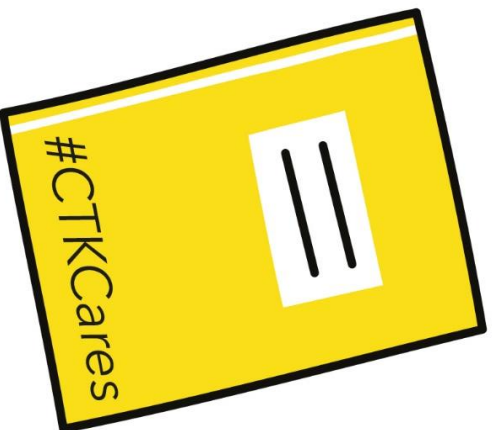




CHRIST THE KING **KNOWLEDGE ORGANISER**

YEAR 8 ADVENT (Term 1)





Why should I self-quiz?

Your mind is split into two parts: the working memory, and the long-term memory. Everybody's working memory is limited, and therefore it can be very easily overwhelmed. Your long-term memory on the other than is effectively limitless.

You can support your working memory by storing key facts and processes in long term memory. These facts and processes can be retrieved to stop your working memory becoming overloaded.

This booklet contains knowledge organisers for each of your subjects. Each organiser has the key information that needs to be memorised to help you master the subject and be successful in lessons.

How often should I self quiz?

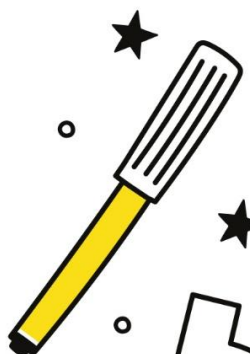
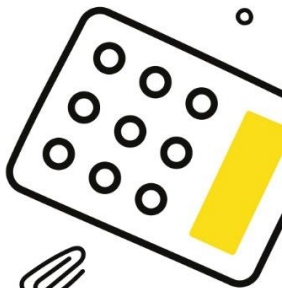
Research shows that regular self-testing improves knowledge retention; in order to learn the information in your knowledge organiser, you will need to work with it more than once! There are many ways to learn the material in your knowledge organiser.

How to use your Knowledge Organiser

- **Cover - Write - Check:** Cover up one section of the knowledge organiser and try to write out as much as you can from memory. Check the knowledge organiser to see if you are right; correct any mistakes and fill in any missing information in a different coloured pen.
- Repeat this process at least twice to fill your page. You could also include content from the previous week's homework, especially if there were some parts that you struggled with.
- **Draw a mind map:** Jot down everything that you can remember from the knowledge organiser. Check accuracy, correct in a different coloured pen and repeat.
- **Revision Clock:** Draw a clock and add the topic in the middle. Break the clock face into 10-minute sections. Add notes from the knowledge organiser in each section. Cover the clock and recite the information aloud.
- **Create Flashcards:** Use the information from your knowledge organiser to create flashcards - these could be double sided, with a question on one side and the answer on another, or a keyword on one side and the definition on the other.

DID YOU KNOW?

Research shows a student remembers 50% more when they test themselves after learning something.



Homework Schedule

You should complete at least one hour of Home Learning per school day.

This will consist of:

- o Knowledge Organiser and Online Learning as directed by your teachers.
- o If you have no tasks set, carry out Knowledge Organiser activities as per the Knowledge Organiser timetable below.
- o Two periods of 20 minute reading each week.

Week 1					
20 Minutes Per Subject	Monday	Tuesday	Wednesday	Thursday	Friday
Subject 1	English	Science	Maths (Mymaths)	Maths	English
Subject 2	RE	PE	RE	Science	Geography
Subject 3	Music	History	Technology / IT	MFL	Art

Week 2					
20 Minutes Per Subject	Monday	Tuesday	Wednesday	Thursday	Friday
Subject 1	Science	English	English	Maths (MyMaths)	Science
Subject 2	RE	Maths	RE	Drama	Geography
Subject 3	Music (Practical)	History	Technology / IT	MFL	Art (Practical)

Read 20 minutes a day and you'll read 1,800,000 words per year.

Reading for 6 minutes a day reduces stress by 68%.

Children learn 4,000 to 12,000 words per year through reading,



What are the homework expectations?

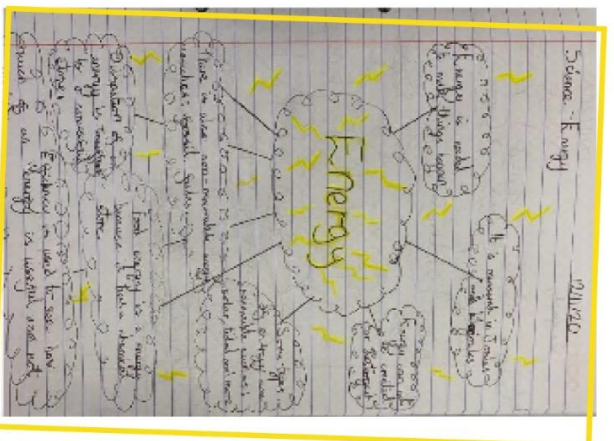
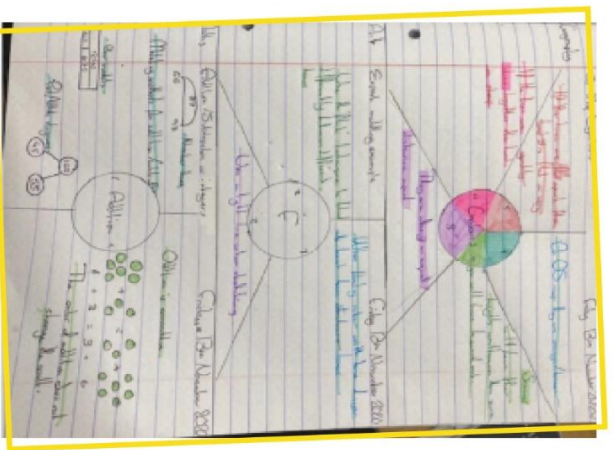
Each homework must meet the following 5 requirements:

- Write the complete title and date in full e.g Wednesday 7th June 2023 on each page and underline.
- You should include minimum of words to summarise the topic. Do not copy the words from the text.
- Make full use of the page for each topic by scaling your notes and images appropriately to use all the space.
- You must include diagrams, sketches, or cartoon doodles to visually represent the topic, try to use humour.
- Highlight key words and phrases, using underlines and highlighter pens, and explain technical terms.

How should I present my work?

Please remember that the same rules apply to the presentation of your homework as applies for your class work: **dates and titles** (which should be the name of the subject) **need to be underlined with a ruler** and you should **present your work as neatly as you are able to**.

If you are self-quizzing correctly, there should be **evidence of green pen on your page**. Here are some examples of how to set out your work:



**DON'T
FORGET!**

Always record
the date, topic,
and page
number in
your Home
Learning
Book!

Portraits

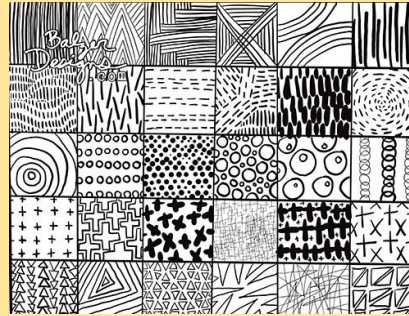
A **portrait** is a painting, photograph, sculpture, or other artistic representation of a person, in which the face and its expression is predominant. The intent is to display the likeness, personality, and even the mood of the person. A self portrait is an observational piece of art based on yourself. A portrait is an observational piece of art based on someone else.

Portrait Keywords

1. Proportion	The size of something compared to something else.
2. Symmetry	When on side of an object mirrors another
3. Form	a three dimensional shape
4. Tone	the quality of brightness, depth or hue of a colour
5. Texture	the way surfaces look and feel, i.e. rough, smooth, soft, etc
6. Line	a one dimensional path, can vary in width, length, curvature, colour or direction
7. Surreal	unrealistic, dreamlike, nothing you would see in real life.
8. Realistic	a true representation of a person, place or object. Looks just like the real thing.
9. Animated	this refers to art that isn't realistic in terms of everyday life but is representative of it, for example children's cartoon animations on TV or pop art.
10. Abstract	Lines, shapes and are used to represent or suggest something else
11. Facial features	yes, nose, mouth, lips, eyebrows, freckles etc
12. Composition	Where you place objects on a page
13. 3D	Appearing to have length, depth and width
14. Accuracy	The extent of which a piece of work looks like another
15. Control	How carefully you work with a specific media

Mark making

is a term used to describe the different lines, patterns, and textures we create in a piece of art – this can help to create an abstract piece of art.



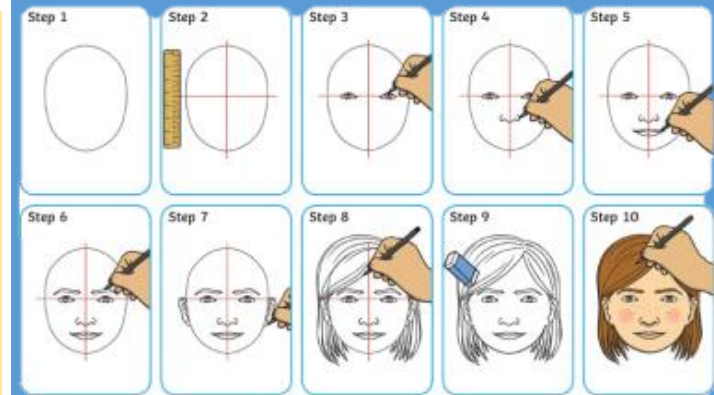
Artist Profile

Frank Shepard Fairey (February 15, 1970 -), Charleston, South Carolina

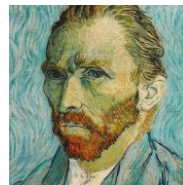
1. An American contemporary street artist, graphic designer, activist and illustrator
2. Founder of OBEY Clothing
3. He first became known for his "Andre the Giant Has a Posse"
4. Fairey became widely known during the 2008 U.S. presidential election for his Barack Obama "Hope" poster.
5. **Fairey's** methods of production and use of imagery to make work which might be defined as **propaganda art**
6. Fairey is a dedicated political and environmental activist and many of his works advocate for awareness and change across a wide spectrum of areas from gun control to climate change.
7. Fairey often fuses appropriated commercial images, in the manner of Pop Art, with strong geometric lines and shapes which are reminiscent of Russian Constructivism.



Proportions and accuracy



Remember to look closely at your features in a mirror and think about the shapes you draw



Vincent van Gogh (30 March 1853 – 29 July 1890) was a Dutch post-impressionist painter. His work had a great influence on modern art because of its striking colours and emotional power. He suffered from anxiety and fits of mental illness and famously cut off his ear lobe. During a 10 year painting career, he produced over 1000 pieces of work. Although he only sold one painting in his life time, his work is now extremely valuable and popular sells for millions.



Frida Kahlo (6th July 1907 – 13th July 1954) Born in Mexico City, Mexico. Frida became one of the most celebrated female artists of recent decades. Her paintings were inspired by nature and artifacts from Mexico and she developed a symbolic style which is said by some to be 'Surreal'. Frida suffered from polio as a child. Whilst recovering, she focused on developing her love of painting. Many of her works are about her life experiences and her battle to overcome the obstacles she faced in her life.

WHAT AM
I DOING
WELLWHAT DO I
NEED TO DO
TO IMPROVEHOW AM I
COMMUNICATING
MEANINGYEAR 8
SILENT FILM

characterisation

The act of changing [physicality] when in role

Why are clear characters important in mime?

What are the challenges in achieving this?

Why do they need to have clear relationships
with the other characters?What are the physical
characteristics of...*The heroine? The hero? The villain?*

Physical skills

STANCE

The way a person stands.

GAIT

The way your character walks-
do they have a narrow gait or a
wide gait?

POSTURE

The position in which someone
holds their body when they sit or
stand- can give us clues to their
personality.

GESTURES

Using your hands (or sometimes
eyes and head) to communicate
meaning with other characters
and the audience e.g.
pointing/winking.

BODY LANGUAGE

Showing emotion through the
way you sit, stand or position
yourself.

FACIAL EXPRESSION

Showing emotion through your
face- eyes, mouth, eyebrows...

Rules of mime

STAY SILENT

Communicate meaning with your
physical, not vocal skills.

OVER EXAGGERATION

All of your movements must be
increased and enlarged- for
clarity and for comedy.

SIZE

When miming an object or piece
of set, it's important that it stays
the same size every time you
interact with it.

WEIGHT

Make sure you show the weight
of any mimed object that you
interact with and that this stays
consistent throughout the
performance.DISAPPEARING
OBJECTSDon't forget where you've 'put'
mimed objects e.g. don't walk
through a table you've mimed!

Homework: Research silent films. Why were they silent? Who were the stars? What were the costumes and story lines like?

Extension: Watch a silent movie online and then write a film review. Consider the physicality of the actors.

WHAT AM
I DOING
WELL ?

WHAT DO I
NEED TO DO
TO IMPROVE ?

WHAT CLUES ARE THERE IN THE
SCRIPT THAT SHOW ME HOW
TO PLAY MY CHARACTER ?

YEAR 8 THE DEMON BARBER

Rehearsal techniques

Tools to help us explore the
script and better
understand our character

C... A... helps us to consider all of the
different emotions a character might
be feeling.



Returns to London seeking
revenge for the loss of his wife
and daughter.

A barber who
was wrongly
sent to
Australia on a
prison ship by
an evil Judge.

Moves in to his old flat
which is above a pork
pie shop.

The pie shop is owned by
Mrs Lovett who is in love
with Mr Todd. They plot
revenge together.

A very charming
man who
manipulates those
around him to get
what he wants.

What you need to know about
SWEENEY TODD

H. S...
allows the
character to be
interrogated
about their
motives and
decisions.

R. O. T. W...
helps us to figure
out what we know about
a character and what we
still need to find out.

Key words CHARACTERISATION

Using a range of physical and
vocal skills to show a character
who is different to you.

BACKGROUND

Your character's past life
experiences- where they come
from, their upbringing, how they
have been treated.

REHEARSAL

Working together in a group to
practice a part of the script and
share ideas about how it should
be performed.

ACCENT

The way a person speaks- can
show where they are from and
sometimes class or status.

tone

The emotion behind what your
character says e.g. an angry
tone, a surprised tone.

FACIAL EXPRESSION

Showing emotion through your
face- eyes, mouth, eyebrows...

PACE

The speed at which your
character speaks or moves.

STANCE

The way a person stands.

GAIT

The way your character walks-
do they have a narrow gait or a
wide gait?

POSTURE

The position in which someone
holds their body when they sit or
stand- can give us clues to their
personality.

GESTURES

Using your hands (or sometimes
eyes and head) to communicate
meaning with other characters
and the audience e.g.
pointing/winking.

PITCH

How high or low your character's
voice is.

BODY LANGUAGE

Showing emotion through the
way you sit, stand or position
yourself.

Homework: Research Victorian London. What was life like for ordinary people? Why might Sweeney be so angry?

Extension: Design the set for a production of The Demon Barber. Think about how you will create the trap door.

Y8 Reading Fiction/Non Fiction

Connectives you can use for comparison

Similarly...	Whereas...
In contrast...	In the same way...
Likewise...	Alternatively...
However...	As with...
Equally...	On the other hand...

Key terms:

Fiction – literature exploring imaginary events and/or people

Non fiction – based on facts and real life events e.g newspaper

Compare – state the similarities and differences between 2 texts

Summarise – state the key points of what is written

Evaluate – offer your own critical opinion

1	adjective	word that gives more information about a noun
2	adverb	word that gives more information about a verb
3	alliteration	repetition of the same first letter
4	anecdote	when a writer uses an incident from his or her personal experience to make a point, or entertain the reader
5	comparatives	adjective that compares the quality of something
6	Connotation	the association that a particular image / colour / word has
7	emotive language/ imagery	language or imagery that promotes an emotional reaction
8	exaggeration/ hyperbole	deliberately over-estimating for effect
9	formal language	language used in formal situations where the speaker / writer wishes to create a good impression
10	informal language	language that uses colloquialisms (everyday sayings) or slang and so suits informal situations

1	perspective	A story can be told from the first, second or third person point of view (or perspective).
2	repetition	used to emphasise / reinforce a point
3	rhetorical question	a question that is asked to draw attention to a particular point, rather than a genuine request for information
4	sarcasm	language designed to insult or taunt
5	appeal to senses	language or imagery connected to hearing/smell/taste/sight/touch
6	sentence length	A variety of sentence lengths can be used for effect: e.g short sentences to create tension; long sentences to give detail
7	simile	a comparison introduced by 'like' or 'as'
8	superlative	adjective that expresses the highest quality or degree
9	triplet	using three different qualities to reinforce or stress a point
10	verbs	simply described as 'doing words', however many verbs identify states or feelings rather than actions and can be very emotive/effective

How to write about texts:

P oint	The character is presented as ... The writer makes us think that... The language of the text is used to... The structure of the text is used to... Similarly/On the other hand the writer suggests that ... The technique of...is used to.... The writer shows us that... One way in which (use the key words from the question) is...
E vidence	For example, One quote to show this is... In the line '.....' In the text it says '.....' This is indicated in the line '....' Such as... For instance... This is shown in the quotation...
T echnique	This is an example of a.... The technique is used to... By using the technique... Bu using the writer shows that... The use of the feature is.... An example of a ...
E ffect	This suggests/shows/implies/connotes/indicates... The effect on the reader is... This is used to show that... The connotations of this are...
R elate back to the question	(Use keywords from the question) Therefore it can be seen that... Overall, the writer is... (relate back to the question and your ideas on this) Relate to why the writer wrote the text, what they are trying to convey) The author's intention was to...

