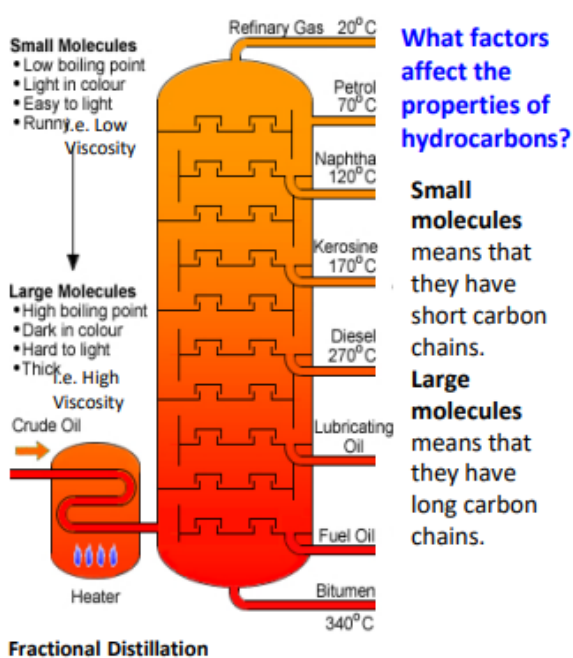
2. Alkanes		
General formula	C_nH_{2n+2}	
Name	Molecular formula	Displayed formula
Methane	CH ₄	
Ethane	C ₂ H ₆	
Propane	C ₃ H ₈	
Butane	C ₄ H ₁₀	

Crude Oil

Formed from the buried remains of plants and animals (mainly plankton). Over millions of years with high temperature and pressure, the remains turn into crude oil. Fossil fuels such as coal, oil and gas are non-renewable. Crude oil is a mixture of lots of different hydrocarbons (mostly alkanes). Crude oil can be split up into separate fractions by fractional distillation.

Fractional Distillation (see diagram in the middle box above)

- 1) Crude oil enters the **bottom** of a fractional distillation column and is **heated** to about **350°C** until most of it has turned to gas
- 2) The temperature is controlled
- 3) Most of the substances in the crude oil **evaporate**. The mixture of vapours then passes up the tower and **condense**
- 4) Hydrocarbons with **high boiling points** (long chains) **condense** first, **low down** in the tower
- 5) Some hydrocarbons have **very low boiling points** and so they are gases. They don't condense but are collected as 'fuel gases'.



Fractional Distillation

Crude Oil uses are important in the modern world

Oil provides the fuel for most modern transport – cars, trains, planes etc. E.g. diesel, kerosene, heavy fuel oil etc. come from crude oil..

The **petrochemicals industry** uses some of the hydrocarbons from crude oil as **feedstock** (raw material to supply or fuel a machine or industrial process) to make new compounds for use in things such as **solvents, lubricants, polymers, detergents etc.**

Cracking (is a thermal decomposition reaction)

This means splitting up long-chain hydrocarbons using heat. Short-chain hydrocarbons are flammable so make good fuels and are high in demand. Long-chain hydrocarbons are thick, gooey liquids = not that useful. **Cracking** is the breakdown of large, long-chain hydrocarbon **alkanes** into smaller, more useful **alkanes** and **alkenes**. This process requires high temperatures and high pressure.

Alkenes are used as a **starting material** when making lots of other compounds and be used to make **polymers**.

What factors affect the properties of hydrocarbons?

Small molecules means that they have short carbon chains. **Large molecules** means that they have long carbon chains.

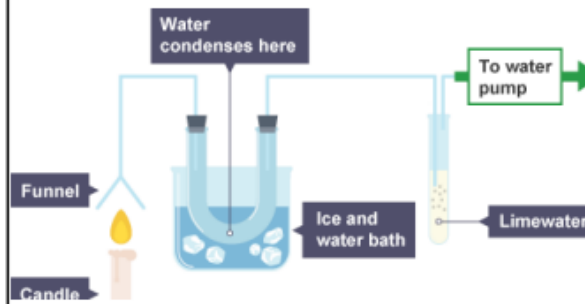
Combustion (burning)

When a hydrocarbon is burned with sufficient oxygen supply, the products are always carbon dioxide and water vapour.

