

# Knowledge Goals Homework Booklet (Spring)

Year 9 and 10

Name: \_\_\_\_\_



Subject	Page Number
Art and Design	<a href="#">10</a>
Computer Science	<a href="#">12</a>
Design and Technology	<a href="#">17</a>
Drama	<a href="#">19</a>
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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

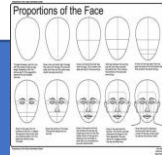
To help you get organised, we have planned out your weekly homework slot for each subject.

# Subject Homework Frequency Information

Subject	Homework
Art	Fortnightly
Computer Science	Fortnightly
Design and Technology	Fortnightly
Drama	One per half term
English	Weekly
Food Technology	Weekly
French	Weekly
Geography	Fortnightly
History	Fortnightly
Mathematics	Weekly
Music	Once per half term
PSHE	Once per half term
Physical Education	One per half term
Religious Studies	Weekly
Science	Weekly

## 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

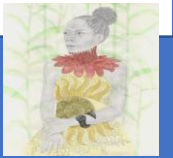
Parent information on knowledge retrieval:



## 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.

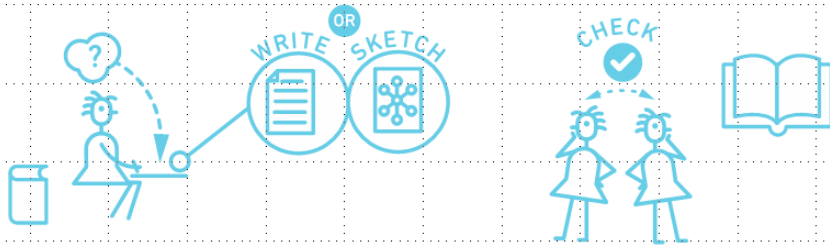
**Your teacher may choose to set you additional homework.**

### 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.

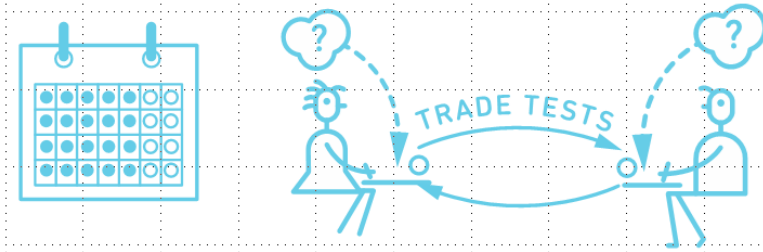
## HOW TO DO IT

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.



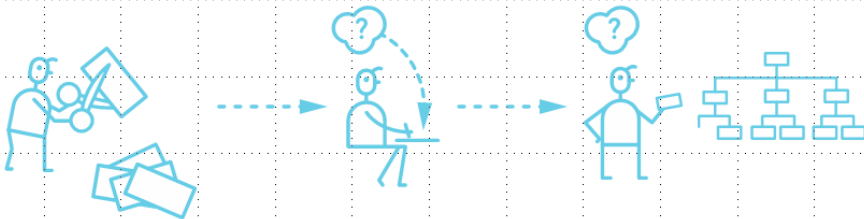
## HOW TO DO IT

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.



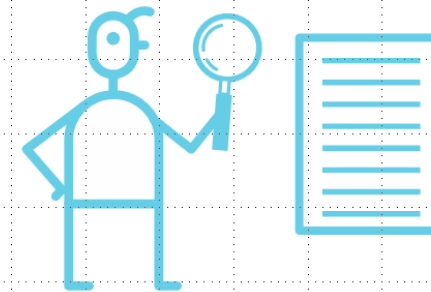
## HOW TO DO IT

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!

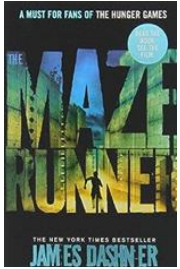

Retrieval practice works best when you go back to check your class materials for accuracy afterward.





**Tier 2 Vocabulary**

	Key word	Definition
1	chore	A tedious but necessary task.
2	disagree	To have or express a different opinion.
3	illusion	An instance of a wrong or misinterpreted perception of a sensory experience.
4	pose	To assume a particular position.
5	treaty	A formally concluded and ratified agreement between states.
6	virtuous	Having or showing a high moral standard.

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.

Book Title	Author	Genre	Overview			Image
Maze Runner	James Dashner	Science Fiction (Dystopian Adventure)	The first three books in the pulse pounding Maze Runner series! When the doors of the lift crank open, the only thing Thomas remembers is his first name. But he's not alone. He's surrounded by boys who welcome him to the Glade - a walled encampment at the centre of a bizarre and terrible stone maze. But the maze is just the beginning ...			
British Values	Tolerance	Individual Liberty	Rule of Law	Democracy	Mutual respect	
Touching the Void	Joe Simpson	Non-fiction Adventure	Touching the Void is a heart stopping, true account of Joe Simpson's terrifying adventure in the Peruvian Andes. He and his climbing partner, Simon, reached the summit of the remote peak, Siula Grande. A few days later, Simon staggered into base camp, exhausted and frost-bitten, with news that Joe was dead. What really happened to Joe makes not only an epic of survival but a compelling testament of friendship.			
British Values	Tolerance	Individual Liberty	Rule of Law	Democracy	Mutual respect	

Book Title	Author	Genre	Overview				Image
All Quiet on the Western Front	Erich Maria Remarque	War Novel	<p>In 1914 a room full of German schoolboys, fresh-faced and idealistic, are goaded by their schoolmaster to troop off to the 'glorious war'. With the fire and patriotism of youth they sign up. What follows is the moving story of a young 'unknown soldier' experiencing the horror and disillusionment of life in the trenches.</p>				
British Values	Tolerance		Individual Liberty	Rule of Law	Democracy	Mutual respect	
The Woman in Black	Susan Hill	Gothic Horror Novel (Ghost Story)	<p>The Woman in Black is a horror story about a young lawyer who encounters a vengeful ghost. Arthur Kipps is sent to a remote village in England to sort out the affairs of a deceased woman, but he soon discovers that her house is haunted by a mysterious woman in black. The ghost terrorizes the villagers and kills their children, and Arthur must find a way to stop her before she claims his own son.</p>				
British Values	Tolerance		Individual Liberty	Rule of Law	Democracy	Mutual respect	

## British Values: What They Mean for Us

British values are the important ideas that help make the UK a fair, safe, and respectful place for everyone. These values shape how we live together and treat each other. Here's a simple breakdown of the key British values:

### Democracy

- Democracy is all about having a voice. In the UK, we get to vote in elections to choose our leaders and decide on important issues. Everyone's opinion matters!
- At school, this means having the chance to express your views, take part in decisions, and have your voice heard.

### The Rule of Law

- The rule of law means that everyone must follow the law, no matter who they are. Laws help keep us safe and ensure that everyone is treated fairly.
- At school, we follow rules that help keep our environment respectful and safe for everyone.

### Individual Liberty

- Individual liberty is about having the freedom to make your own choices, as long as they don't harm others. It's about having the freedom to think for yourself, express your opinions, and be who you are.
- At school, you can express yourself, pursue your interests, and have the freedom to make choices about your learning.

### Mutual Respect and Tolerance

- Mutual respect means valuing other people's opinions, feelings, and beliefs, even if they're different from your own. Tolerance is about accepting people for who they are and being open to different cultures, ideas, and traditions.
- At school, we show respect by listening to each other, understanding differences, and creating a welcoming and friendly environment for everyone.

### Equality

- Equality means treating everyone fairly, no matter their background, gender, race, or beliefs. Everyone should have the same opportunities to succeed.
- At school, we support equality by making sure everyone has the same chances and is treated with respect, regardless of who they are.

## How British Values Apply to Us at Settlebeck

At Settlebeck, we bring British values to life by encouraging respect for each other, celebrating diversity, and working together to create a positive school community. These values help us create a safe and supportive space where we can all learn and grow, respecting each other's differences and making sure everyone feels included. By living these values, we can all contribute to making Settlebeck a great place to learn, where everyone has the chance to thrive!

**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](#)

# Year 9 and 10 Knowledge Goals: Still Life

## Tier 3 Vocabulary

Key word		Definition
1	<b>vanishing point</b>	All parallel lines (that recede into the distance) converge to a single point on the horizon.
2	<b>horizon line</b>	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	<b>linear perspective</b>	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	<b>one-point perspective</b>	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	<b>two-point perspective</b>	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	<b>three-point perspective</b>	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	<b>positive space</b>	The area in a work of art that is occupied by the subject.
8	<b>negative space</b>	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.



**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**

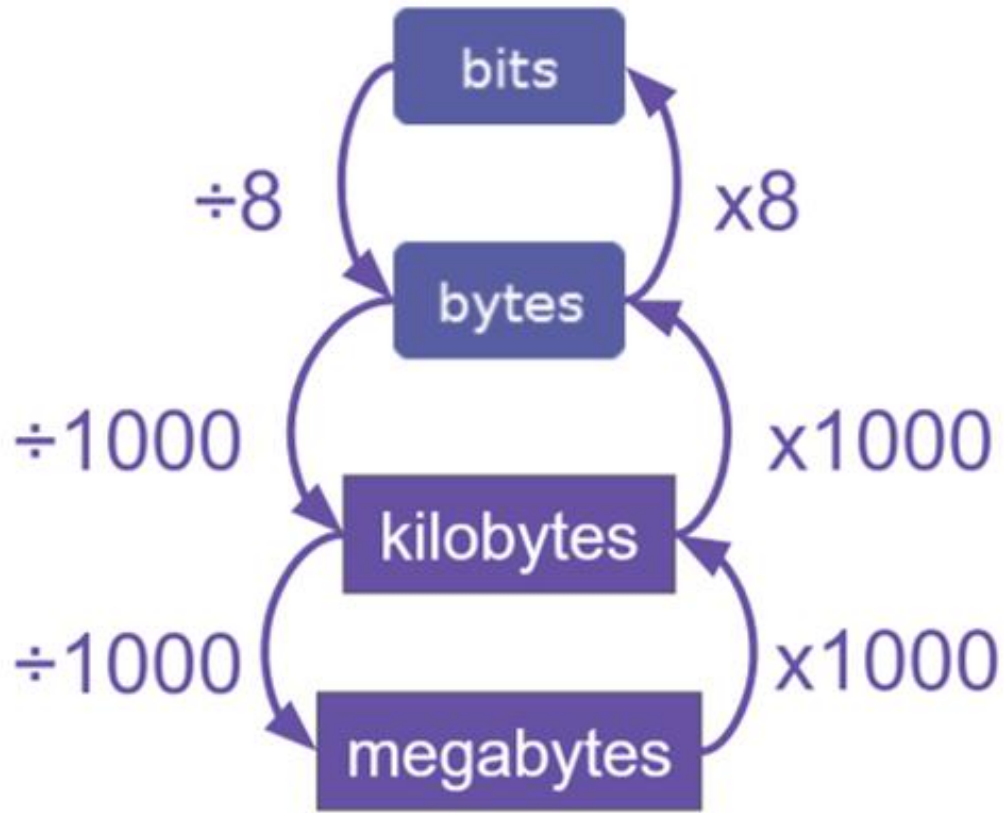
32	16	8	4	2	1
	1	1	1	1	

$2 - 2 = 0$

**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']
sies 110, 95, 00, 30, 95, 5, 8, 10]
for i in range(len(planets)):
    print(planets[i], sizei] | % 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	<b>pixel</b>	The smallest identifiable area of an image or computer screen.
2	<b>bit</b>	A single symbol in a binary number. Either 1 or 0.
3	<b>bit pattern</b>	Any sequence or more than one bit.
4	<b>nibble</b>	A bit pattern which is four bits long.
5	<b>byte</b>	A bit pattern with which is eight bits long.
6	<b>kilobyte</b>	1000 bytes.
7	<b>megabyte</b>	1000 kilobytes.
8	<b>resolution</b>	The number of pixels in an image.
9	<b>colour depth</b>	The number of bits used to store each pixel.
10	<b>bitmap</b>	A digital image made up of a grid of pixels.
11	<b>vector graphic</b>	A digital image made up of lines and shapes described using mathematics.
12	<b>compression</b>	Reducing the amount of storage needed to represent a file.
13	<b>lossy compression</b>	Information is lost during the compression of a file.
14	<b>lossless compression</b>	No information is lost during the compression of the file.

