Knowledge Goals Homework Booklet (Spring 2)

Year 9 and 10

Name: _____

Settlebeck SCHOOL

Respect | Responsibility | Aspiration

Subject Index

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	PSHE
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.

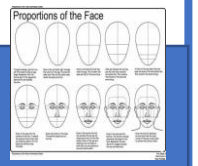
Subject Homework Frequency Information

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

HOW TO SELF TEST

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.



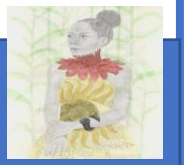
HOW TO MIND MAP VIDEO

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.

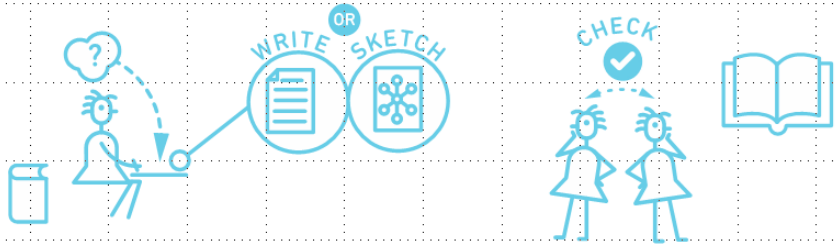
How can parents support?

- 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.

Retrieval Practice

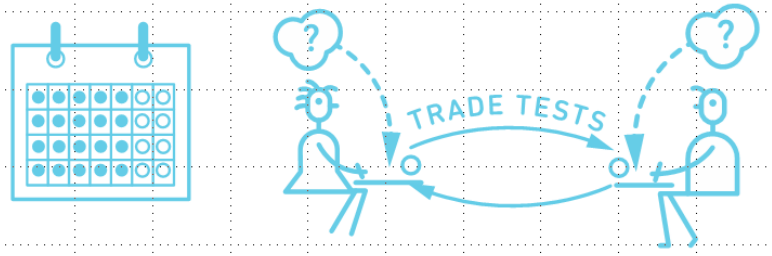
HOW TO DO IT

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



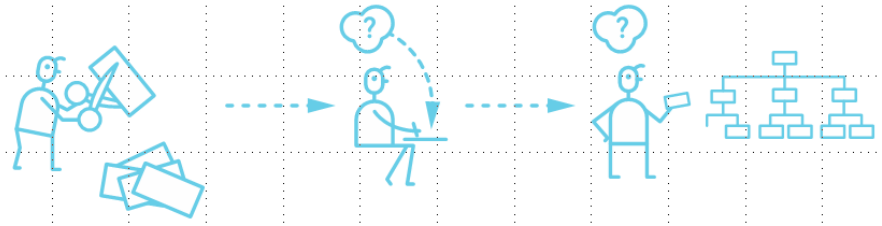
HOW TO DO IT

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



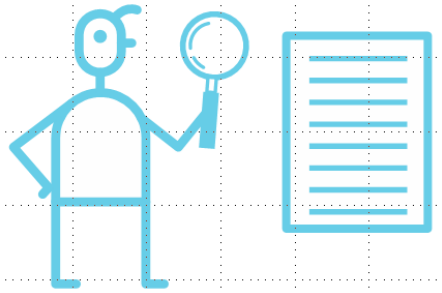
HOW TO DO IT

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



HOLD ON!

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

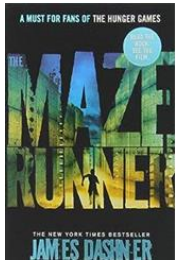


Literacy: Tier 2 Vocabulary

Tier 2 Vocabulary		
	Key word	Definition
1	interact	To act on or in close relation with each other.
2	jaunt	A short pleasurable excursion; outing.
3	liberate	To give liberty to; make free.
4	manipulate	To negotiate, control, or influence (something or someone) cleverly, skilfully, or deviously.
5	partition	A division into parts; separation.
6	raucous	(of voices, cries, etc) harshly or hoarsely loud.

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.

DEAL Year 9 (Spring Term)

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

DEAL Year 10 (Spring Term)

Book Title	Author	Genre	Overview	Image
All Quiet on the Western Front	Erich Maria Remarque	War Novel	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.	
British Values	Tolerance	Individual Liberty	Rule of Law	Democracy	Mutual respect
The Woman in Black	Susan Hill	Gothic Horror Novel (Ghost Story)	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.	
British Values	Tolerance	Individual Liberty	Rule of Law	Democracy	Mutual respect

British Values

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!

Year 9 and 10 Knowledge Goals: Art - CULTURES

African art is a diverse and rich subject that encompasses a wide range of styles, materials, and cultural significance across the continent.

1.Traditional Art Forms:

1. **Masks**: Often used in ceremonies and rituals, masks can represent ancestors, spirits, or animals. Different cultures, such as the Yoruba, Dogon, and Fang, have unique styles and purposes for their masks.
2. **Sculpture**: Wood, stone, and metal sculptures are common. The art often reflects social status, spirituality, and community beliefs.
3. **Textiles**: Fabrics like kente cloth from Ghana or mud cloth from Mali are integral to African culture, often featuring vibrant colours and patterns that convey stories or status.

2.Contemporary African Art:

1. Explore artists who are redefining African art today, such as El Anatsui, Yinka Shonibare, and Kehinde Wiley. Their works often address themes of identity, colonialism, and globalization.

3.Cultural Significance:

1. Art is used in various African cultures for storytelling, preserving history, and community cohesion.

4.Techniques and Materials:

1. Different materials used in African art, such as clay, wood, beads, and textiles.

The Day of the Dead, or Día de los Muertos, is a traditional Mexican holiday celebrated on November 1st and 2nd. It is a time to honour and remember deceased loved ones, blending indigenous traditions with Spanish influences. Families create altars, known as ofrendas, decorated with photographs, personal items, and offerings such as food, flowers (especially marigolds), and candles to invite the spirits of the deceased to return and celebrate with them. The holiday is characterized by colourful decorations, parades, and various cultural activities. It emphasizes the belief that death is a part of life, and it encourages a joyful remembrance rather than mourning.

Egyptian sculpture | British Museum

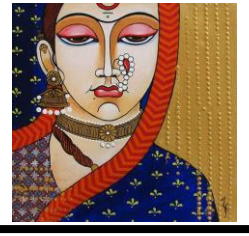
National Museum of Mexican Art, Pilsen, Chicago

Possible Cultures to research and explore through your art.

African Art
Chinese Art
Japanese Art
Australian art/Aboriginal
Mexican Art
Indian Art
North American Art
Egyptian Art

Ancestors, artefacts, empire – mobilising Aboriginal objects | British Museum

Collections: Chinese - National Museum of Asian Art



Africa | British Museum

National Museum of African Art – Smithsonian Institution

Year 9 and 10 Knowledge Goals: Art - CULTURES

VOCABULARY

- Culture
- Artist
- Observation
- Composition
- Tone
- Blend
- Cross hatch
- Collage
- Value
- Contrast
- Perspective
- Weight of line
- Layer
- Textile
- Blend
- Paint
- Printing
- Etching
- Mono print

Festivals are significant cultural events celebrated in various forms around the world, often reflecting the traditions, beliefs, and values of a community. Here are a few examples of festivals from different cultures:

1.Diwali (India): Known as the Festival of Lights, Diwali is celebrated by Hindus, Sikhs, and Jains. It symbolizes the victory of light over darkness and good over evil, featuring fireworks, lamps, and festive meals.

2.Holi (India): The Festival of Colours, Holi celebrates the arrival of spring. Participants throw coloured powders and water at each other, dance, and enjoy traditional sweets.

3.Carnival (Brazil): This vibrant festival occurs before Lent, characterized by parades, samba music, dancing, and elaborate costumes, showcasing Brazil's rich cultural heritage.

4.Chinese New Year (China): Also known as Spring Festival, it marks the beginning of the lunar new year. Celebrations include family reunions, feasts, dragon dances, and fireworks.

5.Day of the Dead (Mexico): This festival honours deceased loved ones with colourful altars, offerings, and celebrations, blending indigenous traditions with Catholic elements.

Hieroglyphics are a writing system used in ancient Egypt, characterized by a combination of logographic and alphabetic elements. This system utilized symbols and pictures to represent sounds, words, or ideas. Hieroglyphs were often inscribed on monuments, tombs, and papyrus scrolls, serving both ceremonial and administrative purposes.

The script consists of over 700 symbols, including representations of objects, animals, and human figures. Hieroglyphics were used primarily for religious texts, official inscriptions, and monumental art, and they played a significant role in the recording of Egyptian history and culture.

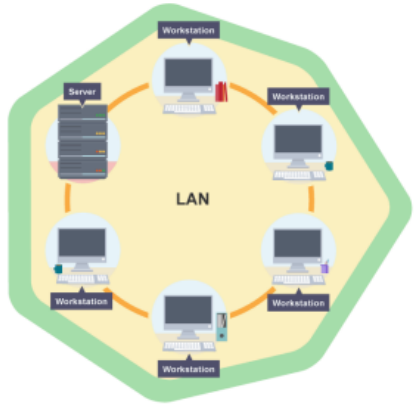
Chinese New Year, also known as Lunar New Year or Spring Festival, is celebrated on a date that varies each year, as it is based on the lunar calendar. It typically falls between January 21 and February 20. The festivities last for about 15 days, culminating in the Lantern Festival. Each year is associated with one of the 12 animals in the Chinese zodiac, and the celebrations often include family reunions, feasting, fireworks, and various cultural traditions intended to bring good luck for the year ahead.

Indigenous Art: This includes a variety of styles and mediums, such as pottery, weaving, painting, and sculpture, created by Native American, Inuit, and First Nations artists. These works often reflect spiritual beliefs, cultural stories, and a deep connection to nature.

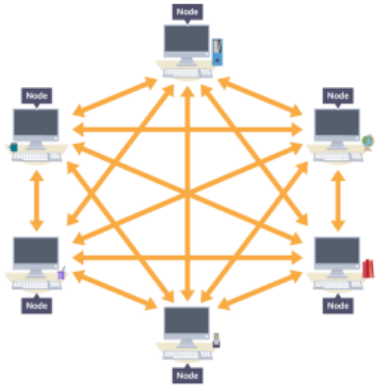
Colonial Art: During the colonial period, European settlers brought their artistic traditions, which influenced the development of American art. This includes portraiture, landscape painting, and decorative arts.

Year 9 and 10 Knowledge Goals: Computer Science

Types of network

LAN	WAN
	

Topologies

Star	Mesh
	

Layers

Layering means to break up the sending of messages into separate components and activities. Each component handles a different part of the communication. This can be referred to as the Transmission Control Protocol/Internet Protocol (TCP/IP) model.

Layering allows **standards** to be developed, but also to be adapted to new hardware and software over time. For example, different software packages (applications) may use the same transport, network and link layers but have their own application layer. The way the program encodes the message changes - the rest of communication method remains the same.

Encryption

A simple method of encryption requires the use of a technique known as the Caesar cipher. The cipher works by giving a number value to a key. Each plaintext letter is replaced by a new letter, the one found at the original letter's position in the alphabet plus the value of the key. The example uses a key value of 3.

Plaintext	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
Ciphertext	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	a	b	c

Year 9 and 10 Knowledge Goals: Computer Science

Protecting networks	
Form of attack	**Prevention**
Malware	Anti-Malware software.
Phishing	Training of user to detect scams as well as the filtering of emails.
Brute-force attacks	Use of different strong passwords. A limit on the number of incorrect attempts.
Denial of service attacks	Block IP addresses which send too many requests. Increase capacity.
Data interception and theft	Encryption of data.
SQL injection	Ensuring that all data input is sanitized. (Forcing data to be in the format you want it such as a date, text or integer.)

Common protocols	
TCP/IP	**Transmission Control Protocol/Internet Protocol** - enables communication over the internet.
HTTP	**Hypertext Transfer Protocol** - governs communication between a webserver and a client.
HTTPS	HTTPS **(secure)** includes secure encryption to allow transactions to be made over the internet.
FTP	**File Transfer Protocol** - governs the transmission of files across a network and the internet.
POP	**Post Office Protocol** – governs the transmission of emails to devices. Once downloaded to the device is deleted from the server.
IMAP	**Internet Message Access Protocol** – governs the transmission of emails. Stored on server and accessed by devices.
SMTP	**Simple Mail Transfer Protocol** - governs the sending of email over a network to a mail server.
Layering	In networking, the concept of breaking up communication into separate components or activities.

Year 9 and 10 Knowledge Goals: Computer Science

Tier 3 Vocabulary		
	Key word	Definition
1	network	A group of interconnected computers/devices.
2	lAN	Local area network. A network of computers that covers a small area, eg a school or college.
3	WAN	Wide area network. A network that spans across a building, buildings or even countries, eg the internet.
4	client-server	A relationship in which data or web application is hosted on a server and accessed by client computers.
5	peer to peer	A relationship where all computers on the network share responsibility and there is no one central server.
6	WAP	A device that connects computers to a network using Wi-Fi
7	switch	A device for connecting computers and other network capable devices together to form a network.
8	NIC	Network Interface Controller -A circuit board that is installed in a computer so it can be connected to a network.
9	transmission media	How data is carried from point A to point B physically, either by cable or wirelessly.
10	ethernet	A set of protocols used in a wired local area network that describes how data is transmitted within it.
11	Wi-Fi	A method of connecting to the internet wirelessly using radio waves.
12	bluetooth	Wireless technology used for transmitting data over short distances.

Notes

Year 9 and 10 Knowledge Goals: Design and Technology

2023 Colour Swatch Predictions

Interior Design

Warm Colors **HUE**

Reds, oranges, yellows

Cool Colors

Blues, purples, greens

Single point perspective

Client Boards

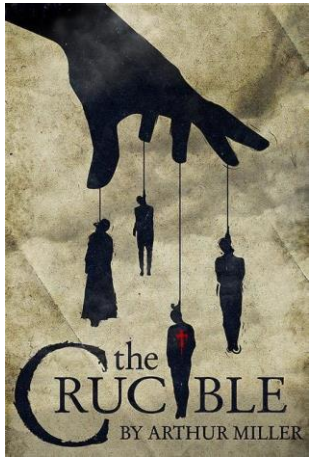
Year 9 and 10 Knowledge Goals: Design and Technology

Tier 3 Vocabulary		
	Key word	Definition
1	client	The person who work is being produced for.
2	psychology	The scientific study of the human mind and its functions.
3	swatch	A sample of colour or pattern.
4	mood board	An arrangement of images, materials, pieces of text, etc. intended to evoke or project a particular style or concept.
5	complimentary	Explain that the complementary colours are opposite one another on the colour wheel.
6	hue	A colour or shade.
7	interior	The inner part of something.
8	perspective	Perspective drawing is a technique to create the linear illusion of depth.
9	texture	How something feels.
10	balance	Balance is the distribution of the visual weight of objects, colours, texture, and space.
11	shape	The external form, contours, or outline of someone or something.
12	prediction	A guess based on evidence of what will happen in the future.

Notes

Year 9 and 10 Knowledge Goals: Drama (Play Studies – The Crucible)

Play Studies



During this unit, you will develop your ability to:

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

The Crucible – About The Play

This exciting drama about the Puritan purge of witchcraft in old Salem is both a gripping historical play and a timely parable of our contemporary society. The story tells how small lies – children's lies – build and build until the suspicions of a whole town is aroused. Set in a small tight-knit community, personal grievances collide with lust and superstition, fuelling widespread hysteria. Arthur Miller's timeless parable attacks the evils of mindless persecution and the terrifying power of false accusations.

Synopsis

Salem, Massachusetts, 1692. A small group of girls 'cry out' against other people in the town, accusing them of witchcraft, in an attempt to cover up their own dabblings in the occult. Led by Abigail Williams, the girls' accusations cause a court to be formed to investigate the alleged crimes. Caught up in the trials are John and Elizabeth Proctor, a farming couple whose marriage is hanging by a thread. John Proctor, following an illicit affair with Abigail, finds himself and his wife caught up in the proceedings when Abigail accuses Elizabeth of witchcraft, hoping to take her place at John's side. Desperate to clear his wife's name, John attempts to convince the court of her innocence, but instead finds himself in deep water when Abigail turns on him. The end of this tale, based on true events, is both tragic and deeply affecting as John is arrested for witchcraft himself. When faced with the choice between confessing to witchcraft, thus saving himself or professing his innocence, and destroying his good name, John finds it is an impossible choice to make…

Year 9 and 10 Knowledge Goals: Drama (Play Studies – The Crucible)

Settlebeck School

Tier 3 Vocabulary		
Key word		Definition
1	crosscutting	Switching between two scenes which are both on stage at the same time.
2	tension	A growing sense of expectation within the drama, a feeling that the story is building up towards something exciting happening.
3	naturalism	A style of drama coined by Stanislavsky, designed to represent real life.
4	levels	Using height to show authority or vulnerability in a scenario.
5	stage directions	An instruction in the text of a play indicating the movement, position, or tone of an actor, or the sound effects and lighting.
6	intention	The decisions, made by theatre makers, to communicate deeper meaning through their work
7	genre	The type of story which is performed.
8	style	How the work is presented on stage.
9	dialogue	The speech within the script.
10	characterisation	To become a character.

Notes:

Quiz QR Code	Quiz Link
	QUIZ LINK

Year 9 and 10 Knowledge Goals : English - What happened to D. B. Cooper?

[D.B. Cooper: Where Are You?! | Official Trailer | Netflix]

A BULLETIN FROM THE F.B.I.

Following is an artist's conception of the hijacker who extorted $200,000 from Northwest Airlines on November 24, 1971.

THIS MAN IS DESCRIBED AS FOLLOWS:

Race	White
Sex	Male
Age	Mid 40's
Height	5' 10" to 6"
Weight	170 to 180 pounds
Build	Average to well built
Complexion	Olive, Latin appearance, medium smooth
Hair	Dark brown or black, normal style, parted on left, combed back; sideburns, low ear level
Eyes	Possibly brown. During latter part of flight put on dark, wrap-around sunglasses with dark rims
Voice	Low, spoke intelligently; no particular accent, possibly from Midwest section of U.S.
Characteristics	Heavy smoker of Raleigh filter tip cigarettes
Wearing Apparel	Black suit; white shirt; narrow black tie; black dress suit; black rain-type overcoat or dark top coat; dark briefcase or attache case; carried paper bag 4" x 12" x 14"; brown shoes.

If you have any information which might lead to the identity of this individual, please contact the nearest FBI Office which would be found in the front of your telephone directory.

Scan for FBI files

[https://en.wikipedia.org/wiki/D._B._Cooper]

After 50 years of mystery, siblings claim hijacker DB Cooper was their father

Cooper's whereabouts after he jumped from a plane with $200,000 stumped investigators. Has the case been solved?

An artist's sketch of DB Cooper, who hijacked a plane and then jumped out with $200,000 in 1971. Photograph: Bettmann/Bettmann Archive

It is one of the biggest mysteries in US criminal history: just what happened to DB Cooper, the man who hijacked an airplane before leaping out in mid-air with $200,000 in cash?

Now, more than 50 years later, the infamous crime may have been solved, after a pair of siblings came forward to claim they had found the parachute used in the hijacking, in their mother's shed, and that Cooper was their father.

Chanté and Rick McCoy III say their father, Richard McCoy Jr, was the man who identified himself as Dan Cooper when he boarded a Northwest Orient Airlines jetliner from Portland to Seattle in November 1971.

Cooper, or perhaps McCoy, proceeded to order a bourbon and soda before handing a note to a flight attendant that said he had a bomb in his briefcase.

[https://www.theguardian.com/us-news/2024/nov/30/db-cooper-plane-hijacking]

D. B. Cooper is the name of an unidentified man who hijacked Northwest Orient Airlines Flight 305, a Boeing 727 aircraft operated by Northwest Orient Airlines, in United States airspace on **November 24, 1971.**

During the flight from Portland, **Oregon**, to Seattle, **Washington**, the hijacker told a flight attendant he was armed with **a bomb**, demanded **$200,000 in ransom**, (equivalent to $1,338,000 in 2021) and requested **four parachutes** upon landing in Seattle.

After releasing the passengers in Seattle, the hijacker instructed the flight crew to refuel the aircraft and begin a second flight to **Mexico City**, with a refueling stop in Reno Nevada.

Approximately thirty minutes after taking off from Seattle, the hijacker opened the aircraft's aft (rear) door, deployed the staircase, and **parachuted into the night** over southwestern Washington.

The hijacker was **never identified, apprehended, or found.**

Year 9 and 10 Knowledge Goals : English - What happened to D. B. Cooper?

What makes a great presentation?

- ✓ **Fluent** – It flows easily and at a good pace, without hesitations, linguistic errors, repetitions, or uncertainty in the use of vocabulary, grammar and punctuation.
- ✓ **Personal** – It expresses, or appears to express, the convictions of the speaker, whose personality comes across in the choice of language.
- ✓ **Appropriate** – It suits the situation the speaker is in, or at least it's an understandable reaction to it.
- ✓ **Heightened** – It displays features of artistry that go beyond the linguistic norms we encounter in everyday informal conversation.
- ✓ **Clear** – It uses words that are known to the listeners, and puts them into sentences in a way that is easy to understand.
- ✓ **Memorable** – It contains elements that stick in the mind so that if asked, 'what did X say?' it's possible for a listener to repeat tiny bits of it.
- ✓ **Reactive** – it shows awareness of the interest levels and listening abilities of the audience, and responds or adapts to any feedback.