Hydrocarbon + oxygen → carbon dioxide + water (+energy)

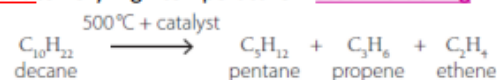
E.g. Butane + Oxygen → Carbon Dioxide + water
 $2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(g)$

During combustion both carbon and hydrogen from the hydrocarbon are **oxidised**. Hydrocarbons are used as **fuels** due to the amount of energy released when they combust completely.



Methods for Cracking: Catalytic and steam cracking.

- 1) Heat long-chain hydrocarbons to **vaporise** them (turn them into gas)
 - 2) **Vapour** is passed over **hot** powdered aluminum oxide **catalyst**
 - 3) Long-chain molecules split apart on the surface of the speck of the **catalyst** = **catalytic cracking**
1. **Vaporise** hydrocarbons and mix them with **steam**
 2. **Heat** to very high temperature = **steam cracking**



This cracking reaction is an example of thermal decomposition.

Alkenes: Are unsaturated hydrocarbons. This means they have 2 fewer H atoms and are joined by **double C=C bonds**.

Testing to see if it's an alkane or an alkene

Add **orange** bromine water and shake

Alkane = stays orange

Alkene = colourless



1. Carbon compounds as fuels and feedstock

Hydrocarbon	A chemical made of only carbon and hydrogen
Crude oil	A mixture of hydrocarbons found in rock
Alkanes	Saturated hydrocarbons (without double bond)
Alkene	Unsaturated hydrocarbon (with double bond). They turn bromine water from brown to colourless.
Fractional distillation	A process of separating crude oil using the different boiling points of fractions
Viscosity	How thick a liquid is
Flammability	How easily a fraction catches fire
Boiling point	The temperature at which a substance turns from a liquid to a gas
Combustion	A reaction where a fuel is oxidised releasing heat energy
Cracking	Breaking less useful long-chain alkanes into useful short-chain alkanes and alkenes

4. Properties of hydrocarbons

Property	Change as carbon change gets longer
Boiling point	Increases
Viscosity	Increases (less runny)
Flammability	Decreases

For Topic area 2, you need to know:

- Describe SPOR and FITT principles with relevant examples given for each aspect of your selected sporting activity.
- Describe SMART goals with relevant examples given for each aspect of your selected sporting activity.
- Analyse the benefits of applying the principles of training programme.
- Analyse your selected training methods including a comparison of aerobic and anaerobic exercises.

Section 1

PRINCIPLES OF TRAINING

Training should be matched to the individual needs of the performer. When designing a training programme, the Principles of Training should be applied.

SPECIFICITY

Training programmes must be specific to the chosen activity.

Tailoring training to the needs of performers will ensure that they meet the correct muscles and body systems for their chosen activity. For example, the training needs of a triathlete runner will be different from those of a weightlifter.

PROGRESSIVE OVERLOAD

To improve and to continue to develop, a training programme must gradually be made more difficult.

As a performer becomes fitter, the training programme needs to be made more difficult to ensure fitness gains continue.

The increase in intensity must be gradual because increasing the intensity too quickly can increase the risk of injury.

FITT

To become fitter, you must progressively work your body harder than normal. This can be achieved by applying the FITT principles.

Frequency – how often you exercise
Intensity – how hard you exercise
Time – how long you exercise for
Type – how your training matches your chosen activity

REVERSIBILITY

Exercise improves fitness. If you stop exercising, your fitness levels drop.

If you train, your muscles get bigger (hypertrophy). Alternatively, if you stop training, your muscles get smaller (atrophy).

Although rest periods are an essential element of recovery, extended rest periods result in a reduction of physical fitness at a rate much higher than it was achieved - if you don't use it, you lose it!

Section 2

TRAINING METHODS

Different sports require different training methods. As a result, sports performers must select training methods that are specific or can be adapted to their chosen activity.

CONTINUOUS

- Long periods of moderate work, without rest.
- Improves cardiovascular fitness and muscle endurance.
- Suitable for distance runners and tri-athletes.

FLEXIBILITY/MOBILITY

- Stretching methods including static, dynamic and Proprioceptive Neuromuscular Facilitation (PNF).
- Improves range of movement, reducing the chance of injury.
- Beneficial for all sporting activities, in particular gymnastics and dance.