Notes:

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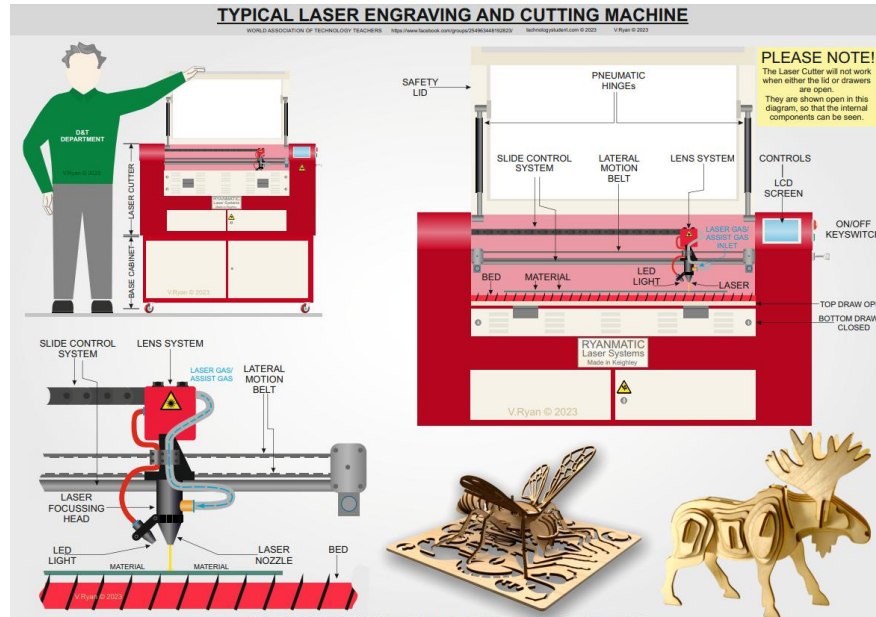
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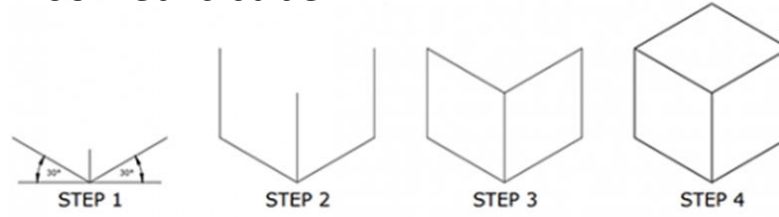
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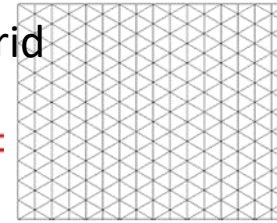
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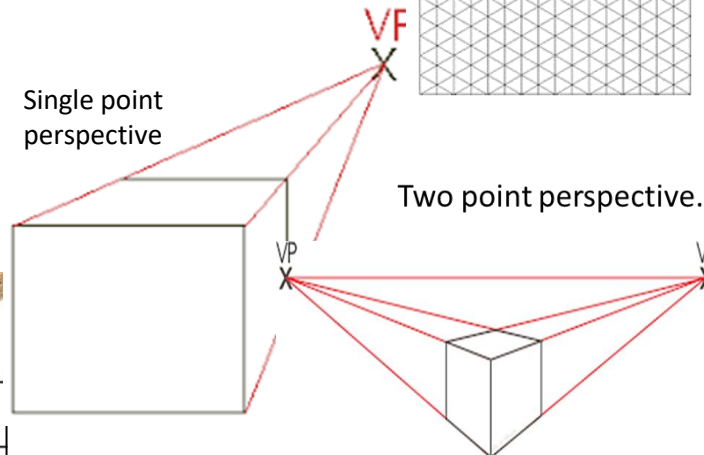
Isometric cube.



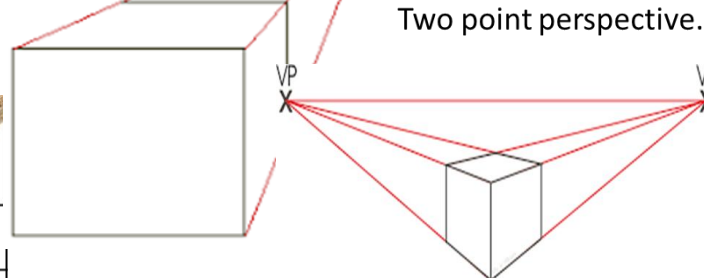
Isometric grid



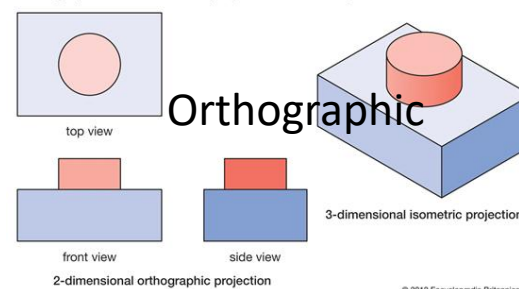
Single point perspective



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	<b>modelling</b>	The activity of making three-dimensional models.
2	<b>prototype</b>	A prototype is an early sample or model to test a concept or process.
3	<b>isometric</b>	Visually representing three-dimensional objects in two dimensions in technical and engineering drawings.
4	<b>orthographic</b>	A drawing in which a three dimensional object is represented in two dimensions.
5	<b>perspective</b>	The representation of three-dimensional objects or spaces in two dimensional artworks.
6	<b>technical drawing</b>	A detailed, precise diagram or plan that conveys information about how an object functions or is constructed.
7	<b>manufactured board</b>	Also known as engineered board, made from waste or scrap wood.
8	<b>wood glue</b>	A slow setting bonding agent.
9	<b>softwood</b>	Wood mainly from coniferous trees.
10	<b>hardwood</b>	Wood from deciduous trees.

Notes:

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Quiz QR Code

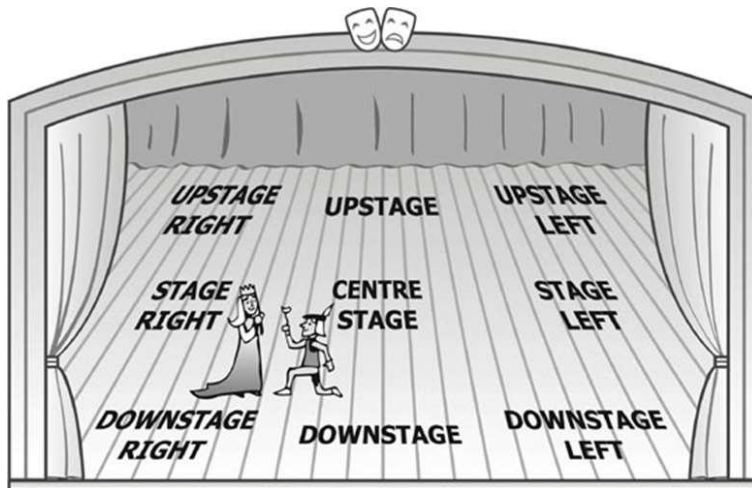


Quiz Link

[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.

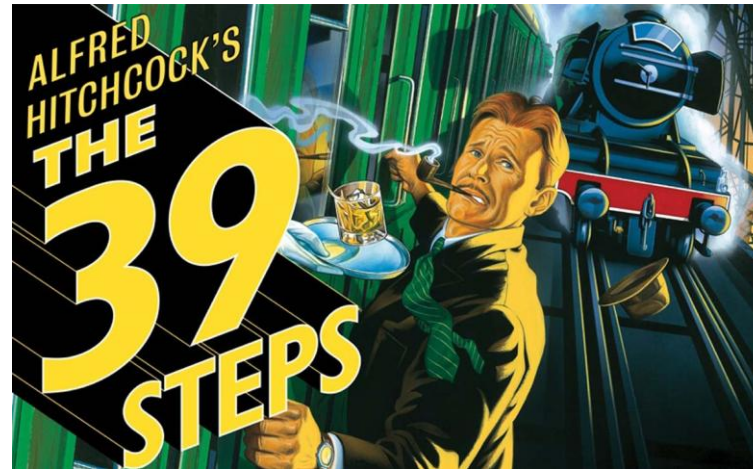


## Set Text Analysis

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.



### 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	<b>ambition</b>	a strong desire to do or achieve something
2	<b>domesticity</b>	home or family life.
3	<b>gothic</b>	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	<b>industrial revolution</b>	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	<b>morality</b>	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	<b>realism</b>	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	<b>romanticism</b>	<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	<b>social commentary</b>	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	<b>symbolism</b>	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	<b>narrator</b>	The <u>character</u> who <u>tells</u> you what is <u>happening</u> in a <u>book</u> or <u>film</u>
11	<b>dialogue</b>	<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

### 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

### 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

<b>Simile</b> 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."	<b>Metaphor</b> 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"
<b>Oxymoron</b> 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.	<b>Hyperbole</b> A hyperbole is a figure of speech which exaggerates the meaning of a sentence. • For example: My granddad is as old as time.
<b>Idiom</b> 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.	<b>Personification</b> 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?
<b>Symbolism</b> 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.	<b>Alliteration</b> 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.
<b>Onomatopoeia</b> 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.	<b>Puns</b> 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.
<b>Irony</b> 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.	



### 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><b>Minor or fragment sentence.</b><br/>An incomplete sentence without a verb and/or subject.<br/><b>Nothing. Silence.</b></p>                        |
| 2 | <p><b>Simple Sentence</b><br/>A main clause with a verb and subject.<br/><b>She was gone. It was over.</b></p>  |
| 3 | <p><b>Compound Sentence</b><br/>Two simple sentences linked by co-ordinating conjunctions.<br/><b>She was gone <u>but</u> it was not over.</b></p>      |
| 4 | <p><b>Complex Sentence</b><br/>A sentence which contains a main clause and a subordinate clause.<br/><b>Although she was gone, it was not over.</b></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](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](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](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=mlkl](https://settlebeckorg-my.sharepoint.com/:w:/g/personal/astbury-smithf_settlebeck_org/EZhqNbuaXdROrVliqJjQQRUBgVrBJA7rsM1CZGnt2AIJ9g?e=mlkl)

What makes this story great?