General criteria

To be awarded a Pass, Merit or Distinction a student must:

- be audible, and
- use spoken Standard English which, for the purposes of the spoken language assessment, means that a Learner must:
  - be intelligible, and
  - generally use language appropriate to the formal setting of the presentation.

Pass	Merit	Distinction
In addition to the general criteria, to be awarded a Pass a Learner's performance in his or her spoken language assessment must meet all of the following criteria – • expresses straightforward ideas/information/ feelings, • makes an attempt to organise and structure his or her presentation, • makes an attempt to meet the needs of the audience, and • listens to questions/feedback and provides an appropriate response in a straightforward manner.	In addition to the general criteria, to be awarded a Merit a Learner's performance in his or her spoken language assessment must meet all of the following criteria – • expresses challenging ideas/information/feelings using a range of vocabulary, • organises and structures his or her presentation clearly and appropriately to meet the needs of the audience, • achieves the purpose of his or her presentation, and • listens to questions/feedback responding formally and in some detail.	In addition to the general criteria, to be awarded a Distinction a Learner's performance in his or her spoken language assessment must meet all of the following criteria – • expresses sophisticated ideas/information/feelings using a sophisticated repertoire of vocabulary, • organises and structures his or her presentation using an effective range of strategies to engage the audience, • achieves the purpose of his or her presentation, and • listens to questions/feedback, responds perceptively and if appropriate elaborates with further ideas and information.

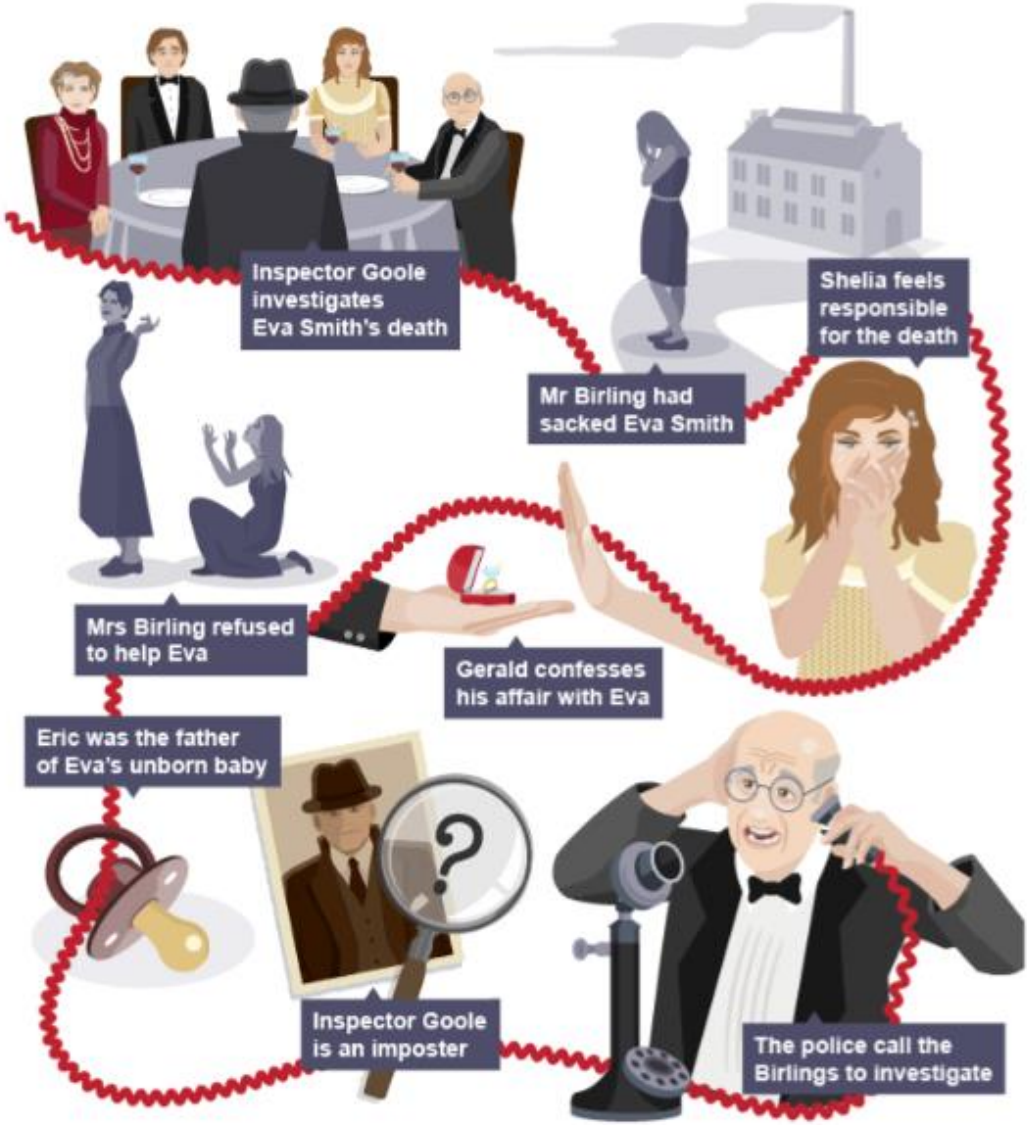
Year 9 and 10 Knowledge Goals: English - What happened to D. B. Cooper?

Spring Term 2: Tier 3 Vocabulary		
	Key word	**Definition**
1	Standard English	The formal and widely recognised version of English associated with education and clear communication.
2	audible	Heard or perceptible by the ear.
3	body language	The conscious and unconscious movements which communicate attitudes and feelings.
4	prosody	The patterns of stress and intonation in language.
5	paralinguistics	The non-verbal elements of communication such as tone, pitch, volume and facial expression.
6	fact	A thing that is known or proved to be true.
7	opinion	A view or judgement formed about something, not necessarily based on fact or knowledge.
8	evidence	The available body of facts or information indicating whether a belief or proposition is true or valid.
9	conjecture	An opinion or conclusion formed on the basis of incomplete information.
10	counterargument	An argument or set of reasons put forward to oppose an idea or theory developed in another argument.
11	rhetorical question	A question that doesn't require an answer and is used to engage a reader or listener.
12	triadic structure	Magic Three. When words, phrases or clauses come in groups of three.
13	superlative	An adjective or adverb which expresses the highest quality or degree (bravest, biggest, most beautiful, best)
14	discourse marker	Linking words like however, although, etc which help us to link ideas and sentences together logically.

Year 9 and 10 Knowledge Goals: English - What happened to D. B Cooper?

Spring Term 2: Tier 2 Vocabulary		
Key word		**Definition**
1	alias	A false or assumed identity.
2	pseudonym	A fictitious name.
3	enigmatic	Mysterious, puzzling (from Greek *ainigma* 'riddle').
4	elusive	Difficult to find or to catch.
5	perpetrator	A person who carries out a harmful, illegal, or immoral act.
6	protracted	Lasting for a long time or longer than expected or usual.
7	plausible	Seeming reasonable or probable, credible, believable.
8	extorted	To obtain something by force, threats or unfair means.
9	extensive	Covering or affecting a large area or large in amount or scale.
10	civilian	A person not in the armed services or the police force.
11	veteran	Someone who has served in the armed forces.
12	inclement	Unpleasantly cold or wet.
13	conclusive	Having or likely to have the effect of proving a case; decisive.
14	culpability	Responsibility for a fault or wrong; blame.

Year 9 and 10 Knowledge Goals: English – An Inspector Calls – The Plot



The Chain of Events in An Inspector Calls

The Birlings celebrate the engagement of Sheila to Gerald Croft
An Inspector arrives to question them about the death of a young working class woman, Eva Smith.
Mr Birling fired her from his factory for being one of the organisers of a strike for more money
Sheila Birling insisted she was sacked from her job at Milward's shop when she believed Eva was laughing at how she didn't suit a dress she had chosen.
Gerald saw her at the Palace bar and, on learning she was destitute. gave her a meal and temporary accommodation then started an affair with her which he soon ended.
Eric met her at the same bar soliciting. He forced himself on her and got her pregnant.
Mrs Birling refused to help Eva when she went to the women in need charity that Sybil did voluntary work at.
The family argue. Sheila and Eric are ashamed at what they did, the others are more worried about being publicly shamed.
They are relieved when they believe it's all a hoax.
Then the phone rings.. an inspector is coming round.

What happened to Eva in September 1910, January 1911, March 1911. September 1911. early 1912, and March 1912?

Year 9 and 10 Knowledge Goals:– An Inspector Calls

Vocabulary to find the meanings of and learn

	Key word	Definition
1	portentous	
2	opinionated	
3	arrogant	
4	supercilious	
5	judgemental	
6	patronising	
7	frivolous	
8	immature	
9	shy	
10	assertive	

Vocabulary find the meanings of and learn

	Key word	Definition
12	privileged	
13	a sense of entitlement	
14	respectable	
15	self-serving	
16	morally complacent	
17	hypocritical	
18	remorse	
19	capitalist	
20	socialist	

Find the meanings of all these words .
Think about which of these words toy would use to describe which characters

Year 9 and 10 Knowledge Goals: English – An Inspector Calls The Main Characters

Mr. Arthur Birling
A business man who's made money and married above himself. He is driven by profit and believes everyone should just look after themselves and make their own way in the world. If they fail to then it's their own fault

Mrs. Sybil Birling
Born into the upper class, she is socially superior to her husband. She is particular about manners and people behaving correctly, She believes the working class do not have the "fine feelings and scruples" of the higher classes.

Eric Birling
Having gone to a private school then university, he now helps in his father's business but has not been given much responsibility as his father doesn't think he is capable of doing a management role..
Bored and frustrated he has started drinking a lot.

Shelia Birling
Sheila as the daughter of a wealthy family has led a life of luxury and been sheltered from the harsh realities of life. She has been courting Gerald Croft, the son of another business man, a competitor of Birling's and is now getting engaged to him..

Gerald Birling
Gerald is particularly privileged, born into the upper class with a father who owns a successful business and has established him as a manager. In Mr. Birling's mind, he is the ideal husband for Shelia to unite the two rival businesses of Croft's and Birling's

Year 9 and 10 Knowledge Goals: English – An Inspector Calls - Context

What inspired Priestley to write this play?

Priestley was strongly influenced by
1. his upbringing in a northern industrial town
2. working in a factory and
3. by his experiences in World War 1.

Born in 1894 in Bradford, he went to work in a woollen mill at 16, and was disgusted by the conditions and pay.

He fought in World War 1 and was disgusted at how wrong decisions were made by those in charge resulting in sending lots of young men to their deaths.

What did Priestley say about World War 1 after the war ?

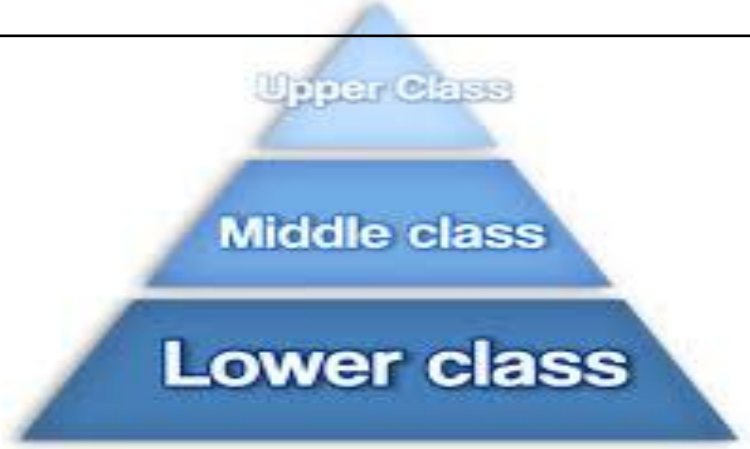
He became increasingly interested in socialism which challenged capitalism and its exploitation of and disregard for working people. It led him to support the Labour Party.

During World War 2 he was responsible for a radio programme – Priestley's Postscripts – which aimed to raise the morale of people bur also was used to raise ideas about there being greater equality and a better standard of living for the working class, As a result it stopped being broadcast.

in 1945 he wrote, "An Inspector Calls" whose message is that we are all responsible for each other.

The Class System

Priestley was critical of the class system which allowed some people lots of wealth whilst other were in poverty



Which characters in the play are:

1. upper class? 2.middle class? 3.working class?

How are each of these classes portrayed?

Watch An Introduction to the Context of JB Priestley's An Inspector Calls

Year 9 and 10 Knowledge Goals: English – An Inspector Calls The Main Characters

A mystery, whodunit, detective, crime drama?

Inspector Goole (ghoul?)

Who is he?
Note down your ideas
Watch Who is Inspector Goole? (Animated Character Analysis) 2023

The Inspector's Final Speech

"But just remember this. One Eva Smith has gone – but there are millions and millions of Eva Smiths and John Smiths still left with us with their lives, their hopes and fears, their suffering and chance of happiness, all intertwined with our lives, with what we think and say and do. We don't live alone. We are members of one body. We are responsible for each other. And I tell you that the time will soon come when, if men will not learn that lesson, then they will be taught it in fire and blood and anguish."

1. **Learn this speech.**
2. **Watch Inspector Goole's Final Speech; Analysis by Mr Bruff**
3. **Write an analysis of how language and structural techniques are used to engage us.**

A morality play?

The 7 Deadly Sins

1. **Check what each of the words above means.**
2. **Each of the Birlings and Gerald are guilty of one of more of these sins.**
   Who is guilty of which?

Year 9 and 10 Knowledge Goals: Non Fiction - Remarkable People

P	The character is presented as … Another aspect of this …… is…. The structure of the text is used to…. The language of the text is…….. The writer makes us think/conveys that…… Using…., the writer shows…. One aspect of the relationship is….	A further aspect of this text is…….. Similarly/on the other hand, the writer suggests that…. The technique of…..is used to …….. Another feature used is…… The writer shows us that…. One way in which the (use key words from the question) is….
E	For example,….. One quote that shows this is…. One example of this is……. In the line…….. In the text, it…. This is indicated in the….	such as…… For instance…….. is shown in the quotation……..
T	This is an example of a…….. The technique…….. is used to…. The use of the technique…… By using the technique…….. This is a …….. The use of the feature……. is…. an example of a…….. By using……..the writer show….	EXAMPLES: simile, metaphor, alliteration, question, assonance, simple sentence, compound sentence, complex sentence, paragraph, imagery, symbolism, structure, caesura, enjambement, end-stopped lines, stanza, personification, dehumanisation, noun, verb, adjective, adverb, pronoun, rhyme, rhyming couplets, alternate rhyme, half rhyme etc….
E	This suggests/shows/implies/connotes/indicates/evokes to the reader….. From this, the reader can see that…. By using the word…. the writer shows…. The use of diction such as ….. This presents…. This is similar to…. This is used to show that…. The connotations of this are… Some people may interpret it as…. Conversely, this could be seen to show… Another idea suggested by this quotation is….	
R	(Use key words from the question) Therefore, it can be seen that….. (Relate back to the question and your ideas on this) Overall, the writer is …. (Link to WHY he wrote the text, what was he trying to convey) The author's intention was to….. (Link to the next point you are going to make) (Link to your overall argument and answer)	

Wider Reading

'The most inspiring story I've ever heard': Klopp cheers on friend Czyz at Paralympics | Paris Paralympic Games 2024 | The Guardian

The 10 most inspirational people of all time | The Gentleman's Journal | The Gentleman's Journal

10 inspirational women who are changing the world | Hugh Baird College

Is this Britain's greatest cyclist no one's heard of? | Cycling UK

Word	Definition	In a sentence	Synonyms
1. **Advocate**	Noun: a person who publicly supports someone or something.	*For years, he had been an **advocate** for the vulnerable members of society.*	Supporter Champion
2. **Defeatist**	Noun: a person (or tone) who expects or is excessively ready to accept failure.	*They will never be beaten if every one of their opponents adopts such a **defeatist** attitude.*	Fatalistic Resigned
3. **Demeaning**	Adjective: to damage or lower the character, status of reputation of someone or something.	*It was **demeaning** to be criticised in front of my peers.*	Degrading Mortifying
4. **Derisive**	Adjective: expressing contempt or ridicule.	*The politician's attempt to answer the question drew **derisive** laughter.*	Mocking Jeering
5. **Desensitised**	Adjective: to cause someone to experience something, usually an emotion or a pain, less strongly than before.	*Having been surrounded by insensitive people for so long, he had become **desensitised** to unfeeling comments.*	Immune Numb
6. **Despondent**	Adjective: in low spirits from loss of hope or courage.	*She grew more and more **despondent** about her ability to pass her Chemistry exam.*	Dispirited Disconsolate
7. **Detrimental**	Adjective: to cause harm or damage.	*A lack of sleep can be **detrimental** to your wellbeing.*	Damaging Lethal
8. **Divisive**	Adjective: something that tends to cause a disagreement between people.	*Who you vote for can often be a very **divisive** issue.*	Contentious Fraught
9. **Facetious**	Adjective: treating serious issues with deliberately inappropriate humour; flippant.	*She kept interrupting the teacher with **facetious** remarks.*	Flippant Glib
10. **Farcical**	Adjective: very silly, unlikely, or unreasonable, often in a way that is humorous.	*The public refused to believe the politician's farcical excuses.*	Ridiculous Absurd
11. **Futile**	Adjective: something that produces no end result; useless and pointless.	*All my attempts to cheer her up proved **futile**.*	Pointless Hopeless
12. **Idealistic**	Adjective: characterised by idealism; unrealistically aiming for perfection; someone who believes that very good things	*Perhaps he was being **idealistic**, but his dream was to build a better future for all concerned.*	Utopian Romantic

Exam Key Words:

Interpret	This is to read, comprehend and then explain what you understand.
Explicit	These are elements within the text which are *clearly stated* and should be fairly obvious and easy to pick out.
Implicit	These are elements within the text which may be *hidden* or need you to *'read between the lines'* so are less obvious.
Evidence	This is when you refer to the text and use quotations to support your ideas.
Synthesise	A synthesis combines information from different sources to form a summary or an overview of the main ideas.
Analyse	To analyse is to explore something deeply. We use MQE squish to really consider the effect of a method.
Compare	This is to look for similarities and differences between texts. You need to make links between what, how and why writers make certain choices.
Evaluate	Evaluation is the skill of looking at a text and forming an opinion or judgement about it. The root 'value' is in the middle of evaluate, therefore you have to weigh up the value of the idea.
Communicate	This is to write your response in a way that is clear and engaging. It should be detailed and convincing.
Organise	You always plan your writing before you start so that you can organise your ideas. You need a logical and ordered final piece.

Year 9 and 10 Knowledge Goals: Non Fiction - Remarkable People

Tier 3 Vocabulary		
	Key word	Definition
1	adjective	A word that describes a noun or pronoun:
2	adverbs	A word that describes or gives more information about a verb, adjective, adverb, or phrase:
3	connotation	A feeling or idea that is suggested by a particular word although it need not be a part of the word's meaning, or something suggested by an object or situation:
4	narrator	The character who tells you what is happening in a book or film
5	symbolism	The use of symbols in art, literature, films, etc. to represent ideas:
6	triadic structure	A list of three words to create emphasis
7	hyperbole	A way of speaking or writing that makes someone or something sound bigger, better, more, etc. than they are:
8	semantic field	A lexical set of semantically related items, for example verbs of perception.
9	imperative	An imperative verb is one that tells someone to do something, so that the sentence it is in becomes an order or command.

Useful Websites

Classroom resources - The Day

Grammar and punctuation | Punctuation marks

GCSE English Language - BBC Bitesize

Englishbiz - GCSE English and English Literature Revision Guides

Grammar Girl

Paper-2-Summer-2017.pdf

Paper-2-Edexcel-sample-paper.pdf

Year 9 and 10 Knowledge Goals: Food Nutrition and Preparation

Low biological value protein

Foods that do not contain all the essential amino acids are said to have **low biological value** (LBV).

Low biological value sources of protein include cereals, peas, beans, pulses, nuts and seeds.

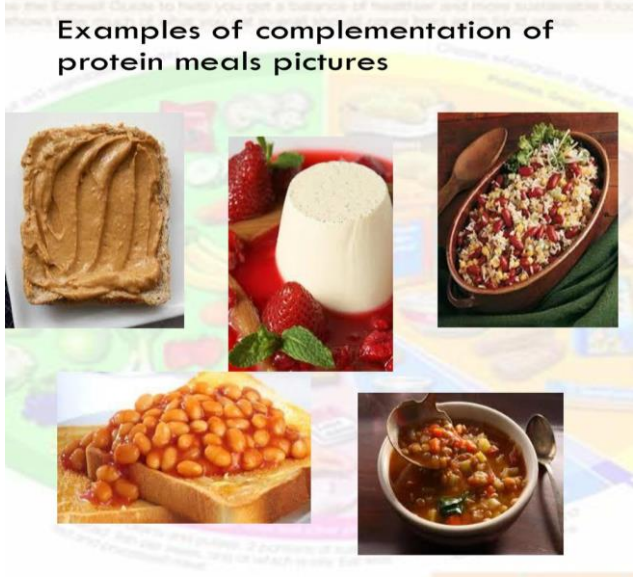
Low biological value proteins can easily be combined in a meal or product to provide all the essential amino acids. This is called **food combining** or **complementary proteins**.