FARTLEK (SPEED PLAY)

- A continuous workout, involving changes in speed and/or terrain.
- Improves recovery time and both aerobic and anaerobic fitness.
- Suitable for cross country runners and team games involving changes in speed.

WEIGHT TRAINING

- A workout using weights as a form of resistance.
- Can be tailored to improve muscular endurance, power and strength.
- Suitable for all activities and general fitness/toning.

CIRCUIT

- A series of exercises performed in a circuit.
- Improves cardiovascular endurance and muscular endurance.
- Excellent for general fitness and can be structured to suit most sports.

PLYOMETRICS

- A series of explosive movements such as jumps, bounds, hops etc.
- Improves power.
- Excellent for activities that require explosive strength, e.g. long/high jump.

INTERVAL

- Involves alternating periods of work and rest.
- Can be used to improve speed, recovery time, and aerobic and anaerobic fitness.
- Suitable for team games involving short bursts of speed.

SAQ (SPEED, AGILITY, QUICKNESS)

- Exercises aimed at activating neural pathways.
- Improves speed, agility and quickness.
- Suitable for team games involving changes in direction.

Section 3

TOPIC AREA 2

FITT Principle:

- Frequency → How often training takes place
- Intensity → How 'hard' training is
- Time → How long training lasts
- Type → What type of training is used

Aerobic Respiration:
Glucose + Oxygen = Energy + CO₂ + Water

Anaerobic Respiration:
Glucose = Energy + Lactic Acid

Smart Goals

S - Specific
M - Measurable
A - Achievable
R - Realistic
T - Timed

Principles of Training:


SPOR

Specificity
Progression
Overload
Reversibility

7 Types of Training

Tier 3 Vocabulary		
	Key word	Definition
Section 4	1	SMART Acronym for Specific, measurable, achievable, realistic and time-bound.
	2	SPOR Principles of training: specificity, progression, overload and reversibility.
	3	Specificity Making training specific to the movements skills and muscles that are used in the activity.
	4	Progression Gradually making training harder as it becomes too easy.
	5	Overload Working harder than normal.
	6	Reversibility "Use it or lose it". If you stop training, you will lose fitness.
	7	FITT Principles of overload, frequency, intensity, time and type.
	8	Continuous training Any activity or exercise that can be continuously repeated without suffering undue fatigue.
	9	Interval training Any training that involves periods of work and rest.
	10	Circuit training A series of exercises performed at work stations with periods of work and rests.
	11	Fartlek training "Speed Play" which generally involves running, combining continuous and interval training with varying speed and intensity.
	12	Plyometric training Repeated exercises such as bounding, hopping or jumping over hurdles which are designed to create fast, powerful movements.

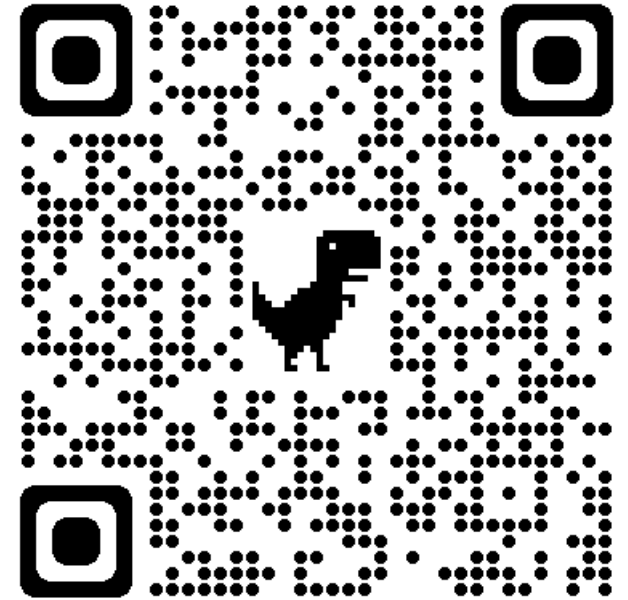
Notes:

Section 5	
Quiz QR Code	Quiz Link
	QUIZ LINK

Frayer Model: Adjacent

definition	synonyms
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adjacent	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
sentence	antonyms

Complete a Frayer Model for the word **adjacent**.