Key language devices used by writers:

1	irony	the humorous or sarcastic use of words to imply the opposite of what is being said
2	metaphor	a description of something as though it were something else
3	noun (abstract)	an abstract noun is something that you cannot touch, e.g. emotions like joy or fear
4	noun (concrete)	a concrete noun is something that you can touch, e.g. a table or chair
5	noun (proper)	Nouns that are given capitals identify particular places, things, people or events
6	onomatopoeia	a word that sounds like what it describes
7	opinion	a point of view that cannot be proved to be true or untrue
8	paragraph	Paragraphs are used to sequence and organise the ideas, setting, timeframe etc. of a text. The topic sentence is particularly important for signposting the main idea in the paragraph
9	personal pronoun	direct address to the reader, e.g. 'you'
10	personification	when an object is given human characteristic

Key Context

- | | |
|---|--|
| 1 | John Steinbeck was born in Salinas, California in 1902. Although his family was wealthy, he was interested in the lives of the farm labourers and spent time working with them. He used his experiences as material for his writing. |
| 2 | On October 29 1929, millions of dollars were wiped out in the Wall Street Crash. It led to the People losing their life savings and a third of America's population became unemployed. |
| 3 | A series of droughts in southern mid-western states like Kansas, Oklahoma and Texas led to failed harvests and dried-up land. Farmers were forced to move off their land: they could not repay the bank-loans which had helped buy the farms and had to sell what they owned to pay their debts. |
| 4 | Racism/sexism were common, especially in Southern states due to economic climate, & history of slavery. |

Characteristics

George	frustrated, devoted, a dreamer
Lennie	childlike, unassuming, physically powerful
Crooks	cynical, proud, isolated
Candy	unloved, an outcast, aging
Curley's Wife	a seductive temptress, objectified, lonely, nameless
Curley	insecure, unmerciful, jealous

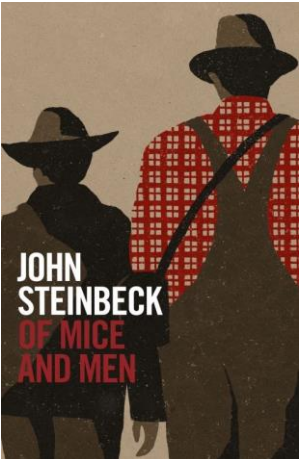


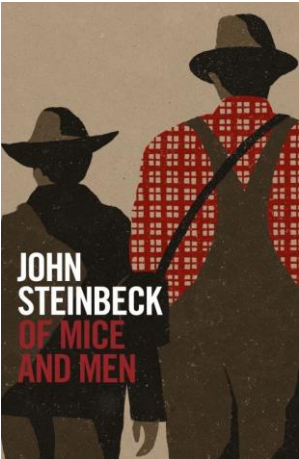
Key Quotations

- | | | |
|---|--------------------|--|
| 1 | George – C1 | “Guys like us...that work on ranches, are the loneliest guys in the world. They got no family. They don’t belong no place...” |
| 2 | Lennie – C1 | “Slowly, like a terrier who doesn’t want to bring a ball to its master, Lennie approached, drew back, approached again.” |
| 3 | Slim – C2 | “Aint many guys travel around together, he mused. I don’t know why. Maybe ever’body in the whole damn world is scared of each other.” |
| 4 | Candy – C3 | “I ought to of shot that dog myself, George. I shouldn’t of ought to let no stranger shoot my dog.” |
| 5 | George – C3 | “We wouldn’t ask nobody if we could. Jus’ say, ‘We’ll go to her,’ an’ we would”. |
| 6 | Crooks – C4 | “Ever’body wants a little piece of lan’. I read plenty of books out here. Nobody never gets to heaven, and nobody gets no land.” |
| 7 | Crooks – C4 | “A guy needs somebody to be near him. He whined, a guy goes nuts if he aint got nobody”. |
| 8 | Curley’s wife – C5 | And the meanness and the plannings and the discontent and the ache fo attention were all gone from her face. She was very pretty and simple, and her face was sweet and young.” Chapter 6 – A silent head and beak lanced down and plucked it out by the head, and the beak swallowed the little snake while its tail waved frantically. |

Key themes and content

- | | |
|---|--|
| 1 | Steinbeck encourages us to empathise with the plight of migrant workers during the Great Depression. |
| 2 | The American Dream is shown to be impossible: reality defeats idealism. |
| 3 | The novella explores the human need for companionship and the tragedy of loneliness. |
| 4 | Steinbeck reveals the predatory nature of mankind: the powerless are targeted by the powerful. |
| 5 | Steinbeck explores the tension between the inevitability of fate and the fragility of human dreams. |
| 6 | Steinbeck explores the contrasts of Nature Vs Man. |

Linking Themes and Context		Key Vocabulary		Definition	Example
1	Steinbeck encourages us to empathise with the plight of migrant workers during the Great Depression.	1	Isolation	The process or fact of isolating or being isolated. (Being alone / apart from others.	Curley's wife felt a sense of isolation as her husband did not like her talking to others on the ranch.
2	The American Dream is shown to be impossible: reality defeats idealism.	2	Loneliness	Sadness because one has no friends or company.	Curley's wife feels a sense of loneliness as she is not allowed to have friends and has no female company on the ranch.
3	The novella explores the human need for companionship and the tragedy of loneliness.	3	Racism	Prejudice, discrimination, or antagonism directed against someone based on the belief that one's own race is superior.	Crooks was subjected to racism. He believed that people didn't listen to him as he was "just a nigger talkin'."
4	Steinbeck reveals the predatory nature of mankind: the powerless are targeted by the powerful.	4	Segregation	The action or state of setting someone or something apart from others.	Crooks feels separated from the other workers. "I ain't wanted in the bunkhouse, and you ain't wanted in my room."
5	Steinbeck explores the tension between the inevitability of fate and the fragility of human dreams	5	Migrant	A person who moves from one place to another in order to find work or better living conditions.	George and Lennie are migrant workers. They move from place to place to find work. Usually, migrants would travel alone.
6	Steinbeck explores the contrasts of Nature Vs Man	6	Cyclical	Occurring in cycles; recurrent.	The structure of OMAM is cyclical. There is a sense of things happening in an order then repeated giving the impression that things are inevitable.
7	The novella is an indictment of the way society treats the dispossessed	7	Hierarchy	A system in which members of an organisation or society are ranked according to relative status or authority.	Curley's father is at the top of the hierarchy as he is the boss of the ranch.
		8	American Dream	The ideal by which equality of opportunity is available to any American, allowing the highest aspirations and goals to be achieved.	George and Lennie's dream of owning a farm and living off the "fatta the lan" symbolizes this dream.
		9	The Great Depression	A long and severe recession in an economy or market.	In October 1929, millions of dollars were wiped out in the Wall Street Crash. This led to the Great Depression, which crippled the country between 1930 and 1936.
		10	The Dust Bowl	An area of land where vegetation has been lost and soil reduced to dust and eroded, especially because of drought or unsuitable farming practice.	The dustbowl was a key reason why workers had to move so regularly due to land being dry and them not being able to farm there.



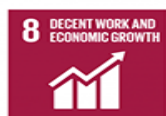
1. Key words	
Development	Economic progress of a country and its improving quality of life
Inequality	Extreme differences in quality of life
Resource	An item with value or purpose e.g. food
Malnutrition	Ill or weak due to too little food
Famine	Extreme shortage of food
Drought	Prolonged period of low rainfall leading to water shortages
Aid	Money, supplies and skills supplied to improve lives.
Contaminated	Infected by poisonous or polluting substance e.g. chemicals or faeces
Sanitation	Clean water, good sewerage and waste disposal
Gender Inequality	Treating people differently because they are male or female
NGO	Non-Governmental Organisation. Charities which raise money to support development and raise awareness of issues.
UN	United Nations. a group of 192 countries set up after WW2 to bring the world together to avoid future conflict.

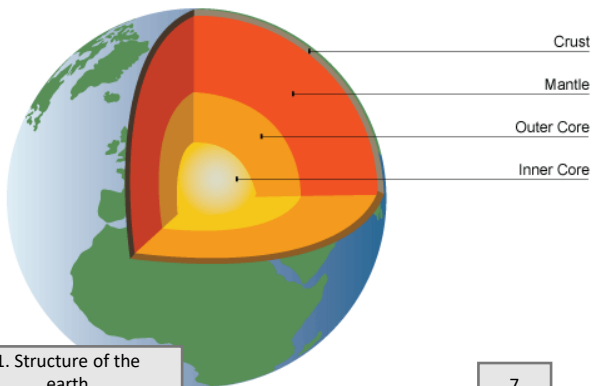
2. Development Indicators	
Birth rate	Number of babies born per 1000 of population
GNI	Gross National Income – the amount of money a country makes in a year
Infant Mortality Rate	The number of children who die before their first birthday per 1000 of population
Life expectancy	How long a person is expected to live
Literacy Rate	The % of the population over 15 years old who can read and write
HDI	Human Development Index – a combination of life expectancy, GNI and education
Per Capita	Per person

3. Causes of inequality	
Landlocked	No access to the sea
Conflict	Ongoing violence between different groups/countries
Access to healthcare	Shortage of hospitals, doctors, nurses, and medical supplies.
Extreme weather	Temperature and rainfall which prevent effective agriculture
Natural Hazards	Disasters such as tropical storms, floods or earthquakes which are large scale and costly.
Access to education	Shortage of schools, teachers and resources
Access to resources	Shortage of water, energy and food.
Colonialism	European countries ruled over countries in Africa, Asia and the Americas.

4. Trade Key Words	
Commodity	A good for sale
Import	A good entering a country from abroad for sale
Export	A good leaving a country to go abroad for sale
TNC (Trans-National Corporation)	A large company with a headquarters in one country (often a HIC) which operates in a number of other countries.
Plantation	A large estate on which crops are grown e.g. cocoa beans, coffee beans, sugar.
Cash crop	Crops grown for sale
Free trade	Trade between countries with no restrictions which favours TNCs and HICs.
Fair trade	Trade of goods which guarantees a fair price for farmers and investment in their local community improving education, healthcare and their environment.

5. Types of aid	
Top-down aid	A government decides how to invest aid in their country
Bottom-up aid	Local populations decide on and run smaller-scale aid projects
Short-term emergency aid	Aid to recover from a disaster e.g. earthquake
Long-term development aid	Aid to improve development indicators within a place over a number of years





1. Structure of the earth

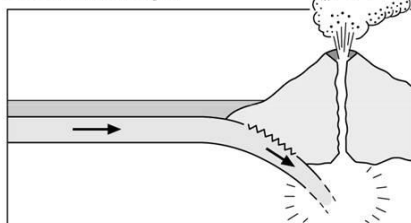
2. Plate tectonic theory key words

Plate	A large rigid section of the earth's surface
Plate Margin	The boundary of two plates
Tectonic	The structure of the earth and processes within.
Continental Drift	Gradual movement of continents across time
Convection	Movement in a fluid of rising less dense heat and sinking denser cooler liquid.
Subduction	Denser oceanic plate sinks below less dense continental plate at a destructive margin.

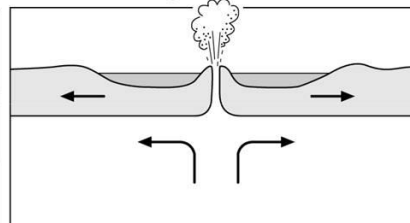
3. Plate Margins

Plate Margin	Plate movement	Hazards
Destructive	Together	Volcanoes and earthquakes
Constructive	Apart	Volcanoes and earthquakes
Conservative	Past one another	Earthquakes
Collision	Together	Earthquakes

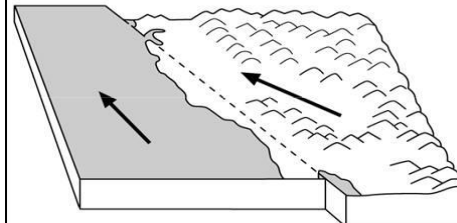
4 Destructive margin



5 Constructive margin

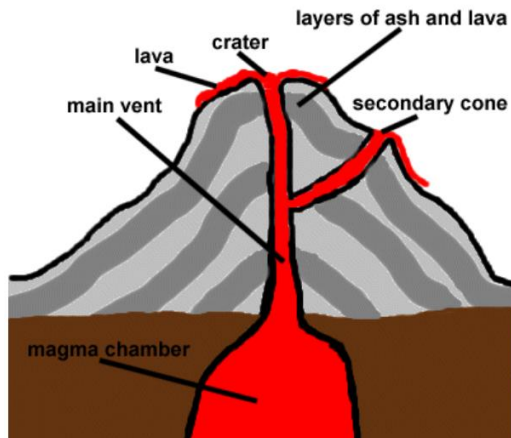


6 Conservative margin



7

A simple cross section of a volcano



8. Volcanic Hazards

Lava	Molten rock which erupts from the ground
Ash	Small pieces of shattered roc, minerals and gas thrown from the volcano
Volcanic Bomb	balls of molten rock that solidify as they fall
Lahar	Mud flows, made from pyroclastic materials, rocks and water.
Pyroclastic flow	Pyroclastic flows spill down the sides of the volcano. It is carrying heavier materials such as gas and rock.

10. Managing Volcanic Eruptions

Dams	Blocking the path with a concrete wall
Channels	Digging channels to direct lava flow away from settlements
Water	Cools the lava to turn rock from molten to solid to slow the flow
Education	Teach people how to behave during a hazard to protect lives and communities
Evacuation	Remove people quickly and safely from a hazard
Monitoring	Observing the movement of the earth's crust for evidence of tectonic activity

11. MT St Helens eruption, 1980

Location	Washington State, NW USA.
Warning signs	Bulge, earthquakes, ash and steam
Management	5 mile red zone
Impacts	57 deaths, 250 homes destroyed, 47 bridges destroyed, 185 miles of road ruined, thousands of trees killed

9. Reasons for living near volcanoes

Fertile soil
Tourism
Precious minerals
Geothermal energy
Social factors

1. Industrial revolution - key words

Industry	Manufacturing goods in mills and factories
Revolution	A complete change
Mechanisation	Machines replace manual labour
Workhouses	Food and board for the poor in exchange for work
Types of Transport	Railways, canals, steam ships

2. Industrial revolution – living conditions

Housing	One room per family. Little furniture, damp, dirty.
Sanitation	One shared outside water pump and toilet
Social reformers	Charles Booth and Seebohm Rowntree

3. Industrial revolution – working conditions

Pay	Very low pay for adults and children
Hours	6 days a week. 12 hours a day. Few breaks
Conditions	Dangerous, dirty, punishments
Accidents	Faulty machines, no safety gear, whips, fire

**7. Continuity and Change key words**

Long term	Change that happens over a long period of time
Short term	Change that happens over a short period of time
Factors for change	The reasons why change happens
Help	To enable change to happen
Hinder	To hold back or slow down change

4. Jack the Ripper case study

Whitechapel	Polluted, overcrowded and dangerous area of East London with high levels of crime.
Victims	5 victims. Annie Chapman. Elizabeth Stride. Mary Jane Kelly. Mary Ann Nichols. Catherine Eddowes.
Profile	Tall, dark, wore a hat, smart clothes, leather apron, facial hair, medical experience
Suspects	Lots of potential suspects. Main names are Montague John Druitt, Aaron Kosminski, Thomas Neil Cream, Prince Albert, Michael Ostrog

6. Local history

Causes of the Reform Riots	<ul style="list-style-type: none"> •Reform Bill was defeated in the House of Commons. •Local Nottingham landowner The Duke of Newcastle had voted against it. •Locals wanted revenge.
Events of the Reform Riots	A violent mob attacked Nottingham Castle and Colwick Hall.
Consequences of the Reform Riots	<ul style="list-style-type: none"> •Ring leaders arrested and put on trial with London Judges. •George Beck was sentenced to death •Valentine Marshall was sentenced to transportation.

8. Timeline of key dates

1825	The first passenger railway opens
1832	The Great Reform Act
1834	Poor Law Amendment Act
1837	Queen Victoria becomes the Monarch
1848	Cholera epidemic across Britain
1870	Education Act
1888	Jack the Ripper
1889	Charles Booth's survey
1901	Death of Queen Victoria

5. Political reforms

Elections before 1832	No secret ballots, corruption, bribery and violence.
Voters before 1832	Very rich men who lived in the countryside
MPs before 1832	Very rich men and aristocrats who didn't need to work
1832 Reform Act	Electorate doubled to 4% adult male population. Less corruption. New industrial towns got MPs.

1. The Empire - key words

Trade Triangle	A system of profit from slavery involving 3 countries – Britain, Africa and The West Indies
Goods	Cotton, tobacco, sugar, indigo

2. Slave trade – capture and middle passage

Capture	Men, women and children kidnapped and sold.
Conditions on board	Chained in rows on their backs in the dark for months
Food	Weak watery porridge every meal brought in buckets below deck
Disease	Cholera and Typhus

3. Slave trade – life on the plantations

Auctions	People were sold to the highest bidder on a stage alongside goods
Work	6 days a week. At least 12 hours a day without pay. Picking cotton in gangs.
Living conditions	Small wooden huts, no amenities, straw bed.
Punishments	Whipping, hanging, amputations, chains.

4. Abolition of Slavery

Why?	1.Economic reasons 2.White kindness 3.Black activism 4.Religious reasons
How?	Abolitionism movement campaigned and pushed the British government to end slavery in the British Empire in 1833.
Opposition	Plantation owners and investors demanded financial compensation from the government
Key individuals and groups	The Quakers William Wilberforce Olaudah Equiano

5. Britain in India case study

Gaining control	By 1668 Britain had three trading posts. British trading stations in India were run by one company - the East India Company.
The Indian Mutiny	The Bengal Army had fought faithfully for Britain BUT it was on the British terms. In 1857 they rebelled. They shot British Officers and marched to Delhi.
The Amritsar Massacre	April 13, 1919, British troops fired on a large crowd of unarmed Indians in an open space in Amritsar killing several hundred people and wounding many hundreds more.