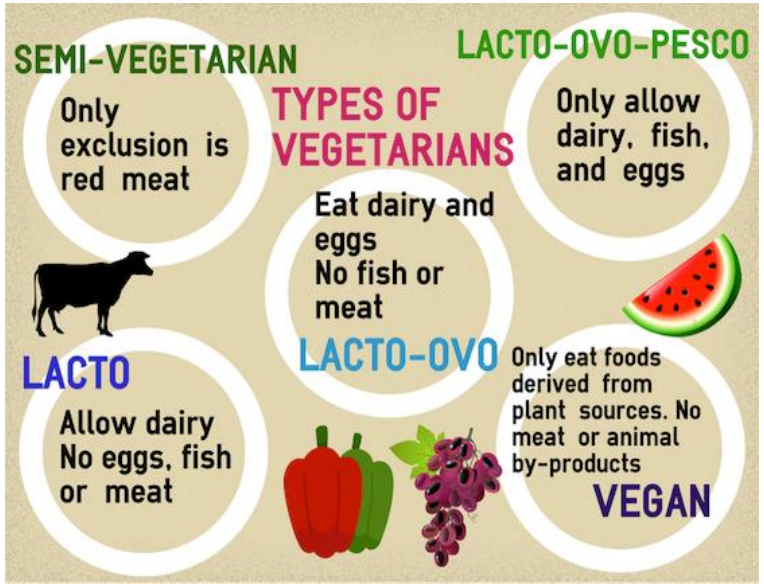
© Val Fehners

OCR GCSE Food Preparation and Nutrition

HODDER EDUCATION LEARN MORE

Protein complementation means eating more than one LBV protein at a time to ensure you get all the amino acids needed. Below are some examples of how you can do this.





Trayf (forbidden)

Pork products

Shellfish -like prawns; crab and lobster

Most Hard cheeses are banned

It is forbidden to mix MEAT and DAIRY PRODUCTS

Kosher (Allowed)

KOSHER means it is 'pure' according to Jewish law

KOSHER

Meat products such as Turkey; Beef; Chicken; Lamb - which have been **ritually slaughtered** according to Jewish custom

Fish like Salmon; tuna and cod are allowed

Meat and Dairy are allowed but have to be kept strictly **separate**

Kosher foods are foods that conform to the Jewish dietary regulations of kashrut.

Halal is an Arabic word that translates to 'permissible' in English.

Muslim Diet

Muslims are required to follow a halal diet. Halal means lawful and is used to designate food which is permitted in Islam.

Not permitted: pork and any other pork product (e.g. bacon, ham, gelatine); meat and derivatives not killed ritually; alcohol.

Permitted: Meat and derivatives that have been killed ritually (halal meat); fish; eggs; vegetarian foods.

The religious laws say all animals should be treated with respect. Slaughtering methods must limit the amount of pain the animal will endure.

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According to the Quran, Muslims cannot eat pork or pork by-products, animals that were dead prior to slaughtering, blood and blood by-products, alcohol, carnivorous animals, birds of prey or land animals without external ears. Those foods are called "haram," meaning "forbidden" in Arabic.

Health care Providers' Handbook on Muslim Patients, State of Queensland (Queensland Health) 2010

Year 9 and 10 Knowledge Goals: Food Nutrition and Preparation

Tier 3 Vocabulary		
	Key word	Definition
1	Low biological Value (LBV) Protein	The **biological value** relates to how many amino acids are present in a protein. If a food is missing one or more of the indispensable amino acids, it has a **low biological value** (LBV). For example, baked beans have an LBV.
2	protein complementation	**Protein complementation is when two LBV proteins are eaten together.** By eating two LBV proteins in the same meal, you can make up for the lacking amino acids.
3	Halal	Halal is an Arabic word meaning 'allowed' or 'lawful'.
4	Kosher	Kosher foods are foods that conform to the Jewish dietary regulations of kashrut. The laws of kashrut apply to food derived from living creatures and kosher foods are restricted to certain types of mammals, birds and fish meeting specific criteria.
5	fasting	Fasting, abstinence from food or drink or both for health, ritualistic, religious, or ethical purposes
6	amino acids	**Amino acids are molecules that combine to form proteins.** Amino acids and proteins are the building blocks of life.
7	lacto-ovo vegetarian	**Lacto-ovo vegetarianism** or **ovo-lacto vegetarianism** is a type of vegetarianism which forbids animal flesh but allows the consumption of animal products such as dairy and eggs.
8	Lacto vegetarian	Lacto-vegetarians consume dairy products, but not eggs or meat.
9	vegan	**Vegans don't eat any animal foods.** This even includes foods that are produced by animals, such as honey, milk, cheese and eggs.
10	deficiency	The quality or state of being defective or of lacking some necessary quality or element.
11	religious diets	Religious food practices often require the use of specific foods in specific situations, especially during special celebrations such as feasts or fasts.

Notes

Scan here for more information on protein

Year 9 and 10 Knowledge Goals: French

- le coca-lite _____
- le coca _____
- la limonade_____
- le Fanta _____
- le milkshake_____
- le chocolat chaud_____
- le jus d'orange_____
- le jus de pomme_____
- le thé_____
- le café_____
- l'eau minéral_____
- les frites_____
- les hamburgers_____
- les sandwichs au jambon_____
- les sandwichs au fromage_____
- les pizzas_____
- les gâteaux_____
- les glaces_____
- les bonbons_____
- la salade_____
- le chocolat_____

What are these food and drink items?

Remember

Language Nut

All students should have their username and password and can go on this at home.

Relevant adjectives

délicieux = delicious
dégoûtant = disgusting
découlasse = disgusting
froid = cold
trop chaud = too hot
salé = salty
piquant = spicy
insipide = tasteless
amer = bitter
trop sucré = too sugary

Year 9 and 10 Knowledge Goals: French

Tier 3 Vocabulary		
	Key word	Definition
1	perfect Tense	The past tense using avoir and être
2	past participle	The past tense verb e.g. joué regardé
3	personal pronouns	The person who is doing an action
4	faux ami	A word that sounds similar to English but has a different meaning.
5	stem	A word that has taken the verb ending off before you add an ending

Notes

Spring 1 Year 9 and 10

Year 9 and 10 Knowledge Goals: Geography (Rio)

Changing Urban Environments: *Rio De Janeiro – A Case study in an NEE*

Location and Background

Rio is a coastal city situated in the South East region of Brazil within the continent of South America. It is the second most populated city in the country (20 million) after Sao Paulo.

City's importance:

- Has the second largest GDP in Brazil It is headquarters to many of Brazil's main companies, particularly with Oil and Gas.
- Sugar Loaf mountain is one of the seven wonders of the world.
- One of the most visited places in the Southern Hemisphere.
- Hosted the 2014 World Cup and 2016 Summer Olympics.

Opportunities:

Social: Standards of living are gradually improving. The Rio Carnival is an important cultural event for traditional dancing and music.
Economic: Rio has one of the highest incomes per person in the country. The city has various types of employment including oil, retail and manufacturing.
Environmental: The hosting of the major sporting events encouraged more investment in sewage works and public transport systems.

Challenges:

Social: There is a severe shortage of housing, schools and healthcare centres available. Large scale social inequality, is creating tensions between the rich and poor.
Economic: The rise of informal jobs with low pay and no tax contributions. There is high employment in shanty towns called Favelas
Environmental: Shanty towns called Favelas are established around the city, typically on unfavourable land, such as hills.

Changing Urban Environments – Rio de Janeiro Revision videos including key word definitions (Geography Hawkes - YouTube)

Changing Urban Environments – Rio de Janeiro BBC bitesize revision

Self Help Scheme – Rochina, Bairro Project

- The authorities have provided basic materials to improve peoples homes with safe electricity and sewage pipes.
- Government has demolished houses and created new estates.
- Community policing has been established, along with a tougher stance on gangs with military backed police.
- Greater investment in new road and rail network to reduce pollution and increase connections between rich and poor areas.

Year 9 and 10 Knowledge Goals: Geography (Rio)

Tier 3 Vocabulary		
	Key word	Definition
1	urbanisation	When increasing proportion of the population live in towns or cities.
2	push factors	Reasons for people to move to an area such as a town.
3	pull factor	Reasons for people to move to an area such as a town.
4	central business district	The main shopping and service area in the city, usually found in the middle of the city.
5	brownfield site	Land that has been built on before, often found in the inner city.
6	greenfield site	Land that has not been built on before, often found towards the edge of a built-up area or in the countryside.
7	multiculturalism	Trying to create unity through difference where people of different ethnic groups living together without conflict.
8	squatter settlement - Favella	Areas of cities that are built by people usually using any materials they can find, land does not belong to squatters.
9	sustainable city	An urban area where residents have a way of life that will last a long time. The environment, economy and social fabric are able to continue.
10	rural to urban migration	A process in which people move from the countryside to towns.
11	informal sector	Part of the economy where jobs are created by people trying to get an income e.g., recycling, ragpickers, the figures are not counted in official statistics, and it is often not taxed.
12	self-help scheme	When local people try to improve their lives often working with authorities or charities, people can tell them what they need and are involved in the improvements.

Notes

Year 9 and 10 Knowledge Goals: Geography (Bristol)

Location and Background

Developed in the 18th century as part of the triangular trade linking West Africa to the West Indies. Holds strategic importance in the UK due to M4 access, universities and ports.

Bristol City Centre Regeneration Projects

Aims: to reduce urban sprawl, keeping historically important cobbled streets, create 4000 new jobs, redevelop the derelict areas.

Main features:

Enterprise Zone status: encourage economic growth and create jobs. Offer incentives to business to move to the4 area including business relief rates, low rates and easier planning procedures.

Improved access from in and around Bristol: electrification will shorten the rail journey to London; improvements to Temple Meads; improved road layout with links to the rapid transit network..

New bridge across the river Avon: gives access to the new Bristol arena.

City's Importance

- **M4 corridor – links to London by rail.**
- **Bristol airport links to major European cities.**
- **Development of global industries such as financial and business services, defence, aerospace, technology, culture and media.**
- **High level of inward investment in manufacturing companies (Airbus, BMW, Siemens), finance and high – tech business.**
- **Bristol University attracts students from all over the world.**

Migration to Bristol

- 1851 – 1891 the population doubled.
- Migration in recent years accounts for ½ of Bristol's population growth.
- Migrant workers are employed in: hospitality, manufacturing, construction, retail, health and transport.
- 50 countries are represented in Bristol's population
- Biggest influence is the Caribbean community
- St. Paul's Carnival attracts 40,000 people each year.

City's Opportunities

Social: more people under 16 than pensionable age, over 2 million people live within 50 km of the city, electrification of the rail line; Development on greenfield and brownfield sites.

Economic: educated and skilled workforce, university links, collaborative research and development, government grant to improve broadband speeds.

Environmental: Integrated transport for Bristol – aiming to encourage more cycling, Encourage use of public transport, 30 percent of the city to be covered with trees.

City Challenges

Social: Inequality in Bristol; Lack of investment in certain areas has led to social deprivation; Filwood: 1300 crimes per year, life expectancy is 2 years younger, 1/3 of people unemployed.
Stoke Bishop: less than 300 crimes per year. Only 3% unemployment, life expectancy is 83 years

Economic: high level of dereliction due to redundant industrial buildings

Environmental: produces half a million tonnes of waste per year; one of the worst in the country for food waste; vehicle emissions cause high levels of pollution.

Geography Hawkes playlist – Urban Change in the UK

Cabot Circus Development

- Opened Sept 2008.
- £500 million to build.
- Mostly shops and leisure facilities e.g. restaurants, mini golf, cinemas etc.
- There are high end offices and 250 apartments.
- Built on a **brown field site**, an old car park and disused shops that previously had a high rate of vandalism, robbery and other crimes – no economic or social value.

Bristol Harbourside Development

- Brownfield site old abandoned warehouses, factories and docklands, high levels of crime and toxic chemicals.
- Many restaurants, bars, nightclubs as well as an art gallery, media center, planetarium, sea life center and other cultural centers.
- The annual Habourside festival attracts 300,000 people over 3 days.
- £383 million to build over 10 years.

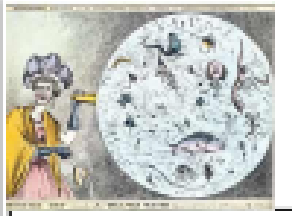
Year 9 and 10 Knowledge Goals: Geography (Bristol)

Tier 3 Vocabulary

	Key word	Definition
1	HIC	High Income country usually with a high GDP and GDP per capita.
2	infrastructure	The basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society
3	CBD – Central Business District	The main business and commercial area of a town or city, usually where governmental buildings, universities, offices and retail and entertainment can be found.
4	suburbs	An outlying district of a city, especially a residential one, usually associated with higher earners, larger homes and often higher levels of education.
5	inner city	The area near the centre of a city, especially when associated with social and economic problems.
6	regeneration	The purposeful long-term upgrading and redevelopment of existing places for economic and social change by investment usually by the local government.
7	gentrification	The social process whereby the character of a poor urban area is changed by wealthier people moving in, improving housing, and attracting new businesses, often displacing current inhabitants in the process.
8	brown field site	A site potentially used for development that has had previous use, this usually would have been for industry.
9	green field site	A site potentially used for development that has had **no** previous use, this is often link with habitat destruction.
10	urbanisation	The total population of an urban area becomes larger, the area could become more built up (more urban).
11	urban sprawl	The outward spreading of urban structures (roads, housing, commercial buildings etc.) into areas surrounding a city.
12	out of town shopping centre	A shopping centre or complex of retail and entertainment venues built

Notes

Year 9 and 10 Knowledge Goals: History



Ideas about CAUSE of disease

C18th Age of "Enlightenment" – people thinking for themselves, not just following ideas of church

1861, **Louis Pasteur** published **Germ Theory**. Observed that "microbes" present in the air, these made liquids rot (he was investigating rotting beer).
Proved microbes could be killed by heat (pasteurisation).
1878 published Germ Theory of infection, proving microbes caused disease in humans.

Robert Koch identified that different microbes caused different diseases.
First discovered cholera 1883.
Came up with methods to study bacteria (grow in petri dish, stain with dye to make easier to see) – these methods made it possible for other scientists to make further discoveries.
Koch's work meant that scientists studied diseases, not symptoms.

Impact in Britain
GB doctors – led by Henry Bastian – did not believe in Germ Theory. They still believed in Spontaneous Generation (microbes spread from rotting matter by miasma).
GB government rejected germ theory until end of C19th.

Approaches to TREATMENT and PREVENTION

Hospitals
Florence Nightingale: nurse in Crimean War 1854; hospitals appalling
Made changes to way wounded soldiers treated
- Sanitation (clean hospital, bedding)
- Nurses to provide care
- Good meals provided

Mortality rate (% of wounded dying) fell from 40% to 2%
Nightingale returned to GB
- Set up nursing college; designed hospitals with wards to stop disease spreading; wrote "Notes on Nursing"

Surgery: 3 major problems: pain, infection, blood loss (this was not "solved" until C20th)
Anaesthetic developed to deal with pain.
Other drugs had been used (eg ether), but problems.
James Simpson discovered chloroform.
Some opposed as though pain was sent by God, but when Queen Victoria used chloroform, it became popular
Antiseptic developed to deal with infection. After reading Pasteur's Germ Theory Joseph Lister used carbolic acid during operations to keep wound clean. Many doctors opposed at first, as carbolic was unpleasant

Prevention
Edward Jenner develop **vaccination** to protect against smallpox.
Previously people had been inoculated (given small dose of disease to develop immunity.
1776 Jenner worked out you could make someone immune to smallpox by injecting a small amount of cowpox.
Lots of opposition from church, inoculators and scientists

Public Health
1848 Public Health Act encouraged cities to provide clean water, but not compulsory.
1852 government makes smallpox vaccinations compulsory
1875 Public Health Act. Realisation government should intervene to improve living conditions in cities. City authorities forced to: provide clean water, dispose of sewage properly, public health officer to monitor outbreak of disease, ensure good new housing.

C18th - 19th (1700-1900)

Case Study: Cholera (1854)

Disease first arrived London 1831.
Particularly affected the poor – those living in slums and workhouses.
Three "epidemics" (major outbreaks, killing thousands).
Government tried to prevent by cleaning slums to reduce miasma – did not work.
1854 outbreak studied by **John Snow**.
Snow plotted where all deaths had occurred on a map.
Identified that they were centred around Broad St water Pump.
Took handle off pump, no more victims
Discovered Broad St well was next to a cesspit (toilet pit).
Proved that cholera was spread by dirty water.

Key Individuals

Louis Pasteur developed germ theory
Robert Koch identified specific microbes, developed methods to study them better
Henry Bastian British doctor, did not believe in Germ Theory
Florence Nightingale came up ideas of modern nursing / hospital design
James Simpson discovered chloroform
Joseph Lister develop use of carbolic acid to tackle infection in surgery
John Snow worked out that cholera caused by dirty water
Edward Jenner came up with the concept of using vaccination

Key Vocabulary

Anaesthetic a drug which makes a patient unconscious during surgery
Germ a small organism which can cause disease
Antiseptic germ-free
Microbe germ that can cause disease
Spontaneous generation idea about cause of decay
Epidemic rapid spread of a disease

Examples of Change

- Germ Theory – understanding that germs cause disease
- Surgery became safer
- Hospitals more clean
- Government became involved more involved in health / medicine
- Vaccines developed to prevent disease

Examples of Continuity

- Many people still believed in miasma
- Still major public health issues in cities. Widespread poverty
- No cure for blood loss in surgery
- There was better understanding of cause of disease, but still few cures

Year 9 and 10 Knowledge Goals: History

Key terminology	
Amputation	The **removal of a limb** by surgery.
Anaesthetic	A drug or drugs given to produce **unconsciousness** before and during surgery.
Antiseptics	Chemicals used to **destroy bacteria** and prevent infection.
Chloroform	A liquid whose vapour acts as an **anaesthetic** and produces unconsciousness.
Diarrhoea	A symptom of a disease (such as cholera); frequent, **fluid bowel movements**.
The Enlightenment	A European intellectual movement of the 18th century emphasising **reason** and **science** over religion and tradition; also known as the "Age of Reason".
Germ theory	The theory that **germs cause disease**, often by infection through the air.
Inoculation	Putting a **low dose** of a disease into the body to help it fight against a more serious one.
Laissez-faire	Belief that **governments** should **not interfere** in people's lives.
Microbe	A **living organism** that is too small to see without a microscope.
Pasteurisation	A way of **preserving** food or drink by **heating** to 55 degrees C and thus killing the bacteria.
Public Health Act (1875)	Government **legislation** that made it compulsory for city authorities to dispose of **sewage**, build public toilets and provide **clean water**. New houses had to be built to better quality and food sold in shops had to be checked for safety.
Spontaneous generation	The theory that **decaying matter** turns into germs.
Vaccination	**Injection** into the body of **weakened organisms** to give the body **resistance**. Comes from the word *vacca* which means cow in Latin. This was because the first vaccination involved injecting cow pox samples into people to develop immunity against small pox.

SUMMARY OF THE PERIOD
Significant changes in medicine occur in this period. By 1900, there was a better understanding of how germs cause disease and work was being done to develop new vaccines and treatments. The government, which started out with a laissez-faire attitude to public health, began to become more involved, with compulsory small pox vaccination and the Public Health Act of 1875. Hospitals developed into clean, modern institutions thanks to the work of Florence Nightingale and more surgery became possible through the use of anaesthetics. Fewer people died as a result of surgery because of Joseph Lister's pioneering work with antiseptics.

Notes:

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

Quiz QR Code	Quiz Link
	https://forms.office.com/e/QiM1tqw6Lj

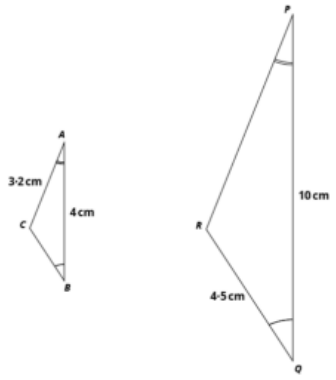
Year 9 and 10 Knowledge Goals: Mathematics (Higher)

Calculating unknown measurements for similar shapes

Lengths

Using the scale factor for the enlargement gives a method for calculating missing lengths.

Example
Triangles ABC and PQR are similar.
Calculate the lengths of PR and BC.



Answer
We are given the lengths of the **corresponding sides** AB and PQ. This means that the scale factor for the enlargement is $\frac{10}{4} = 2{\cdot}5$.

To calculate the length PR, we need to multiply the corresponding side by 2·5, as triangle PQR is the larger triangle.

Length of $PR = 3{\cdot}2 \times 2{\cdot}5 = 8\,\text{cm}$.

To calculate the length BC, we need to divide the corresponding side by 2·5, as triangle ABC is the smaller triangle.