[https://www.youtube.com/watch?v=0XRrj\\_0H2KU&t=108s](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

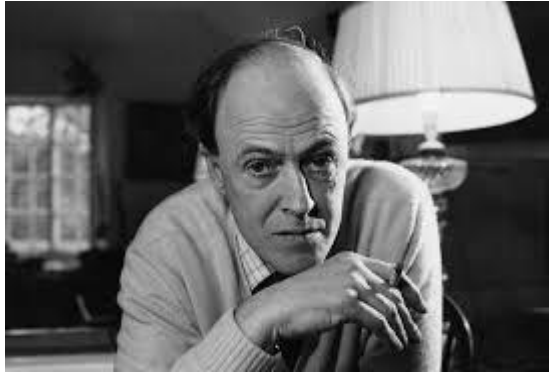
## Tier 2 Vocabulary

	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

## Other great short stories to read and enjoy...



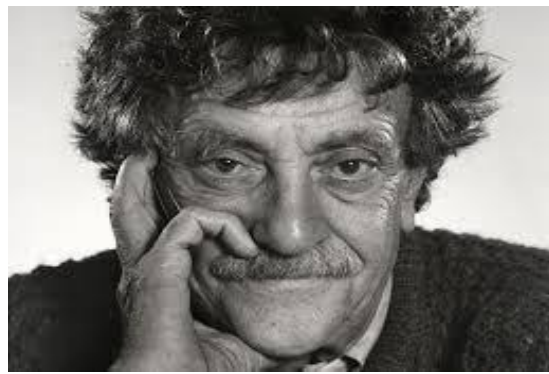
Roald Dahl (1953)  
**'Lamb to the Slaughter'**

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](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.

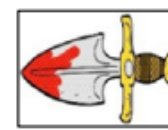
## Characters

- **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.



# Year 9 and 10 Knowledge Goals: English (Macbeth)

## 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

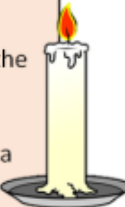
- Violence in battle is celebrated at start of the play
- Macbeth and Lady Macbeth argue about killing King Duncan
- Macbeth suffers internal conflict of conscience
- Macbeth murders King Duncan
- Macbeth orders the death of Banquo
- Conflicted, Lady Macbeth dies
- Macduff kills Macbeth and his death 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      | Courageous            |
| • Honourable | Admired               |
| • Loyal      | Selfless              |
| • Righteous  | Powerful              |
| • Feared     | Antithesis of Macbeth |

### Points (words to describe the witches)

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

### Top 10 quotations

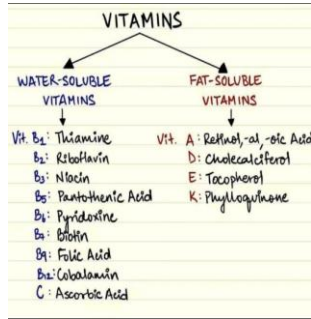
1. *"oh horror, horror, horror"* 2.3 (finding Duncan's body)
2. *"O gentle lady, 'Tis not for you to hear what I can speak"* (to L. Macbeth)
3. *"The untimely emptying of the happy throne"* 4.3 (Macbeth murdering Duncan)
4. *"bleed, bleed, poor country"* 4.3 (when he thinks Malcolm will be a bad king)
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)

### 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 <b>the physical sensations in the mouth caused by food or drink, making it distinct from taste</b>
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.

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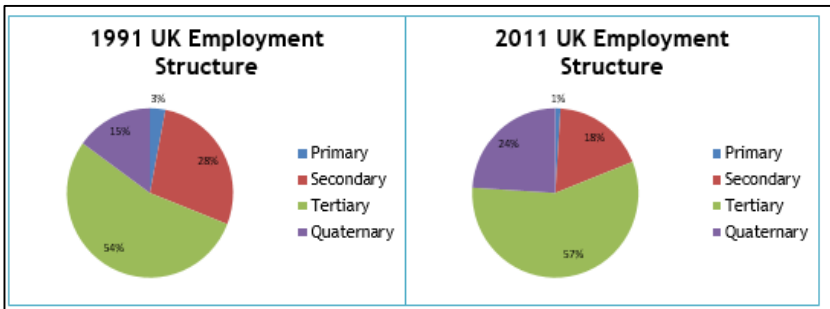
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# Studies and my future

1. et ton collège, c'est comment ?
2. quels sont les avantages et les inconvénients de ton collège ?
3. Qu'est-ce que tu aimerais changer au collège ?
4. tu aimes ton uniforme scolaire ?
5. idéalement qu'est-ce que tu voudrais porter
6. Tu aimes quelles matières
7. et hier, qu'est-ce que tu as fait au collège ?
8. A l'avenir, après le collège, tu voudrais continuer tes études?
9. et comme profession, qu'est-ce que tu voudrais faire?
10. tu as fait une visite scolaire récemment ?

**Work out what  
these questions  
are and  
practice them for  
Homework as we  
Cover them in class**





### 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.

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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.

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.

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.

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.

**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.

Vs

**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.

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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.

Quiz QR Code

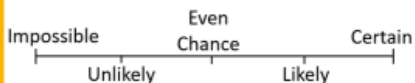


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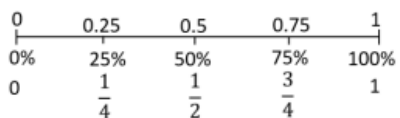
[QUIZ LINK](#)

## 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.

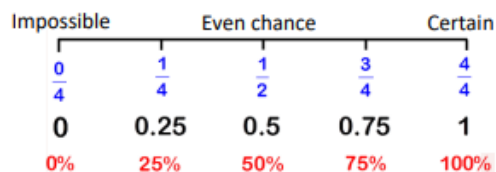
**Theoretical probability** is what should happen if all variables were fair.

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 is black.

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

$$6x + 4 = 100$$

$$x = 16$$

$$\text{Number of black counters} = 16 - 5 = 11$$

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

### 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

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

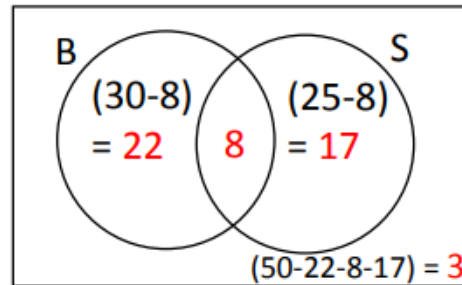
### Example

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

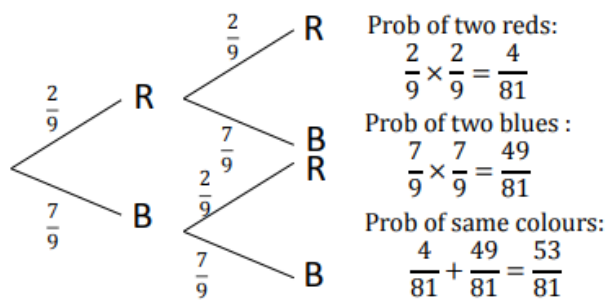
When there are a number of different possible outcomes in a situation we need a **logical** and **systematic** way in which to view them all.

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

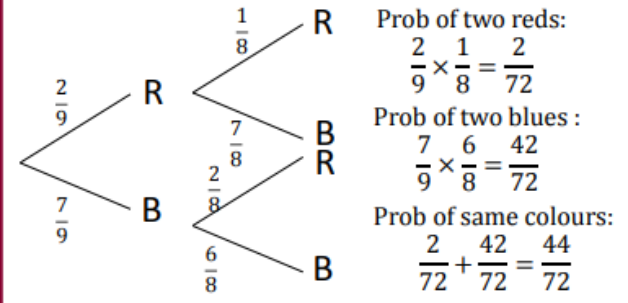
We can also use a **sample space diagram**. This records the possible outcomes of two different events happening.

## 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:

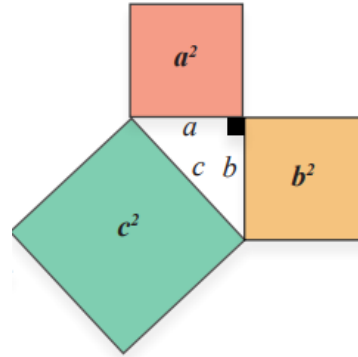
	1	2	3	4	5	6
1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)
2	(2,1)	(2,2)	(2,3)	(2,4)	(2,5)	(2,6)
3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6)
4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6)
5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6)
6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6)

- What is the probability that 2 numbers which are the same are rolled?  
 $\frac{6}{36} = \frac{\text{outcomes where numbers are the same}}{\text{total number of outcomes}}$
- 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  $x$ .

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

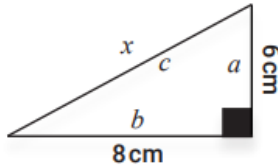
$$6^2 + 8^2 = x^2$$

$$36 + 64 = x^2$$

$$100 = x^2$$

$$\sqrt{100} = x$$

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



2) Find the length of  $y$ .

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

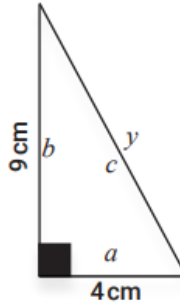
$$4^2 + 9^2 = y^2$$

$$16 + 81 = y^2$$

$$97 = y^2$$

$$\sqrt{97} = y$$

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



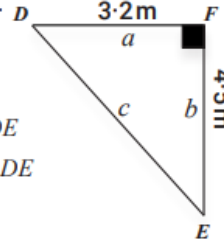
3) Find the length of  $DE$ .

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

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

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

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



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

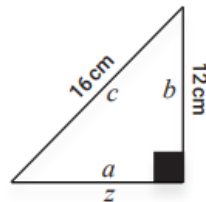
1) Find the length of  $z$ .

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

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

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

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



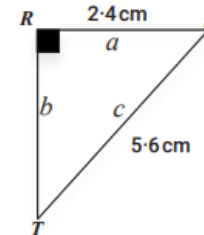
2) Find the length of  $RT$ .

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

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

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

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



### 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.

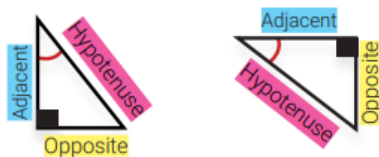
**Labelling the right-angled triangle**

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.

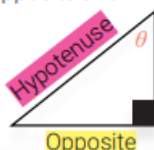


Once we know what sides and angles we know or are looking for we can then choose the correct ratio to use.

**The sine ratio (SOH)**

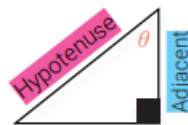
When working with the angle  $\theta$  and the opposite and hypotenuse sides, we use the sine ratio.

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

**The cosine ratio (CAH)**

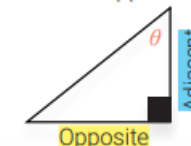
When working with the angle  $\theta$  and the adjacent and hypotenuse sides, we use the cosine ratio.