6. Potato famine case study

Causes	A disease destroyed the potato crop
Events	The potato harvest failed for seven years! 60% of the population faced starvation or died from malnutrition
Consequences	Fall in Population: Fell by 2 million. 1 Million from hunger and disease & 1 Million emigrated mostly to America and Britain.

7. Timeline of key dates

1783	133 Africans are thrown overboard alive from the slave ship Zong so that the owners can claim compensation money from their insurance company.
1807	The Act to end the transatlantic slave trade
1833	The Abolition of Slavery Act
1845-52	The Irish potato famine
1857	The Indian Mutiny
1919	The Amritsar Massacre



Term 1: Multiplying and Dividing Fractions

What do I need to be able to do?

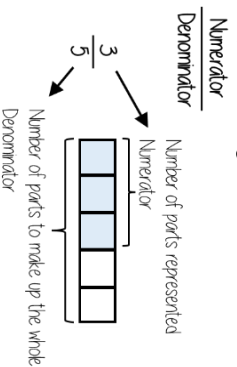
By the end of this unit you should be able to:

- Carry out any multiplication or division using fractions and integers.
- Solutions can be modelled, described and reasoned

Keywords

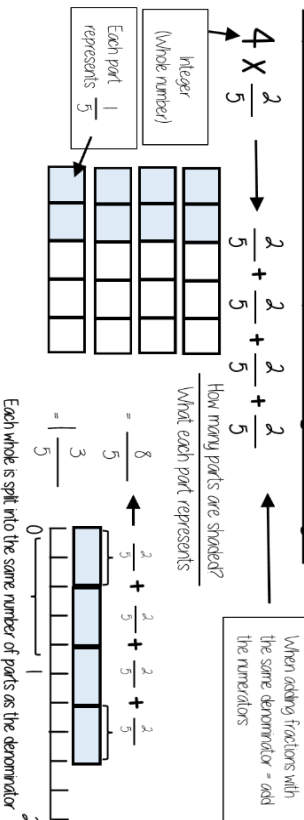
- Numerator:** the number above the line on a fraction. The top number. Represents how many parts are taken
- Denominator:** the number below the line on a fraction. The number represent the total number of parts.
- Whole:** a positive number including zero without any decimal or fractional parts.
- Commutative:** an operation is commutative if changing the order does not change the result.
- Unit Fraction:** a fraction where the numerator is one and denominator a positive integer.
- Non-unit Fraction:** a fraction where the numerator is larger than one.
- Dividend:** the amount you want to divide up.
- Divisor:** the number that divides another number.
- Quotient:** the answer after we divide one number by another.
e.g. dividend ÷ divisor = quotient
- Reciprocal:** a pair of numbers that multiply together to give 1.

Representing a fraction

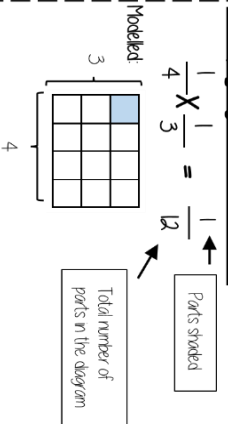


ALL PARTS of a fraction are of equal size

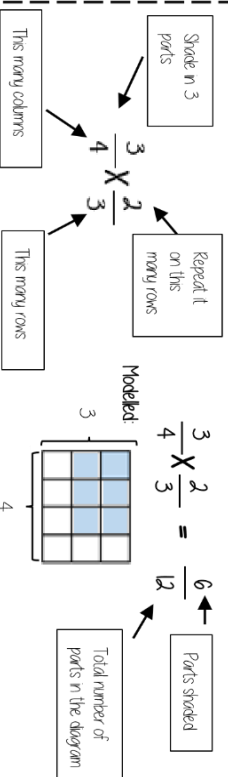
Repeated addition = multiplication by an integer



Multiplying unit fractions



Multiplying non-unit fractions



Quick Multiplying and Cancelling down

$\frac{1}{3} \times \frac{4}{9} = \frac{4}{27}$

The 3 and the 9 have a common factor and can be simplified

Quick Solving

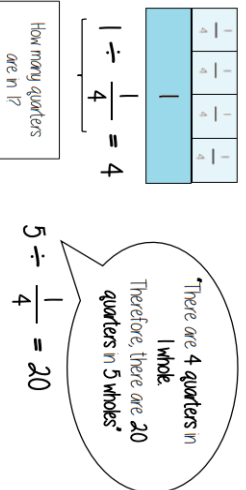
Multiply the numerators

Multiply the denominators

$1 \times 4 = 4$

$5 \times 3 = 15$

Dividing an integer by an unit fraction



The reciprocal

When you multiply a number by its reciprocal the answer is always 1

$3 \times \frac{1}{3} = 1$

$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = 1$

The reciprocal of 3 is $\frac{1}{3}$ and vice versa

Reciprocals for division

e.g. $5 \div \frac{1}{4} = 20$

$5 \times 4 = 20$

Multiplying by a reciprocal gives the same outcome


Dividing any fractions

Remember to use reciprocals

$\frac{2}{5} \div \frac{3}{4} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$

Multiplying by a reciprocal gives the same outcome

Represented



Year 8 Mathematics

Term 1: Multiplicative Change



What do I need to be able to do?

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

- Solve problems and explain direct proportion
- Use conversion graphs to make statements, comparisons and form conclusions.
- Understand and use scale factors for length

Keywords

Proportion: a statement that links two ratios
Variable: a part that the value can be changed
Axes: horizontal and vertical lines that a graph is plotted around
Approximation: an estimate for a value
Scale Factor: the multiple that increases/ decreases a shape in size
Currency: the system of money used in a particular country
Conversion: the process of changing one variable to another
Scale: the comparison of something drawn to its actual size

Direct Proportion

As one variable changes the other changes at the same rate



4 cans of pop = £2.40

4 cans of pop = £2.40

2 cans of pop = £1.20

12 cans of pop = £7.20

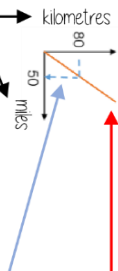
This is a multiplicative change

This multiplier is the same in the same way that this would be for ratio

Sometimes this is easiest if you work out how much one unit is worth first
 eg 1 can of pop = £0.60

Conversion Graphs

Compare two variables



Labelling of both axes is vital

This is always a straight line because as one variable increases so does the other at the same rate
 To make conversions between units you need to find the point to compare – then find the associated point by using your graph
 Using a ruler helps for accuracy
 Showing your conversion lines help as a 'check' for solutions

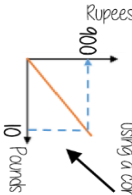
Conversion between currencies



£1 = 90 Rupees

For every £1 I have 90 Rupees

Currency can be converted using a conversion graph



£1 = 90 Rupees

£10 = 900 Rupees

Convert 630 Rupees into Pounds

£1 = 90 Rupees

£7 = 630 Rupees

Ratio between similar shapes



Angles in similar shapes do not change
 eg if a triangle gets bigger the angles can not go above 180°

The two rectangles are similar.

3m 8m

45m 7m

Corresponding sides

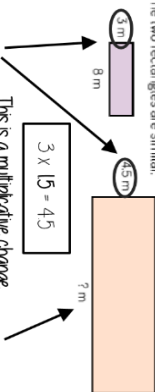
3m 45m

8m 7m

Note: Simplify to the same ratio

Understand Scale Factor

The two rectangles are similar.



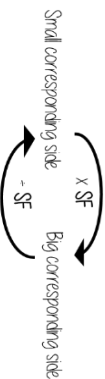
This is a multiplicative change

Missing length

8 x 15 = 12m

Use corresponding sides to calculate a scale factor

Scale factor can also be calculated by **Bigger corresponding side**



Draw and interpret scale diagrams

A picture of a car is drawn with a scale of 1:30

For every 1cm on my image is 30cm in real life

The car image is 10cm

Image: 10cm

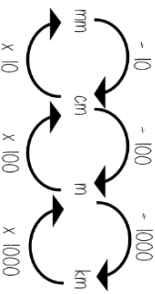


The car in real life is 2.10m

Image: 10cm



Interpret maps with scale factors



1cm : 250m

1cm : 250m

For every 1cm on my map is 25000cm in real life





Year 8 Mathematics

Term 1: Ratio and Scale

What do I need to be able to do?

Keywords

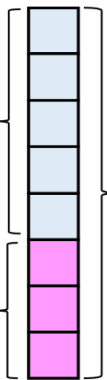
By the end of this unit you should be able to:

- Simplify any given ratio
- Share an amount in a given ratio
- Solve ratio problems given a part

- Ratio:** a statement of how two numbers compare
- Equal Parts:** all parts in the same proportion, or a whole shared equally
- Proportion:** a statement that links two ratios
- Order:** to place a number in a determined sequence
- Part:** a section of a whole
- Equivalent:** of equal value
- Factors:** integers that multiply together to get the original value Scale: the comparison of something drawn to its actual size.

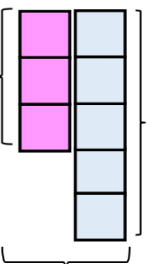
Representing a ratio

For every 5 bags there are 3 gits^{*}



This represents the 5 bags This represents the 3 gits

5:3



This represents the 5 bags Double Number Line

Order is Important

For every dog there are 2 cats^{*}



Dogs Cats

1:2

The ratio has to be written in the same order as the information is given

eg 2 I would represent 2 dogs for every 1 cat X

Simplifying a ratio

Cancel down the ratio to its lowest form

For every 6 days of rain there are 4 days of sun^{*}

6:4

÷ by 2 ↓

3:2



Find the biggest common factor that goes into all parts of the ratio
For 6 and 4 the biggest factor (number that multiplies into them is 2)

Ratio In (or n:1)

This is asking you to cancel down until the part indicated represents 1

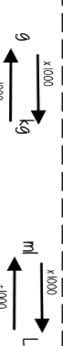
Show the ratio 4:20 in the ratio of In

The question states that this part has to be 1:5
4:20
÷ by 4
1:5
This side has to be divided by 4 too - to keep in proportion

*If the n part does not have to be an integer for the type of question

Units are important:

When using a ratio - all parts should be in the same units



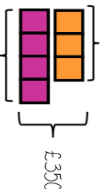
Sharing a whole into a given ratio

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James Lucy

3:4



Find the value of one part

Whole £350

7 parts to share between (3 James, 4 Lucy)

£350 ÷ 7 = £50
□ = one part
= £50

Put back into the question

James Lucy

James = 3 x £50 = £150
Lucy = 4 x £50 = £200

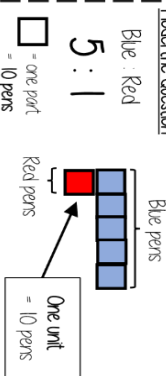
Finding a value given In (or n:1)

Inside a box are blue and red pens in the ratio 5:1
If there are 10 red pens how many blue pens are there?

Model the Question

Blue Red

5:1



Put back into the question

Blue pens = 5 x 10 = 50 pens

Red pens = 1 x 10 = 10 pens

Blue Red

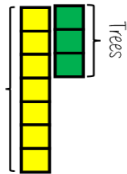
5:1
x10
50:10

Ratio as a fraction



Trees Flowers

3:7



Ratio

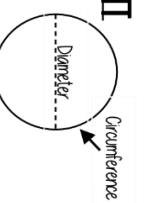
There are 3 parts for trees

Number of parts of n group
Total number of parts



Fraction of trees
Tree parts 3 ÷ Flower parts 7 = 10

PII



The ratio of a circles circumference to its diameter

Year 8 Mathematics

Term 1: Representing Data

What do I need to be able to do?

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

- Draw and interpret scatter graph
- Describe correlation and relationships
- Identify different types of non-linear relationships
- Design and complete an ungrouped frequency table, ...
- Read and interpret grouped tables (discrete and continuous data...)
- Represent data in two way tables.

Keywords

- Variable:** a quantity that may change within the context of the problem.
- Relationship:** the link between two variables (Items). E.g. Between sunny days and ice cream sales
- Correlation:** the mathematical definition for the type of relationship.
- Origin:** where two axes meet on a graph.
- Line of best fit:** a straight line on a graph that represents the data on a scatter graph.
- Outlier:** a point that lies outside the trend of graph.
- Quantitative:** numerical data
- Qualitative:** descriptive information, colours, genders, names, emotions etc.
- Continuous:** quantitative data that has an infinite number of possible values within its range.
- Discrete:** quantitative or qualitative data that only takes certain values.
- Frequency:** the number of times a particular data value occurs.



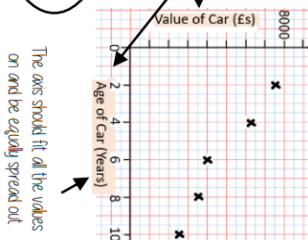
Draw and interpret a scatter graph

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

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

The link between the data can be explained verbally

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



Linear Correlation



As one variable increases so does the other variable

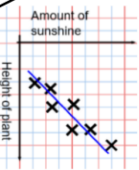
As one variable increases the other variable decreases

There is no relationship between the two variables

The line of best fit

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

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



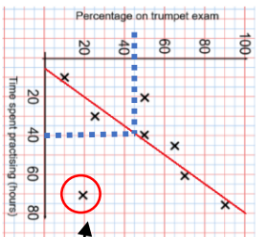
It is only an estimate because the line is designed to be an average representation of the data

It is always a straight line

Using a line of best fit

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

eg 40 hours raining predicts a percentage of 45



Extrapolation is where we use our line of best fit to predict information outside of our data

This is not always useful – in this example you cannot score more than 100% So raining for longer can not be estimated

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

Ungrouped Data

The number of times an event happened

The table shows the number of siblings students have. The answers were 3, 1, 2, 0, 3, 4, 1, 1, 2, 0, 2

Number of siblings	Frequency
0	2
1	3
2	4
3	2
4	1

2 people have 0 siblings. This means there are 0 siblings to be counted here

2 people had 0 siblings. The answers were 3, 1, 2, 0, 3, 4, 1, 1, 2, 0, 2

2 people have 3 siblings so there are 6 siblings in total

Best represented by discrete data (Not always a number)

OVERALL there are 0 + 3 + 8 + 6 + 4 Siblings = 21 siblings

Grouped Data

If we have a large spread of data it is better to group it. This is so it is easier to look for a trend from groups of equal size to make comparison more valid and spread the groups out from the smallest to the largest value

Cost of TV (£)	Tally	Frequency
101 - 150	THH, H	7
151 - 200	THH, THH, H	11
201 - 250	THH, THH, H	5
251 - 300	HH	3

We do not know the exact value of each item in a group – so an estimate would be best to calculate the overall total (frequency)

Continuous Data

To make sure all values are included inequalities represent the subgroups

Weight (kg)	Frequency
40 <= x <= 50	1
50 < x <= 60	3
60 < x <= 70	5

eg the group notices every weight bigger than 60kg up to and including 70kg

Representing data in two-way tables

Two-way tables represent discrete information in a visual way that allows you to make conclusions, find probability and find totals of sub groups

	Squares	Circles	Total
Green	2	3	5
Red	2	1	3
Total	4	4	8

Using your two-way table

To find a fraction

eg What fraction of the items are red? 3 red items but 8 items in total = $\frac{3}{8}$

Interpreting the fraction, decimal percentage equivalence knowledge

Year 8 Mathematics

Term 1: Tables and Probability



What do I need to be able to do?

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

- Construct a sample space diagram.
- Systematically list outcomes.
- Find the probability from two-way tables.
- Find the probability from Venn diagrams.

Keywords

- Outcomes:** the result of an event that depends on probability.
- Probability:** the chance that something will happen.
- Set:** a collection of objects.
- Chance:** the likelihood of a particular outcome.
- Event:** the outcome of a probability – a set of possible outcomes.
- Bias:** a built in error that makes all values wrong by a certain amount.
- Union:** Notation 'U' meaning the set made by comparing the elements of two sets.

Construct sample space diagrams



Sample space diagrams provide a systematic way to display outcomes from events

The possible outcomes from tossing a coin

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

The possible outcomes from rolling a dice

This is the set notation to list the outcomes $S =$

$$S = \{1H, 2H, 3H, 4H, 5H, 6H, 1T, 2T, 3T, 4T, 5T, 6T\}$$

In between the { } are n , the possible outcomes

Probability from sample space

The possible outcomes from rolling a dice

	1	2	3	4	5	6
H	1H	2H	3H	4H	5H	6H
T	1T	2T	3T	4T	5T	6T

This is the set notation that represents the question P

What is the probability that an outcome has an even number and a tail?

$$P(\text{Even number and Tails}) = \frac{3}{12}$$

There are three even numbers with tails
Numerator: the event

Denominator: the total number of outcomes
There are twelve possible outcomes

Probability from two-way tables

	Car	Bus	Walk	Total
Boys	15	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

$$P(\text{Girl walk to school}) = \frac{21}{100}$$

The total number of items

The total in the set

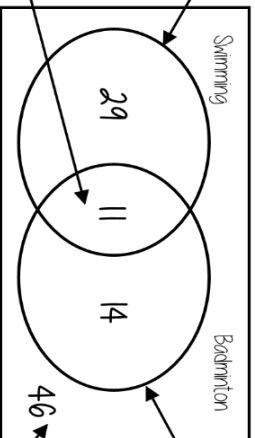
Product Rule

The number of items in event a \times The number of items in event b

Probability from Venn diagrams

This whole curve includes everyone that went swimming

Because 11 did both we calculate just swimming by $40 - 11$



The intersection represents both Swimming AND badminton

This whole curve includes everyone that went to badminton

Because 11 did both we calculate just badminton by $25 - 11$

The number outside represents those that did neither badminton or swimming

100 students were questioned if they played badminton or went to swimming club
40 went swimming, 25 went to badminton and 11 went to both

$$P(\text{Just swimming}) = \frac{29}{100}$$

$$100 - 29 - 11 = 44$$

Year 8 Mathematics

Term 1: Working in the Cartesian plane



What do I need to be able to do?