Length of $BC = 4{\cdot}5 \div 2{\cdot}5 = 1{\cdot}8\,\text{cm}$

Another method is to use the **ratios** between the corresponding sides.

This can be written as:

$$\frac{PQ}{AB} = \frac{PR}{AC} = \frac{QR}{BC} \text{ or } \frac{AB}{PQ} = \frac{AC}{PR} = \frac{BC}{QR}$$

In this example, we have:

$$\frac{10}{4} = \frac{PR}{3{\cdot}2} \text{ and } \frac{4}{10} = \frac{BC}{4{\cdot}5}$$

Length of $PR = \frac{10}{4} \times 3{\cdot}2$

$= 8\,\text{cm}$

Length of $BC = 4{\cdot}5 \times \frac{4}{10}$

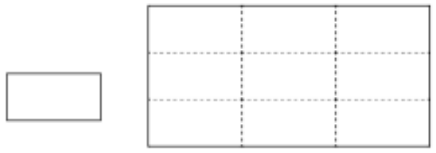
$= 1{\cdot}8\,\text{cm}$

We can also use ratios to find the unknown areas and volumes of similar shapes.

Areas

Example
A small rectangle has been enlarged by scale factor of three to create a large rectangle. What is the ratio of their areas?

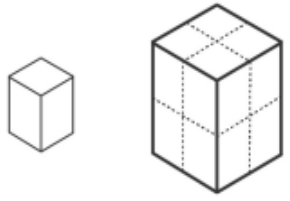
Answer
Although the lengths have been increased by a ***linear*** scale factor of 3, it is obvious that the large rectangle has an area more than three times the area of the small rectangle. Since both the length and width of the rectangle have enlarged by a linear scale factor of 3, the area has been increased by a factor of 3×3 or 3^2, which is 9, as illustrated in this diagram.



Volumes
A small cuboid has been enlarged by a scale factor of 2 to create a large cuboid. What is the ratio of their volumes?

Answer
This diagram illustrates that, as each of the length, width and height have been increased by a linear scale factor of 2, the volume has been increased by a scale factor of $2 \times 2 \times 2$ or 2^3, which is 8.

Using these two examples, we can obtain some general rules for similar shapes.



If the length scale factor is k, then:

- **the area scale factor is k^2**
- **the volume scale factor is k^3.**

Congruent triangles

For triangles to be congruent, they must satisfy one of four different conditions. These conditions for congruent triangles can then be used in proofs. In these conditions, the following notation is usually used:

S ≡ side, A ≡ angle, R ≡ right angle, H ≡ hypotenuse.

SSS: All three corresponding sides are equal.
SAS: Two sides and the included angle (the angle between the two given sides) are equal.
ASA: Two angles and one corresponding side are equal. Note that the corresponding side doesn't need to be the side included between the two angles.
RHS: Right angle, hypotenuse and side are equal on the corresponding triangle.

Conditions that do not guarantee congruent triangles

AAA: Three angles matching across triangles does not guarantee congruent triangles, only similar triangles.
SSA: Two sides and one angle that match across triangles does not guarantee they are congruent, as two different triangles are often possible.

You may come across examples stating that two angles and a side matching across triangles (AAS) is a condition for congruent triangles. However, although often correct, this is not correct as a general rule

REMEMBER!
For two shapes to be congruent, they must be exactly the same shape and size.

Year 9 and 10 Knowledge Goals: Mathematics (Higher)

What you need to know:

Pie Charts

Use the data in the following table to draw a pie chart

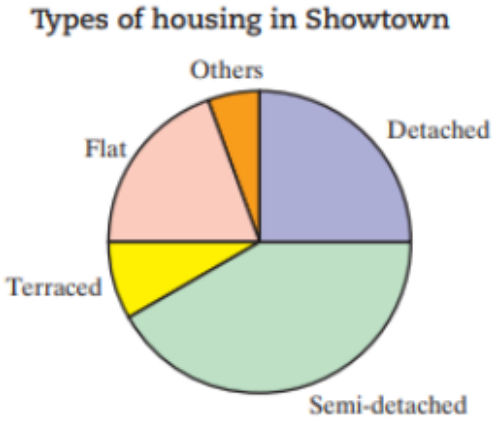
House Type	Frequency	Angle
Detached	18	18 x 5° = 90°
Semi-detached	30	30 x 5° = 150°
Terraced	6	6 x 5° = 30°
Flat	14	14 x 5° = 70°
Other	4	4 x 5° = 20°

Total = 72

Finding angles:
Step 1 – Divide 360° by your total frequency to find how many ° represents one house
= 360 ÷ 72 = 5°

Step 2 – Multiply the frequency for each house type by the ° per house

Drawing the pie chart:
Step 1 – Draw a circle using a compass, and draw a vertical line from the centre to the top
Step 2 – Using a protractor, measure and draw each angle
Step 3 – Label each section of the pie chart
Step 4 – Give your pie chart a suitable title

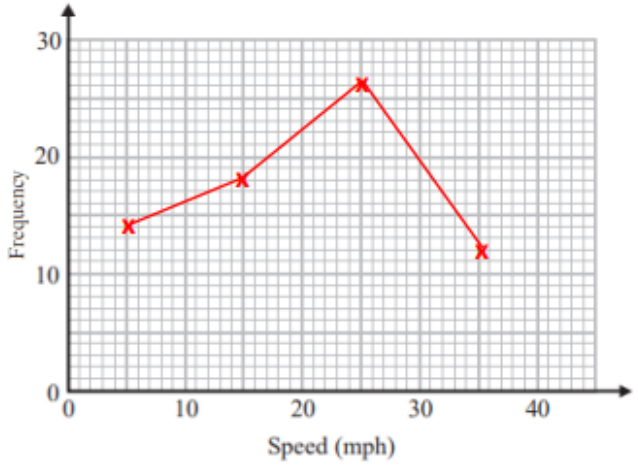


Drawing Frequency Polygons

This table gives information about the speeds of 70 cars.

Speed (s mph)	Frequency (f)	Midpoint
$0 < L \leq 10$	14	5
$10 < L \leq 20$	18	15
$20 < L \leq 30$	26	25
$30 < L \leq 40$	12	35

a) Draw a frequency polygon for this information.



Step 1 – Find the midpoint of each class interval
Step 2 – Label your axes and choose an appropriate scale
Step 3 – Plot each point at the midpoint for that interval
Step 4 – Connect each point with a straight line

Do not extend the line beyond the points you have

b) Identify the interval with the median speed

Step 1 – Identify the median car
Median car = 71 ÷ 2
= 35.5

Median = $\frac{Total\ Frequency+1}{2}$

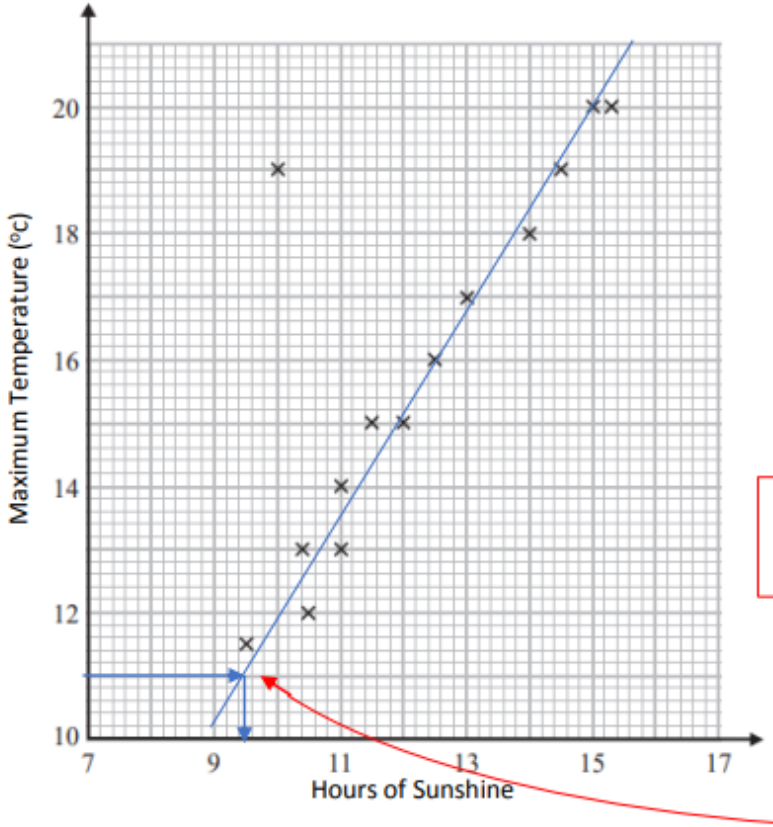
Step 2 – Which bracket does this car fall into?
35.5 occurs in the $20<L\leq30$ bracket

Year 9 and 10 Knowledge Goals: Mathematics (Higher)

What you need to know:

Scatter Graphs

This scatter graph shows the maximum temperature and the number of hours of sunshine in 14 British towns in one day.



Scatter Graphs - Outliers and Correlation

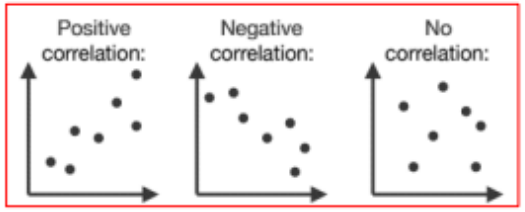
Identify the coordinates of the outlier.

= (10, 19)

An outlier is a value that doesn't fit the pattern of the data

What type of correlation does the remaining data show?

= Positive correlation



Scatter Graphs – Correlation and Causation

A student looks at the graph and says "This graph shows that sunshine causes higher temperatures". Is this true? Give a reason.

Correlation does not imply causation. While it may look like variables are related, there may be something else responsible for the data points.

= No, although the graph shows a positive correlation, this does not mean there is a causal link between hours of sunshine and maximum temperature

Scatter Graphs – Explaining Patterns

A weatherman says "Temperatures are higher in towns that have more sunshine". Is this supported by the scatter graph?

= Yes, the majority of points for high temperature appear when there are more hours of sunshine.

Interpolation and Extrapolation

Interpolation – making a prediction of a value that falls within the range of your data. This is more accurate.

Extrapolation – making a prediction of a value that falls outside the range of your data. This is less accurate.

Another town had a maximum temperature of 11°c that day. Use a line of best fit to estimate the hours of sunshine at this town.

Step 1 – Draw a line of best fit
Step 2 – Draw a line along from 11°c and down from the line of best fit

= 9.5 hours

Comment on the reliability of your prediction.

= This is not a reliable estimate because it is extrapolation

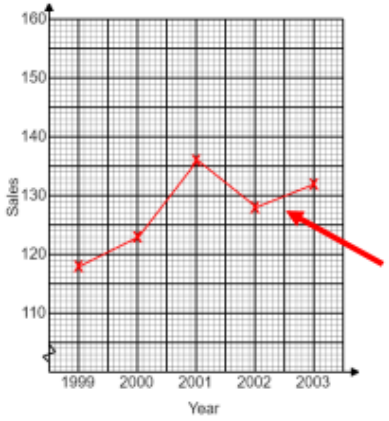
Year 9 and 10 Knowledge Goals: Mathematics (Higher)

What you need to know:

Time-series Graphs

Plot the following sales information on the graph below and describe the overall trend:

Year	1999	2000	2001	2002	2003
Sales	118	123	136	128	132



Step 1 – Label the x and y axes, and use an appropriate scale

Try to fill the graph paper

Step 2 – Plot each point onto the graph

Double check what one square represents

Step 3 – Join up each point with a straight line

Step 4 – Identify the overall pattern shown = generally increasing

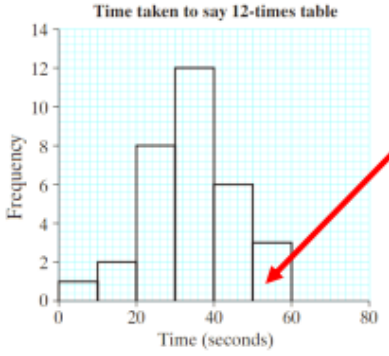
Visualising a line of best fit through the plotted points can help you to see the overall trend

Histograms with Equal Class Intervals

A group of 32 students were asked to say the 12-times table as fast as possible.

a) Draw a histogram for the following data:

Time, t (s)	Frequency
$0 < t \leq 10$	1
$10 < t \leq 20$	2
$20 < t \leq 30$	8
$30 < t \leq 40$	12
$40 < t \leq 50$	6
$50 < t \leq 60$	3



See *Cumulative Frequency, Box Plots, and Histograms* for more on drawing histograms

No gaps between bars

$$\text{Frequency Density} = \frac{\text{Frequency}}{\text{Class Width}}$$

Writing a Ratio

Ratio: The is the relationship between two or more numbers and each number is separate by a colon.

The ratio of footballs to rugby balls: 1:4

The ratio of rugby balls to footballs: 4:1

Football is mentioned first so that is why the 1 comes before 4.

Rugby is mentioned first so that is why the 4 comes before 1.

As fractions: If we wanted to represent the ratio as fractions then:

$$1 : 4$$

$$= \frac{1}{5} : \frac{4}{5}$$

The denominator comes from adding the two parts of the ratio together.

Writing ratios as 1:n or n:1

This means that the ratio needs to be simplified in a specific way. You may end up with fractions or decimals as part of your answer.

Write 2: 5 in the form 1 : n

2 : 5

÷ 2 ÷ 2

1 : 2.5

You must end up with a 1 in the correct place - read the question carefully!

Write 2: 5 in the form n : 1

2 : 5

÷ 5 ÷5

0.4 : 1

Year 9 and 10 Knowledge Goals: Mathematics (Higher)

What you need to know:

Simplifying a ratio

You must make sure that your ratio has been simplified fully by finding the highest common factor.

Simplify 12 : 20

÷ 4

= 3 : 5

This could have been done in two steps by dividing by 2 and then by 2 again.

Simplify 60 : 40 : 100

÷ 10

= 6 : 4 : 10

÷ 2

= 3 : 2 : 5

This could have been done in one step by dividing by 20.

Sharing in a ratio

Sharing in a ratio: To share in a ratio we can use bar modelling to visualise the steps.

Share £45 in the ratio 2:7.

Add the parts of the ratio together.

2 + 7 = 9 parts

Divide the total by the number of parts.

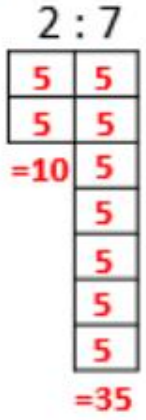
45 ÷ 9 = 5

x

2 : 7

Multiply each part of the ratio by the value of one part,

= £10:£35



Sharing ratio when given one part:

Joy and Martin share money in the ratio 2:5. Martin gets £18 more than Joy. How much do they each get?

5 -2 = 3 parts difference

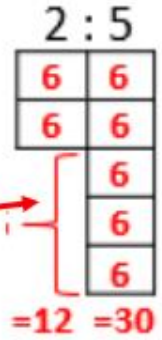
18 ÷ 3 = 6

x

2: 5

Find how many parts difference there are and then divide.

= £12: £30



Year 9 and 10 Knowledge Goals: Mathematics (Higher)

Tier 3 Vocabulary		
	Key word	Definition
1	congruence	Two shapes are congruent if they have exactly the same size and shape. They can be rotated, reflected, or translated, but their corresponding sides and angles must be equal.
2	similarity	Two shapes are similar if they have the same shape but different sizes.
3	corresponding sides	Sides that are in the same position in two similar or congruent shapes.
4	scale factor	The ratio of the lengths of corresponding sides in two similar shapes.
5	frequency distribution	A table that shows how often different values or ranges of values occur in a dataset.
6	cumulative frequency	The running total of frequencies, showing the number of data points that fall below a certain value.
7	box plot	A graphical representation of data that shows the median, quartiles, and minimum and maximum values.
8	histogram	A bar graph where the area of each bar represents the frequency of the data within that interval.
9	ratio	A part, share, or amount considered in relation to the whole.
10	percentage	A comparison of two or more quantities.
11	reciprocal	A proportion or rate per hundred.
12	proportion	The multiplicative inverse of a number. For example, the reciprocal of 2 is 1/2.

Notes

Year 9 and 10 Knowledge Goals: Mathematics (Higher & Foundation)

What you need to know:

Solving two step equations/inequalities

To solve a two step equation or inequality we need to complete 2 inverse calculations in a specific order.

$6y + 2 = 32$
$-2 \quad -2$
$6y = 30$
$\div 6 \quad \div 6$
$y = 5$

Subtract first because the 2 is separate from the y.

Divide because it is the inverse of multiplying.

$\frac{w-5}{3} \geq 4$
$x3 \quad x3$
$w - 5 \geq 12$
$+5 \quad +5$
$w \geq 17$

Multiply first because the entire expression is divided by 3.

Add because it is the inverse of subtracting.

Solving equations with brackets

We must expand the bracket first and then solve by doing the inverse of the operations. We use the same method for inequalities.

$3(2x + 5) = 39$

Expand brackets first.

$6x + 15 = 39$
$-15 \quad -15$
$6x = 24$
$\div 6 \quad \div 6$
$x = 4$

The inverse of +15 is -15.

The inverse of x 6 is ÷6.

Solving with unknowns on both sides

To solve an equation or inequality with unknowns on both sides we need to collect all of the same terms together, still by looking at the inverse.

$5x - 20 \leq 3x + 4$
$-3x \quad -3x$
$2x - 20 \leq 4$
$+20 \quad +20$
$2x \leq 24$
$\div 2 \quad \div 2$
$x \leq 12$

We subtract 3x from both sides because it is the smaller term of x.

Then solve like a normal two step equation.

$2x - 10 = 5x + 2$
$-2x \quad -2x$
$-10 = 3x + 2$
$-2 \quad -2$
$-12 = 3x$
$\div 3 \quad \div 3$
$-4 = x$

We subtract 2x from both sides because it is the smaller term of x.

Then solve like a normal two step equation.

Top tip: Always subtract/add the smaller number of terms to avoid getting a negative term at the end.

Year 9 and 10 Knowledge Goals: Mathematics (Higher & Foundation)

What you need to know:

Reading and Writing Inequalities

The list of integers for $-2 < x \leq 1$ is -1, 0, 1.

Check the symbols carefully, if they have the line underneath they include the end value.

Greater than $>$

Greater than or equal to $\geq$

Less than $<$

Less than or equal to $\leq$

Not equal to $\neq$

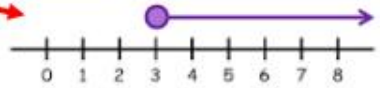
The arrow points in the same direction as the inequality.

An open circle means that the value is not included:

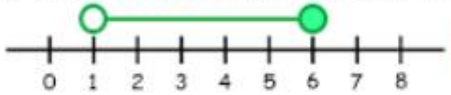
$x > 2$ — x is greater than 2

A filled in circle means that the value is included:

$x \geq 3$ — x is greater than or equal to 2



If x is between two values, use two circles:



$1 < x \leq 6$

x is greater than 1, but less than or equal to 6.

Solving one step equations/inequalities

To solve any equation or inequality we need to do the inverse of the operation that we see.

$t + 4 = 10$

$-4 \quad -4$

$t = 6$

The inverse of add is subtract and vice versa.

$c - 3 > 6$

$+3 \quad +3$

$c > 9$

$6y < 30$

$\div 6 \quad \div 6$

$y < 5$

The inverse of multiply is divide and vice versa.

$\frac{m}{7} = 4$

$\times 7 \quad \times 7$

$m = 28$

You need to be able to:

- Read an inequality.
- Represent an inequality on a number line.
- Solve one step equations and inequalities.
- Solve two step equations and inequalities.
- Solve equations and inequalities with brackets.
- Solve equations and inequalities with unknowns on both sides.

Year 9 and 10 Knowledge Goals: Mathematics (Higher & Foundation)

Tier 3 Vocabulary		
	Key word	Definition
1	simultaneous equations	A set of two or more equations with the same variables, requiring you to find values that satisfy all equations at the same time.
2	linear equation	An equation whose graph is a straight line.
3	quadratic equation	An equation where the highest power of the variable is 2
4	inequality	that compares two expressions using symbols like < (less than), > (greater than), ≤ (less than or equal to), or ≥ (greater than or equal to)
5	solution	The value(s) of the variable(s) that make an equation or inequality true.
6	coefficient	The number that multiplies a variable (e.g., the '2' in 2x).
7	constant	A value that does not change.
8	variable	A symbol (usually a letter) that represents an unknown quantity.
9	substitution	Replacing a variable with its equivalent expression.
10	elimination	A method for solving simultaneous equations by adding or subtracting the equations to eliminate one of the variables.
11	factorisation	Expressing a number or algebraic expression as a product of its factors.
12	quadratic formula	A formula used to find the solutions of any quadratic equation.

Notes

Year 9 and 10 Knowledge Goals: Mathematics (Foundation)

What you need to know:

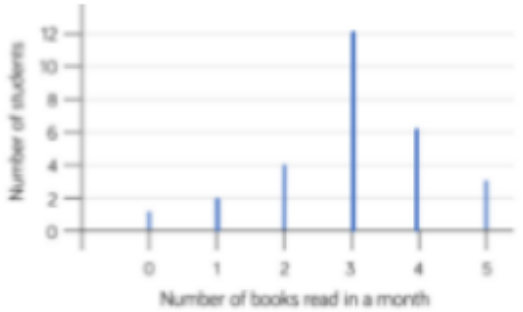
Frequency Table

Tally marks are used to help count things. Each vertical line represents one unit. The fifth tally mark goes down across the first four to make it easier to count. The frequency column is completed after all the data has been collected.