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

**The tangent ratio (TOA)**

When working with the angle  $\theta$  and the adjacent and opposite sides we use the tangent ratio.

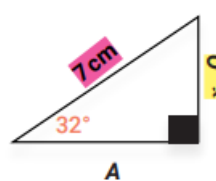
$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$



- SOH CAH TOA is used to help us remember which ratio connects which sides.
- $\theta$  ('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  $x$ .



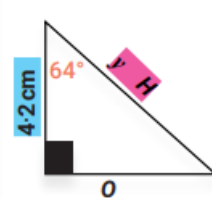
SOH CAH TOA

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

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

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

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



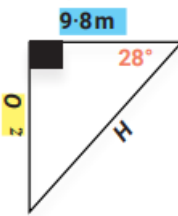
SOH CAH TOA

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

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

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

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



SOH CAH TOA

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

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

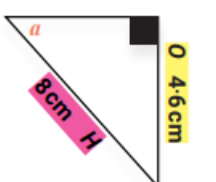
$$z = 5.2 \text{ m (to 1 d.p.)}$$

**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  $a$ .



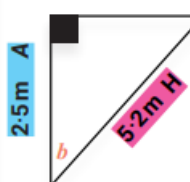
SOH CAH TOA

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

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

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

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



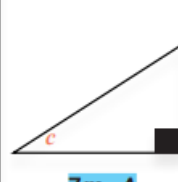
SOH CAH TOA

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

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

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

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



SOH CAH TOA

$$\sin \theta = \frac{o}{h} \quad \sin c = \frac{3}{7}$$

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

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

**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:

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Quiz QR Code



Quiz Link

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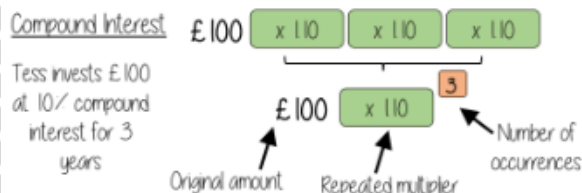
### What do I need to be able to do?

- By the end of this unit you should be able to:
- Convert and compare FDP
- Work out percentages of amounts
- Increase/ decrease by a given percentage
- Express one number as a percentage
- Calculate simple and compound interest
- Calculate repeated percentage change
- Find the original value
- Solve problems with growth and decay

### Keywords

**Exponent:** how many times we use a number in multiplication it is written as a power  
**Compound interest:** calculating interest on both the amount plus previous interest  
**Depreciation:** a decrease in the value of something over time.  
**Growth:** where a value increases in proportion to its current value such as doubling  
**Decay:** the process of reducing an amount by a consistent percentage rate over time  
**Multiplier:** the number you are multiplying by  
**Equivalent:** of equal value

### Repeated percentage change



### Depreciation

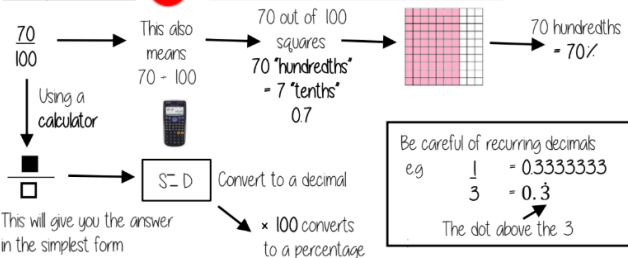
Depreciation calculations use multipliers less than 1

Multipliers are commutative – an overall multiplier effect can be calculated by combining the multipliers separately

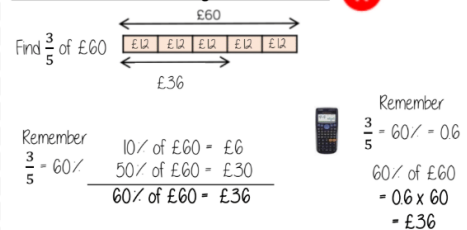


### Compare FDP

Comparisons are easier in the same format



### Fraction/ Percentage of amount



### Growth and decay

Compound growth    Compound decay

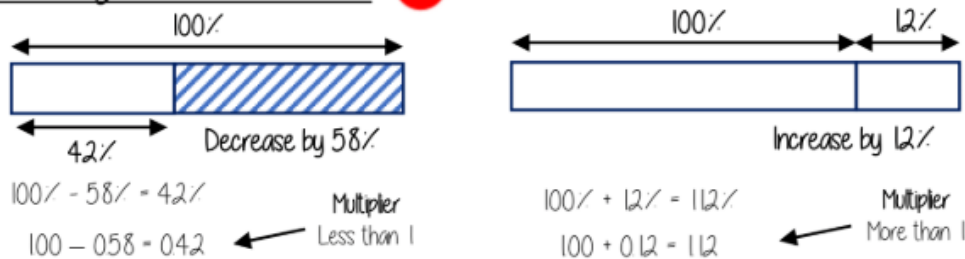


Compound growth and compound decay are exponential graphs

**Decay** – the values get closer to 0  
 The constant multiplier is less than one

**Growth** – the values increase exponentially  
 The constant multiplier is more than one

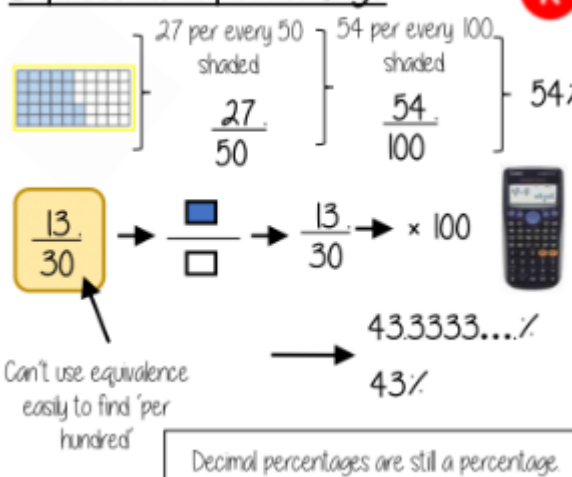
### Percentage increase/decrease



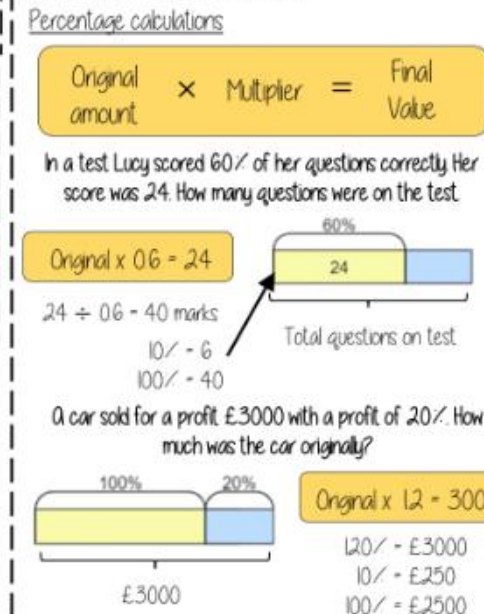
### Simple and compound interest



### Express as a percentage



### Find the original value





**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.

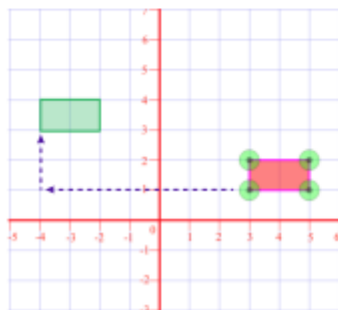
Draw the same path on the other side of the line of reflection.

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  $\begin{pmatrix} -6 \\ 2 \end{pmatrix}$ .

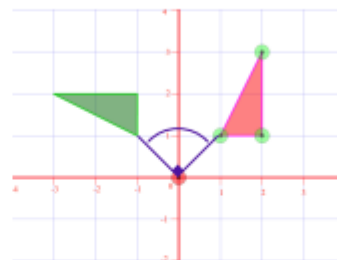


Choose a point on the rectangle and move it 6 units to the left and then 2 units up.

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.

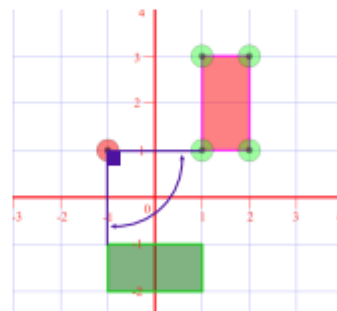


Trace the triangle.

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

Rotate the paper anti-clockwise and for 90° (¼ turn) around (0, 0) 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° (¼ turn) around (-1, 1) to find the position of the image.

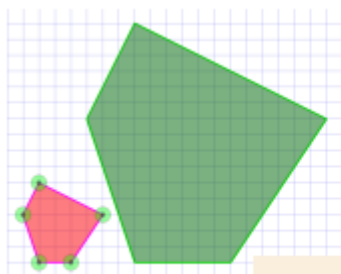
Draw the image.

**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.

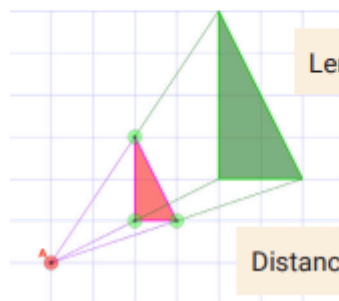
E.g. Draw an enlargement of the given shape when the scale factor is 3.



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.

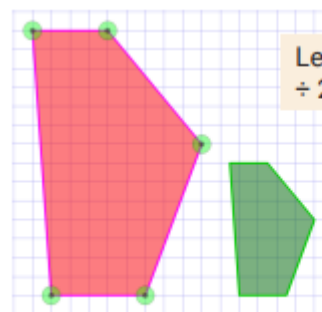


Length of all sides  $\times 2$ .

Distance from the centre  $\times 2$ .

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

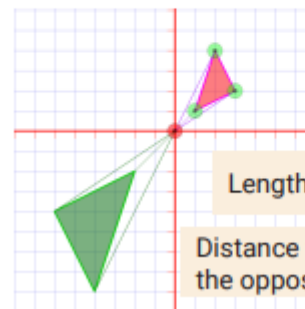
E.g. Draw an enlargement of the given shape when the scale factor is  $\frac{1}{2}$ .



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.

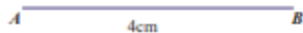


Length of all sides  $\times 2$ .

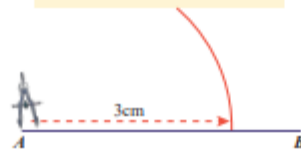
Distance from the centre  $\times 2$  but on the opposite side and upside down.

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

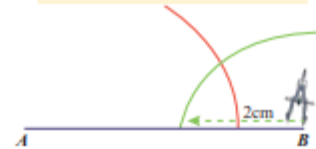
1) Draw the longest line 4cm and label the ends  $A$  and  $B$ .



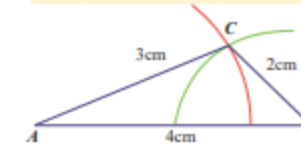
2) Place the compass at the end labelled  $A$  and draw an arc with a radius of 3cm.



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.



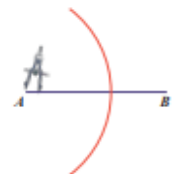
### Perpendicular bisector

This creates a  $90^\circ$  angle to a line and splits the line in half.