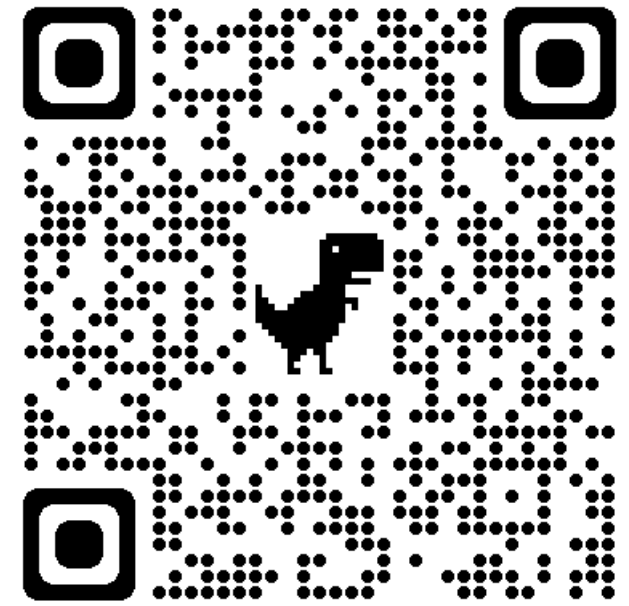
Scan to view thesaurus

[click to view thesaurus](#)

Frayer Model: Pivotal

definition	synonyms
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<p>pivotal</p>	
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sentence	antonyms

Complete a Frayer Model for the word **pivotal**.



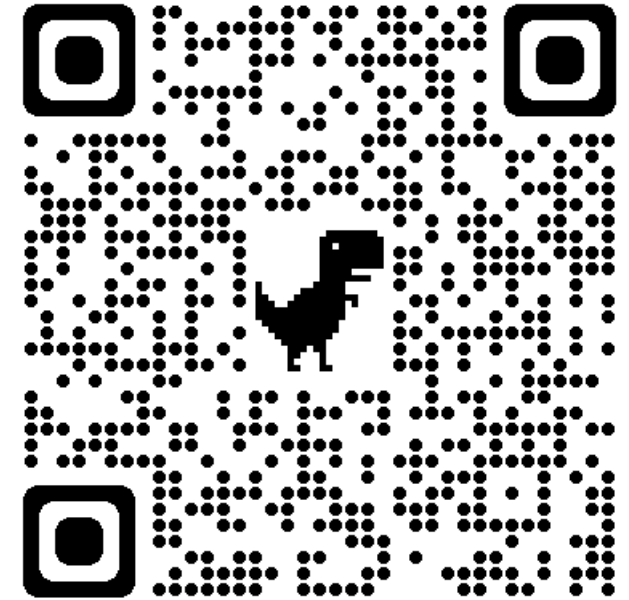
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Frayer Model: Subsequent

definition	synonyms
subsequent	
sentence	antonyms

Complete a Frayer Model for the word **subsequent**.



Scan to view thesaurus

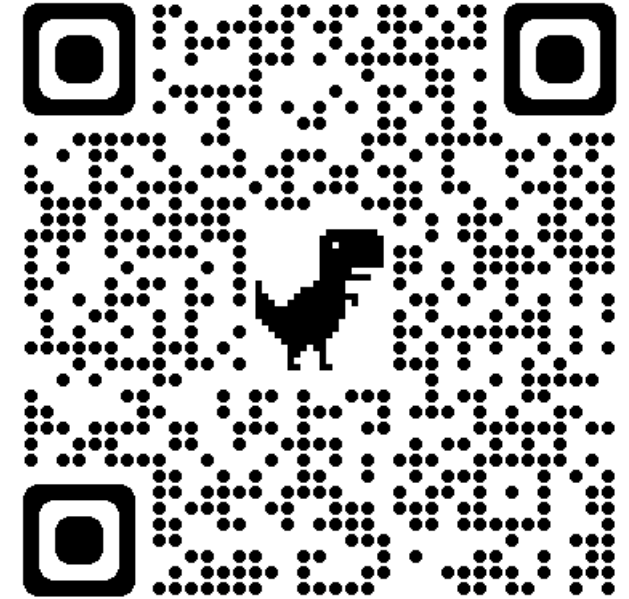
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Frayer Model: Imperative

definition	synonyms
sentence	antonyms

imperative

Complete a Frayer Model for the word **imperative**.



Scan to view thesaurus

[click to view thesaurus](#)