You must represent 5 like this.

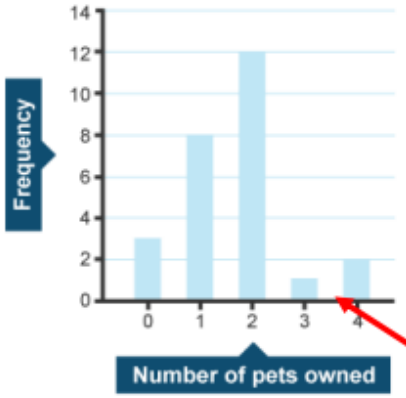
Eye Colour	Tally	Frequency
brown	𝍸 |	6
blue	𝍸 |||	8
green	|||	3
grey	||||	4
hazel	𝍸	5

Vertical Line Chart



- Gaps between the lines.
- Clearly labelled axes.
- Scale for the axes.
- Discrete data only.

Bar Charts

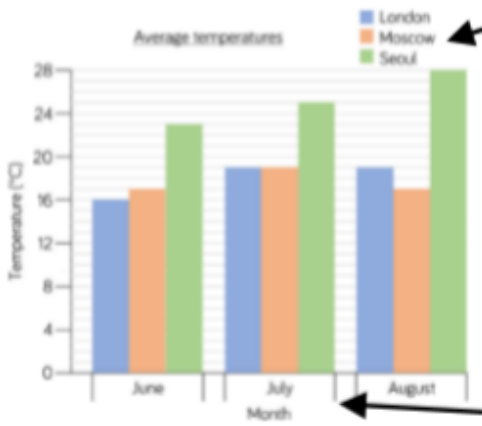


A bar chart has a horizontal axis and a vertical axis. The x axis is for the type of data and the y axis shows the frequency. The bars show the data value of each category. There must be a gap between each bar and the scale must increase in the same sized intervals and the axes must be labelled.

You must include gaps and labels.

Dual Bar Charts

Compares multiple groups of data.



Key/Colour code for separate groups.

- Clearly labelled axes.
- Scale for axes.
- Comparable data bars drawn next to each other.

Gaps between different categories.

Year 9 and 10 Knowledge Goals: Mathematics (Foundation)

What you need to know:

Pictograms

Pictograms are similar to bar charts, but the data is shown in pictures. A pictogram **must have a key** so that you know what a full image represents.

Looking at this diagram:

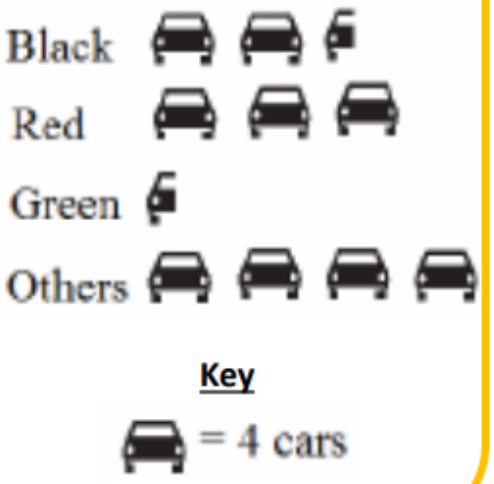
Black = 4 + 4 + 2 = 10 cars

Red = 4 + 4 + 4 = 12 cars

Green = 2 cars

Others = 4 + 4 + 4 + 4 = 16 cars

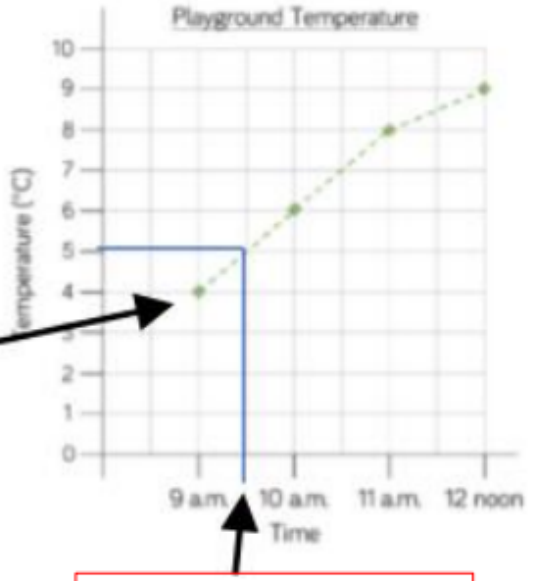
This represents 2 cars because it is half of the diagram in the key.



Line Graphs/Time Series

- Commonly used to show changing over time.
- The points are the recorded information and the lines join the points.

Line graphs do NOT ned to start from 0.



More than one piece of data can be plotted on the same graph to compare data.

It is possible to make estimates from the line e.g. temperature at 9.30am is 5 degrees Celsius.

Stem and leaf diagrams

Here is a list of numbers and the stem and leaf diagram:

68, 75, 77, 79, 80, 82, 92, 96, 96, 97

Stem	Leaf
6	8
7	5 7 9
8	0 2
9	2 6 6 7

The 'leaves' must be from smallest to biggest in each row.

Key 6|8= 68

You must include a key to explain what the stem and leaf shows.

Mode = 96 because 96 appears twice.

Median = 81 because 81 is in the middle of 80 and 82.

Range = 97 – 68 = 29.

Mean = $\frac{68+75+77+79+80+82+92+96+96+97}{10}$ = 84.2

We calculate these in the same way we would from a list.

Two Way Tables

A table that organises data around two categories.

Fill out the information step by step using the information given:

Question: Complete the 2 way table below.

	Left Handed	Right Handed	Total
Boys	10		58
Girls			
Total		84	100

Both need to add to make 100 so the missing number is 16.

Answer: Step 1, fill out the easy parts (the totals)

	Left Handed	Right Handed	Total
Boys	10	*48*	58
Girls			*42*
Total	*16*	84	100

Both need to add to make 100 so the missing number is 42.

Answer: Step 2, fill out the remaining parts

	Left Handed	Right Handed	Total
Boys	10	*48*	58
Girls	*6*	*36*	*42*
Total	*16*	84	100

Both need to add to make 16 so the missing number is 6.

Both need to add to make 42 so the missing number is 36.

Year 9 and 10 Knowledge Goals: Mathematics (Foundation)

Key Concepts

Equivalent fractions have the same value as one another.

Eg. $\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$

A number multiplied by it's **reciprocal** gives the answer of 1. Or the reciprocal of a number is 1 over the number.

Eg. $\frac{1}{8}$ is the reciprocal of 8.

$\frac{2}{5}$ is the reciprocal of $\frac{5}{2}$

Examples

Addition: $1\frac{2}{3} + 2\frac{1}{4}$

$= \frac{5}{3} + \frac{9}{4}$ (Convert into an improper fraction)

$= \frac{20}{12} + \frac{27}{12}$ (Find a common denominator)

$= \frac{47}{12}$

$= 3\frac{11}{12}$ (Convert back into a mixed number)

Subtraction: $2\frac{2}{3} - 1\frac{1}{4}$

$= \frac{8}{3} - \frac{5}{4}$ (Convert into an improper fraction)

$= \frac{32}{12} - \frac{15}{12}$ (Find a common denominator)

$= \frac{17}{12}$

$= 1\frac{5}{12}$ (Convert back into a mixed number)

Multiplication: $1\frac{1}{3} \times 2\frac{3}{4}$

$= \frac{4}{3} \times \frac{11}{4}$ (× ... ×)

$= \frac{44}{12}$

$= 3\frac{8}{12}$

Division: $2\frac{1}{3} \div 1\frac{3}{5}$

$= \frac{7}{3} \div \frac{8}{5}$ (Find the reciprocal of the second fraction....)

$= \frac{7}{3} \times \frac{5}{8}$ (...and multiply)

$= \frac{35}{24}$

$= 1\frac{11}{24}$

Key Concepts

Calculating percentages of an amount without a calculator:

10% = divide the value by 10
1% = divide the value by 100

Calculating percentages of an amount with a calculator:

Amount × percentage as a decimal

Calculating percentage increase/decrease:

Amount × (1 ± percentage as a decimal)

Examples

Percentage change:

A dress is reduced in price by 35% from £80. What is it's **new price**?

$Value \times (1 - percentage\ as\ a\ decimal)$
$= 80 \times (1 - 0.35)$
= £52

A house price appreciates by 8% in a year. It originally costs £120,000, what is the **new value** of the house?

$Value \times (1 + percentage\ as\ a\ decimal)$
$= 120{,}000 \times (1 + 0.08)$
= £129,600

Reverse percentages: This is when we are trying to find out the original amount.

A pair of trainers cost £35 in a sale. If there was 20% off, what was the **original price** of the trainers?

$Value \div (1 - 0.20)$
$= 35 \div 0.8$
= £43.75

A vintage car has increased in value by 5%, it is now worth £55,000. What was it worth **originally**?

$Value \div (1 + 0.05)$
$= 55{,}000 \div 1.05$
= £52,380.95

Year 9 and 10 Knowledge Goals: Mathematics (Foundation)

Key Concepts

We use **multipliers** to increase and decrease an amount by a particular percentage.

Percentage increase:

$$Value \times (1 + percentage\ as\ a\ decimal)$$

Percentage decrease:

$$Value \times (1 - percentage\ as\ a\ decimal)$$

Appreciation means that the value of something is going up or increasing.

Depreciation means that the value of something is going down or reducing.

Per annum is often used in monetary questions meaning **per year.**

Examples

Compound interest:

Joe invest £400 into a bank account that pays 3% **compound interest** per annum. Calculate how much money will be in the bank account after 4 years.

$Value \times (1 + percentage\ as\ a\ decimal)^{years}$
$= 400 \times (1 + 0.03)^4$
$= 400 \times (1.03)^4$
$=$ £450.20

Compound depreciation:

The original value of a car is £5000. The value of the car **depreciates** at a rate of 7.5% per annum. Calculate the value of the car after 3 years.

$Value \times (1 - percentage\ as\ a\ decimal)^{years}$
$= 5000 \times (1 - 0.075)^3$
$= 5000 \times (0.925)^3$
$=$ £3957.27

1) Jane invests £670 into a bank account that pays out 4% compound interest per annum. How much will be in the bank account after 2 years?
2) A house has decreased in value by 3% for the past 4 years. If originally it was worth £180,000, how much is it worth now?

ANSWERS A 1) £724.67 2) £159352.71

Year 9 and 10 Knowledge Goals: Mathematics (Foundation)

Tier 3 Vocabulary		
	Key word	Definition
1	percent	A proportion or ratio expressed as a fraction of 100.
2	appreciate	To increase in value or worth over time.
3	depreciate	To decrease in value or worth over time.
4	interest	The cost of borrowing money, expressed as a percentage of the principal amount.
5	annum	A Latin word meaning "year." Used in various contexts to denote an annual rate, frequency, or period.
6	compound	To grow exponentially by reinvesting earnings or interest.
7	multiplier	A factor that amplifies or magnifies the effect of a change in a variable.
8	gradient	This describes the steepness of a line, crucial for understanding how quickly a quantity changes.
9	intercept	The point where a line crosses an axis (x-axis or y-axis), providing key information about the starting point or initial value.
10	correlation	This measures the strength and direction of the relationship between two variables, helping to understand if they tend to change together and how closely.
11	extrapolation	Estimating values beyond the known data points, allowing for predictions and forecasts.
12	interpolation	Estimating values within the range of known data points, useful for filling in missing information or making more precise readings.

Notes

Year 9 and 10 Knowledge Goals: Media (Magzines)

PRIDE: CONTEXTS

Production Context

Monthly, lifestyle mag, first published in 1990, readership (including online) 300,00, circulation (printed copies) (of over 146,000, distributed by COMAG (part of Conde Nast), still in Black ownership Name links to black liberation but could be confused with Gay Pride

Social/ Cultural Context

Modern mags focus more on beauty, less on homemaking mag encourage us to feel bad about ourselves but they will make us better. BLM – campaign against police racism, big on Twitter as is Pride (lots of followers)

Historical/Political Context

The term Pride come from the Civil Right Movement that encourages/ celebrates black culture, wanted people to be proud of being black and having afro hairstyles.

Key Terms and conventions

Strapline, Cover line, colour palette, direct address, flashes, left third, masthead, anchorage, polysemic, hyperbole, FMG, BLM, pose Metrosexual, body language, facial expressions, Image as commodity. Red connotes strength, power, courage, energy, warmth, Black connotes power, sophistication, classic, stylish.

The Target Audience

Females of colour, aged between 24- 35, are middle class or higher, many would have a good education, they would be interested in fashion and beauty, spend a lot of money on fashion and beauty products, most of the audience would live in London, they are a niche audience (smaller than average with specific interests)

Messages and Values

Key message- Be proud of who you are, and your culture, have confident and self-respect. Focus on body image- reminding the reader that they could/ should look better (women are valued based on looks). Women should aspire to be successful like Naomi Harris. Mixed messages: straighten hair- conforming to European ideas of beauty, consumerist context about buying hair care products like relaxers, straighteners.

MEDIA LANGUAGE: How the fron page communicates with the audience using the different codes:

Technical Codes

1. Masthead- covered but still recognisable
2. Strapline- best magazine of its kind
3. Colour Palette suggests pride, strength strong
4. Cover lines- serious issues (FGM), success of NH,
5. Range of topics, aligned around NA
6. Breaks left third rule- worried about topics?
7. Narrative- cover lines start of a story

Symbolic Codes

1. Pose is confident and sexy
2. She looks at us- direct address
3. Costume not revealling but still tight
4. Serious facial expression- she serious!
5. Colours are eye catching, contrasting
6. Hair/make up = pretty, beautiful but not over the top demonstrating natural beauty over 'made up' beauty. More realistic.

Written Codes

1. Personal pronouns- we, you, draws TA in,
2. Hyperbole- failed, sexualised, mocked
3. Alliteration- Bond and Beyond emphasis her success as a Bond girl (sexy)
4. Use of acronym (FGM)- asumption that the TA will know what it is, comfortable dealing with a controversial topic.
5. PRIDE communicates the ethos of the brand and how the TA should feel.

REPRESENTATION *Ethnicity, Gender and Issues*

Ethnicity

Naomi Harris is a successful black women as a role model, came from a similar background to the TA. The magazine presents black people as outgoing, confident, and ambitious.

Gender

NH is attractive, slim, fashionably dressed- fits the stereotype, the magazine (like other magazines) encourages women to work harder to improve themselves because they are inadequate (How far would you go?), the importance of body image is the same for different races, a lot of pressure on women to be perfect, the mag reminds reader that they are judged on their looks (Objectifed, Sexualised, Mocked)

Issues

FGM- hard hitting issues but is it reported on from the beauty/ cosmetic surgery side?, brave move to have such controversial topic on the cover, use of ! shows they view it as shocking and not being done for religious reason but because of aesthetics/ beauty.

Test Yourself:

KS4 Media Half Term 4 Magazines

The central image is a medium long shot of actress Naomie Harris, smartly dressed, with her hand on her hip. Her neutral facial expression connotes control and the direct gaze is a convention of magazine covers.

Some of the masthead is lost behind the cover star's head, suggesting her dominance and showing how confident the magazine is that their readers will still recognise their brand, despite not being able to see all of the title.

Star Appeal of a celebrity cover model

Title of the magazine, Pride, has connotations of self-respect, self-esteem, dignity and strength. There is a subtext of resistance and an affirmation of cultural identity.

Direct gaze is a common convention of magazines & helps to add to the more personal approach of this format.

Intended for niche audience demographic of black women, aged 25 – 45, ABC1. Mainstreamers and Succeeders using Young & Rubicam's 4Cs model.

The strapline tells us that the magazine is "celebrating 24 years at the top!". The phrasing encourages the reader to feel a part of something great. The assumption is that they are reading one of the best magazines of its kind.

The red and black colour palette used for the cover lines helps to support the idea of pride. Red connotes pride and strength and the black is a strong, bold statement, perhaps representative of their target audience, women of colour

Many of the cover lines focus on body image reminding readers that they could and should look better, and also that will be judged on their appearance

The 'Uses and Gratifications Model' suggests that audiences interact with texts for different reasons: information, personal identity, social interaction and entertainment. Although all of these reasons could be argued for why Pride has such high readership figures, arguably the personal identity aspect is probably the main one. In fact, its unique selling point (USP) is that it is the only black media company that still remains in black British ownership.

One cover line references Female Genital Mutilation but uses only its acronym (FGM). There's an assumption then that the reader will understand this and so have a certain level of social and cultural understanding of the practice. It's a controversial topic, illustrating how the magazine is comfortable covering such serious topics through investigative journalism and sees their target audience as mature enough to handle the subject matter, and educated enough to engage with it.

The pose used by the cover star, with her hand on her hip connotes confidence and sass. It's also a photographer's trick to lengthen the appearance of the torso, helping to make her look taller and slimmer, trying to add to her beauty and further improve her body shape making her figure aspirational to the target audience

Year 9 and 10 Knowledge Goals: Media (Magazines)

THE PRODUCT: GQ Magazine

- Launched in **1931**, GQ began its life as a quarterly publication called **Gentleman's Quarterly**, aimed specifically at fashion industry insiders. Its popularity with customers caused its rebranding in 1967 to GQ.
- Produced by **Condé Nast**, today GQ is a multi-platform brand. Each issue is published in print and digitally; it has its own acclaimed website and apps.
- Published **monthly**, British GQ sells itself as *"The greatest magazine around. The men's magazine with an IQ. Whether it's fashion, sport, health, humour, politics or music, GQ covers it all with intelligence and imagination."*
- GQ is aimed at **ABC1 men aged between 20 and 44**, has a 212,000 monthly print readership, with online boasting over **2 million monthly unique users**, and more than 2 million social media followers.
- **Funded by magazine sales and advertising**, GQ says that 88% of its audience have bought or plan to buy products they've seen in GQ and **93% of GQ's audience own designer fashion**.

In 1994, Mark Simpson – an author and journalist – coined the word **'metrosexual'**. In the early 2000s it became more socially acceptable for men to openly care about their looks, clothing and skincare regime. GQ claims that 80% of its readers buy at least one male grooming product per month. In 2014, Simpson then introduced the term **'spornosexuals'**, men who are extremely body focused. The selection of the GQ cover shot, with Sterling's six-pack and muscles on show, even though he is a footballer, supports this concept.

Media Language

The branded **masthead** is conventionally placed in the top left-hand corner **(Z-rule)** and stands out with the choice of **gold font**, connoting **luxury and exclusivity** – traits that the brand associates with.

The **cover price** further reinforces this is a print magazine aimed at an **ABC1 audience** with **disposable income**.

The **limited colour palette** of black, white, gold and orange create a sense of **cohesion** to the design, whilst also reinforcing the magazines messages of **luxury, sophistication and masculinity.**

There is a **long shot** of footballer and celebrity **Raheem Sterling**, ensuring the magazine has **star appeal** for the audience.

The top **cover lines** "How to wear a broken suit" and "Why it's finally OK to own a belt bag" should be considered when thinking about the magazine's target audience. In today's competitive society, which focuses heavily on **aesthetics** and where having the 'right' look is apparently very important, the reader begins to think of this magazine as **a casual 'how to' guide** when it comes to being a fashionable man.

At **the top right** of the page, there is another **cover line** advertising a picture special from **'GQ Heroes'.** "All the sizzle" implies **gossip and celebrity intrigue**, while the term "exclusive" suggests the reader won't be able to find it anywhere else and they need to purchase the magazine to be in on the secrets.

On the right-hand side of the page the reader is offered some politics, "Westminster has become a living nightmare. Andy Burnham's Manchester masterplan." This **hyperbolic language** is a reference to the elected Mayor of Manchester, **Andy Burnham**, who is calling for more devolved power to be given to cities rather than held by the government in London. By including some **serious journalism**, as well as entertainment and fashion advice, the magazine is broadening its offering for its audience members.

Sterling is looking **directly at the audience**, seemingly making **eye contact**. This is a common convention of magazines and helps to add to the more **personal approach** of this format. His cool, relaxed gaze and slight smile looks down at the reader, suggesting he should be admired, looked up to.
Sterling's **leather combat trousers** and boots are **more high fashion** than practical and connote luxury and masculinity, whilst also indicating to readers that GQ is a **lifestyle magazine**.

Sterling's **professional role** as a footballer is anchored in the main cover line "Guardian Angel. How Raheem Sterling saved football from itself". GQ calls Sterling a **"Guardian Angel"**, which has multiple connotations, including a sense of **guidance and protection**, suggesting he is looking after players and the values of the game **by rooting out racism**. The idea that he is doing **morally good work** is reinforced through his **black angel wings and cross tattoo**. This also frames him as a **Proppian Hero**, which is conventional for magazine cover stars.