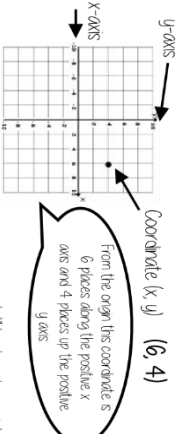
By the end of this unit you should be able to:

- Label and identify lines
- Parallel to the axes
- Recognise and use basic straight lines
- Identify positive and negative gradients
- Link linear graphs to sequences
- Plot $y = mx + c$ graphs

Keywords

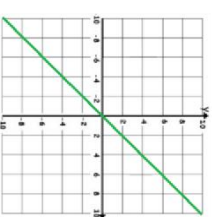
- Quadrant:** four quarters of the coordinate plane.
- Horizontal:** a straight line from left to right (parallel to the x axis)
- Vertical:** a straight line from top to bottom (parallel to the y axis)
- Origin:** (0,0) on a graph. The point the two axes cross
- Parallel:** Lines that never meet
- Gradient:** The steepness of a line
- Intercept:** Where lines cross

Coordinates in four quadrants



Always the x first
Always the y second
Always the position on the x axis first
Always the position on the y axis second
 $(0, a)$ will be always be a point on the y axis (a can be any number)
 $(a, 0)$ will be always be a point on the x axis (a can be any number)

Recognise and use the line $y=x$

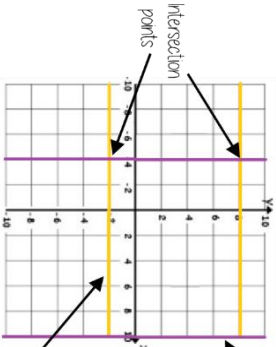


Examples of coordinates on this line: $(0, 0)$ $(-3, -3)$ $(8, 8)$

The axes scale is important – if the scale is the same $y = x$ will be a straight line at 45°

This means the x and the y coordinate have the same value

Lines parallel to the axes



All the points on this line have a x coordinate of 10

Lines parallel to the y axis take the form $x = a$ and are vertical

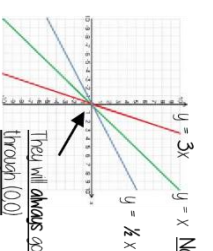
Lines parallel to the x axis take the form $y = a$ and are horizontal

All the points on this line have a y coordinate of -2

eg $(3, -2)$ $(7, -2)$ $(-2, -2)$ all lay on this line because the y coordinate is -2

a can be ANY positive or negative value including 0

Recognise and use the lines $y=kx$



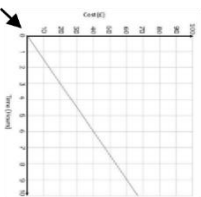
Note: $y = kx$ is the same as $y=k$

The value of k changes the steepness of the line

The bigger the value of k the steeper the line will be

The closer to 0 the value of k the closer the line will be to the x axis

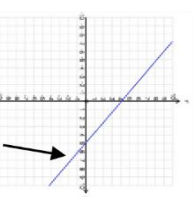
Direct Proportion using $y=kx$



The line must be straight to be directly proportional – variables increase at the same rate k

Direct proportion graphs always start at (0,0) as they are describing relationships between two variables

Lines with negative gradients

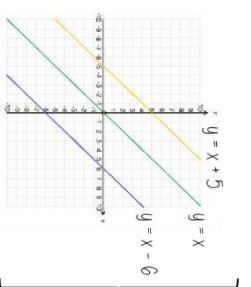


Only straight the graph with a negative x value has a negative gradient

Eg $y = -2x$
 $y = -x$ $y + x = 12$

Direction of all negative gradients

Lines in the form $y = x + a$



All the lines are parallel because the gradients are the same

This is the line $y=x$ when the y and x coordinate are the same

This shows the transition of that line

eg $y = x + 5$ is the line $y=x$ moved 5 places up the graph

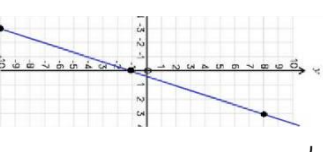
5 has been added to each of the x coordinates

Plotting $y = mx + c$ graphs

$y = 3x - 1$ → 3 x the x coordinate then -1

Draw a label to display this information

This represents a coordinate pair $(-3, -10)$



You only need two points to form a straight line








Plotting more points helps you decide if your calculations are correct (if they do make a straight line)

Remember to join the points to make a line

Year 8 French – HT1

Qu'est-ce que tu aimes étudier? = *What do you like to study?*



 <p>Au collège, j'étudie la biologie, les maths, les sciences, l'histoire et le Français.</p>	1	At school, I study (the) biology, (the) maths, (the) science, (the) history, and (the) French.	
<p>J'aime le français et l'anglais parce que j'ai des bonnes notes et la prof est sympa</p>		2	I like French and English because I have good grades and the teacher (female) is nice
<p>Par contre, je déteste la technologie et l'art plastique parce que c'est compliqué, et le prof est stricte.</p>		3	However, I hate technology and Art because it is complicated, and the teacher is strict.
 <p>Je dirais que le français est plus amusant que les maths, cependant</p>	4	I would say that French is more fun than maths, however	
<p>hier j'ai étudié l'EPS et c'était vraiment divertissant</p>		5	Yesterday I studied PE and it was really entertaining
<p>Dans mon collège, on commence les cours à neuf heures cinq et on finit à trois heures vingt. Après</p>		6	In my school, we start classes at five past nine and we finish at twenty past three. Afterwards
<p>je rentre à la maison en bus où je fais mes devoirs</p>		7	I go home by bus where I do my homework

SCHOOL



A. SUBJECTS

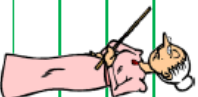
les matières	subjects
le français	French
le dessin	art
l'informatique	ICT
le théâtre	drama
l'allemand	German
l'espagnol	Spanish
l'anglais	English
l'histoire	history
la géographie	geography
l'EPS	PE
la technologie	technology

B. DESCRIPTIONS

amusant	fun
facile	easy
ennuyeux	boring
difficile	difficult
intéressant	interesting
fatigant	tiring
créatif	creative
sympa	nice
sévère	strict
mais	but
très	very
trop	too
un peu	a bit
assez	quite

C. TEACHERS/TIMETABLE

ma matière préférée	my favourite subject
le prof	the teacher
les devoirs	homework
la récré	break
le déjeuner	lunch
un cours	a lesson
commencer	to start
finir	to finish
après	after
avant	before
puis/ensuite	then/next
suivi(e)s de	followed by



Positive opinions

j'aime
j'aime beaucoup
j'adore
Je préfère

+

le/
la/
les

Negative opinions

Je n'aime pas
Je déteste

beaucoup—a lot
tellement—much
vraiment—really

D. AFTER SCHOOL

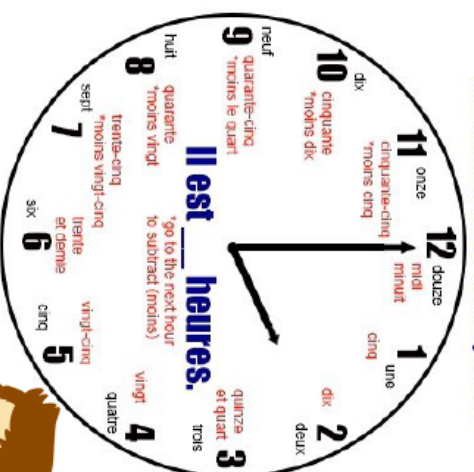
Je rentre à la maison.	I return home.
Je prends le goûter.	I have a snack.
Je fais mes devoirs.	I do my homework.
Je regarde la télé.	I watch TV.
Je fais du vélo.	I ride my bike.
Je mange.	I eat.
Je fais la vaisselle.	I do the washing up.
Je me couche.	I go to bed.



plus ____ que = more ____ than
moins ____ que = less ____ than

e.g. J'aime le dessin moins que l'EPS.
I like art less than PE.

Mon horloge française










E. DAILY ROUTINE

Je me réveille	I wake up
Je me lève	I get up
Je m'habille	I get dressed
Je me brosse les dents	I brush my teeth
Je me lave	I wash
Je me douche	I shower
Je me couche	I go to bed



Year 8 French – HT2

C'est comment ton college? – What is your school like?

 <p>Dans mon collège on doit porter un uniforme scolaire. Je trouve ça nul!</p>	1	<i>In my school, we must wear a school uniform. I find that it is rubbish!</i>
<p>On porte un pantalon noir ou une jupe noire avec une veste noire et jaune. On porte aussi une cravate noire. J'adore mon uniforme.</p>	2	 <i>We wear black trousers or black skirts with a black and yellow blazer. We also wear a black tie. I like my uniform.</i>
<p>Mon collège s'appelle Christ The King. C'est un collège catholique et mixte. Il y a huit cent élèves et quarante profs. C'est assez grand.</p>	3	 <i>My school is called Christ The King. My school is catholic and mixed. There are eight hundred students and forty teachers. It is quite big.</i>
 <p>Dans mon college il y a un terrain de foot. Cependant, il n'y a pas de piscine. C'est dommage!</p>	4	<i>In my school there is a football ground. However, there is not a swimming pool. What a pity!</i>
<p>Hier, j'ai mangé du poulet avec des frites à la cantine. C'était délicieux!</p>	5	 <i>Yesterday I ate chicken and chips at the canteen! It was delicious!</i>
<p>Si j'avais le choix, je voudrais étudier en France</p> 	6	<i>If I had the choice, I would like to study in France</i>
 <p>parce que les vacances d'été sont plus longues qu'en Angleterre.</p>	7	<i>because the summer holidays are longer than in England.</i>

SCHOOL

F. L'UNIFORME SCOLAIRE

Je porte...	I wear...
un pantalon	trousers
une jupe	a skirt
une chemise	a shirt
un pull	a jumper
des chaussures	shoes
une cravate	a tie
affreux	terrible
confortable	comfortable
laid	ugly
pratique	practical
bon marché	cheap
cher	expensive
joli	pretty

G. LES RÈGLES SCOLAIRES

Il faut	You must
Il ne faut pas	You must not
faire ses devoirs	do your homework
porter des bijoux	wear jewellery
porter trop de maquillage	wear too much makeup
porter l'uniforme	wear uniform
manquer les	miss lessons
utiliser le portable	use a mobile phone
mâcher du chewing-gum	chew gum

H. CLUBS

Je fais de la danse	I do dance
Je vais au club de cuisine	I go to cooking club
Je vais au club de natation	I go to swimming club
Je vais au club d'échecs	I go to chess club
Je joue dans l'équipe de foot	I play in the football team
Je joue dans l'équipe de basket	I play in the basketball team
Je suis membre du club scientifique	I'm a member of the science club

Comment vas-tu au collège?

How do you get to school?

Je vais...

I go...

PRESENT TENSE

	ER VERBS	IR VERBS	RE VERBS
Je	e	is	s
Tu	es	is	s
Il/Elle/On	e	it	-
Nous	ons	issons	ons
Vous	ez	issez	ez
Ils/Elles	ent	issent	ent

I. TRANSPORT

en bus	by bus
en voiture	by car
à vélo	by bike
en avion	by plane
en bateau	by boat
en train	by train
à pied	on foot

J. COMPLEX PHRASES

Ce que j'aime le plus c'est...	What I like the most is...
Ce que j'aime le moins c'est...	What I like the least is...
Ce que je préfère c'est...	What I prefer is...
Je trouve ça	I find it
C'est vrai que	It's true that
Je le/la/les trouve	I find it/them

ESSENTIAL VERBS

DÉTESTER—TO HATE

Je déteste	I hate
Tu détestes	You hate (s)
Il/elle déteste	He/she hates
Nous détestons	We hate
Vous détestez	You hate (p)
Ils/elles détestent	They hate

PRÉFÉRER—TO PREFER

Je préfère	I prefer
Tu préfères	You prefer (s)
Il/elle préfère	He/she prefers
Nous préférons	We prefer
Vous préférez	You prefer (p)
Ils/elles préfèrent	They prefer

Layers of sound

1. Melody

2. Chords

3. A bass line

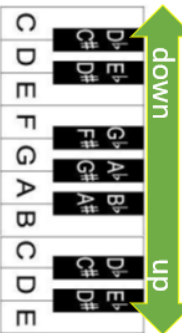
4. A beat

Beat = rhythm. Played on unpitched instruments such as drums.

1. Notes are in alphabetical order, going up to G
2. Say: 'C is to the left of the two black keys: C D E F G A B'

1. Notes are in alphabetical order, going up to G

2. Say: 'C is to the left of the two black keys: C D E F G A B



**A note by itself
CANNOT be
major or minor!**

3. Every black note has two names: sharp # and flat b

4. Flat = lower than white note

5. Sharp = higher than white note

Definitions

1. Pulse = the underlying count in the music. Like a heartbeat. You clap/dance to this. You *feel* it rather than *hear* it.

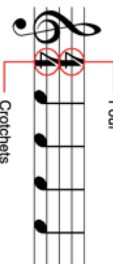
P
U
L
S
E

2. Rhythm = long and short notes, and the gaps between them:

1. Notes on the stave are divided up into bars by bar lines.



2. The time signature = two numbers at the start of the music. It tells us how many beats are in a bar: how we count in the piece.



1. Chord = 2+ notes played together

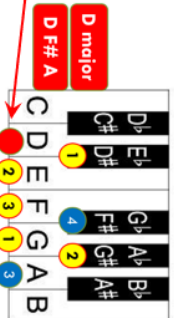


2. Chords can be major or minor

Major = 4 then
3 semitones.
Sounds happy

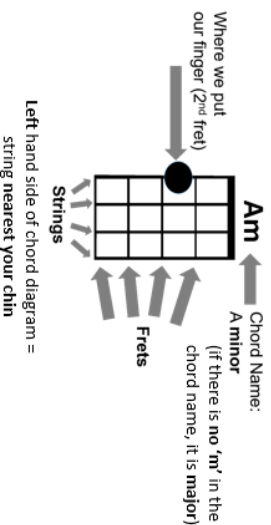
Minor = 3 then
4 semitones.
Sounds sad

Semitone = the next note, counting white AND black

















The bottom note of the chord = the root.
The root gives its name to the chord.

3. Chords are usually played on the keyboard, guitar, or ukulele.



1. These are the basic types of notes.

American note names are more logical: here, the UK names are in brackets.

Note/Rest Name	Note Symbol	Rest Symbol	Note/Rest Value (Length)
Whole Note/Rest (Semibreve)			4 beats
Half Note/Rest (Minim)	 		2 beats
Quarter Note/Rest (Crotchet)	  		1 beat
Eighth Note/Rest (Quaver)	   		1/2 beat

Pairs or 4s of quavers are beamed together. Remember each blob is a note

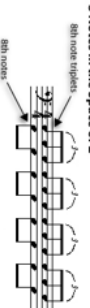
2. Rhythms can be made up of any combination of notes or rests, as long as each bar adds up correctly.

again: $\frac{1}{2} + \frac{1}{2} = 3$ beats

$\bullet + \bullet + \bullet = 3 \text{ beats}$

$\text{♩} = \text{♩} + \text{♩} = 1\frac{1}{2} \text{ beats}$

4. A triplet squeezes three notes into the time it normally takes to play two:



Musical knowledge 3: pitch notation

Definitions

- 1. **Rhythm** = long and short notes, and the gaps between them:
- 2. **Melody** = tune. This has **pitch** as well as rhythm (i.e. it goes up and down):

Words for describing melodies

Treble Clef



MELODY

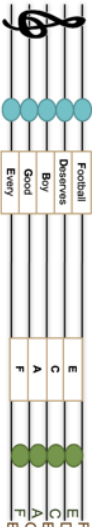
Register – how **high** or **low** the notes are
Range – the distance from the lowest note to the highest: **wide** or **narrow**
Sequence – a pattern that repeats, **ascending** or **descending**
Scale (moving in a scale) or broken chord (moving in chord shapes) movement
Steps (going to a **next-door note**) or leaps (**jumping** to a note further away)
Ornaments (extra notes added to **decorate**)
Melodic **ostinato/riff**: a **repeating pattern**

How to read pitches

- 1. The blobs of the notes are arranged on the lines and spaces of the stave. The higher the blob on the stave, the higher the pitch.



- 2. Notes alternate being on a line and in a space.
- 3. Notes higher or lower than the stave have their own little line called a **ledger line**, like middle C shown above.



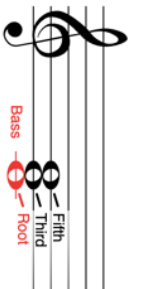
- 4. You can remember the notes on the lines with '**Every Good Boy Deserves Football**', and the notes in the spaces spell '**FACE**'. Remember to go **upwards** when doing this!

Musical knowledge 4: a cappella

Definitions and theory

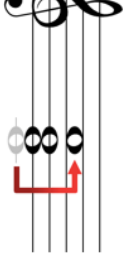
- 1. **A cappella** = music sung by voices alone: no instruments
- 2. **Key** = the set of notes used to create the music. Can be **major** (sounds happy) or **minor** (sounds sad)
- 3. **Inversion** = when you shuffle the order of the chord notes:

Root position chords follow the 4+3 or 3+4 pattern.

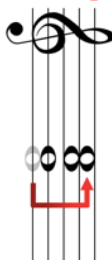


C major chord in **root position** (called this because the root note is in the bass (at the bottom))

C major chord in **first inversion** - now the **third** of the chord is in the bass.