1) Draw the line  $AB$ .



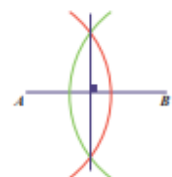
2) Place the compass on  $A$  and open it to more than halfway between  $A$  and  $B$ . Draw an arc.



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



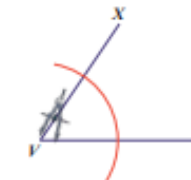
4) The arcs will meet above and below the line. Mark these two points and then join them with a straight line.



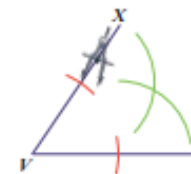
### Bisector of an angle

This splits an angle into two equal parts.

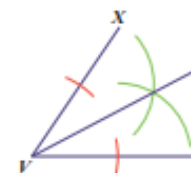
1) Place the compass on the vertex of the angle  $V$ . Draw an arc of any size that crosses both arms of the angle.



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



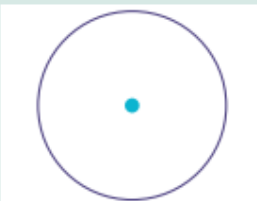
3) Mark the point where the arcs meet then join this point to the vertex of the angle with a straight line.



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

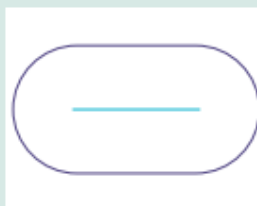
#### Locus of points a constant distance from a point

Draw a circle with radius = the constant distance.



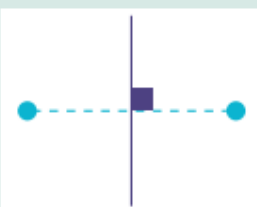
#### Locus of points a constant distance from a line

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  $BD$ .

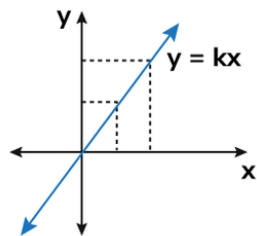


3) Shade the region that satisfies both conditions.

### Direct Proportion

$$y \propto x$$

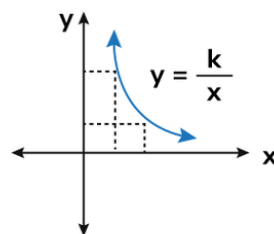
$$y = kx, \text{ for a constant } k$$



### Inverse Proportion

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

$$y = \frac{k}{x}, \text{ for a constant } k$$



### 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.



# 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 QR Code



Quiz Link

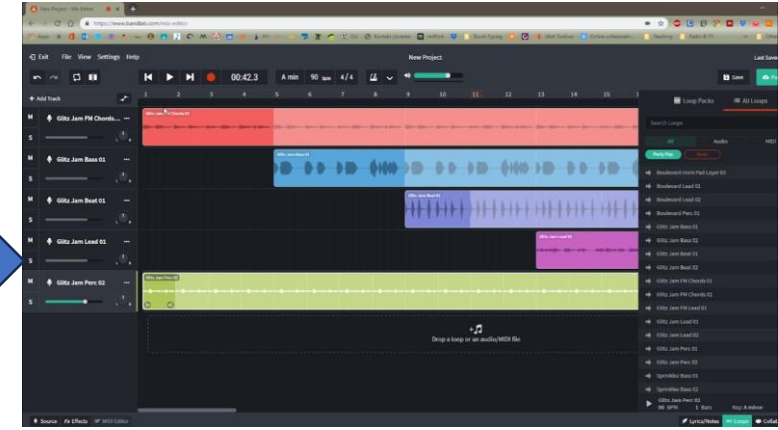
[QUIZ LINK](#)

## Music Technology

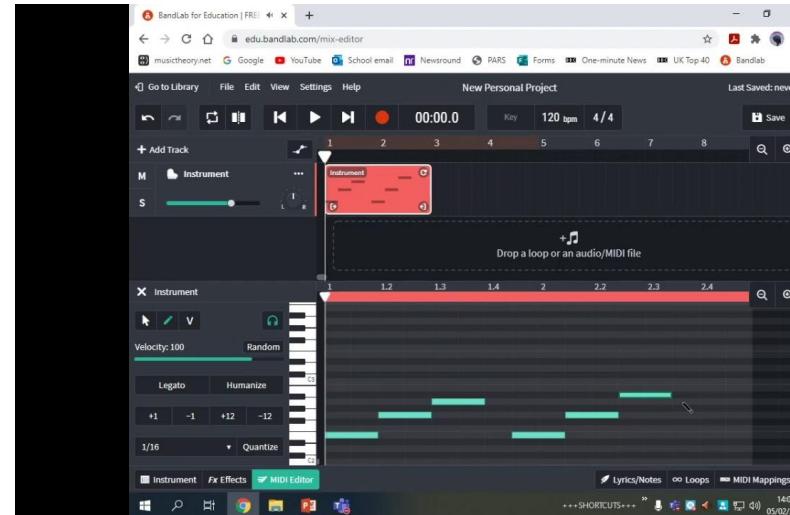
1. A DAW or Digital Audio Workstation is a piece of computer software used to create, compose and record music.
2. Loops are prerecorded short pieces of music that can be put together to create a larger piece of music.
3. You can create a rock song by doing the following:
  - Add loops together for 'rock 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

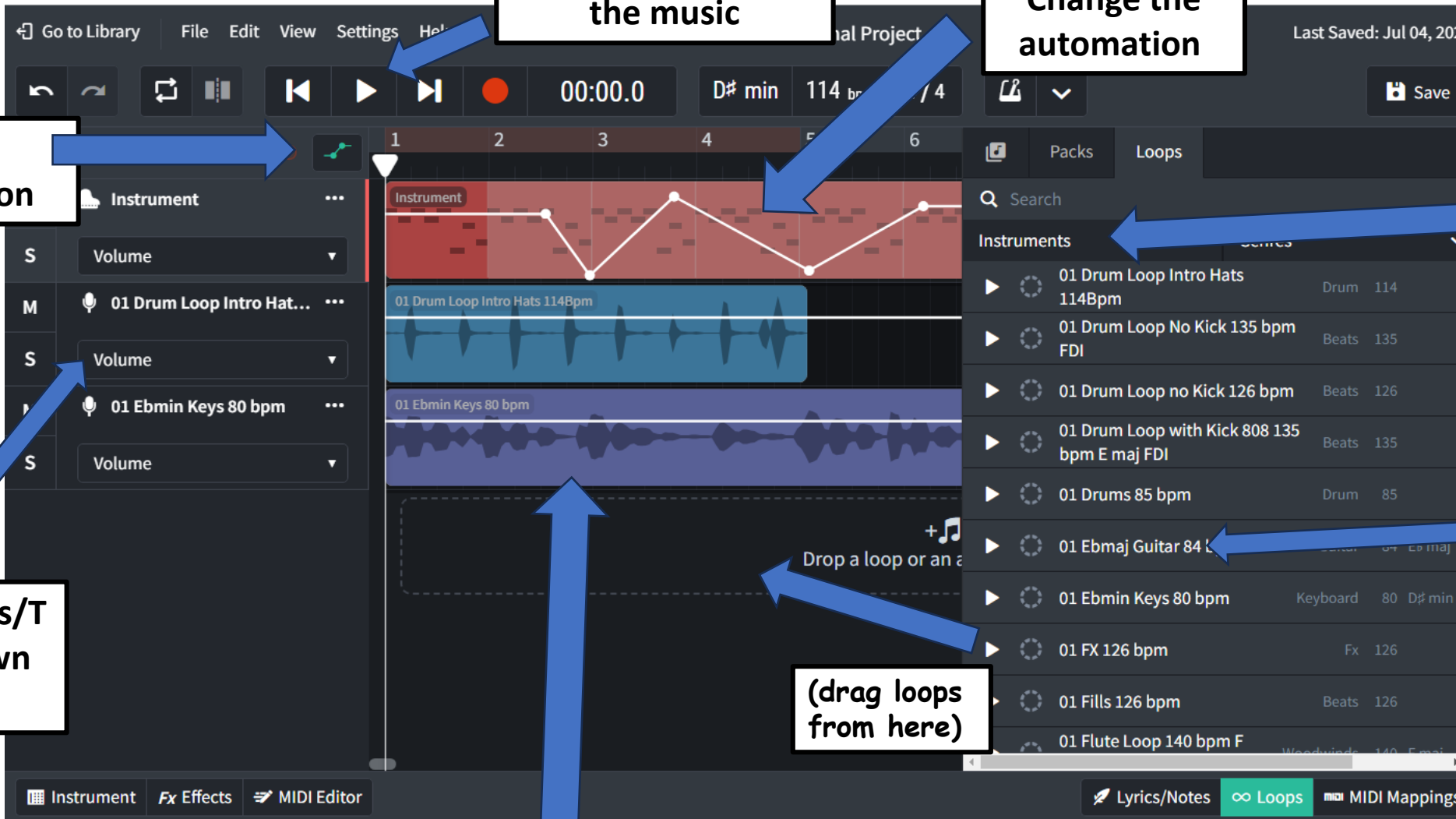
Using loops to create music



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



# Year 9 and 10 Knowledge Goals: PE - Dance

## Key learning:

### Performance and appreciation

Developing dance when creating one piece, performing in unison and sync with other group members in front of the class. Self- assess and assess peers' work, and give feedback using appropriate dance vocabulary

### Choreography

Developing synchronisation when working in a group including to different rhythms. Respond to teacher instruction to create a choreographed dance routine

### Movement

Developing choreographic skill incorporating more free – creative thinking  
 Developing good co-ordination within a sequence of movements  
 Movements articulate the style of dance well  
 Use music to influence movement with increasing skill