Year 9 and 10 Knowledge Goals: Media (Magazines)

Tier 3 Vocabulary (Film Industry)

	Key word	Definition
1	lifestyle magazine	Lifestyle journalism covers travel, fashion, fitness, leisure, food, and arts, among other topics.
2	masthead	Title of the magazine.
3	skyline	Coloured block at the top of the magazine.
4	cover lines	A line of text on a front cover promoting stories inside.
5	elite persons	People who have power and influence in society.
6	puff	A small, colourful advert/trail on a front cover (sticker).
7	circulation	The numbers of copies sold of a magazine.
8	splash	A prominent or sensational news story.
9	consumerism	The preoccupation with the acquisition of consumer goods.
10	commodity	A product that can be bought and sold (valuable).
11	kicker	The largest coverline usually at the bottom or bottom left.
12	hypermasculinity	Exaggerated image of stereotypical male traits (strength).
13	metrosexual	Men who care about their looks, clothing and skin care.
14	spornosexual	Extremely body focused men.
15	star appeal	Putting a celebrity on the cover to draw in readers.

GQ: Representations of Ethnicity and Gender

- Historically, **British black men** have been **under-represented** on magazine front covers. In a 2018 study, by The Guardian, it was revealed that of **214 covers** published by the 19 bestselling glossies in 2017, **only 20 featured a person of colour**. That's 9.3%, whereas 13.7% of the UK are BAME. However, Vogue appointed editor **Edward Enninful** in 2017. He has turned one of the nation's most respected fashion magazines into a celebration of all beauty. This, alongside the **2020 global anti-racism protests**, has meant that recently there has been a wider range of ethnicities and races on the front of British GQ.

- Using a hugely successful black cover star **(Raheem Sterling is British Jamaican)** as their dominant image, GQ is presenting **a role model** for its readers, someone to aspire to be like. Although Sterling's sporting success might be outside of most reader's possibilities, his work ethic, principles and desire to want to better himself is not.

- The choice to represent Sterling topless with his tattoos on show reinforces the stereotype of men as having to be **hypermasculine**, strong and muscular. The tattoos themselves represent different aspects of his identity – the cross on his chest illustrates his **Christian faith**, while the baby on his arm represents him as a father. The black wings represent him as a supernatural figure suggesting his extraordinary skills on the pitch. The wings, combined with the main cover line "Guardian Angel" and the low angle shot construct him as a **protective figure, fighting for justice**. His wide stance and the choice of costume represent him as a dominant, confident figure. Meanwhile the thick silver jewellery and watch represent his wealth and modern masculinity.

- The main cover line reads, "How Raheem Sterling saved football from itself". The reader understands this to mean that he is a success on a much grander scale than just the pitch; he is an **influencer**. His thick silver jewellery reinforces **the capitalist ideology** that for a man to be thought of as successful you must be wealthy and make a lot of money.

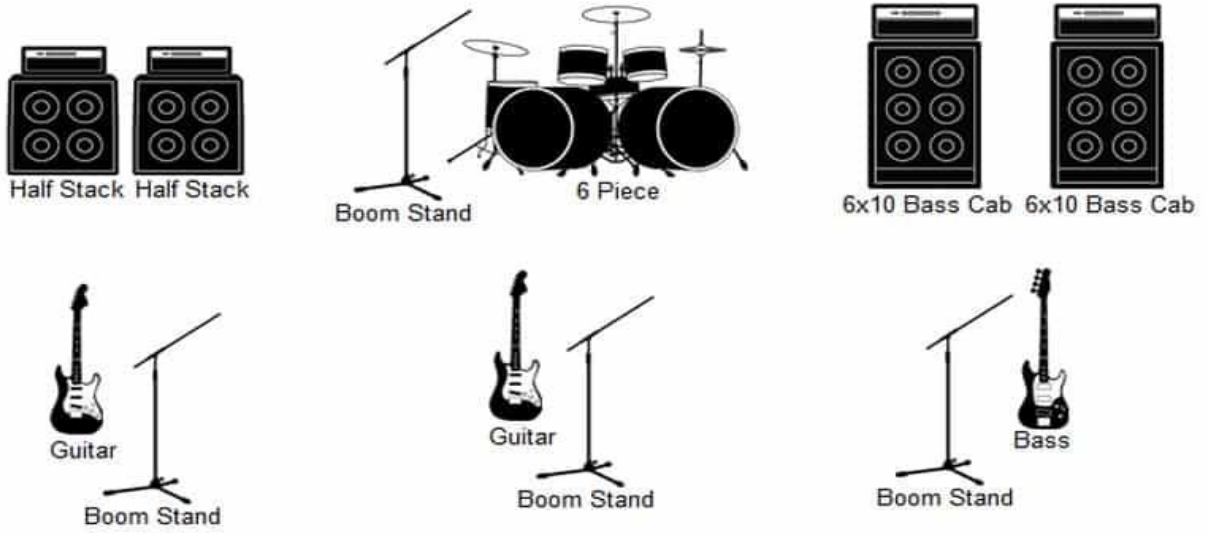
Year 9 and 10 Knowledge Goals: Music

Creating a Live Performance:

Checklist of what is involved:

- Choose repertoire
- Research detailed information about the repertoire including music and lyrics.
- Rehearse repertoire: learn to perform the music, change and improve, both as an ensemble and individually as required.
- Develop stage presence and audience interaction.
- Learn to set up your equipment ready for a performance, including any tuning of instrument, space used, setting up of amplifiers, microphones and any other electronics.
- Be mindful of the health and safety or your equipment within rehearsal and performance space.
- Promote the event, sell tickets if required.
- Set up, sound check and rehearse on the day of performance.
- Perform event.
- Analyse and evaluate performance.

Band Set-up



Tips for a great performance:

- Don't worry about mistakes, and don't stop in the middle of the song if you make a mistake.
- Engage with the audience.
- Be unique with your music, arrangements and the performance, don't just play the same as everyone else.
- Listen to each other.
- Have fun - if you have fun so will the audience.

Year 9 and 10 Knowledge Goals: Music

Tier 3 Vocabulary		
	Key word	Definition
1	tempo	The speed of the music.
2	dynamics	The volume of the music.
3	major/minor chord	Notes I, III & V played together.
4	progression	Chord changes in a piece of music.
5	root note/chord	Chord or note I (1) in a piece of music.
6	tonic	Another term for chord/note I.
7	the circle of 5ths	The order of key signatures, all a 5^{th} apart.
8	relative minor	A minor key with the same key signature as it's relative major.
9	root position	A chord with notes in the order I III V.
10	1^{st} inversion	A chord with notes in the order III V I.
11	2^{nd} inversion	A chord with notes in the order V I III.
12	octave	The same note played an interval of 8 notes apart.

Notes

Year 9 and 10 Knowledge Goals - Physical Education - Handball

Rules of Handballl

- Pushing, holding, tripping and hitting are violations. You cannot push a player out of the way – it is a non- contact sport. You cannot trip a player over accidently or deliberately. Free throws will be given from where ever the violation took place.
- Players are not allowed to play the ball with their legs below the knee or to dive on the floor to play a ball, this will also result in a free throw.
- Players are not allowed to take more than 3 steps with the ball. If a handball player takes more than three steps without dribbling (bouncing the ball) or holds the ball for more than 3 seconds without bouncing it, shooting or passing, then that is deemed 'walking' and possession is lost.
- To score a goal you must throw the ball into the goal when you are outside the goal area.
- Defensive players are allowed to use their body, arms and hands to obstruct an opponent. The game is quite fast and includes quite a lot of contact as the defenders try to bodily stop the attackers from approaching the goal. Only frontal contact by the defenders is allowed; when a defender stops an attacker with their arms from the side, the play is stopped and a free throw is given.

Positions in Handball

The goalkeeper- responsible for defending the goal.
•**Left wing-** this attacking player is usually right, handed and covers the left, hand side of the court. In defence, they stand on the far left side touch
line and in attack they provide counter, attacks down the left and hand side of the court.
•**Right wing-** has the same responsibilities as the left wing down the opposite side.
•**Left back -** the left back stands to the left of the centre back and tries to prevent the opposition from shooting. In possession of the ball they
should initiate counter. Attacks and often shoot from distance.
•**Right back** - has the same responsibilities as the left back down the opposite side.
•**Centre back –** the centre back stands in the middle of the court and provides both defending and attacking options.
•**Pivot** - the pivot is an attacking player who travels along the opponent's six
-metre line. They must work well with
their team's centre back to initiate
attacking strategies and are required
to shoot in a range of positions.

Attacking and defensive play

ATTACKING PLAY

Attacking players aim to score by throwing the ball into the opposing goal. In possession of the ball....

1. ... a player may take a maximum of 3 consecutive steps and may bounce the ball as much as desired. If the player catches the ball, they can not bounce it again and must take a maximum 3 further steps, pass or shoot.
2. ... is not permitted to enter the goal area. Players may jump towards it (e.g. to shoot) providing the ball is released prior to landing inside the 6-metre line.

DEFENSIVE PLAY

3. Defending players attempt to stop the opposing team shooting at their goal. They are permitted to make body contact, but they should not....
4. ... hold or restrain attacking players
5. ... must not hit another player
6. ... strike or pull back the opponent's throwing arm
7. ... spoil a clear chance of scoring by illegal means. This always leads to a seven metre (penalty) throw.

Year 9 and 10 Knowledge Goals: Physical Education - Handball

Tier 3 Vocabulary		
	Key word	Definition
1	pivot	A player who stands close to the opponent's goal, looking to score.
2	2-minute suspension	A penalty that sends a player off the court for two minutes for certain fouls.
3	throw-off	The method of restarting play after a goal is scored.
4	wing	Players positioned near the outer edges of the court, focusing on fast breaks and scoring from the sides.
5	free throw	A throw awarded after certain fouls, taken from the spot of the foul.
6	breakthrough	A move to get past an opposing defender, usually in an attempt to score.
7	fast break	A quick counterattack, often following a turnover.
8	centre back	A key attacking player who often directs the play from the back.
9	line player	A player who stays near the opponent's goal line, often looking to set up plays or score.

Notes

Year 9 and 10 Knowledge Goals: PSHE

Key Terms:

Personal space- having enough distance between you and another person

Physical contact- when one person touches another person. If you don't want to be touched, then this is 'unwanted contact.

Inappropriate contact- When someone touches you who shouldn't, or in a way they shouldn't

Consent – to give permission for something to happen.

Non-consensual – doing something without someone's permission.

Non-consensual sex – the word we usually use for this is rape.

PSHE

Consent, boundaries + unwanted contact

- **How do I know if a person has given consent?**

Remember that consent MUST be given verbally. If the person is too drunk to speak but nods or gives a thumbs up, this doesn't count as if they are not sober enough to speak, then they are not sober in enough to think clearly and give what we would call **affirmative consent – consent you can trust to be valid**.

Of course, a person could change their mind too. It's always best to be 100% clear, even if it means feeling a bit silly and stating exactly what you want to do. 'Are you sure you want to have sex with me now?' isn't so hard to say though, is it?

- **How do I draw boundaries?**

Remember that nobody else should have control of or access to your body unless you want them to. This is true whether you're male, female, in a relationship, single, young, old, married, straight, gay, whatever your culture. Do not feel pressured into doing anything that you don't want to do, whether by an individual person or by feeling like you're an odd one out if you don't. **Saying 'no' should always be enough – no means no.**

- **How do I know what's OK and what isn't in a sexual relationship?**

The key thing to bear in mind is consent. You must ensure that you have the consent of your would-be partner before any kind of sexual activity takes place. If that person isn't interested, then it's not going to be consensual (mutually agreed upon) sexual activity. If it's not consensual sexual activity, then it's not sex: it's sexual misconduct, sexual abuse, sexual assault, or even rape. **Coercing somebody to have sex with you, even if no physical violence is involved, is still sexually abusive behaviour.**

Need help, support or more information?

NSPCC Helpline:
0808 800 5000
(24 hours, every day)
www.nspcc.org.uk

Childline Helpline: 0800 1111(24 hours, every day)
https://www.childline.org.uk

Rape Crisis Helpline: 0808 802 9999 (12-2:30 and 7-9:30)
www.rapecrisis.org.uk

Survivors UK – Male Rape and Sexual Abuse Support
www.survivorsuk.org

RASAC (Rape and Sexual Abuse Support Centre)
National Helpline: 0808 802 9999 (12-2.30 & 7-9.30)
www.rasasc.org.uk

Year 9 and 10 Knowledge Goals: PSHE

Tier 3 Vocabulary		
	Key word	Definition
1	pornography	Printed or visual material containing the explicit description or display of sexual organs or activity, intended to stimulate sexual excitement.
2	sexual images	Some representations are obviously sexually explicit; for example pictures of sexual activity or of a naked person displaying their genitals, buttocks or breasts.
3	consent	Permission for something to happen or agreement to do something.
4	persuasion	An umbrella term for influence. Persuasion can influence a person's beliefs, attitudes, intentions, motivations, or behaviours.
5	legal consequences	Established by or founded upon law; lawful or relating to law. What happens if the law is broken.
6	coercion	The use of force to persuade someone to do something that they are unwilling to do.
7	permission	Granted to do something; formal consent: to ask permission to leave the room.
8	emotional abuse	Emotional abuse involves controlling another person by using emotions to criticize, embarrass, shame, blame, or otherwise manipulate them.
9	physical abuse	Physical abuse is an act where one person uses their body in order to inflict intentional harm or injury upon another person.
10	stalking	Criminal activity consisting of the repeated following and harassing of another person. Stalking is a distinctive form of criminal activity composed of a series of actions that taken individually might constitute legal behavior .
11	harassment	Illegal behaviour towards a person that causes mental or emotional suffering, which includes repeated unwanted contacts without a reasonable purpose, insults, threats, touching, or offensive language.

Notes

Strand:
Health and Wellbeing

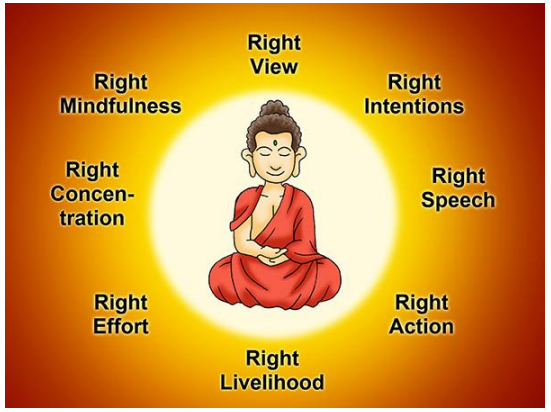
Quiz QR Code	Quiz Link
	Quiz Link

Year 9 and 10 Knowledge Goals: Religious Studies

The Four Noble Truths

Noble Truth	Term	Definition
First	Dukkha	Suffering exists
Second	Samudaya	The causes of suffering
Third	Nirodha	Suffering can end
Fourth	Magga	The way to end suffering

The Fourth Noble Truth is also known as **The Eightfold Path, middle way** and **The Threefold Way.** It gives Buddhists as set of guiding principles to live by to end suffering and attain enlightenment



The Eightfold Path and Threefold Way

The Threefold Way	The Eightfold Path
Ethics (sila)	Right action
	Right speech
	Right livelihood
Meditation (samadhi)	Right mindfulness
	Right effort
	Right concentration
Wisdom (panna)	Right view/understanding
	Right intention

The Three Poisons

Buddhist believe that the three main causes of suffering are greed, ignorance and hatred. They are represented by:

- A pig – ignorance
- A cockerel – greed
- A snake - hatred

Year 9 and 10 Knowledge Goals: Religious Studies

Tier 3 Vocabulary		
	Key word	Definition
1	anicca	Impermanence. The idea that all things change.
	anatta	No fixed self or soul.
2	dependent arising	All things are dependent on other things to exist.
3	mahayana buddhism	An umbrella term to describe Buddhist traditions including Tibetan, Zen and Pure Land Buddhism.
4	samadhi	A section of the threefold way that emphasises the role of meditation in spiritual development.
5	nirvarna	A state of complete enlightenment, happiness and peace.
6	panna	A section of the threefold way that deals with Buddhist approaches to understanding the nature of reality.
7	sila	Ethics.
8	tanha	Craving, desiring or wanting something.
9	The Three Poisons	The main causes of suffering: greed, ignorance and hatred.
10	Theravada buddhism	The oldest Buddhist tradition found in Southern Asia.
11	The Eightfold Path	Eight aspects that Buddhists practice and live by in order to achieve enlightenment.
12	The Threefold Way	The Eightfold Path grouped into 3 sections.

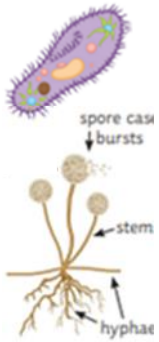
Notes

Year 9 and 10 Knowledge Goals: Science (Infection and Response)

Communicable disease:
Microorganisms which cause disease (Pathogens), enter plants and animals and cause disease.

Bacteria- Small prokaryotic cells which reproduce quickly producing toxins which damage your cells and tissues.

Viruses: Much smaller than bacteria. Viruses take control over parts of your cells so they can replicate. They burst our of your cells releasing many new viruses in one go



Protists: Eukaryotic organisms. Some are parasites which live in side of other larger organisms. They are transported to new hosts via vectors.

Fungi: can be single or multi –cellular, that can penetrate the skin or plants to cause infection.

Methods of Preventing transmission (spread)

- Being hygienic (washing hands thoroughly etc.)
- Destroying vectors
- Isolating when infected
- Vaccination

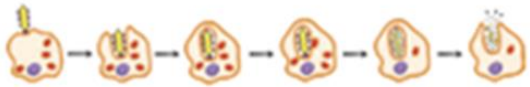
Bacterial diseases - (YOUNEED TO KNOW!)
Salmonella-causes food poising due to toxins made by the bacteria
Symptoms; stomach cramps, vomiting and diarrhoea
Transmission : contaminated food, common in poultry and eggs
Gonorrhoea-
Symptoms: yellow green thick discharge, pain when urinating
Transmission: sexual contact
Treatment: antibiotics

Fungal and protist diseases:
Fungal -Rose black spot: black spots on leaves reduce photosynthesis so reduces plant grow.
Transmission: wind and water
Treatment: Fungicides
Protist: Malaria
Symptoms: fever , can be fatal
Transmission: Spread by mosquito as a vector feeding on infected blood

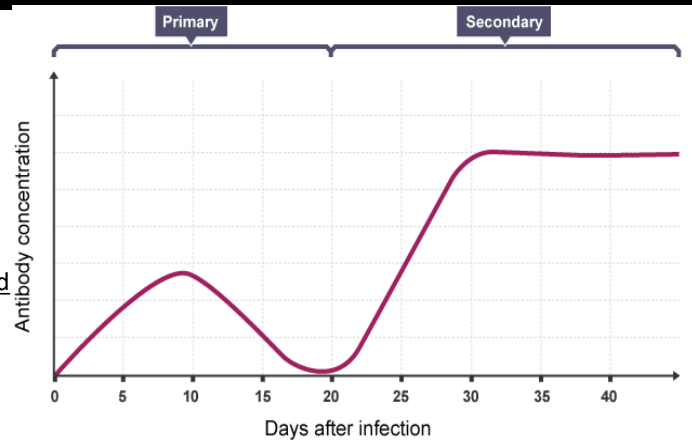
Viral Disease:
Measles:
Symptoms: red skin rash, fever, can cause meningitis, pneumonia or even be fatal
Transmission: Droplets in the air from coughing and sneezing
Most people are vaccinated as infants against it
HIV: Immune cells are infected and damaged, reducing the body's ability to fight off disease.
Transmission: STD, needle stick, exchange of blood and some other bodily fluid.
Treatment: antiviral drugs can slow down the progression to AIDs.
Tobacco Mosaic Virus:
Symptom: Parts of the leaves become yellow and discoloured meaning plants can not photosynthesis and grow fully.

Primary defences **prevent** entry to the organism:
Animals, Skin acts as a Barrier, Mucus in nose, trachea and bronchi traps pathogens, HCl in stomach kills pathogens .
Plants: physical barriers include waxy cuticles, layers of dead cells and cell walls. Mechanical barriers include: thorns, leaves that droop or curl.

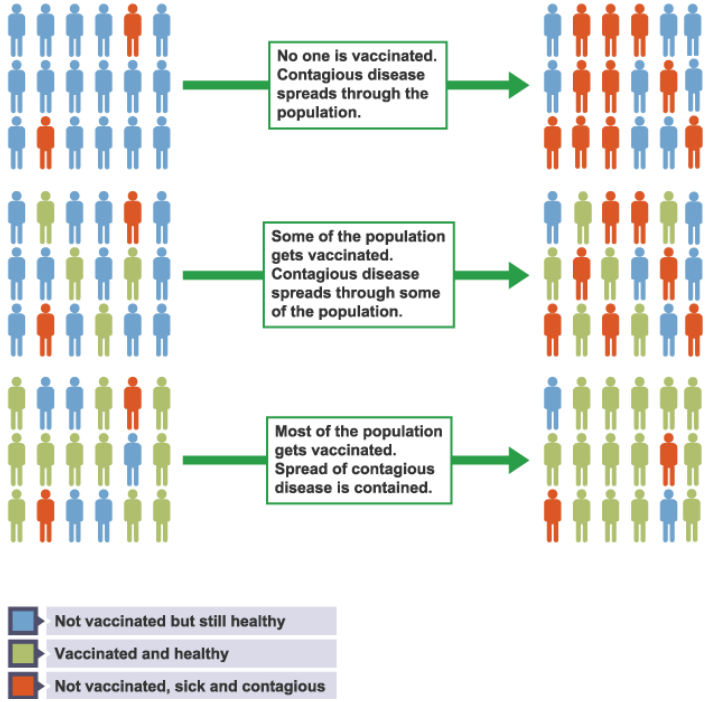
Secondary defences kill pathogens which have entered the body:
White blood cells
Phagocytes – Engulf and digest pathogens



Lymphocytes- produce antitoxins which neutralise toxins and antibodies which bind to antigens on the cell surface.
Lymphocytes can turn into memory cells which will remain in the body ready for future infections. (see graph)



Vaccination programmes can cause herd immunity and help protect our most vulnerable members of society.