C major chord in **second inversion** - now the **fifth** of the chord is in the bass.



These are all C major chords because they have C E and G in them.

Types of voices

- 1. **Soprano** = the highest female voice
- 2. **Treble** = a boy's unchanged voice
- 3. **Alto** = a lower female voice
- 4. **Tenor** = a high male voice
- 5. **Bass** = a low male voice

Articulation

Articulation is *how* the notes are played/sung.

ARTICULATION

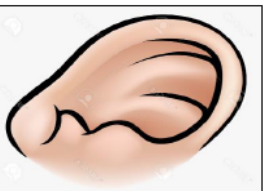
Strummed – on a guitar or ukulele, playing **all the notes of a chord**
Finger-picking – on guitar or uke, playing individual notes **one at a time**
Sustained – notes that are **held on**
Stab – a **short, accented chord**
Staccato – **short, detached notes**
Legato – notes that join **smoothly** together
Slurred – on a voice/wind instrument, going from one pitch to another **without articulating** the new note
Pizzicato – on a violin or cello, **plucking** the string
Arco – on a violin or cello, using the **bow**
Accents – notes that are **louder** than the surrounding notes

Musical knowledge : Listening 5

Definitions

When you are listening to a piece of music:

- ✓ Does it sound **happy** (major tonality) or **sad** (minor tonality)?
- ✓ Which instruments can you hear?
- ✓ How would you describe the rhythm?
- ✓ What are the **key features** of the piece?
- ✓ Which words could you use to describe the tempo? Is it fast or slow?



T.DRIPS
Use **IDRIPS** -
Tempo, Dynamics, Rhythm, Instrumentation, Pitch, Structure to describe music.

Key words

LISTENING SKILLS

Appraisal

'an act of assessing something.'

"What am I hearing?"



Tempo Fast Slow Allegro Lento
Dynamics Forte Piano
Rhythm Straight Syncopated
Instrumentation
Pitch Treble Clef High or Low Bass Clef
Structure Strophic Ternary Rondo

Musical knowledge : Composing 6

Definitions

Composing Using the Elements

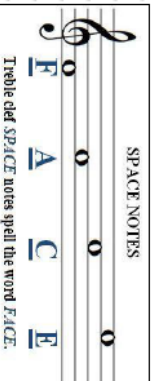
- Texture:** how layers of sound within a piece of music interact.
- Dynamics:** How loud or soft a musical sound is.
- Rhythm:** Musical patterns, measured in time e.g. 4 beats in every bar is common time.
- Instrumentation:** The instruments and musical sections used in a composition e.g. strings, percussion etc.
- Pitch:** how high or low a musical note or sound is.
- Structure:** the parts which make up a composition e.g. section A, section B.



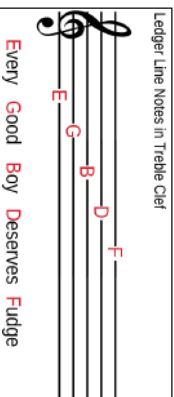
COMPOSITION

Key Notes

Key words



Crotchet: a note worth 1 beat.
Quaver: a note worth 1/2 a beat.
Minim: a note worth 2 beats.
Semibreve: a note worth 4 beats.



What is 'harmony'?

The sound of two or more notes heard simultaneously. This includes chords and melodies heard in a piece of music.

What does 'composition' mean?

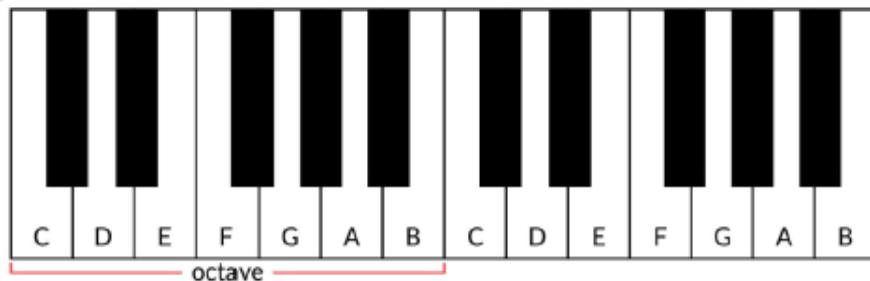
Composition is the art of creating music, by composing parts and developing ideas to create a piece of music.

Composition Tips

- ✓ Listen to a range of music for inspiration.
- ✓ Play an instrument.
- ✓ Sing and train your ears.
- ✓ Practice.
- ✓ Learn the software well.

KEYBOARD SKILLS

A. Layout of a Keyboard/Piano

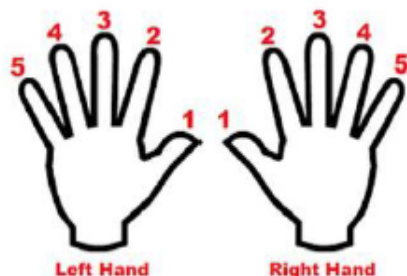


A piano or keyboard is laid out with **WHITE KEYS** and **Black Keys** (see section G). C is to the left of the two Black Keys and the notes continue to G then they go back to A again. Notes with the same letter name/pitch are said to be an **OCTAVE** apart. **MIDDLE C** is normally in the centre of a piano keyboard.

D. Keyboard Functions



E. Left Hand/Right Hand (1-5)



Exploring Treble Clef Reading and Notation

B. Treble Clef & Treble Clef Notation

A **STAVE** or **STAFF** is the name given to the five lines where musical notes are written.

The position of notes on the stave or staff shows their **PITCH** (how high or low a note is). The **TREBLE CLEF** is a symbol used to show high-pitched notes on the stave and is *usually* used



for the right hand on a piano or keyboard to play the **MELODY** and also used by high pitched instruments such as the flute and violin. The stave or staff is made up of 5 **LINE**s and 4 **SPACE**s.

Every Green Bus Drives Fast. Notes in the SPACES spell "FACE"



Notes from **MIDDLE C** going up in pitch (all of the white notes) are called a **SCALE**.



C. Keyboard Chords

C Major



G Major



F Major



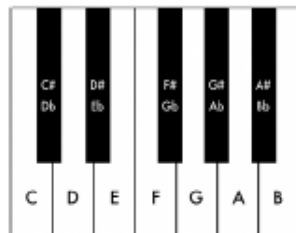
A Minor



Play one - Miss one - play one - miss one - play one

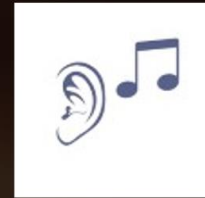
F. Black Keys and Sharps and Flats

There are five different black notes or keys on a piano or keyboard. They occur in groups of two and three right up the keyboard in different pitches. Each one can be a **SHARP** or a **FLAT**. The **#** symbol means a **SHARP** which raises the pitch by a semitone (e.g. **C#** is higher in pitch (to the right) than C). The **b** symbol means a **FLAT** which lowers the pitch by a semitone (e.g. **Bb** is lower in pitch (to the left) than B). Each black key has 2 names - C# is the same as Db - there's just two different ways of looking at it! Remember, black notes or keys that are to the **RIGHT** of a white note are called **SHARPS** and black notes to the **LEFT** of a white note are called **FLATS**.





T.DRIPS



• **TEMPO** - speed

• **DYNAMICS** - volume

• **RHYTHM** - beats

• **INSTRUMENTS**

• **PITCH** high/low sounds

• **STRUCTURE** The plan/map of the piece

• **Speed** – fast (allegro) medium (moderato) slow (lento) getting faster (accelerando) getting slower (rallentando)

• **Volume** – loud (forte), soft (piano), getting louder (crescendo) getting softer (diminuendo)

• **Beats** – simple or complex Crotchets, quavers, minims, dotted (bouncy) swung (jazzy) long notes (semibreves)

• **Instruments** – Classical orchestra or rock/pop band
Strings – violin, cello, double bass
Woodwind – flute, clarinet
Brass – trumpet, trombone, tuba
Percussion – timpani drum, triangle, maracas, glockenspiel, castanets
VOICE is an instrument.

• This links to the instrument being played. Eg flute is high pitch, tuba & double bass is low pitch

• **Verse/Chorus/Verse** – like in pop songs

• **Binary Form** – 2 contrasting sections of music A & B section

• **Blues** – 12 bar blues chord sequence

• **Ternary Form** – 3 sections of music A B A

• **Strophic** – repeating a verse/chorus, but with different lyrics, hymns, carols, nursery rhymes – Wheels on the Bus

Handball

Key Words:

3 seconds on the ball	Players are only allowed to have possession of the ball for 3 seconds.
Contact	Contact is allowed in handball.
Goalkeeper	Goalkeeper can leave the D but not in possession of the ball.
Corners	Awarded if the ball comes off a defender and goes behind the goal.
Penalty throw	Awarded if a defender steps into the D.

Skills:

Shooting	Players can shoot from outside of the D or by performing a jump shot.
Dribbling	Players can move with the ball by bouncing but only for 3 seconds.
Passing	Passing is done with one hand or two and can include a shoulder pass and bounce pass.

Famous Player

Heidi Loke is a Norwegian line player.



Rules:

A match consists of two periods of 30 minutes each.

Each team consists of 7 players; a goalkeeper and 6 outfield players.

Outfield players can touch the ball with any part of their body that is above the knee.

Once a player receives possession, they can pass, hold possession or shoot.

If a player holds possession they can have the ball for up to 3 seconds, after they can dribble or take three steps (without dribbling).

Only the goalkeeper is allowed to come in contact with the floor of the goal area.

Goalkeepers are allowed out of the goal area but must not retain possession if they are outside the goal area.

HANDBALL. Play advances towards the goal, with the red side on the attack, during an Olympic handball match.

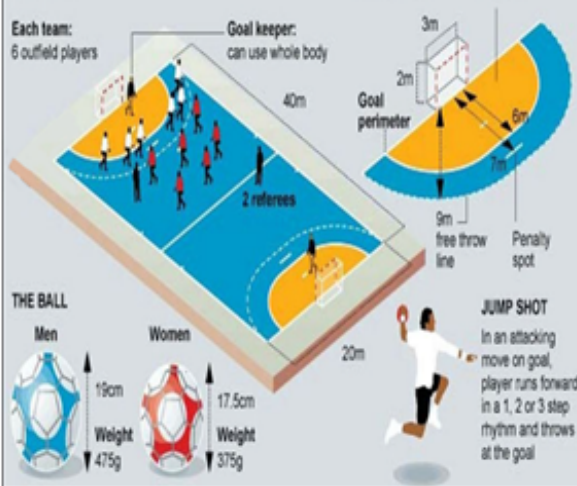
THE PITCH

Each team:
6 outfield players

Goal keeper:
can use whole body

GOAL AREA

Goal crease:
No outfield players allowed



THE BALL

Men

19cm

Weight

475g

Women

17.5cm

Weight

375g

JUMP SHOT
In an attacking move on goal, player runs forward in a 1, 2 or 3 step rhythm and throws at the goal

Respiratory System

1) Respiratory System

Function – to get **OXYGEN** in and **CARBON DIOXIDE** out.

Oxygen is transported around the body via the blood and pumped around the body by the heart.

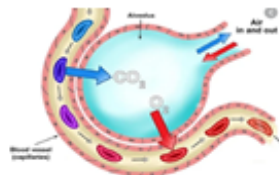


2) Respiratory System and Cardiovascular System

The respiratory system (lungs) works with the cardiovascular system (heart and blood vessels) to increase the supply of oxygen and remove carbon dioxide efficiently.

GASEOUS

EXCHANGE Occurs in the **ALVEOLI**



3) KEY TERMS

Tidal Volume (TV): the amount of air that is inspired and expired normally.

Breathing Rate (f): the number of breaths taken in a minute normally.

Lung Capacity: the amount of air (volume) the lungs can hold.

Minute Ventilation (VE): the volume of air that is inspired or expired in one minute.

$$VE = TV \times f$$

(measured in 1/min)

4) Breathing Rates

AT REST: breathing rate is slow and shallow (normal)

DURING EXERCISE: breathing rate increases and depth of breathing increases. Allows more air in.

Key Words:

Drive

Charge

Key

Baseline

Side line

Skills:

Dribbling

Jumping

Passing

Catching

Shooting

Famous basketball players:



Kobe Bryant



LeBron James

Basketball

Rules:

Team players/substitutions— Each team is allowed 5 players on court at one time. There is no limit on the amount of substitutions you are able to make in each game and each team can have a maximum of 12 players per squad.

Shot clock— When a team has possession and the ball is in court, they only have 24 seconds to shoot. If they don't shoot within this time the ball is turned over to the opposition.

Goaltending— You are not allowed to stay under the basket. You are only allowed in the 'key' for 3 seconds before having to come out.

Backcourt Violation— You are not allowed back into your own half after crossing the midcourt line.

Basketball Positions and Roles

1. Centre	<ul style="list-style-type: none"> Usually, the tallest and strongest player. They are positioned under the basket to get re-bounds and block shots.
2. Forward	<ul style="list-style-type: none"> Usually, the second tallest and strongest players on the team. Their role is to guard against bigger players on the opposition team. They need to be able to score from all ranges on the court.
3. Guards	<ul style="list-style-type: none"> Usually, the shortest players on the team. They are the team's best shooters from three-point range. Responsible for driving the ball down the court and setting up teammates. Also known as the 'Coach on the Court' as they dictate what will happen.

Principles of Training

1. Specificity	Ensuring that the training is relevant and specific to the sport you are training for
2. Progressive Overload	Training frequency, intensity, time and type must be increased over time to ensure the body is pushed beyond its normal rhythm
3. Individual Needs	Training must be related to an athletes age, gender, injury status and fitness level
4. Reversibility	Systems and progress are reversed if training stops or is reduced
5. Rest and Recovery	Physical adaptations occur during the recovery and rest periods of the training cycle
6. Overtraining	If an athlete doesn't have sufficient rest periods then their body doesn't have time to adapt and overall fitness declines

FITT Principle

1. Frequency	This is increased by training a greater number of times each week
2. Intensity	This is increased by lifting a greater resistance when weight training, or training at a higher percentage of your maximum heart rate
3. Time	This can be when you train for longer periods or when you reduce recovery time between sets of exercise
4. Type	This is where you offer a variety of training types and experiences for the athlete by combining different training methods

Key Words:

Routine

Contacts

Rotation

Difficulty

Execution

Skills:

Full Twist

Seat Drop

Front Drop

Back Drop

Front Somersault

Famous trampolinists:



Karen Cockburn



Dong Dong

Trampolining

Trampoline Moves

Tuck Jump
Straddle Jump
Pike Jump
Half Twist
Full Twist
Seat Drop
Front Drop
Back Drop
Turntable
Cradle
Cat Twist
Seat to Front Drop
Back to Front Drop
Front Somersault
Back Somersault

Trampolining is a competitive gymnastic sport

Rules

A competitor performs a routine of various moves.

Competitors must make only 10 contacts with the trampoline bed.

Competitors can only land on their feet, front, back, or in a seat position.

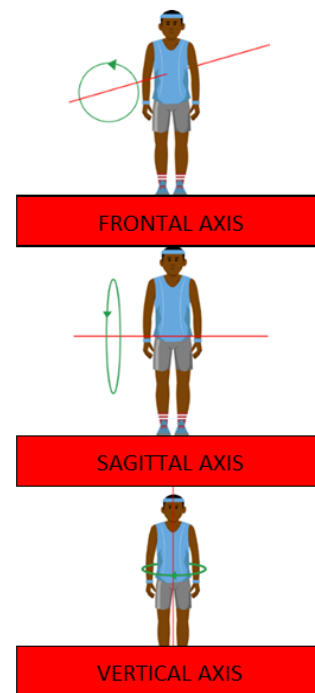
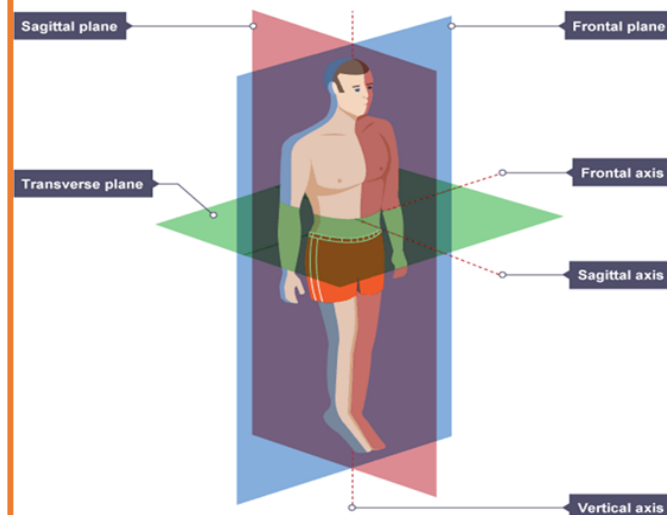
History of Trampolining

In the early 1930s, an American man, named George Nissen, observed trapeze artists perform a series of exciting tumbling tricks when bouncing off the safety net.

This experience inspired him and his friend, Larry Griswold, to build the first ever trampoline.

Movement Analysis

Type of Plane	Movement Available
Sagittal	Divides the left and right side of the body, vertically.
Frontal	Divides the front and the back of the body, vertically.
Transverse	Divides the top and bottom of the body, horizontally.