This is the greatest show.....  
 Your inspiration for this years dance



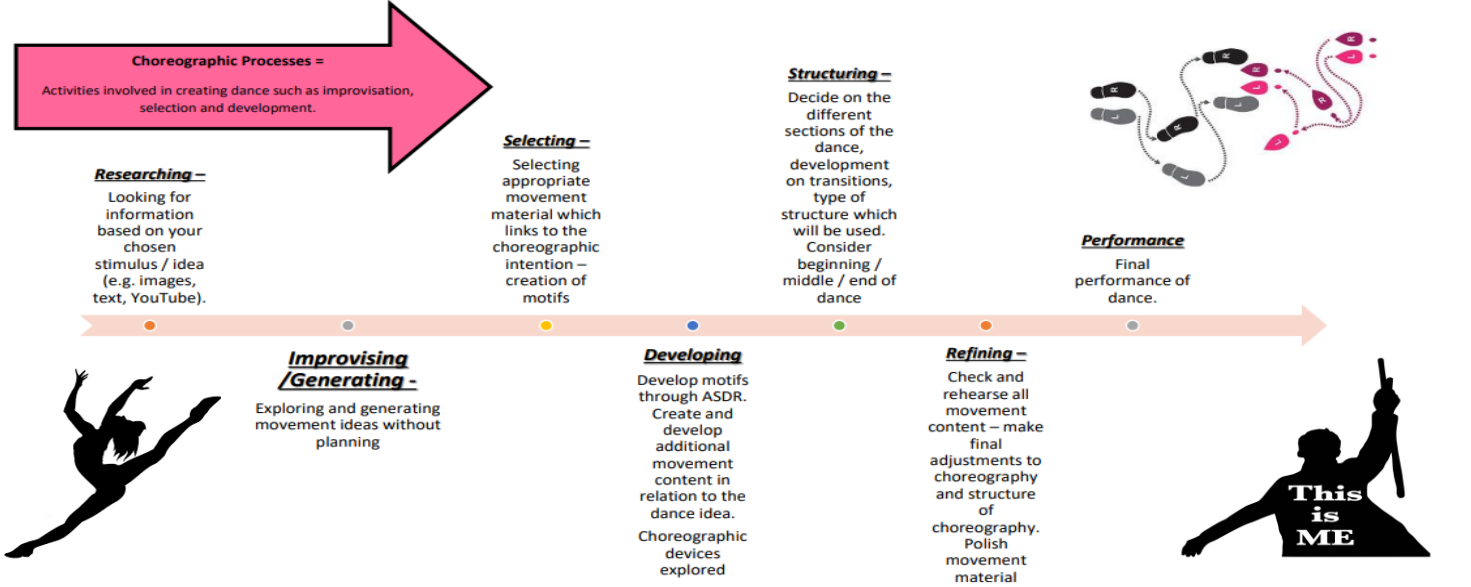
## Physical Skills:

- B – Balance
- A – Alignment
- S – Strength
- I – Isolation
- C – Control
- S – Stamina
- P – Posture
- E – Extension
- C – Co -ordination
- F – Flexibility
- M - Mobility

## Mental Skills:

- C – Commitment
- C – Confidence
- C – Concentration
- M – Movement memory
- M – Mental Rehearsal
- S – Systematic Repetition
- R – Rehearsal Discipline
- R – Response to Feedback
- P – Planning Rehearsals

## Creating a dance- the process



## Technical Skills:

- D – Dynamic content
- R – Relationship content
- S – Spatial content
- T – Timing
- A – Action content
- R – Rhythm

## Expressive Skills:

- M – Musicality
- C – Communication of Choreographic Intent
- P – Phrasing
- P – Projection
- F – Facial expression
- F – Focus
- S – Sensitivity to other dancers
- S – Spatial Awareness



This is ME



# Physical Education Knowledge Goals – Dance & Gymnastics

## Spring Term 1: DANCE Tier 3 Vocabulary

Section 2	1	<b>Gymnastics</b>	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	<b>Apparatus</b>	The equipment used in gymnastics, including the balance beam, uneven bars, vault, parallel bars, and rings.
	3	<b>floor Exercise</b>	A gymnastics event that involves a choreographed routine performed on a padded floor mat, combining tumbling passes, dance elements, and jumps.
	4	<b>Dismount</b>	The final element of a gymnastics routine or apparatus performance, where the gymnast leaves the apparatus or floor with a controlled landing.
	5	<b>Bridge</b>	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	<b>form</b>	The proper alignment and technique of gymnastic movements and skills, emphasizing correct body positions and execution.
	7	<b>flexibility</b>	The range of motion and suppleness of a gymnast's joints and muscles, which is essential for performing various skills and movements.
	8	<b>spotter</b>	An individual, often a coach or instructor, who assists gymnasts during training by providing support and guidance to ensure their safety.
	9	<b>mount</b>	A mount is the skill used to get on the apparatus. Mounts are needed for Balance Beam and Uneven Bars.
	10	<b>vault</b>	An apparatus in gymnastics consisting of a springboard and a stationary platform, used for performing powerful jumps and various flips and twists.

Notes:

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## 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

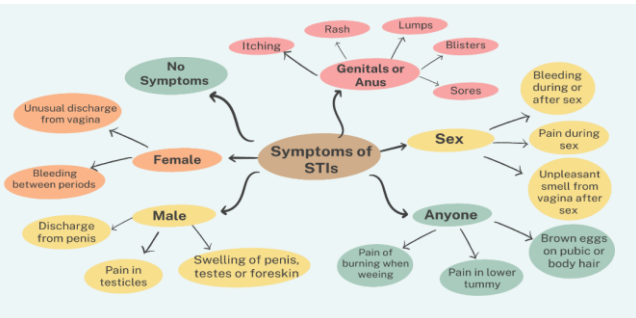
Chlamydia    Gonorrhea    Genital herpes    Hepatitis B

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

STI, sexually transmitted infection; HIV, human immunodeficiency virus.  
<sup>a</sup>Pregnancy 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 <a href="#">erect</a> penis into a woman's vagina, typically <a href="#">culminating</a> in orgasm and the ejaculation of <a href="#">semen</a> .
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 <a href="#">intercourse</a>
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 <a href="#">vertebrates</a> , carrying the duct for the transfer of sperm during <a href="#">copulation</a> . In humans and most other mammals it consists largely of erectile tissue and is used also for <a href="#">urination</a>
9	vagina	The muscular tube leading from the external <a href="#">genitals</a> to the <a href="#">cervix</a> of the <a href="#">uterus</a> 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.**



## What is a wave?

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

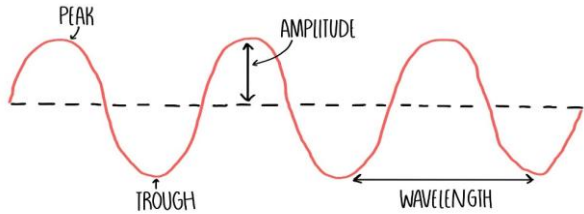
## Longitudinal or transverse?

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.

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

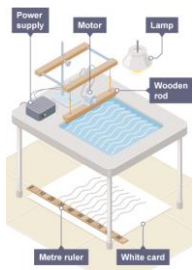
For all waves you can use the equation below to calculate the speed of the wave. Make sure all units are converted correctly – quite often you will need to be able to use **standard form** (see further material).

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

(m/s)                      (Hz)                      (m)

## Measuring wave speed - liquids

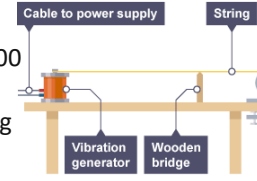
Set up the apparatus like shown



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.

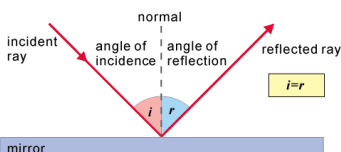
## Measuring wave speed - solids

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.



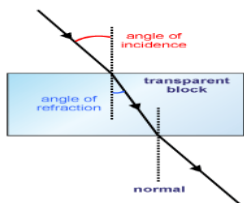
See further materials to watch videos of these practical's.

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



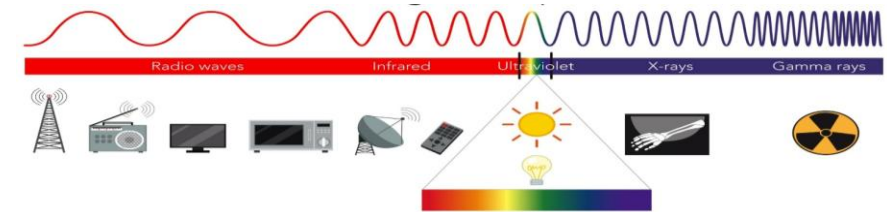
The **law of reflection** states that the angle of incident is equal to the angle of reflection. Specular reflection happens off smooth surfaces that appear shiny whereas diffuse reflection scatters light off a rough surface so it appears dull.

**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

QR codes for Gamma and x-rays, Infrared and microwaves, and Radio waves.

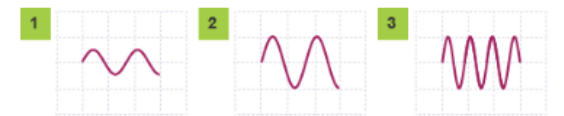
See further materials to watch a video of the practical into infrared.

**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



### 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

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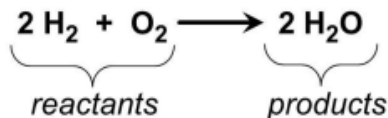


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## Paper 2 - Chemistry Knowledge Organiser – Rate of reaction

### 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

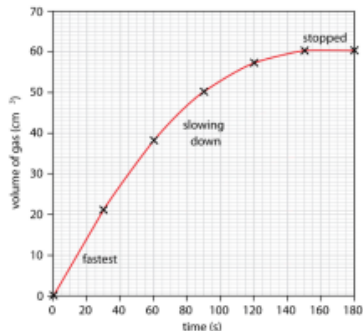
The rate of a reaction can be found by the equation below.

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

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

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.



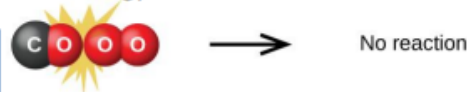
The line is curved. This means that the rate of reaction changes as it progresses.

### 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

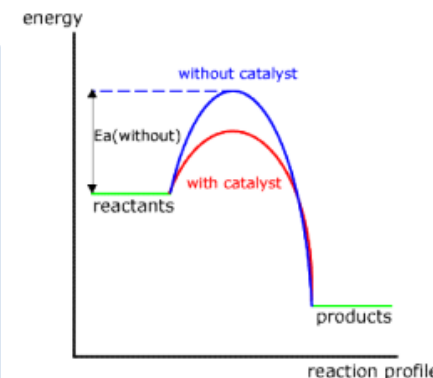
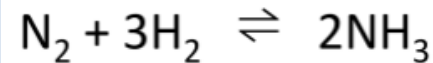
Catalysts are substances that speed up the rate of a reaction without being used up themselves. They work by lowering the activation energy. This is the amount of energy needed to get a reaction going. Just like striking a match, you need to put some energy into it, the match will not just burst into 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:**  $C_nH_{(2n+2)}$

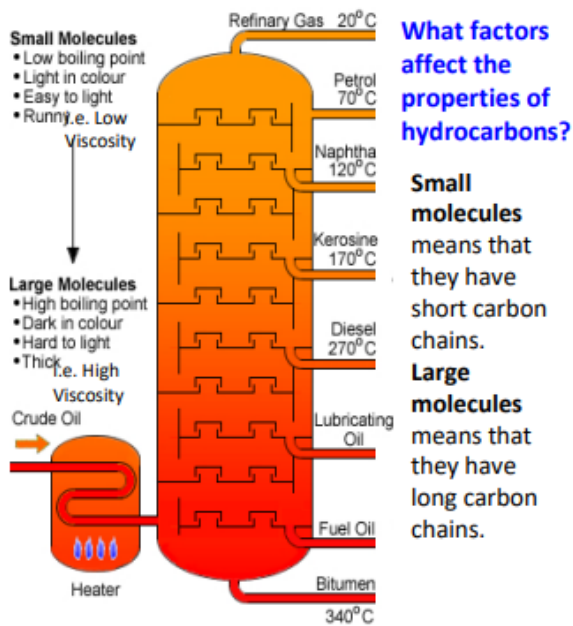
2. Alkanes		
General formula	$C_nH_{2n+2}$	
Name	Molecular formula	Displayed formula
Methane	CH <sub>4</sub>	
Ethane	C <sub>2</sub> H <sub>6</sub>	
Propane	C <sub>3</sub> H <sub>8</sub>	
Butane	C <sub>4</sub> H <sub>10</sub>	

### 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)**

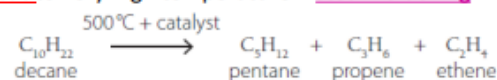
E.g. Butane + Oxygen → Carbon Dioxide + water  
 $2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(g)$

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

A training programme should include all of the following elements.