Drug development:
There are three stages:
Preclinical
1. Drugs are tested on human cells and tissue
2. Drugs are tested on living animals
Clinical
3. Drugs are tested on healthy volunteers

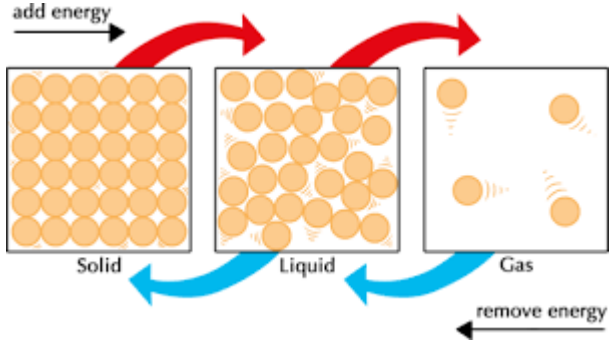
Year 9 and 10 Knowledge Goals: Science (Infection and Response)

Tier 3 Vocabulary		
	Key word	Definition
1	antibodies	A protein made by lymphocytes which attaches to the antigens on pathogens.
2	antitoxins	A protein made by lymphocytes which attaches to toxins produced by pathogens and neutralises them.
3	antigens	A marker molecule in cells which is used to identify what the cell is and where it came from.
4	blind trial	In drugs trials when the patients are not aware if they are taking a new drug or the existing one.
5	double blind trial	In drugs trials when neither the Drs or patients are aware which drugs (new v existing) groups are given to eliminate bias.
6	vector	An organism which spreads a pathogen.
7	bacteria	A small prokaryotic organism which can release toxins and reproduce rapidly.
8	protist	A eukaryotic organism which can be spread by means of a vector. E.g. Malaria.
9	efficacy	The success or effectiveness of a treatment.
10	Toxicity	The degree to which a substance can harm humans or animals.
11	phagocytosis	A process where a white blood cell surrounds (engulfs) and digests and kills a pathogen.
12	herd immunity	When a high level of the population has immunity to a disease it slows the spread of infection. This provides some protection to more vulnerable individuals.

Notes

Year 9 and 10 Knowledge Goals: Science (Particle Model of Matter)

Matter – is a tiny portion of matter or "stuff" – often in models seen as being the smallest 'thing' a substance is made up.
It is arranged into three main states:



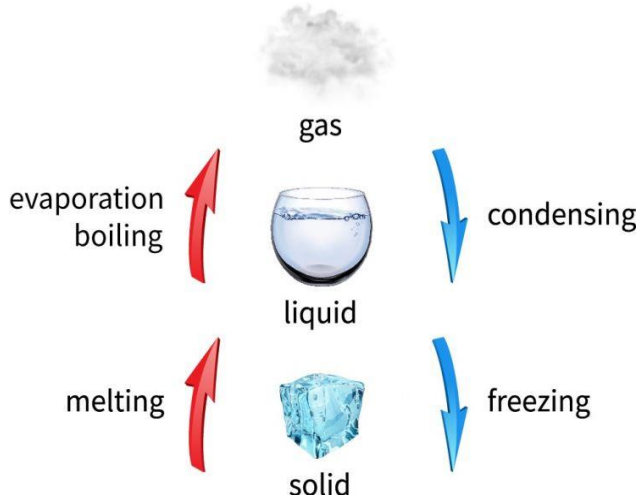
Solids:
- Have a regular fixed arrangement
- Vibrate in their fixed position
- Have strong forces between the particles
- Store the least energy

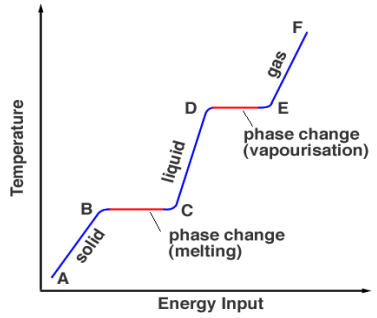
Liquids:
- Have an irregular arrangement
- Move around each other, whilst still touching
- Have moderate forces between the particles
- Store a moderate amount of energy

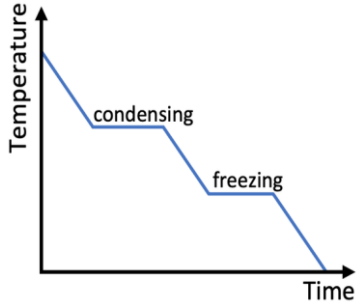
Gases:
- Have no fixed pattern to their arrangement
- Move randomly, in straight lines at a range of speeds
- Have the weakest forces between the particles
- Store the most energy

Matter moves between these states when energy is added to, or removed from it. A change of state is a **physical change** as it is easily reversible and no new products are formed.

The names given to the process of changing between two states is shown below.







Typically when you add more energy to matter (by heating it up) you increase its temperature. When the matter is changing state there is **no change in temperature**. This is called **specific latent heat.** The energy is going into breaking the bonds between particles.

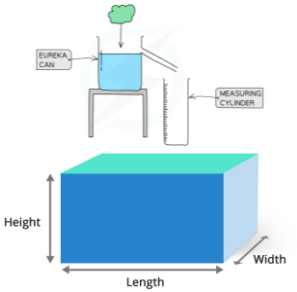
The same happens when energy is removed from matter and it cools down. This time, the energy goes into forming new bonds between the particles.
This happens at an elements **boiling point** or **melting point.**
Changes between liquid and gas states are called **vaporisation.**
Changes between solid and liquid states are called **fusion.**

Density is a measure of how many particles are in a particular volume. Solid particles have the highest density whereas gas particles have the lowest. Density is different for different materials.

Scan the top QR code opposite to watch a video into how to investigate the density of different types of matter.
The bottom QR code will take you to a quiz to test your knowledge.

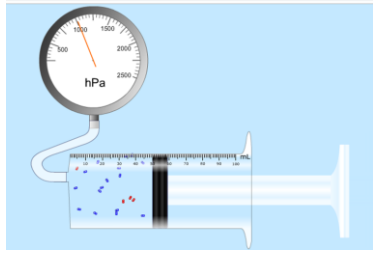
$$\text{Density} = \frac{\text{Mass}}{\text{Volume}} = \frac{g}{cm^3} = \frac{g}{mL}$$

solids liquids



	How to calculate mass	How to calculate volume
Regular object	On an electric balance	H x L x W
Irregular object	On an electric balance	Eureka can and measuring cylinder
Liquid	Mass of liquid and measuring cylinder – mass of measuring cylinder	With a measuring cylinder

Gas pressure
Gas particles move around in different directions, colliding with the surface of the container containing them. The pressure of a gas can change due to two factors:
Temperature: an increase in temperature causes and increase in pressure as the particles move with more energy and collide with more force.
Volume: a decrease in volume will cause an increase in pressure as the particles collide more often with the surface of the container.



Scan the QR code below to use the animation opposite to investigate this further.

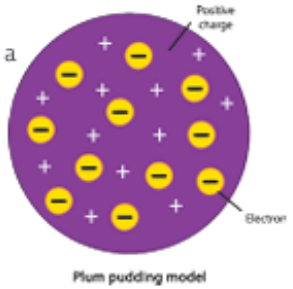
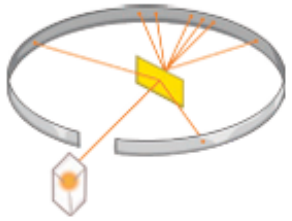
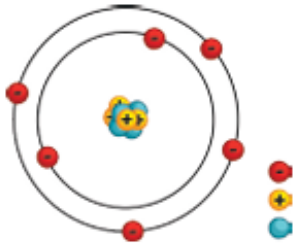
There is loads of extra resources on the QR code here.

Year 9 and 10 Knowledge Goals: Science (Particle Model of Matter)

Tier 3 Vocabulary		
	Key word	Definition
1	boiling	Change of state from liquid to gas that happens at a substances boiling point.
2	condensing	Change of state from gas to liquid that happens at a substances boiling point.
3	density	How tightly packed the particles are. Calculated with the equation mass / volume.
4	deposition/reverse sublimation	Change of state from gas straight to solid.
5	evaporation	Change of state from liquid to gas that happens at any temperature (as long as the matter is in a liquid state).
6	gas pressure	Pressure exerted by gas particles as they move around and collide with surfaces.
7	melting	Change of state from solid to liquid that happens at a substances melting point.
8	specific latent heat	The amount of energy required to change the state of 1 kilogram (kg) of a material without changing its temperature.
9	sublimation	Change of state from solid straight to gas.
10	volume	A measure of how much space the particles take up.

Notes

Year 9 and 10 Knowledge Goals: Science (Atomic Structure)

Scientist	Time	Contribution
John Dalton	Start of 19th century	Atoms were first described as solid spheres.
JJ Thomson	1897	Thomson suggested the plum pudding model – the atom is a ball of charge with electrons scattered within it.  Plum pudding model
Ernest Rutherford	1909	Alpha Scattering experiment – Rutherford discovered that the mass is concentrated at the centre and the nucleus is charged. Most of the mass is in the nucleus. Most atoms are empty space. 
Niels Bohr	Around 1911	Bohr theorised that the electrons were in shells orbiting the nucleus. 
James Chadwick	Around 1940	Chadwick discovered neutrons in the nucleus.

Isotopes

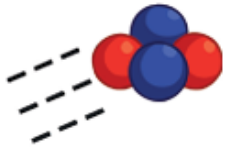
An isotope is an element with the same number of protons but a different number of neutrons. They have the same atomic number, but different mass numbers.

Isotope	Protons	Electrons	Neutrons
$^{1}_{1}H$	1	1	0
$^{2}_{1}H$	1	1	1
$^{3}_{1}H$	1	1	2

Some isotopes are unstable and, as a result, decay and give out radiation. Ionising radiation is radiation that can knock electrons off atoms. Just how ionising this radiation is, depends on how readily it can do that.

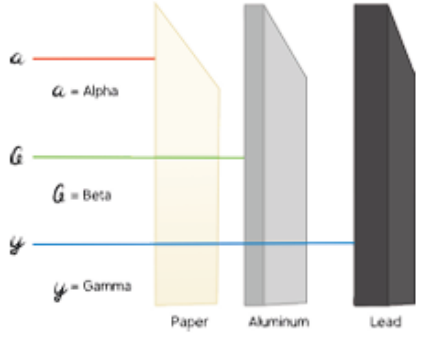
Alpha

Alpha radiation is an alpha particle emitted from the nucleus of a radioactive nuclei. It is made from two protons and two neutrons. They can't travel too far in the air and are the least penetrating – stopped by skin and paper. However, they are highly ionising because of their size.



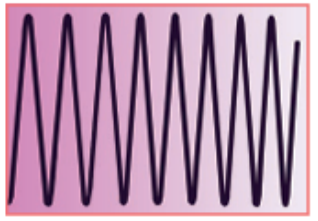
Beta

Beta radiation is a fast moving electron that can be stopped by a piece of aluminium. Beta radiation is emitted by an atom when a neutron splits into a proton and an electron.

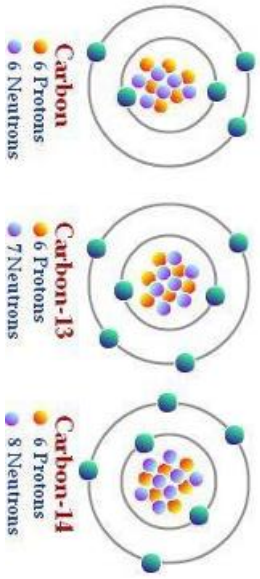


Gamma

A gamma wave is a wave of radiation and is the most penetrating – stopped by thick lead and concrete.



Type of nuclear radiation	Range in air
Alpha	A few centimet-res
Beta	A few metres
Gamma	Enormous distances



Year 9 and 10 Knowledge Goals: Science (Atomic Structure)

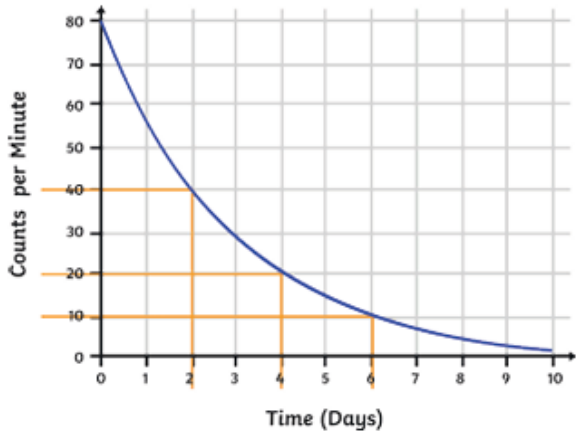
Half-life

The half-life is the time taken for the number of radioactive nuclei in an isotope to halve.

Radioactivity is a random process – you will not know which nuclei will decay. Radioactive decay is measured in becquerels Bq. 1 Bq is one decay per second.

Radioactive substances give out radiation from their nucleus.

A graph of half-life can be used to calculate the half-life of a material and will always have this shape:



Judging from the graph, the radioactive material has a half-life of two days.

Irradiation

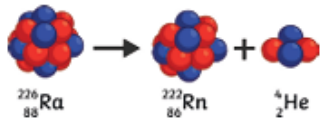
Irradiation occurs when materials are near a radioactive source. The source is sometimes placed inside a lead-lined box to avoid this.

People who work with radioactive sources will sometimes stand behind a lead barrier, be in a different room or use a remote-controlled arm when handling radioactive substances.

Atomic Structure Knowledge Organiser – Foundation and Higher

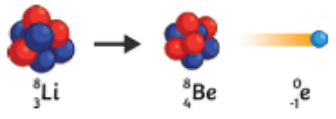
Alpha Decay Equations

An alpha particle is made of two protons and two neutrons. The atomic number goes down by two and its mass number decreases by four.



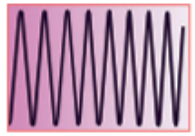
Beta Decay Equations

A neutron turns into a proton and releases a an electron. The mass of the nucleus does not change but the number of protons increases.



Gamma rays

There is no change to the nucleus when a radioactive source emits gamma radiation. It is the nucleus getting rid of excess energy.



Contamination

When unwanted radioactive atoms get onto an object, it is possible for the radioactive particles to get inside the body.

Protective clothing should be worn when handling radioactive material.

Alpha radiation is more dangerous inside the body. It is highly ionising and able to cause a lot of damage. Outside the body it is less dangerous because it cannot penetrate the skin.

Beta radiation is less dangerous inside the body as some of the radiation is able to escape. Outside the body it is more dangerous as it can penetrate the skin.

Gamma radiation is the least dangerous inside the body as most will pass out and it is the least ionising. Gamma is more dangerous outside the body as it can penetrate the skin.

$$^{14}_{6}\text{carbon} \longrightarrow {}^{14}_{7}\text{nitrogen} + {}^{0}_{-1}\text{e}$$

$$^{219}_{86}\text{radon} \longrightarrow {}^{215}_{84}\text{polonium} + {}^{4}_{2}\text{He}$$

Key terms

Make sure you can write a definition for these key terms.

abundance *atom* *atomic number* *aqueous* *compound* *electron* *element* *energy level* *isotope* *neutron* *nucleus* *orbit* *product* *proton* *reactant* *relative atomic mass* *relative charge* *relative mass* *shell*

Year 9 and 10 Knowledge Goals: Science (Atomic Structure)

Tier 3 Vocabulary		
	Key word	Definition
	atom	The smallest possible piece of an element.
1	element	A substance in which all the atoms have the same atomic number.
2	isotope	Atoms with the same number of protons but a different number of neutrons.
3	nucleus	The centre of an atom. Contains protons and neutrons.
4	unstable	The ability for a nucleus decay.
5	radioactive decay	The random process of radiation being released by a nucleus. A different element is formed.
6	nuclear radiation	The energy and particles released when an unstable nucleus decays.
7	activity	How quickly a radioactive sample decays.
8	Becquerel	The unit of activity.
9	Geiger-Muller tube	A device to measure the count rate of a radioactive source.
10	count rate	The number of radioactive decays per second.
11	ionising power	How well it knocks off electrons and damages cells.
12	half life	The time it takes half of a group of radioactive nuclei to decay.

Notes

Year 9 and 10 Knowledge Goals: Science (Bioenergetics)

Photosynthesis

Photosynthesis is a chemical reaction which takes place in plants. It converts **carbon dioxide** and **water** into **glucose** and **oxygen**. It uses **light** energy to power the chemical reaction, which is absorbed by the green pigment **chlorophyll**. This means that photosynthesis is an example of an **endothermic** reaction. The whole reaction takes place inside the **chloroplasts** which are small organelles found in plant cells.

Plants acquire the carbon dioxide via diffusion through the **stomata** of their leaves. The water is absorbed from the soil through the **roots** and transported to the cells carrying out photosynthesis, via the **xylem**.

The glucose made in photosynthesis is used for respiration, stored as starch, fat or oils, used to produce cellulose or used to produce amino acids for protein synthesis.

The Rate of Photosynthesis and Limiting Factors

A **limiting factor** is something which stops the photosynthesis reaction from occurring at a faster rate. **Temperature**, **light intensity** and **carbon dioxide** level are all limiting factors.

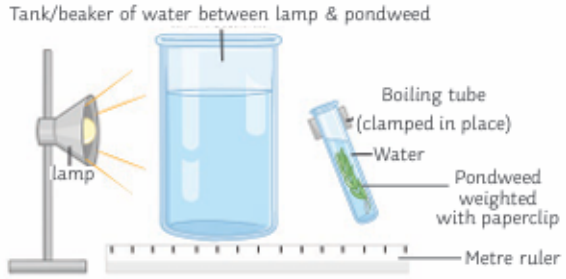
Increasing the temperature of the surroundings will increase the rate of reaction, but only up to around 45°C. At around this temperature, the enzymes which catalyse the reaction become denatured.

Increasing the light intensity will increase the rate of reaction because there is more energy to carry out more reactions.

Increasing the carbon dioxide concentration will also increase the rate of reaction because there are more reactants available.

The Effect of Light Intensity on the Rate of Photosynthesis (RPI)

The amount of light a plant receives affects the rate of photosynthesis. If a plant receives lots of light, lots of photosynthesis will occur. If there is very little or no light, photosynthesis will stop.



Method

1. Measure 20cm^3 of sodium hydrogen carbonate solution and pour into a boiling tube.
2. Collect a 10cm piece of pondweed and gently attach a paper clip to one end.
3. Clamp the boiling tube, ensuring you will be able to shine light onto the pondweed.
4. Place a metre rule next to the clamp stand.
5. Place the lamp 10cm away from the pondweed.
6. Wait two minutes, until the pondweed has started to produce bubbles.
7. Using the stopwatch, count the number of bubbles produced in a minute.
8. Repeat stages 5 to 7, moving the lamp 10cm further away from the pondweed each time until you have five different distances.
9. Now repeat the experiment twice more to ensure you have three readings for each distance.

The **independent** variable was the light intensity.

The **dependent** variable was the amount of bubbles produced. Counting the bubbles is a common method, but you could use a gas syringe instead to more accurately measure the volume of oxygen produced.

The **control** variables were same amount of time and same amount of pondweed. A bench lamp is used to control the light intensity and the water in the test tube containing the pondweed is monitored with a thermometer to check and control the temperature.

Respiration

Respiration is the chemical reaction which occurs inside the **mitochondria** of all living cells to release energy for living functions and processes, e.g. movement, warmth and building larger molecules for growth and repair. The reaction is **exothermic**, meaning that energy is released to the surroundings.

Respiration can be either **aerobic** (using oxygen) or **anaerobic** (without using oxygen).

glucose + oxygen → carbon dioxide + water + energy

$$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O + ATP$$

In anaerobic respiration, the glucose is not completely oxidised. This means that there is less energy released than in aerobic respiration.

glucose → lactic acid + energy

$$C_6H_{12}O_6 \rightarrow 2C_3H_6O_3 + ATP$$

In plants and yeast, anaerobic respiration makes some different products. The reaction is also called fermentation and is used in bread-making and beer-brewing.

glucose → ethanol + carbon dioxide + energy

$$C_6H_{12}O_6 \rightarrow C_2H_5OH + CO_2 + ATP$$

Aerobic Respiration:

glucose + oxygen → carbon dioxide + water + energy

Photosynthesis:

carbon dioxide + water → glucose + oxygen

chlorophyll – green pigment

Year 9 and 10 Knowledge Goals: Science (Quantitative Chemistry)

The **relative atomic mass** (ram or Ar) is the average mass of the atoms of an element compared to carbon-12. (The average mass takes into account the abundance of the naturally occurring isotopes.)