Key Words

1	Catholic Church	The Catholic (universal) Church is that Church which traces its origins back to the Apostles
2	Christianity	Followers of Christ; divided into many denominations
3	Church of England	The established Church in this country, first formed by Henry VIII
4	Great Schism	The event in 1054, which led to the breaking of the Catholic and Orthodox Churches
5	Magisterium	The teaching authority of the Catholic Church
6	Pope	The Bishop of Rome, Head of the Catholic Church
7	Protestant	The collective name for these Churches which broke away from the Catholic Church during the Reformation
8	Reformation	A movement to reform the Church resulting in the division of the western Church into Catholicism and Protestantism

Key Quotes

1	And I tell you that you are Peter, and on this rock I will build my church, and the gates of Hades will not overcome it. I will give you the keys of the kingdom of heaven; whatever you bind on earth will be bound in heaven, and whatever you loose on earth will be loosed in heaven.' (Matthew 16:18-19)
2	'I want to open the windows of the Church so that we can see out and the people can see in.' (Pope John XXIII)

Unit 1: Church History



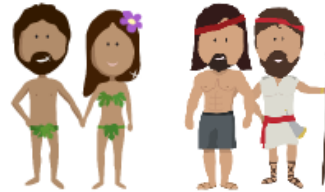
Key Facts

1	Christians are monotheists that recognise Jesus as God and Messiah. They claim that Jesus died so that people could be forgiven of their sins and have eternal life. There are over 30,000 denominations of Christians globally.
2	Following Jesus' death, his disciples were entrusted to call the entire world to Jesus' message of love and forgiveness. They faced persecution and brutal death. St Paul was one of the most important missionaries in spreading the Christian message across Asia and Greece. However, allowing Gentiles to follow Jesus' teaching ensured the religion of Christianity has begun.
3	Life for early Christians was dangerous. Christians were hunted and martyred by Romans. Early Christians met secretly in catacombs. They held secret meetings and celebrated Mass. They also used the catacombs to bury the dead, rather than cremate them.
4	Emperor Constantine converted to Christianity, believing God helped him to defeat his enemies. Following this victory he converted. At the Council of Nicea, a Creed was written outlining the Christian beliefs that Jesus is 'true God' and 'of one substance with the father'.
5	The great Schism was the split between the Western, Roman Catholic Church and the Eastern, Orthodox Church (Istanbul), after tensions had arisen over who should be in charge and the wording of the Nicene Creed.
6	The Pope is believed to be a successor of the disciple Peter. The Pope is considered the closest link to God and has the authority of St Peter on Earth to make decisions on God's behalf. He resides in the Vatican City in Rome.
7	The Magisterium is the teaching authority of the Catholic Church. It is split into three parts: Ordinary, Conciliar and Pontifical. Together they are leaders and teacher of the faith today.
8	The Reformation refers to the movement led by Martin Luther to attempt to Reform the Church. Churches that followed his teachings were known as Protestants because they had protested against the Church. The Catholic Church responded to the issues Luther had raised and this was known as the Counter Reformation.

Key Words

1	Covenant	An agreement or promise between God and people
2	Descendant	A future relation, for example, a child or child's child
3	The Fall	Adam and Eve's disobedience towards God by eating the forbidden fruit, bringing sin and evil into the world
4	Garden of Eden	The garden created by God for Adam and Eve to live in
5	Genesis	The first book in the Bible; it literally means 'origin'
6	Israelites	A name given to Abraham's descendants, chosen by God to be a great nation and have their own land
7	Old Testament	The first part of the bible, written between 800 BCE and 165 BCE
8	Original Sin	The Christian belief that everybody is born with a desire to do wrong

Unit 2: Biblical Literacy Old Testament - Genesis



Key Facts

1	The bible is a collection of 66 or more separate books written by about 40 different authors over several centuries. These books are organised into two sections: the Old Testament and the New Testament
2	Christians believe that the Bible is inspired by God. Some interpret the Bible literally and others think that some of its stories are myths.
3	In Genesis, God creates the first humans, Adam and Eve, and tells them they can eat the fruit from any tree in the Garden of Eden except the tree that 'gives them knowledge of good and evil.' They disobey him, and Christians believe this brought original sin into the world.
4	Adam and Eve had two sons called Cain and Abel. Christians believe the effects of original sin can be seen in Cain's murder of his brother Abel.
5	According to Genesis, as the earth's population increased, so too did the violence and evil. God decided to send a great flood to wipe out the human race, but he told a good man named Noah to build an ark to save himself and his family.
6	God wanted to establish a special nation of people who would follow his laws and be an example to others., He chose a man named Abraham to be the father of this nation. He tested Abraham's suitability by asking him to sacrifice his son, Isaac.
7	Isaac had two sons, Jacob and Esau. Jacob had 12 of his own sons, including Joseph. Joseph's brothers disliked him because he was his father's favourite and dreamed of his brothers bowing down to him.
8	Joseph's brother sold him into slavery in Egypt, where he work for Potiphar before being imprisoned when Potiphar's wife accused him of trying to get into bed with her. He was released from prison after interpreting Pharaoh's dreams. The pharaoh made him the second most powerful man in Egypt.

Key Quotes

1	Thus the heavens and the earth were completed in all their vast array... This is the account of the heavens and the earth when they were created, when the LORD God made the earth and the heavens. (Genesis 2:2-4)
2	You are to bring into the ark two of all living creatures, male and female, to keep them alive with you. ²⁹ Two of every kind of bird, of every kind of animal and of every kind of creature that moves along the ground will come to you to be kept alive. (Genesis 6:19-20)

Key Words		
1	Covenant Box	A special box containing the stone tablets on which the Ten Commandments were inscribed
2	Exile	Being forced to live outside the country of your birth
3	Exodus	The Israelites' journey out of Egypt
4	Messiah	A saviour, or rescuer, sent by God
5	Passover	A Jewish festival remembering the Israelites' freedom from slavery in Egypt
6	Promised Land	The land of Canaan, which God promised to give the Israelites
7	Ten Commandments	The 10 rules given by God to Moses for the Israelites to follow
8	The Ten Plagues	The 10 disasters that God inflicted on the people of Egypt to convince the pharaoh to free the Israelites

Key Quotes	
1	God said to Moses, 'I AM WHO I AM. This is what you are to say to the Israelites: "I AM has sent me to you."'... 'Say to the Israelites, "The LORD, the God of your fathers – the God of Abraham, the God of Isaac and the God of Jacob – has sent me to you..."' (Exodus 3:14-15)
2	Then the fire of the Lord fell and burned up the sacrifice, the wood, the stones and the soil, and also licked up the water in the trench. When all the people saw this, they fell prostrate and cried, 'The Lord – he is God! The Lord – he is God!' (1 Kings 18:38-39)

Unit 2: Biblical Literacy
Old Testament – Exodus
to exile



Michelangelo's David



Key Facts	
1	The second book of the bible, Exodus, begins with the king of Egypt trying to drown all the Israelite babies, but Moses was saved by the Pharaoh's daughter.
2	Moses left Egypt to work as a shepherd in Midian because the pharaoh wanted to kill him for murdering an Egyptian. Whilst shepherding, God spoke to him from a burning bush, telling him to return to Egypt and free the Israelites from slavery.
3	At first the pharaoh was unwilling to free the Israelites from slavery, but he changed his mind after God sent 10 plagues to Egypt.
4	Moses led the Israelites out of Egypt through the Red Sea and into the desert. God gave the Ten commandments to Moses on Mount Sinai.
5	Joshua led the Israelites into the land that God had promised, but the Israelites started to worship the gods of other tribes. God sent them strong leaders known as the Judges. Samson was one of the Judges, whose strength came from his long hair, which was shaved off while he slept.
6	David defeated the giant Philistine Goliath with a stone and became Israel's second king after the death of Saul.
7	While David was king he committed adultery with Bathsheba and then arranged the killing of her husband, Uriah.
8	God sent prophets like Elijah, who took part in a contest with the prophets of Baal on Mount Carmel to prove his God was real.



Elements and atoms

- An **element** is a substance that only contains one type of atom, it is found on the **Periodic Table**
- Each element has its own unique chemical symbol which is the same in every language, these are also found on the Periodic Table
- An **atom** is the smallest part of which an element can be broken down into
- As there are around 100 types of elements that can occur naturally, there are around 100 different atoms

Compounds

- Compounds** are formed when two or more different elements chemically bond together
- The compound will have different **physical properties** to the elements which make up the compound, for example water is a liquid, but it made from oxygen and hydrogen which are both gases
- Compounds are hard to separate and need a chemical reaction to do this

- When naming a compound, we always mention the metal first and the non metal second
- The name of the metal will not change but the name of the non metal will, for example oxygen can change to oxide
- Chemical formulae tells us how many atoms of each element are in the compound in relation to each other



- The small number tells us the number of each element which is in front of the number

Polymers

- Polymers** are long chains of groups of atoms which are repeated many times
- Natural polymers are not man-made and include wool, cotton, starch and rubber
- Synthetic polymers are man-made and include polythene, polystyrene and nylon

Groups and periods

- Groups** are the columns in the Periodic Table, they go downwards
- Periods** are the rows in the Periodic Table, they go sideways
- Elements in the same group normally follow the same trends in properties such as melting point, boiling point and reactivity
- By placing these elements into these groups, scientists can make predictions about their properties

1		2																		group number						0
Li		Be																		B	C	N	O	F	Ne	
Na		Mg																		Al	Si	P	S	Cl	Ar	
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr									
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe									
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn									
Fr	Ra																									

Group 0

- Group 0** elements are known as the **noble gases**
- They are all non metals with low melting and boiling points, meaning all are gases at room temperature
- The boiling point decreases going down the group
- All of the group 0 elements are unreactive
- When electricity is passed through the gas, they emit a brightly coloured light, this can be seen in neon signs

Halogens

fluorine	↑ most reactive
chlorine	
bromine	
iodine	

least reactive

Group 1

- Group 1** elements are also known as the **alkali metals**
- They share similar properties with other metals such as:
 - Being shiny when freshly cut
 - Being good conductors of electricity and heat
- Group 1 metals are much softer than other metals and also have much lower melting and boiling points
- Group 1 elements react with water to form alkali solutions

lithium + water → lithium hydroxide + hydrogen

metal + water → metal hydroxide + hydrogen
- The further down the group that the metal is, the more vigorous the reaction will be. This is called a **trend**
- Another trend seen in Group 1 is with the boiling and melting points: the further down the group, the lower the boiling and melting points are

Group 7

- Group 7** elements are also known as the **halogens**
- They share similar properties with other non metals such as:
 - Having low melting and boiling points
 - Not conducting electricity
 - Moving down the groups the elements have an increased melting and boiling point
- The halogens also react in a similar way to one another, for example with iron:

iron + chlorine → iron chloride

iron + bromine → iron bromide
- Halogens can undergo **displacement reactions**, this is where a more reactive halogen will take the place of a less reactive halogen
- The most reactive halogens are at the top of the group, and the least reactive halogens are at the bottom of the group
- If the most reactive halogen is on its own, it will take the place of the less reactive halogen in a compound

calcium bromide + chlorine → calcium chloride + bromine



Key terms

Make sure you can write definitions for these key terms.

atom alkali metals compound displacement reaction element group Group 1 Group 7 Group 0 halogen
noble gas period Periodic Table physical properties polymer trend

Keyword	Definition	Retrieval Question	Retrieval Answer
Atom	The smallest part of an element that can exist	Define the term "element"	substances that contain only 1 type of atom
Alkali metals	The elements in the left column of the periodic table including lithium, sodium etc. also called group 1	What is the Periodic Table?	a table containing all the symbols and names of different elements
Compound	Pure substances made up of atoms of 2 or more elements strongly joined together	What is the chemical symbol for Hydrogen?	H
Displacement reaction	A reaction involving a metal and a compound of a less or more reactive metal	Which element has the chemical symbol Cu?	Copper
Element	Substances which contain only one type of atom	What is the chemical symbol for Chlorine?	Cl
group	A column in the periodic table. The elements have similar properties	Define the term "compound"	A pure substance made up of atoms of two or more elements joined together
Group 1	The elements in the left column of the periodic table, including sodium and lithium. Also known as the alkali metals	Name 2 compounds	water, carbon dioxide (any sensible answer)
Group 7	Elements in the right column of the periodic table including fluorine and chlorine. Also known as the halogens	How can compounds be made?	reacting two or more elements together
Group 0	Elements in the farthest right column of the periodic table including helium and neon, also known as the noble gases	What are the elements in Nitrogen Dioxide?	Nitrogen and Oxygen
Halogen	An element in group 7 of the periodic table	What are the elements present in Hydrochloric Acid?	Hydrogen and Chlorine
Noble gas	An element in group 0 of the periodic table	What are the elements found in Calcium Carbonate?	Calcium, Carbon and Oxygen
Period	A row in the periodic table	How many atoms are in a molecule of Carbon Dioxide CO ₂ ?	1 Carbon, 2 Oxygen
Periodic table	A table which shows all known elements. Elements with similar properties are grouped together	How many atoms are in a molecule of Sulfuric Acid H ₂ SO ₄ ?	2 Hydrogen, 1 Sulfur, 4 Oxygen
Physical properties	Features of a substance that can be observed without changing the substance itself	What is a polymer?	a substance with very long molecules
Polymer	A molecule made by joining up thousands of smaller molecules in a repeating pattern.	What are the 2 different types of polymer?	natural and synthetic

Keyword	Definition	Retrieval Question	Retrieval Answer
Trend	A pattern in properties, such as an increase or decrease	Give an example of each type of polymer and suggest a use	natural - wool and cotton, used in clothing, rubber - tyres. Synthetic - poly(ethene), used in carrier bags, artificial joints
		What is the Periodic Table?	a table containing all the symbols and names of different elements
		What are the horizontal rows called?	periods
		What are the vertical columns called?	groups
		Give 3 physical properties of elements?	melting point, boiling point, density, hardness, state
		Name all the elements in Group 1 of the Periodic Table	lithium, sodium, potassium, rubidium, copper, platinum
		Are the elements in Group 1 metals or non-metals?	metals
		How does the reactivity of the elements in Group 1 change?	increases down the group
		What is another name for the Group 1 metals?	alkali metals
		How does the trend in boiling point change in Group 1?	decreases down the group

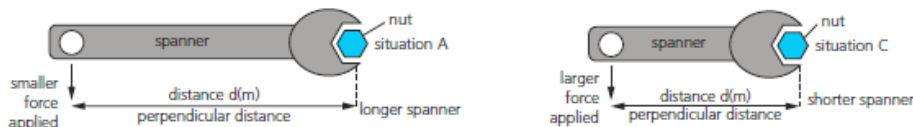
Work

- In physics, **work done** is the energy transferred when a force is used to move an object a certain distance
- Like energy, work is measured in **Joules (J)**
- Work can be done in a range of situations e.g. lifting a book work is done against gravity, when you slide a book along a table work is done against friction
- We calculate work with the equation:

$$\text{work done (J)} = \text{force (N)} \times \text{distance moved (m)}$$

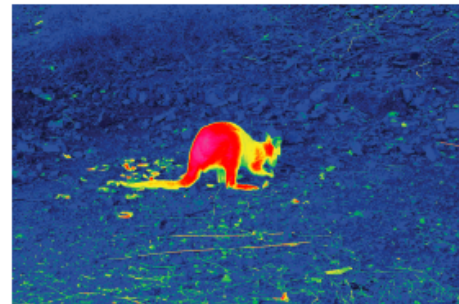
- A **simple machine** makes it easier to lift things, they reduce the force needed
- A **force multiplier** uses a smaller **input force** (what you apply) to generate a larger **output force** (what is created)
- If you increase the distance from the pivot, less input force is needed to be used for the same output force as before
- A **lever** is an example of a force multiplier, a longer lever will require a less input force than a shorter lever to produce the same output force

The physics of unscrewing a tight nut with a spanner



Radiation

- Radiation** is a method of transferring energy without the need for particles
- An example of radiation is thermal energy being transferred from the Sun to us through space (where there are no particles)
- This type of radiation is known as **infrared radiation**, it is a type of wave just like light
- The hotter an object is the more infrared radiation it will emit (give out)
- The amount of radiation emitted and absorbed depends on the surface of the object:
 - Darker matte surfaces absorb and emit more infrared radiation
 - Shiny and smooth surfaces absorb and emit less infrared radiation, instead reflecting this
- The amount of infrared radiation being emitted can be viewed on a **thermal imaging camera**

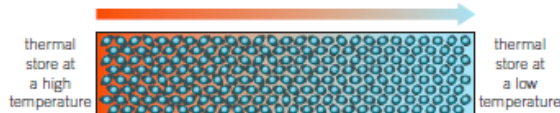


Energy and temperature

- The **temperature** of a substance is a measure of how hot or cold it is
- Temperature is measured with a **thermometer**, it has the units of degrees Celsius (°C)
- The **thermal energy** of a substance depends on the individual energy of all of the particles, it is measured in Joules (J)
- As all particles are taken into account, a bath of water at 30 °C would have more thermal energy than a cup of tea at 90 °C as there are many more particles
- The faster the particles are moving, the more thermal energy they will have
- When particles are heated they begin to move more quickly
- The energy needed to increase the temperature of a substance depends on:
 - the mass of the substance
 - what the substance is made of
 - how much you want to increase the temperature by

Conduction

- Conduction** is the transfer of thermal energy by the vibration of particles, it cannot happen without particles
- This means that every time particles collide they transfer thermal energy
- Conduction happens effectively in solids as their particles are close together and can collide often as they vibrate around a fixed point
- Metals are also good **thermal conductors** as they contain electrons which are free to move
- In conduction the thermal energy will be transferred from an area which has a high **thermal energy store** (high temperature) to an area where there is a low thermal energy store (low temperature)
- Gases and liquids are poor conductors as their particles are spread out and so do not collide often, we call these **insulators**



Convection

- Convection** is the transfer of thermal energy in a liquid or a gas, it cannot happen without particles
- As the particles near the heat source are heated they spread out and become less dense, this means that they will rise
- More dense particles will take their place at the bottom nearest the heat source creating a constant flow of particles
- This is known as a **convection current**
- Convection cannot happen in a solid as the particles cannot flow, they can only move around a fixed point



Key terms

Make sure you can write definitions for these key terms.