- Suitable warm up and cool down
- Activities/main content of programme
- Duration of plan
- Duration of sessions
- Equipment and facilities
- Coaching points
- Adaption of programme based on each session and mid-term testing



Factors to be considered when planning an exercise programme:

- Facilities/equipment
- Safety/risk assessments
- Aims/goals/objectives
- Current fitness levels/injuries
- Organisation
- Environment
- Skills to be improved



A rugby player set a target for their training programme to improve their Illinois Agility Test score by 0.5 seconds.

At the end of the programme the rugby player had improved their Illinois Agility Test score by 1 second.

The rugby player has achieved their goal and may now set a new goal covering a different component of fitness and fitness test

## SPORT SCIENCE R181 PART 2

### TOPIC AREA 3

The principles of training should be applied to a training programme in order to ensure improvement takes place



### TOPIC AREA 4

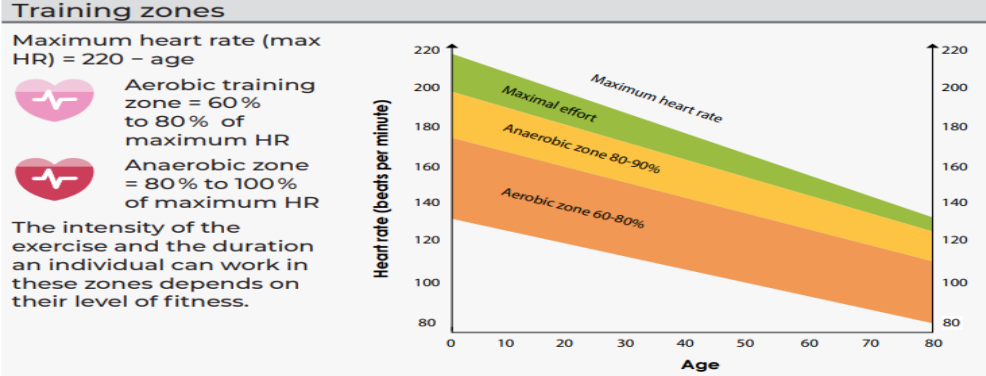


- 3 possible outcomes following a training programme ...
- SMART goal has been partially achieved = **Repeat** the fitness programme
  - SMART goal has not been achieved = **Adapt** the types of training or FITT principle
  - SMART goal has been achieved = Set a **new goal** focusing on an area of weakness



## SMART TARGETS

S	M	A	R	T
<b>SPECIFIC</b> What exactly do you want to achieve?	<b>MEASURABLE</b> How will you know you have achieved it?	<b>ACHIEVABLE</b> Is it in your power to achieve it?	<b>REALISTIC</b> Is it realistic that you will achieve it?	<b>TIME-BOUND</b> When do you want to achieve it by?

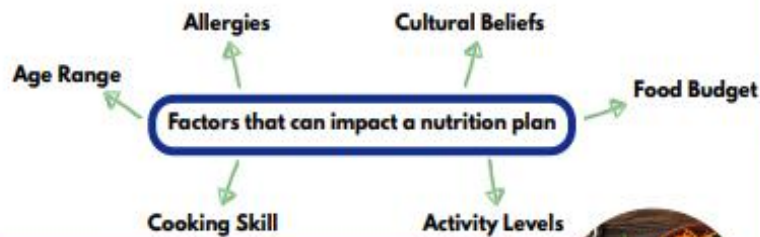


Continuous Training	Fartlek Training	Circuit Training	Interval Training	Plyometric Training	Weight Training
Is aerobic Has no breaks or rest (20 min or more) Sub-maximal exercise Improves cardiovascular & muscular endurance	Form of continuous training Varies in pace and terrain Aerobic & Anaerobic Improves cardiovascular & muscular endurance	Contains stations organised in a circuit they can be skill or fitness based. aerobic or anaerobic Intensity is measure by circuits, time or repetitions	High intense exercise followed by periods of rest to recover Usually anaerobic can be used in a variety of locations Improves speed but can improve strength and cardiovascular	High Intensity Short duration Breaks between sets (exercises) Involves jumping/bounding Improves power (speed & strength)	Form of interval training Involves reps and sets Weight provides the resistance Improves strength, power and muscular endurance
<b>Advantages</b>	<b>Advantages</b>	<b>Advantages</b>	<b>Advantages</b>	<b>Advantages</b>	<b>Advantages</b>
No equipment or facilities Has many health benefits (CHD)	No equipment or facilities Change of pace can be more interesting	Variety of stations generates interest Can be skill or fitness Can easily be adapted	Can be used to improve health and fitness (aerobic & anaerobic) No equipment needed	Develops power quickly No equipment	Can target specific areas of the body Easily adapted for different fitness
<b>Disadvantages</b>	<b>Disadvantages</b>	<b>Disadvantages</b>	<b>Disadvantages</b>	<b>Disadvantages</b>	<b>Disadvantages</b>
Boring No change of pace Can cause impact injuries	High intensity can be avoided A safe route may be hard to find	Equipment can be costly Can be time consuming to set up	Can be repetitive and boring Need to plan and keep track of sets	Can cause injury due to high intensity	Can cause injury with poor technique A spotter needed with free weights
<b>Sports</b>	<b>Sports</b>	<b>Sports</b>	<b>Sports</b>	<b>Sports</b>	<b>Sports</b>
Marathon running cycling swimming	Fotball Rugby Netball	Can be adapted to suit all sports	Usually for speed It can be adapted to other sports	Basketball Long jump Hurdles	Weight lifting rugby shot-put



## Key information

### Topic area 3: Developing a balanced nutrition plan for a selected sporting activity.



- Adaptations to diet to suit a specific sporting activity:**
- Add or remove nutrients
  - Change portion sizes
  - Change timings of mealtimes
  - Alter the number of meals



### TOPIC AREA 3

## SPORT SCIENCE R183 PART 2

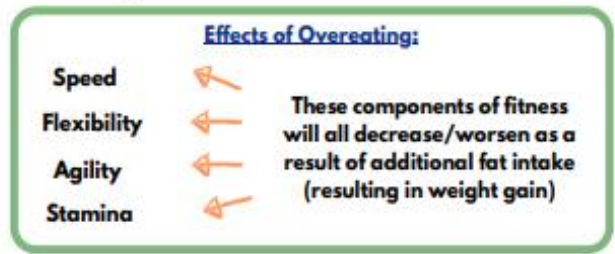
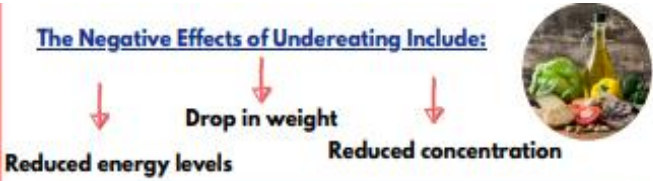
- Increased carbohydrate intake = Increased Energy
- Reduced fat intake = Weight Loss
- Increased protein intake = Quicker Muscle Repair



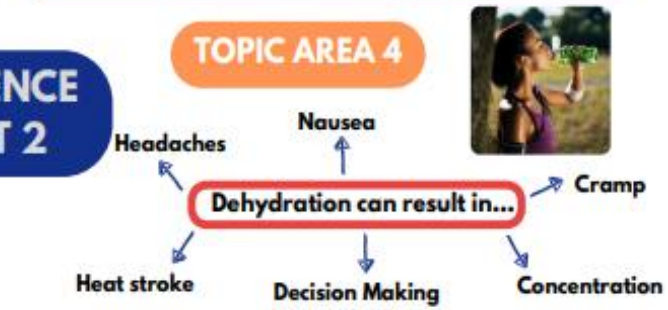
**Evaluating a nutritional plan**

E.g. after several months of training with an increased protein intake, a weightlifter should find that they are now lifting **heavier weights**, are able to train at a **greater intensity** and **recover quicker**.

### Topic area 4: How nutritional behaviours can be managed to improve sports performance



### TOPIC AREA 4



In some sports dehydration is sometimes used as a tool to lose weight very quickly.

A boxer may reduce their water intake before a weigh-in ensure they meet their weight requirements.

This is dangerous as dehydration can lead to headaches, nausea or even life-threatening conditions.

### Topic area 3: Factors to consider when developing a balanced nutrition plan for a selected athlete.

<p><b>AGE RANGE</b></p> <p>Teenagers are growing and need to take on more calories/food</p>	<p><b>COOKING SKILL</b></p> <p>A nutritious diet will often require some skills in cooking</p>	<p><b>ALLERGIES</b></p> <p>Certain foods may be restricted due to allergies e.g. dairy</p>
<p><b>FOOD BUDGET</b></p> <p>Higher quality food can often be expensive</p>	<p><b>CULTURAL BELIEFS</b></p> <p>Some people may restrict their diet based on cultural beliefs. For example some cultures choose not to eat meat</p>	<p><b>ACTIVITY LEVELS</b></p> <p>Those taking part in activity regularly will need to take on more calories</p>

### Topic area 3 & 4: The effects of dehydration.

## Signs of Dehydration





### Why Thinking About Your Career and Education Is Important.

#### 1. It Helps You Make Informed Choices

In KS4, you start to make decisions that shape your future — such as what to study after Year 11. Thinking about your career early helps you understand what qualifications, subjects, or experiences you'll need for your next steps. For example, some college courses or apprenticeships require specific GCSEs, so planning ahead keeps your options open.

#### 2. It Gives You Direction and Motivation

Knowing what you're working towards can make school feel more purposeful. When you have a goal — even a rough idea — you're more likely to stay focused, put in effort, and make the most of opportunities like work experience or volunteering.

#### 3. It Builds Employability Skills

Exploring different careers helps you see which skills employers value, such as teamwork, communication, creativity, and problem-solving. KS4 is the perfect time to start developing these through lessons, clubs, part-time work, or community projects.

#### 4. It Helps You Choose the Right Path After GCSEs

At the end of KS4, you'll choose whether to study **A-levels**, **BTECs**, **T Levels**, or begin an **apprenticeship**. Thinking about your career goals now makes it easier to choose the pathway that suits your strengths, interests, and learning style.

#### 5. It Prepares You for the World of Work

The world of work is changing fast — with new technologies, industries, and opportunities appearing all the time. Learning about careers in KS4 helps you understand what's out there and what kinds of jobs might exist in the future.

#### 6. It Builds Confidence in Making Decisions

Career thinking isn't about choosing one job for life — it's about getting to know yourself, exploring your options, and feeling confident about your choices. The more you understand your interests and strengths, the more independent and prepared you'll be for life after school.

### Exploring Careers

You should look and explore a wide range of career areas. You can do this by:

• Using websites like **National Careers Service**, **BBC Bitesize Careers**, or **icould.com** to discover different job roles.