The **relative formula mass** (rfm or Mr) of a molecule is the total of the relative atomic masses added up as shown in the formula of the substance.

The law of **Conservation of mass** states that no atoms are destroyed or created during a chemical reaction hence the mass of the products is equal to the mass of the reactants.
$2Na + Cl_2 \rightarrow 2NaCl$ There are 2 sodium atoms and 2 chorine atoms on either side of the equation.
Sum of rfm on LHS of equation
$2 \times Mr\ Na + 2 \times Mr\ Cl_2 = (2 \times 23) + (2 \times 71) = 117$
Sum of rfm on RHS of equation
$2 \times Mr\ NaCl = (2 \times 58.5) = 117$
So the total Mr on the LHS is equal to the Mr on the RHS hence mass is conserved.

Some reactions may appear to show that there has been a loss in mass, but this can because one of the products was a **gas** and escaped into the surroundings.
e.g., $Mg_{(s)} + 2HCl_{(aq)} \rightarrow MgCl_{2(aq)} + H_{2(g)}$

In a balanced chemical equation, the sum of the rfm of the reactants is equal to the sum of the rfm of the products. Mass is conserved.

The **mole** is the name given to an amount of substance. The symbol for the unit mole is **mol**.

One **mole** of a substance contains the same number of particles/atoms/molecules/ions as one mole of any other substance. This number is 6.023×10^{23} and is known as the **Avagadro** constant.
1 mole of carbon atoms will contain 6.023×10^{23} atoms
1 mole of iron atoms will contain 6.023×10^{23} atoms
1 mole of carbon dioxide molecules will contain 6.023×10^{23} molecules
1 mole of potassium ions will contain 6.023×10^{23} ions.

Chemical equations can be interpreted in terms of moles
$2Na + Cl_2 \rightarrow 2NaCl$
2 moles of sodium react with one mole of chlorine to produce one mole of sodium chloride.

Reactions stop when one reactant has been used up.

The reagent that is **in excess** is a chemical that has not been used up at the end of a chemical reaction.

A **limiting reagent** is the reagent that got completely used up (hence it limits the amount of product that can be made.)

One of the reagents is always added **in excess** to ensure that the other reactant is completely used up.

The concentration of a solution is the amount of a particular substance dissolved within a particular volume of solution. It's measured in g/dm^3 or mol/dm^3

Volumes are often given in cm^3 but the units of concentration require conversion of cm^3 to dm^3. To **convert cm^3 to dm^3 we divide by 1000**.

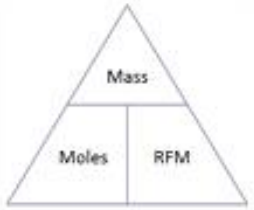
To convert **g/dm^3 into mol/dm^3** we **divide by rfm**.

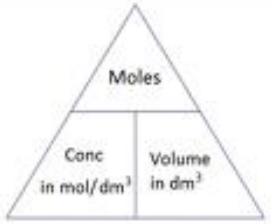
Titrations are experiments where you measure accurately the volumes of two solutions that react together completely. If you know the concentration of one of the solutions, you can then calculate the concentration of the other solution.

Volumetric flasks are used to make up solutions of **known concentration**. Water is added to a solute until it's dissolved. The flask has a graduation mark and the water is then filled up to this mark by looking at the bottom of the meniscus.

As you know the mass of solute and then volume of water added, you can work our its concentration

Quantitative chemistry knowledge organiser





A **more concentrated** solution has more solute in the same volume of solution than a less concentrated solution.

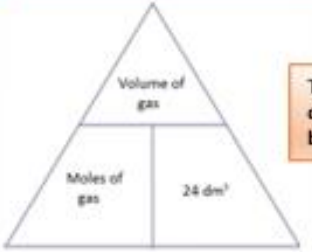
A pipette is used to measure out a precise volume of solution.

The burette is used to measure the volume of solution added. It is more accurate than a measuring cylinder but less accurate than a pipette.

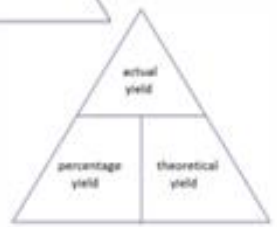
Steps required to complete an acid alkali titration:
- Measure a known volume of alkali into a conical flask using a pipette.
- add an indicator, phenolphthalein to sodium hydroxide in a conical flask.
- add the acid from the burette and swirl.
- add acid dropwise towards the end point until the indicator just changes colour.
- the indicator changes colour from pink to colourless.
- Repeat the process at least three times until you get two results within $0.1cm^3$ of each other.

A certain volume of gas **always** contains the **same number** of gas particles under the same conditions.

The volume of a 1 mole of any gas occupies 24 dm^3 (or 24000 cm^3) at RTP (room temp and pressure.)



To convert **dm^3 to cm^3 we multiply by 1000**.



Pipette Burette

Titrations are usually used to measure accurately the exact volume of acid and alkali that will react together .

The **end point** is the point at which the acid and alkali have reacted completely. This is judged by a **change in colour of the indicator**.

Atom economy is a measure of the amount of starting materials that end up as **useful products.**

Maximising atom economy in industry will conserve the world's resources and reduce pollution.

In reality reactions do not go to completion, this is because:
Not all the reactants reacted.
Some of the product was lost during purification
Some by-products might have formed.

The amount of product that can form in theory is known as the **theoretical yield**.
The amount of product formed is known as the **actual yield**.

The percentage yield of a chemical tells us how much product was made compared with the maximum amount that could have been made.

Year 9 and 10 Knowledge Goals: Science (Quantitative Chemistry)

Conservation of Mass

No atoms can be created or made during a chemical reaction, so the mass of the reactants will equal the mass of the product.

Reactions can be shown as a word or symbol equation.

magnesium + oxygen → magnesium oxide

Mg + O → MgO

Symbol equations should also be balanced; they should have the same number of atoms on each side.

$2Mg + O_2 \rightarrow 2MgO$

Relative Formula Mass

The relative formulas mass is the sum of all the relative atomic masses of the atoms in the formula.

Examples:

HCl

A_r of H = 1

A_r of Cl = 35.5

1 + 35.5 = 36.5

H_2SO_4

A_r of H = 1

A_r of S = 32

A_r of O = 16

(1 × 2) + 32 + (16 × 4)

2 + 32 + 64 = 98

Calculating Percentage Mass of an Element in a Compound

percentage mass of an element in a compound =

$$A_r \times \frac{\text{number of atoms of that element}}{M_r \text{ of the compound}}$$

Find the percentage mass of magnesium in magnesium oxide.

A_r of magnesium = 24 A_r of oxygen = 16

M_r of MgO = 24 + 16

= 40

$$\% \text{ mass} = \frac{A_r}{M_r} = \frac{16}{40} = 0.4 \qquad 0.4 \times 100 = 40\%$$

Concentration of Solutions

Concentration is the amount of a substance in a specific volume of a solution. The more substance that is dissolved, then the more concentrated the solution is.

It is possible to calculate the concentration of a solution with the following equation:

concentration (g/dm^3) = mass (g) ÷ volume of solvent (dm^3)

The equation can be rearranged to find the mass of the dissolved substance:

mass (g) = concentration (g/dm^3) × volume (dm^3)

Conservation of Mass

Show that mass is conserved in a reaction.

$2Mg + O_2 \rightarrow 2MgO$

$(2 \times 24) + (2 \times 16) \rightarrow 2(24 + 16)$

$48 + 32 \rightarrow 2 \times 40$

$80 \rightarrow 80$

Total M_r on the left-hand side of the equation is the same as the M_r on the right-hand side.

Calculate the mass of the product.

8g of magnesium reacts with 6g of oxygen:

8 + 6 = 14g of magnesium oxide

During a reaction the mass can change. If one of the reactants is a gas, the mass can go up.

E.g.

magnesium + oxygen → magnesium oxide

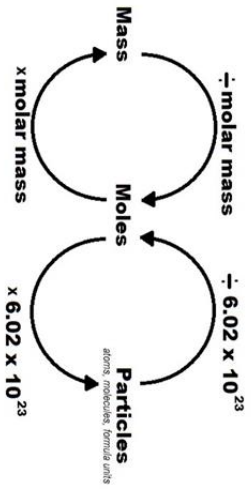
Oxygen from the air is added to the magnesium (making the product) which will be heavier in mass.

If one of the products is a gas, the mass can go down.

E.g.

sodium carbonate → sodium oxide + carbon dioxide

When sodium carbonate is thermally decomposed, carbon dioxide gas is produced and released into the atmosphere.



2. Moles (HT ONLY)	
Mole	The number of particles needed to make the mass equal the atomic mass
Avogadro constant	6.022x10^{23} particles in 1 mole

Year 9 and 10 Knowledge Goals: Nutrition and Sports performance

Key information

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

Factors that can impact a nutrition plan:
- Allergies
- Cultural Beliefs
- Age Range
- Food Budget
- Cooking Skill
- Activity Levels

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

The Negative Effects of Undereating Include:

- Drop in weight
- Reduced energy levels
- Reduced concentration

Effects of Overeating:

- Speed
- Flexibility
- Agility
- Stamina

These components of fitness will all decrease/worsen as a result of additional fat intake (resulting in weight gain)

TOPIC AREA 4

Dehydration can result in...
- Headaches
- Nausea
- Cramp
- Heat stroke
- Decision Making
- Concentration

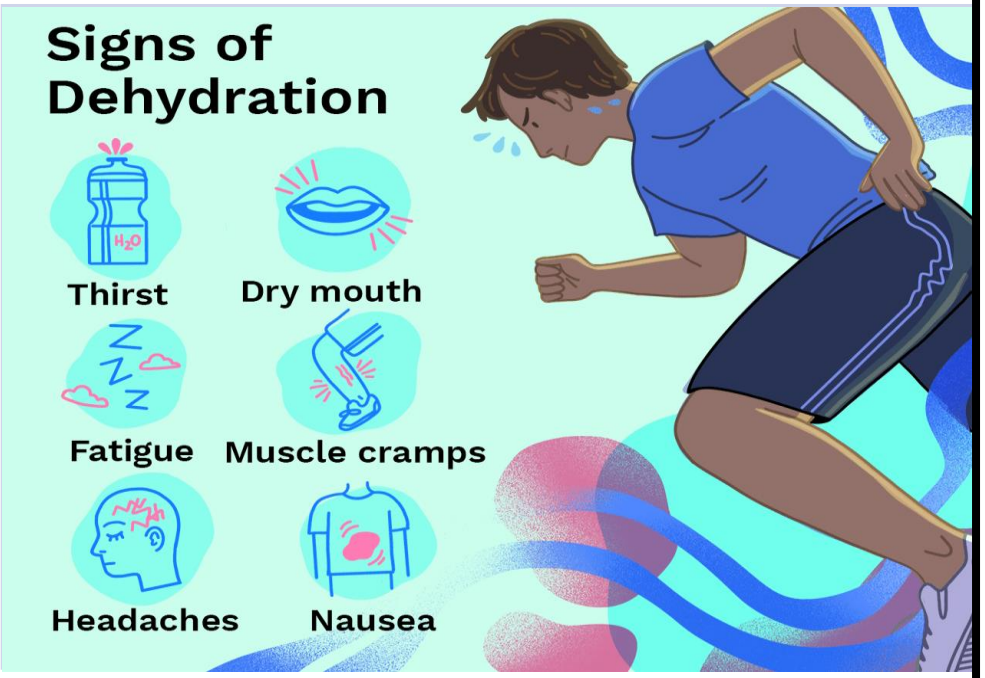
In some sports dehydration is sometimes used as a tool to lose weight very quickly.

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.

Topic area 3 & 4: The effects of dehydration.



Year 9 and 10 Knowledge Goals: Nutrition and Sports performance

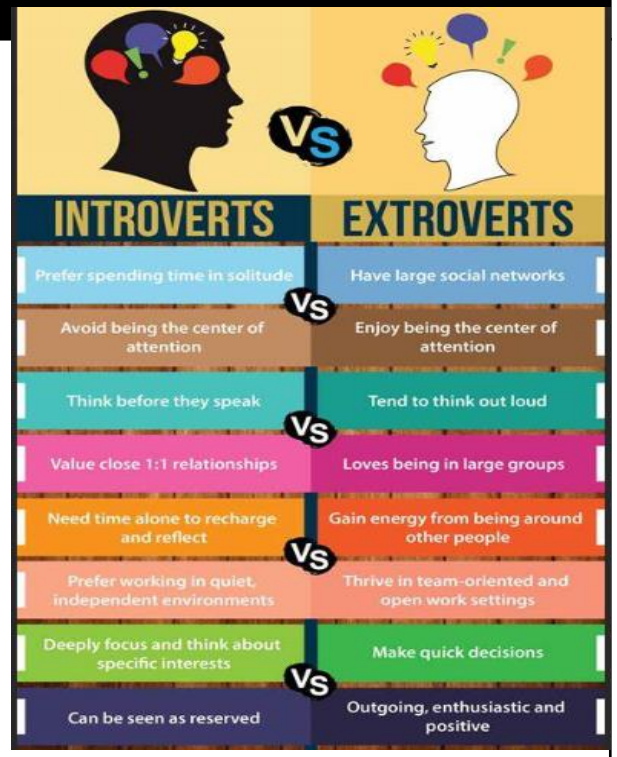
Tier 3 Vocabulary		
	Key word	Definition
1	calories	Unit of energy in food.
2	balance energy	When the amount of energy consumed equals the amount needed.
3	positive energy balance	When the amount of energy consumed is greater than needed.
4	negative energy balance	When the amount of energy consumed is less than needed.
5	BMR	-Basal metabolic rate- How quickly the body is using energy.
6	macronutrients	The foods which you need in large amounts – Carbohydrates, Protein and Fat.
7	nutrients	The substances in food needed for the body to function.
8	rehydration	Replacing lose fluids.
9	eat well guide	A guidance to a balance, healthier diet showing the different food groups.
10	glycogen	Storage from glucose found in the muscle and liver.
11	nutrition plan	A plan which obtained the correct quantities of nutrition's to need the individual needs of the performer.

Notes

Year 10 Knowledge Goals: Sport Science (Psychology)

Key information

LO1-Understand the relationship between personality and sports performance.



LO2- Know how motivation can affect sports performance.

LO1-Understand the relationship between personality and sports performance.

The difference between introverts and extroverts.	Personality types and links to sports.	Personalities in sport.

LO2- Know how motivation can affect sports performance.

Motivation in sports.	Motivational sports speech.	Motivation and sports psychology.

Year 9 Knowledge Goals: Sport Science (Psychology)

Tier 3 Vocabulary		
	Key word	Definition
1	sports psychology	Is the study of how psychological factors influence sports, athletic performance, exercise, and physical activity.
2	personality	The unique characteristics of a person that distinguish them from other people.
3	introverts	Personality types of shyness and require low arousal levels.
4	extroverts	Personality types of talkative, prone too boredom and sociable.
5	social learning theory	Suggest we develop our personalities by watching and copying others.
6	the trait approach	Theory that suggests we inherit are personalities from our parents.
7	motivation	The drive and desire to take part in physical activity.
8	intrinsic motivation	Comes from within a performer; EG the pride gained from beating your personal bests.
9	extrinsic motivation	The drive for the performer to gain an award; EG winning a medal in a football tournament,.
10	achievement motivation	Refers to a performers approach to sporting situations and competitions.
11	NACH (Need to achieve)-	Personality type that wants to win, accept challenges and competition.
12	NAF (Need to avoid failure)	Personality that is afraid of losing, failing and often avoids competitive.

Notes

Tier 2 Vocabulary

Tier 2 words are powerful words that help you understand what you're reading and make your writing even stronger. They're not as simple as everyday words like *big* or *cat*, but they're also not as tricky or technical as words like *photosynthesis* or *hypothesis*. Instead, Tier 2 words are words like *analyse*, *compare*, *evaluate*, and *complex*—words that pop up in lots of subjects, from reading and writing to science and history.

These words are important because they give you a better understanding of what's being asked in questions, books, and even instructions from your teachers. Knowing what a word like *analyse* means can help you break down a problem or figure out exactly what to do when you're given a task.

Think of Tier 2 words as "power words" that make it easier for you to understand and explain things. When you know more Tier 2 words, you can think more clearly, talk more confidently, and express yourself better in your schoolwork and beyond. Plus, they'll come in handy throughout your life as you keep learning and working toward your goals. So, the more Tier 2 words you learn and use, the stronger your language and learning skills become!

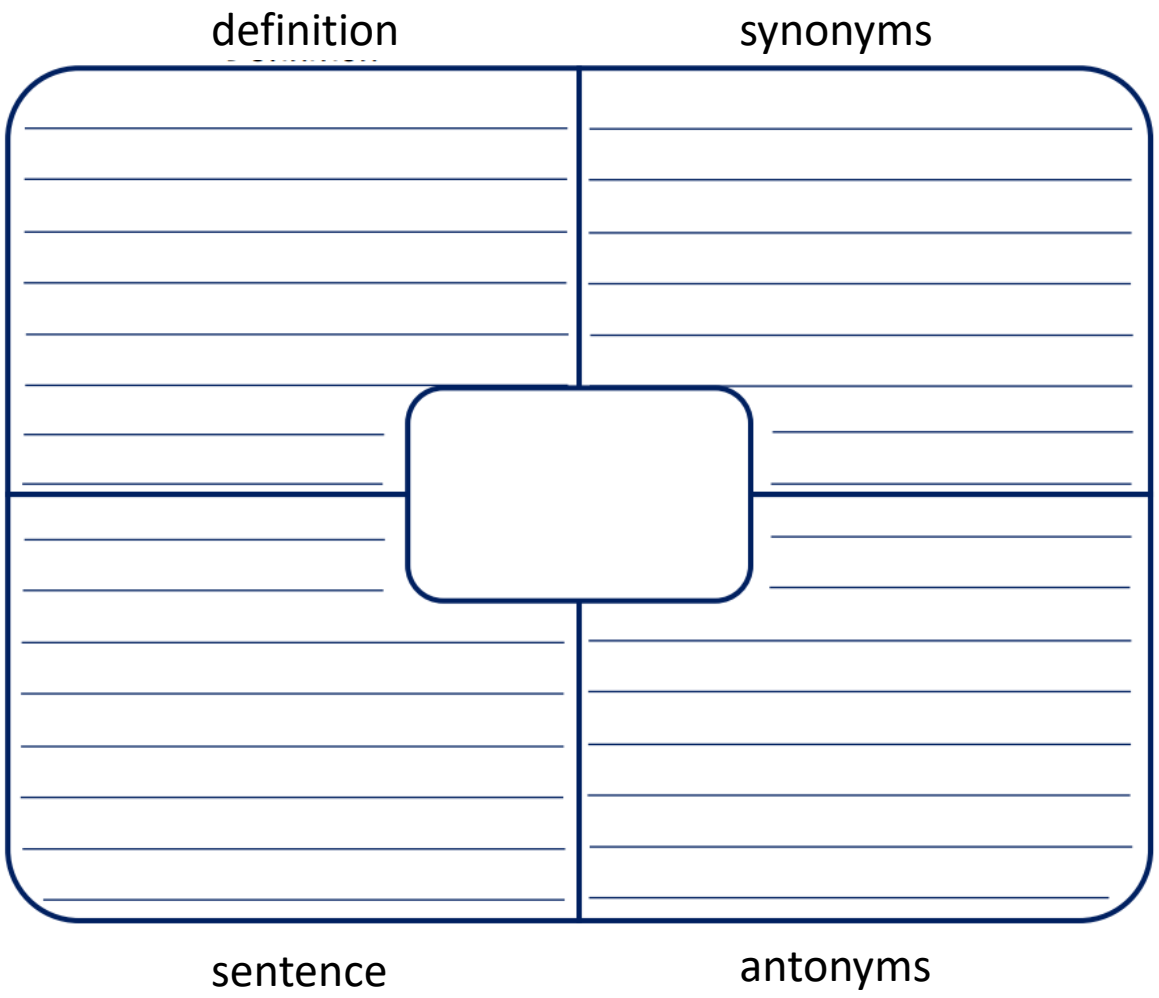
Tier 2 Vocabulary

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

Literacy: Tier 2 Vocabulary – Frayer Model



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: Interact

definition

synonyms

interact

sentence

antonyms

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

Scan to view thesaurus

click to view thesaurus

Frayer Model: Jaunt

definition

synonyms

jaunt

sentence

antonyms

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

Scan to view thesaurus

click to view thesaurus

Frayer Model: Liberate

definition

synonyms

liberate

sentence

antonyms

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

Scan to view thesaurus

click to view thesaurus

Frayer Model: Partition

definition

synonyms

partition

sentence

antonyms

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

Scan to view thesaurus

click to view thesaurus

Frayer Model: Raucous

definition

synonyms

raucous

sentence

antonyms

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

Scan to view thesaurus

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