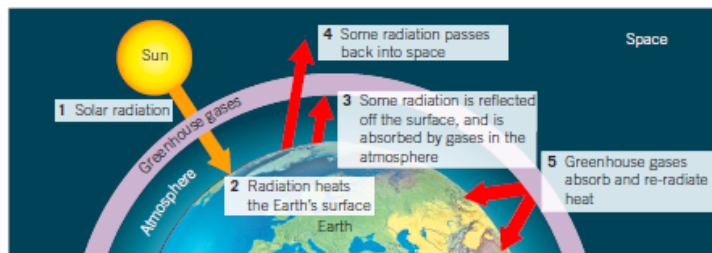
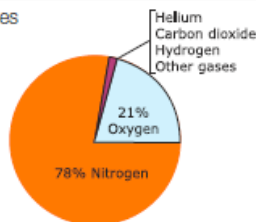
conduction convection convection current force multiplier input force insulator infrared radiation lever output force simple machine temperature
 thermometer thermal conductor thermal energy store thermal imaging camera work done

Keyword	Definition	Retrieval Question	Retrieval Answer
Conduction	Transfer of thermal energy by the vibration of particles.	What is meant by "work"?	When a force moves/deforms an object
Convection	Transfer of thermal energy when particles in a fluid rise	Give 2 examples of "doing work"	Lifting, pushing (any sensible answer)
Convection current	The movement of heated fluids where hot fluid moves upwards, and cold fluid moves downwards	State the equation to calculate work done?	Work done (J) = force (N) x distance moved (m)
Force multiplier	A simple machine that uses a small input force to generate a large output force	What is the unit of measurement for work done?	Joules (J)
Input force	The force you apply to make an object move or change shape	Give 2 examples of simple machines	Levers and pulleys
Insulator	Materials which do not allow thermal energy to pass through them.	Why is a lever described as a force multiplier?	The output force is bigger than the input force
Infrared radiation	The transfer of thermal energy without the need for particles	Define the term "temperature"	How hot or cold an object is
Lever	A type of machine which is a rigid bar that pivots about a point. It is a force multiplier	Which piece of scientific apparatus measures temperature?	Thermometer
Output force	The force that is applied to the object moved by the machine	What are the units of measurement for temperature?	Degrees Celsius (°C)
Simple machine	A machine such as a lever or pulley system which changes the size of the force by moving a force over a bigger or smaller distance	What are the unit of measurement for energy?	Joules or Kilojoules
Temperature	A measure of how hot or cold a substance is	What happens to particles when an object is heated?	They vibrate or move around more
Thermometer	An instrument used to measure temperature	In which direction is the transfer of energy as an object cools down?	From the hot object to a cooler object
Thermal conductor	Thermal conductors contain electrons that are free to move	Describe 2 ways energy can be transferred	Conduction, convection, or radiation
Thermal energy store	The energy store associated with an object's temperature	State what an insulator is?	A material that does not allow energy to be transferred through it easily

Keyword	Definition	Retrieval Question	Retrieval Answer
Thermal imaging camera	A device used to view, and amount of infrared radiation being emitted from an object	Describe how energy is transferred in conduction?	Particles transfer energy by colliding with other particles when they vibrate
Work done	The amount of energy transferred when an object is moved over a distance WD = force x distance	Describe how energy is transferred in convection?	Particles move further apart, become less dense and rise transferring energy
		What is infrared radiation?	A type of (electromagnetic) wave that transfers heat energy
		What type of materials are good absorbers of infrared radiation?	Dark, matt surface
		What type of materials are good reflectors of infrared radiation?	Shiny or light surfaces
		Name 2 sources of infrared radiation	Sun, fire (any sensible answer)
		What do we use to detect infrared radiation?	Thermal imaging camera

The atmosphere

- The air around us all of the time is known as the **atmosphere**, it is made up of a mixture of gases
- When the Sun heats the Earth's surface, some of the radiation is absorbed and some is reflected back into space
- Some of the gases in the atmosphere absorb radiation that is about to be reflected into space, this keeps the Earth at a warmer temperature than it would be without the atmosphere, this is needed as otherwise it would be too cold for life
- The gases in the atmosphere which absorb and trap this radiation are known as **greenhouse gases**, the most commonly known greenhouse gases are carbon dioxide and methane

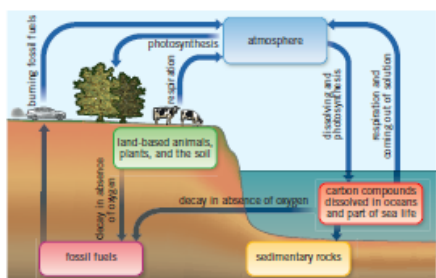


Global warming

- Global warming** is the gradual increase in temperature of the Earth
- This is closely linked to the rise in carbon dioxide levels in the atmosphere

The carbon cycle

- The **carbon cycle** is the processes by which carbon is naturally transferred to different stores through a range of natural processes
- Carbon is released into the atmosphere through **combustion of fossil fuels**, and animal **respiration**
- It is then reabsorbed by plants during **photosynthesis**



Climate change

- Long term changes to weather patterns are known as **climate change**
- This can cause the ice caps to melt, leading to sea levels rising and flooding of low level land
- Graphs alone cannot confirm that humans are the cause, but the majority of scientists now believe that human activity is a very likely cause
- We can help to prevent climate change by:
 - Using renewable energy resources
 - Using cars less
 - Buying and wasting less resources

Extracting metals

- Metals are a **natural resource**, with most being found joined with other elements in compounds
- Naturally occurring metals and their compounds are known as **minerals**
- An **ore** is a naturally occurring rock which contains enough of a mineral to be worth extracting
- An example of an ore is Bauxite, which contains aluminium hydroxide

- When metals are extracted they first have to be separated from other minerals in the ore, then they need to undergo a chemical reaction to separate them from the other element that they are joined to in a compound
- If a metal is below carbon in the reactivity series, it can be extracted by reacting it with carbon in a displacement reaction
- As carbon is more reactive it will take the place of the metal in the compound, leaving the metal on its own:

$$\text{carbon} + \text{metal oxide} \rightarrow \text{metal} + \text{carbon dioxide}$$

$$\text{carbon} + \text{copper oxide} \rightarrow \text{copper} + \text{carbon dioxide}$$
- If the metal is above carbon in the reactivity series, **electrolysis** can be used, this involves separating the metal by using electricity

Reactivity series

magnesium
aluminium
carbon
zinc
iron
lead
copper

Recycling

- Recycling** is the collecting and processing of materials that have been used so that the resources can be used again
- Recycling can have both advantages and disadvantages:

Advantages	Disadvantages
<ul style="list-style-type: none"> Resources will last longer It uses less energy than extracting new materials It reduces waste and pollution 	<ul style="list-style-type: none"> Separating rubbish can be seen as a nuisance The lorries collecting recycling produce pollution Some materials are easier to recycle than others

Key terms Make sure you can write definitions for these key terms.

atmosphere carbon cycle climate change combustion electrolysis fossil fuel global warming greenhouse gas mineral
natural resource ore photosynthesis recycling respiration

Keyword	Definition	Retrieval Question	Retrieval Answer
Atmosphere	The mixture of gases found in the air around us.	What is the definition of global warming?	The increase in air temperature at the surface of the Earth
Carbon cycle	The process by which carbon is naturally transferred from one store to another	What is the definition of greenhouse effect?	The transfer of energy from the Sun to the thermal energy store of the gases in the Earth's atmosphere
Climate change	Long term changes to weather patterns	Name 2 greenhouse gases	Carbon dioxide and methane
Combustion	The burning of a fuel in oxygen	Name 4 of the gases found in Earth's atmosphere	Nitrogen, oxygen, carbon dioxide, argon
Electrolysis	The extraction of metal from a compound using electricity	Define the term "climate change"	Lasting change in long term weather patterns over a period of time
Fossil fuel	A chemical energy store formed from the remains of organisms	Name 3 ways human activities contribute to the addition of carbon to the atmosphere resulting in climate change	Burning fossil fuels, deforestation, farming
Global warming	The gradual increase in the temperature of the Earth	Describe 2 pieces of evidence supporting the theory relating to climate change	Increased carbon dioxide levels, carbon dioxide and methane molecules trap heat
Greenhouse gas	Gases in the atmosphere that trap radiation.eg methane and carbon dioxide	Give 2 ways humans can reduce their impact on climate change	Use renewable sources of energy, use less cars, buy and waste less
Mineral	A naturally occurring mineral or compound	What is a mineral?	Naturally occurring metals joined to other elements in compounds

Keyword	Definition	Retrieval Question	Retrieval Answer
Natural resources	Resources that are not man-made and can be found in the environment	What is a metal ore?	Naturally occurring rocks that contains enough mineral to make it worth getting the mineral
Ore	A naturally occurring rock which has a mineral content worth extracting	How are metals extracted from their ores?	Heating with carbon or electrolysis
Photosynthesis	The process of plants transferring light energy to chemical energy	Name 3 metals extracted using carbon	Zinc, iron, lead, copper
Recycling	The collecting and processing of materials so they can be used again	Describe the 2 stages of extracting iron from its ore	Separating the ore from other compounds, using chemical reactions to extract iron from iron oxide
Respiration	The process by which organisms transfer chemical energy to useable energy stores	What is electrolysis?	Splitting up a compound using electricity
		Where do all the materials and resources we use come from?	Earth's crust, atmosphere, or oceans
		What is meant by the term "recycling"?	Collecting and processing materials that have been used
		Why is the recycling of materials encouraged?	Resources will last longer, uses less energy than using new materials, reduces waste and pollution
		State 2 disadvantages of recycling	Lorries collecting it use fuel and create pollution, difficult to separate,

Respiration

- Respiration is the process in which energy is released from the molecules of food which you eat
 - Respiration happens in the mitochondria of the cell
 - Aerobic respiration** involves oxygen, it is more efficient as all of the food is broken down to release energy

$$\text{glucose} + \text{oxygen} \rightarrow \text{carbon dioxide} + \text{water}$$
 - The glucose is transported to the cells in the blood **plasma**
 - The oxygen is transported to the cells in **red blood cells**, by binding with **haemoglobin**
 - Carbon dioxide is a waste product and is transported from the cells to the lungs to be exhaled
-
- Anaerobic respiration** is a type of respiration which does not use oxygen, it is used when the body cannot supply the cells with enough oxygen for aerobic respiration
 - Anaerobic respiration releases less energy than aerobic respiration

$$\text{glucose} \rightarrow \text{lactic acid}$$
 - The **lactic acid** produced through anaerobic respiration can cause muscle cramps
 - Lactic acid will build up if there is not enough oxygen present in the blood supply to break it down. This is known as an **oxygen debt**

Fermentation

- Fermentation** is a type of anaerobic respiration which occurs in yeast
- Instead of producing lactic acid, yeast produces ethanol, which is a type of alcohol

$$\text{glucose} \rightarrow \text{ethanol} + \text{carbon dioxide}$$
- This process can be used to form alcohol to drink or to allow bread and cakes to rise

Plant minerals

Plants need minerals for healthy growth, if they do not have enough of these minerals this is known as a **mineral deficiency**

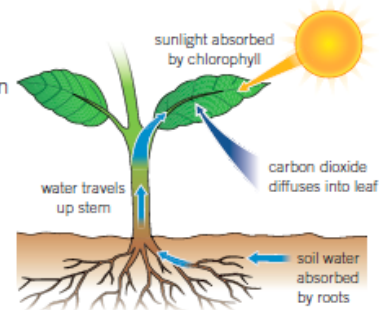
Mineral	What is it used for?	What happens if there is not enough?
nitrates (contain nitrogen)	healthy growth	poor growth and older leaves yellow
phosphates (contain phosphorus)	healthy roots	poor growth, younger leaves look purple
potassium	healthy leaves and flowers	yellow leaves with dead patches
magnesium	making chlorophyll	leaves will turn yellow

Fertilisers can be used to stop plants from suffering with mineral deficiencies

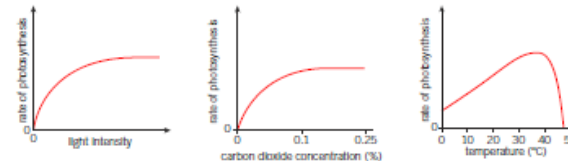
Photosynthesis

- Photosynthesis** is the process which occurs in the chloroplasts to produce glucose using sunlight

$$\text{water} + \text{carbon dioxide} + \text{sunlight} \rightarrow \text{glucose} + \text{oxygen}$$
- Any organism that can use photosynthesis to produce its own food is known as a **producer**, these are not just limited to plants but can include other organisms such as **algae**

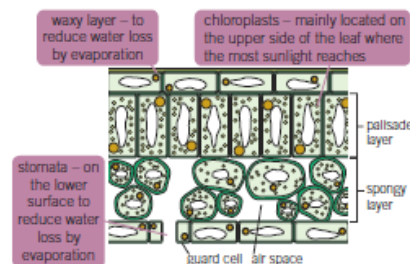


- The rate of photosynthesis can be affected by:
 - Light intensity – the higher the light intensity the higher the rate of photosynthesis up to a point
 - Carbon dioxide concentration – the higher the carbon dioxide concentration the higher the rate of photosynthesis up to a point
 - Temperature – the optimum temperature is the temperature at which photosynthesis occurs at the highest rate, before and after this the rate will be less



Leaves

- To best adapt for photosynthesis leaves have a number of adaptations
- They are thin to allow the most light through
- There is a lot of **chlorophyll** to absorb light
- They have a large surface area to absorb as much light as possible



Key terms

Make sure you can write definitions for these key terms.

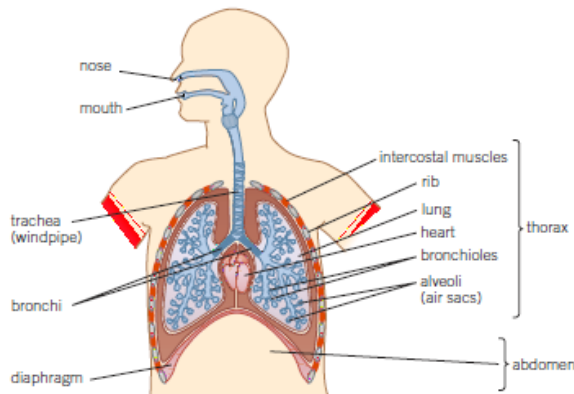
aerobic respiration algae anaerobic respiration chlorophyll mineral deficiency fermentation fertiliser haemoglobin lactic acid magnesium
 nitrates oxygen debt phosphates photosynthesis plasma potassium producer red blood cells

Keyword	Definition	Retrieval Question	Retrieval Answer
Aerobic respiration	The process by which organisms use oxygen to transfer the energy in a fuel into chemical energy	Which 2 substances react in Aerobic Respiration?	Glucose and oxygen
Algae	A single celled plant	What is the word equation for Aerobic Respiration?	Glucose + oxygen --> carbon dioxide + water (+ energy)
Anaerobic respiration	The process by which organisms transfer the energy in a fuel into chemical energy, but in the absence of oxygen	How are the substances required for Aerobic Respiration transported around the body?	Oxygen is carried by red blood cells, glucose dissolves in the plasma
Chlorophyll	The green pigment found in plants which absorbs light during photosynthesis	What is the main waste product of Aerobic Respiration?	Carbon dioxide
Mineral deficiency	A condition in organisms where the concentration of a mineral is lower than it should be and so impairs the function of the organism	Where in the cell does Aerobic Respiration take place?	Mitochondria
Fermentation	A type of anaerobic respiration in which glucose is converted to ethanol, carbon dioxide and energy	Define Anaerobic Respiration	Respiration that does not use oxygen
Fertiliser	Chemicals containing minerals that plants need to be healthy	What is the word equation for Anaerobic Respiration in animals?	Glucose --> lactic acid (+ energy)
Haemoglobin	The substance in blood that carries oxygen around the body	Give 2 reasons animals prefer to respire Aerobically?	It transfers more energy, lactic acid causes painful cramps in muscles
Lactic acid	An acid produced by animals during anaerobic respiration	Name the process that uses respiration in baking and brewing?	Fermentation
Magnesium	An element essential for healthy plant growth. It is used to make chlorophyll	Define Biotechnology	The use of biological processes or organisms to create useful products
Nitrates	Minerals containing nitrogen, used by plants to make protein	What is the word equation for Fermentation?	Glucose --> ethanol + carbon dioxide (+ energy)
Oxygen debt	Extra oxygen required after anaerobic respiration to break down lactic acid	Which microorganism is used in fermentation?	Yeast
Phosphates	Minerals containing phosphorus, used by plants to form healthy roots	How are the products of fermentation used in the baking and brewing industries?	Baking - carbon dioxide helps the bread rise, brewing - ethanol produced is used in alcoholic drinks

Keyword	Definition	Retrieval Question	Retrieval Answer
Photosynthesis	The process plants and algae use light energy to make glucose.	What is the purpose of photosynthesis?	To provide plants with food
Plasma	A liquid that transports blood cells and other materials around the body	What is the word equation for photosynthesis?	Carbon dioxide + water --> glucose + oxygen
Potassium	A mineral needed by plants for healthy leaves and flowers	Where in the plant cell does photosynthesis occur?	Chloroplasts in the leaf cells
Producer	The plant in the food chain that uses light energy and photosynthesis to produce glucose	What is the role of chlorophyll?	Green pigment that uses light for the sun needed in photosynthesis
Red blood cells	Blood cells that transport oxygen around the body	How do gases enter and leave the leaf?	Through tiny holes on the underside of the leaf (stomata)
		In which plant tissues does the most photosynthesis occur?	Leaves
		Where are the most stomata found on the leaf?	On the underside of the leaf
		What is the function of the guard cells in the leaf?	Open and close stomata
		What substance is tested for in the leaf?	Starch
		What colour does Iodine become if the leaf has been photosynthesising?	Blue-black
		What is the function of the ethanol in the experiment?	To remove all the chlorophyll
		Which 3 factors affect the rate of photosynthesis?	Light intensity, carbon dioxide and temperature
		Define fertiliser	Chemicals that contain minerals to prevent mineral deficiency in plants
		Why does a plant need nitrates?	For healthy growth
		Why does a plant need magnesium?	For making chlorophyll
		Why does a plant need phosphorus?	For healthy roots
		Why does a plant need potassium?	For healthy leaves and flowers
		How do minerals enter and move through the plant?	They are absorbed into root hair cells and transported around the plant in xylem tubes