- <https://nationalcareers.service.gov.uk/>
- <https://www.bbc.co.uk/bitesize/careers>
- <https://icould.com/>



### Skills for the Future

Employers value not just qualifications, but also transferable skills.

Skills you are already developing in school are:

- **Communication and Oracy**
- **Teamwork and Leadership**
- **Creativity and Problem-Solving**
- **Resilience and Self-Management**
- **Digital and Research Skills**

Keep a record of these achievements — they'll help when applying for college, apprenticeships, or jobs later.

### Top 5 Skills Employers Want

**1. Communication Skills.** Being able to speak, listen, and write clearly. Explaining your ideas, giving feedback, and working well in teams.

**2. Teamwork.** Working well with others to achieve a goal. Sharing ideas, helping colleagues, and respecting different opinions.

**3. Problem-Solving.** Finding solutions when challenges or unexpected situations arise. Thinking creatively and logically to overcome obstacles.

**4. Resilience & Adaptability.** Staying positive and keeping going even when things are difficult. Being flexible when things change at work or school.

**5. Organisation & Time Management.** Planning your work and managing deadlines effectively. Prioritising tasks and being responsible for your own progress.

## Tier 3 Vocabulary

1. **Apprenticeship** – A paid job where you learn practical skills and gain a qualification while working for an employer.
2. **Vocational** – Education or training that focuses on learning skills for a specific job or career (for example, catering, construction, or childcare).
3. **Entrepreneur** – A person who starts and runs their own business, often taking risks to develop new ideas or products.
4. **Industry** – A group of businesses that make similar products or provide similar services (for example, the fashion industry or the technology industry).
5. **Qualification** – A certificate or award that shows you have successfully completed a course or passed an exam.
6. **Employability** – The skills, qualities, and attitudes that help you get and keep a job (such as teamwork, communication, and reliability).
7. **Internship** – A short-term work experience placement that helps you learn about a career and develop skills.
8. **Networking** – Building professional relationships and connections that can help you learn about job opportunities or career paths.
9. **Portfolio** – A collection of your best work or achievements that shows your skills and progress (often used in creative subjects like art or design).
10. **Labour Market** – The world of work, including all the jobs available, the skills employers need, and the trends in different industries.

[Quiz: What career is right for me? - BBC Bitesize](#)

[The UCAS Careers Quiz – personalised career matches | UCAS](#)

[Home | Discover your skills and careers | National Careers Service](#)

[Career Quiz - Youth Employment UK](#)

Your career, your choice! Know your options...

[Sedbergh Senior - Sixth Form | Sedbergh School](#)

[Windermere School Sixth Form | IB World School](#)

[Kendal College | Home](#)

[Lancaster & Morecambe College](#)

[Welcome - Kirkbie Kendal School](#)

[The Queen Katherine - Sixth Form](#)

[Sixth Form - QES](#)

[Sixth Form – Kirkby Stephen Grammar School](#)



Take some of these quizzes  
to help you plan your future  
career!

[What Career Is For Me? | UK Career Quiz | Explore Careers UK](#)



## Tier 2 Vocabulary

ablution	abrasion	access
acquire	adapt	adequate
advocate	aggressive	albeit
alleviate	alter	altitude
ameliorate	analogous	analyse
behind	benign	beverage
bewitch	brawl	budge
calamity	calculate	callous
capacity	cause	central
challenge	chant	chirp
chore	circulate	claim
clear	collaborate	collude
command	committee	companion
compare	complex	confer
debate	decisive	decompose
define	delineate	deny
deteriorate	detrimental	dimension
disagree	discover	direct
eccentric	ecstasy	eloquent
emerge	emphasis	employ
encounter	epic	epitome
era	escalate	establish
evaluate	excavate	explore
farce	ferocious	flaw
flighty	formidable	function
ginormous	grapple	grizzly
hamper	harmful	harness
hierarchy	hitch	honour
hybrid	hypothesis	hysteria
identical	identify	ignorance
illusion	illustrate	immense

impeccable	imperative	impression
inevitable	innate	intense
interact	intercept	irreversible
jaunt	jubilant	justify
legacy	liberal	liberate
malicious	manipulate	match
measure	menace	meteoric
migrate	misconstrue	mitigate
native	network	notation
notice	notion	numeral
objective	observe	occupy
ointment	opaque	opponent
overall	overstate	overthrow
pallid	parallel	partition
persevere	persuade	pigment
pivot	pledge	ponder
pose	precedent	prepare
presume	previous	principal
radiant	raucous	ravage
rearrange	reckless	recline
refine	reflect	region
rejoice	relate	remote
replace	request	require
revise	rewrite	rhythm
salvation	scheme	sculpt
shift	shrewd	significant
slither	solar	sparse
specify	stability	state
supreme	surge	synonymous
tamper	technique	teeming
tentative	testament	transform

treaty	trivial	troublesome
underestimate	unscathed	update
validity	vanquish	verbose
verify	versatile	version
vibrant	victor	victory
virtuous	welfare	zealous

definition	synonyms
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sentence	antonyms

**Synonyms** are words with the same or similar meaning:

- words such as happy, cheerful and merry.
- words such as sad, miserable and heartbroken.

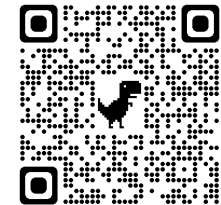
**Antonyms** are words with opposite meanings:

- words such as angry and peaceful.
- words such as funny and serious.

You can use a **thesaurus** to find **synonyms** and **antonyms** for words.

Scan to view thesaurus

[click to view thesaurus](#)



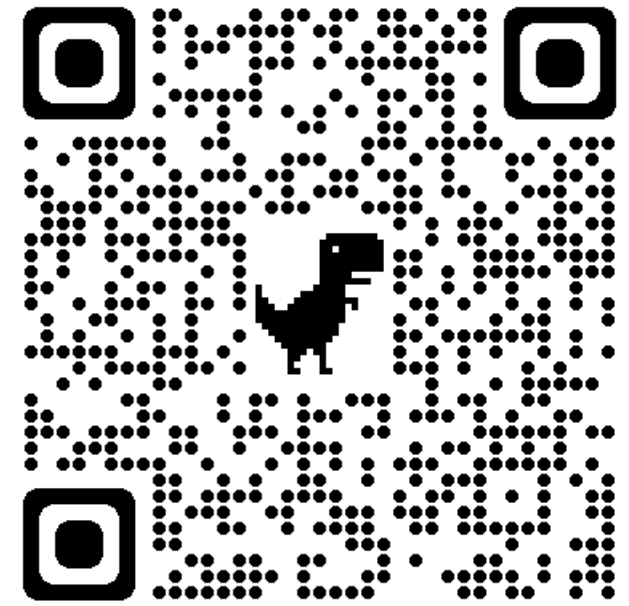
Have a go at creating a Frayer Model for each of the 6 tier 2 words from this term (blank templates are at the back of the booklet for you to complete this activity).



# Frayer Model: Disagree

definition	synonyms
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<p>disagree</p>	
<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 **disagree**.

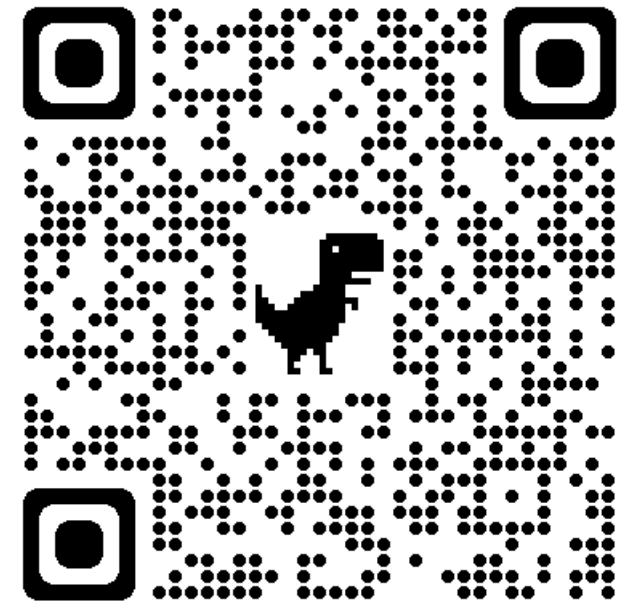


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definition	synonyms
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
<p>illusion</p>	
<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>
sentence	antonyms

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



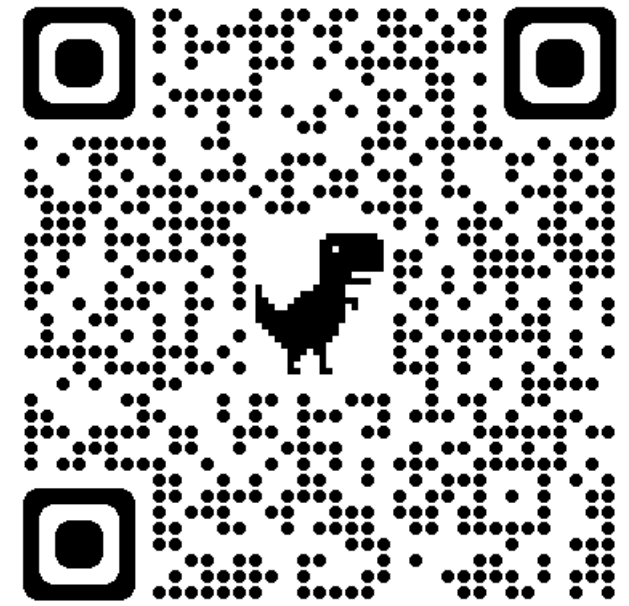
Scan to view thesaurus

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# Frayer Model: Pose

definition	synonyms
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<p>pose</p>	
<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 **pose**.



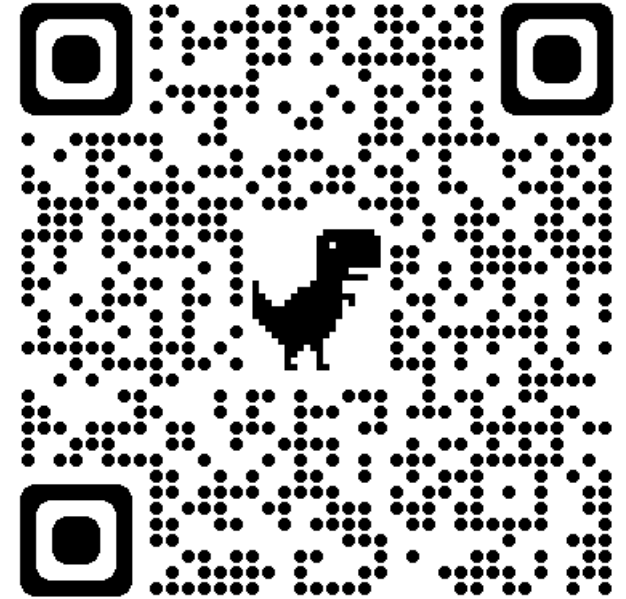
Scan to view thesaurus

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# Frayer Model: Treaty

definition	synonyms
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treaty	
<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 **treaty**.



Scan to view thesaurus

[click to view thesaurus](#)