Gas exchange and breathing

- Gas exchange** is the process of taking in oxygen and giving out carbon dioxide
- This occurs in the **respiratory system**
- The proportions of gases in the air we **inhale** and **exhale** changes due to using oxygen in **respiration** and producing carbon dioxide



What happens when you breathe in and out

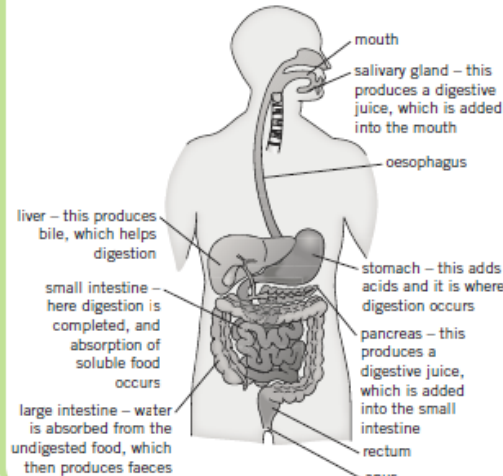
when you breathe in (inhale)

- muscles between the ribs contract
- ribs are pulled up and out
- diaphragm contracts and flattens
- volume of the chest increases
- pressure inside the chest decreases
- air rushes into the lungs

when you breathe out (exhale)

- muscles between ribs relax
- ribs are pulled in and down
- diaphragm relaxes and moves up
- volume in the chest decreases
- pressure inside the chest increases
- air is forced out of the lungs

The digestive system



Enzymes

- Enzymes** are biological **catalysts**, they speed up the digestion of **nutrients**
- Each enzyme is specific to each nutrient
- The way the enzyme and nutrient bind with each other is called a lock and key model
- Carbohydrases** break **carbohydrates** down into simple sugars
- Proteases** break **proteins** down into amino acids
- Lipase** breaks **lipids** (fats) down into fatty acids and glycerol



Drugs

- Drugs** are chemicals that affect the way that our body works
- Medicinal drugs** are used in medicine, they benefit health
- If medicinal drugs are not taken in the correct way they can harm health
- Examples include antibiotics and pain killers
- Recreational drugs** are taken by people for enjoyment
- Recreational drugs normally have no health benefits and can be harmful for health
- Examples include alcohol and tobacco
- Drug **addiction** is when your body gets so used to a drug, it feels it cannot cope without it
- If someone who has an addiction stops taking the drug, they will experience **withdrawal symptoms**

Nutrients

- A **balanced diet** involves eating the right amount of nutrients for your body to function
- Not eating enough of a nutrient means you have an unbalanced diet, and this can lead to a **deficiency**

Nutrient	Role in your body
carbohydrates	main source of energy
lipids	fats and oils provide energy
proteins	growth and repair of cells and tissues
vitamins and minerals	essential in small amounts to keep you healthy
water	needed in all cells and body fluids
fibre	provides bulk to food to keep it moving through the gut



Key terms

Make sure you can write definitions for these key terms.

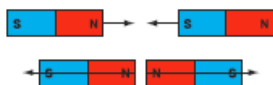
addiction balanced diet carbohydrate carbohydrases catalyst deficiency drug enzyme exhale fibre gas exchange inhale lipid
medicinal drug mineral nutrient protease protein recreational drug respiration respiratory system vitamin withdrawal symptoms

Keyword	Definition	Retrieval Question	Retrieval Answer
Addiction	A need to keep taking a drug to feel normal	Which gases are exchanged in the lungs?	Oxygen and carbon dioxide
Balanced diet	Eating food containing the right nutrients in the correct amounts	What is the pathway air takes from the mouth to the lungs?	Nose/mouth, trachea, bronchus, bronchiole, alveolus, blood
Carbohydrate	Nutrients that provide the body's main source of energy	What is the composition of inhaled air?	79% nitrogen, 21% oxygen, 0.04% carbon dioxide
Carbohydrase	Enzyme that breaks down carbohydrates into smaller sugar molecules	What is the composition of exhaled air?	79% nitrogen, 16% oxygen, 4% carbon dioxide
Catalyst	Substances that speed up chemical reactions but are not unchanged at the end	Explain how oxygen travels to every cell in the body?	It is carried by the blood
Deficiency	A lack of minerals that causes poor health	Which large flat sheet of muscle contracts and relaxes during breathing?	Diaphragm
Drug	Chemical substance that affects the way your body works	Describe the pressure changes during inhalation?	Pressure decreases drawing air into your lungs
Enzyme	Substances that speed up the chemical reactions of digestion	Describe the pressure changes during exhalation?	Pressure increases pushing air out of your lungs
Exhale	Breathing out, removing carbon dioxide	What is breathing rate?	The number of breaths (in and out) taken every minute
Fibre	Food matter that supports movement through the intestines and prevents constipation	State one thing that can affect your lung volume?	Smoking, asthma (other respiratory diseases)
Gas exchange	The transfer of gases between an organism and its environment	Define the term "drug"?	Chemical substances that affect the way your body works
Inhale	Breathing in, to take in oxygen	What is meant by the term medicinal drug?	Drugs that are used in medicine/benefit your health in some way
Lipid	A type of fat	What is meant by the term recreational drug?	Drugs that people take for enjoyment, to help them relax
Medicinal drug	A drug that has a medicinal benefit to your health	Why can you become addicted to drugs?	Your body becomes used to the changes caused by the drug/it becomes dependent on it
Mineral	Essential nutrient needed in small amounts to keep healthy	State 2 medicinal drugs	Paracetamol, antibiotics (any sensible answer)
Nutrient	Essential substances that your body needs to survive, provided by food	State 2 recreational drugs	Alcohol, tobacco (any sensible answer)

Keyword	Definition	Retrieval Question	Retrieval Answer
Protease	Enzyme that breaks down proteins into amino acids	State 2 illegal drugs	Heroin, cocaine, cannabis, ecstasy (any sensible answer)
Protein	Nutrient required for growth and repair	What affect does a depressant drug have on the body?	It slows down your body's reactions
Recreational drug	Drug taken for enjoyment	What drug does alcohol contain?	Ethanol
Respiration	Chemical reaction where energy is released from glucose	Which part of the body is damaged by alcohol?	The liver
Respiratory system	Organ system which replaces oxygen and removes carbon dioxide from the blood	What are the 4 risks of drinking whilst pregnant?	Miscarriage, stillbirth, premature birth, and low birthweight
Vitamin	Essential nutrients needed in small amounts for health	What are the 4 hazards to health linked to smoking and tobacco smoke?	Breathing problems, cancer, heart attacks and strokes
Withdrawal symptoms	Unpleasant symptom a person with a drug addiction suffers from when they stop taking the drug	What is passive smoking?	Breathing in other people's smoke
Retrieval Question	Retrieval Answer	Retrieval Question	Retrieval Answer
Describe how you would carry out a test for fat	Rub food onto filter, which goes translucent if it contains fat	What are the 3 main substances in cigarettes?	Tar, nicotine, and carbon monoxide
Describe how you would carry out a test for protein	Add copper sulfate solution to a food solution, followed by sodium hydroxide, turning purple if it contains protein	What is the addictive chemical in cigarettes?	Nicotine
Give 2 safety precautions you would take when performing food tests	Wear safety goggles, clean up spillages, do not mix chemicals	What are the 6 types of nutrients our bodies need?	Carbohydrates, lipids (fats), protein, vitamins, minerals, and fibre
What happens to your body if you eat too much food?	You can become overweight and/or obese	What is the role of carbohydrate in the body?	Provide energy
What disease is caused by a deficiency of vitamin C?	Scurvy (bleeding gums/teeth can fall out)	What is the role of protein in the body?	Growth and repair
What disease is caused by a deficiency of vitamin D?	Rickets' (where your bones become weak)	What is the role of fat in the body?	Provide energy
Which vitamin deficiency causes night blindness?	Vitamin A	What is the role of vitamins and minerals in the body?	Keep you healthy

Magnets

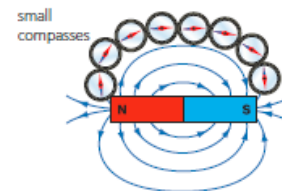
- A **magnet** has two poles, a north and a south pole
 - North poles **attract** south poles
 - South poles **attract** north poles
 - South poles **repel** south poles
 - North poles **repel** north poles



- Magnetic materials** will experience a magnetic force when placed near a magnet, this is a type of non-contact force as the materials do not have to touch for the force to be apparent
- The three magnetic metals are iron, nickel and cobalt

Magnetic fields

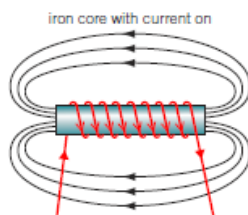
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have its own magnetic field
- Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic field lines are, the stronger the magnetic field will be
- We can find out the shape of a magnetic field in two ways:
 - Using plotting compasses
 - Using iron filings



- The Earth has its own magnetic field, which acts like a giant bar magnet inside the centre of the Earth
- This magnetic field allows compasses to work when navigating around the Earth

Electromagnets

- Electromagnets** are made by wrapping a coil of wire around a magnetic **core**
- Electromagnets only work when electricity is flowing through the coil, which means that they can be turned on and off
- Electromagnets are also stronger than **permanent** magnets
- The electromagnet will produce the same magnetic field shape as a bar magnet

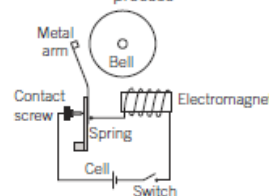


- You can increase the strength of an electromagnet by:
 - Increasing the number of turns on the coil around the core of the electromagnet
 - Increasing the current which is flowing through the coil of wire
 - Using a more magnetic material for the core, e.g. iron rather than aluminium

Using electromagnets

Electric Bells

The electromagnet attracts the iron armature
 ↓
 When it moves, it breaks the circuit, no longer allowing current to flow
 ↓
 The coil and core are no longer magnetic meaning the spring is no longer attracted and returns to its original position
 ↓
 The bell is rung once
 ↓
 The circuit is complete again, restarting the process

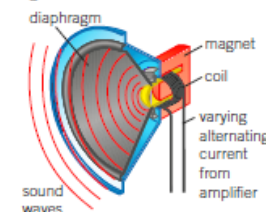


Circuit breakers

- Circuit breakers detect large changes in current in a house, and will break a circuit
- When a large current flows, the electromagnet becomes strong enough to attract an iron catch which will break a circuit
- They can then be reset and used again
- This makes them suitable as an electrical safety device in a home

Loudspeakers

- Loudspeakers use an electromagnet in order to generate sound
- A current passes through the coil and creates an electromagnet, this repels another permanent magnet which moves the cone in and out creating sound



Key terms

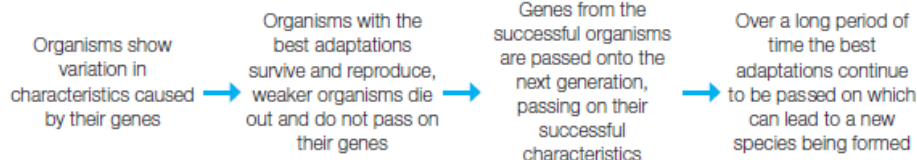
Make sure you can write definitions for these key terms.

attract core circuit breaker electromagnet electric bell loudspeaker magnet magnetic pole magnetic field lines magnetic material permanent magnet repel

Keyword	Definition	Retrieval Question	Retrieval Answer
Attract	Objects moving towards one another due to a magnetic force	Name the 2 poles found on a magnet?	North and South
Core	Soft iron metal which the solenoid is wrapped around	State 2 ways you can find the shape of a magnetic field	Using plotting compasses, using iron filings
Circuit breaker	A device that uses an electromagnet to break a circuit	What happens when you put like poles of a magnet close together?	They repel
Electromagnet	A non-permanent magnet turned on and off by controlling the current through it	What happens when you put unlike poles of a magnet close together?	They attract
Electric bell	A device that uses an electromagnet to make sound using a "make and break circuit"	How do you create an electromagnet?	Make a circular loop of wire and pass a current through it
Loudspeaker	A device that uses an electromagnet. It turns an electrical signal into a pressure wave of sound	What is a solenoid?	A loop of wire made into a coil
Magnet	A material with a magnetic field around it in which a magnetic material experiences a force	What can an electromagnet core be made from?	A magnetic material, usually iron
Magnetic pole	The ends of a magnetic field, called north-seeking and south-seeking poles	Name 3 factors that will change the strength of an electromagnet	Increase the number of turns of wire, increase the current, the material used as a core (magnetic)
Magnetic field lines	Imaginary lines that show the direction of the force on a magnetic material	Give 3 uses of electromagnets	Ring bell, circuit breaker, loudspeakers
Magnetic material	A material that experiences a magnetic force when placed near a magnet	What is a motor?	
Permanent magnet	A object that is magnetic all of the time	Describe how a motor uses electromagnetism to work	
Repel	Objects moving away from one another due to a magnetic force	What is the difference between a permanent magnet and an electromagnet?	You can turn electromagnets on and off and make them stronger

Natural selection

- Scientists believe that the organisms which we see on Earth today have gradually developed over millions of years, this is known as **evolution**
- Charles Darwin came up with the concept of **natural selection**, he said that only the best adapted animals will survive to pass on their **genes**, weaker animals will die out



- One example of natural selection can be seen in giraffes, only the giraffes with the longest necks would be able to eat from trees, the ones with shorter necks would not be able to eat and die out
- This would mean that only the gene for long necks would be passed on, leading to all giraffes having long necks

Extinction

- A species will become **extinct** when all of a species die out
- The **fossil record** shows us that animals have existed in the past which have now become extinct
- Extinction can be caused by:
 - Changes to the environment
 - Destruction of habitat
 - New diseases
 - Introduction of new predators
 - Increased **competition**
- When a species becomes extinct, the variety of species within an ecosystem is reduced, this is also known as a reduction in **biodiversity**
- The more diverse a **population** is, the more likely they are to survive environmental changes

Punnet squares

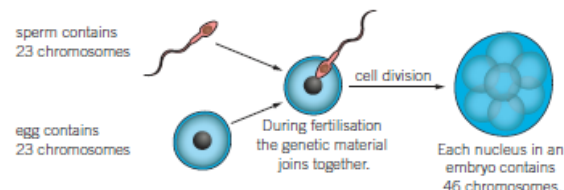
		Possible alleles from father	
		B	b
Possible alleles from mother	b	(dominant allele for brown eyes) Bb Offspring will have brown eyes as B is dominant	(recessive allele for blue eyes) bb Offspring will have blue eyes as both alleles are recessive
	B	(recessive allele for blue eyes) Bb Offspring will have brown eyes as B is dominant	(recessive allele for blue eyes) bb Offspring will have blue eyes as both alleles are recessive

Genetic modification

- Genetic modification** is the process which scientists can use in order to alter the genes of an organism
- Examples of this include altering cotton to produce higher yields, altering bacteria genes to produce medicines and altering crops to produce their own insecticides

Inheritance

- Characteristics** are passed along from parents to their offspring
- Half of the genetic information comes from each parent, this is passed on through the sex cells in the process of fertilisation

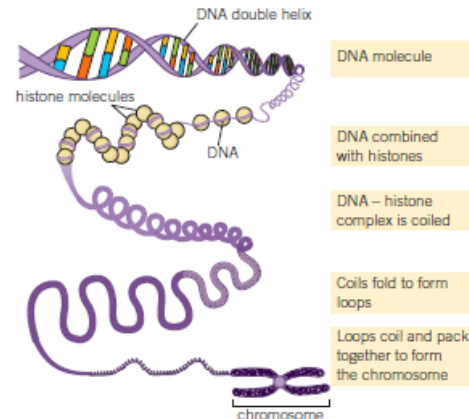


- DNA** is the material which contains all of this genetic information

DNA – in the shape of a double helix

Genes – a section of DNA which hold the information for a particular characteristic

Chromosomes – long strands of DNA which hold many genes, humans have 46 of these in the nucleus of cells



Genetics

- For every characteristic an organism will have two **alleles**, this is two different genes which can code for the same characteristic, one is inherited from each parent
- Dominant** alleles will cause the characteristic to be displayed even if they are with another allele, this is represented by a capital letter
- Recessive** alleles will not be displayed as characteristics unless there are two of the same allele, they are the characteristic least likely to be shown, this is represented by a small letter
- We can predict the inheritance of characteristics using a **Punnet square**



Key terms

Make sure you can write definitions for these key terms.

allele biodiversity characteristics chromosome competition DNA dominant evolution extinct fossil record gene genetic modification mutation
natural selection population punnet square Punnet square recessive

Keyword	Definition	Retrieval Question	Retrieval Answer
Allele	Different forms of a gene	What is evolution?	the development of species on Earth over millions of years
Biodiversity	A measure of the variety of all the different species of organisms on earth or within a particular ecosystem	How do we know some species of organism are now extinct?	fossil records
Characteristics	Features of an organism passes from parents to offspring via genes	What is a fossil?	the remains, or traces, of plants and animals that lived many years ago
Chromosome	Thread-like structure containing tightly coiled DNA. It contains the genes	Why might a plant or animal change over time?	to become better adapted to their environment
Competition	When 2 or more living things struggle against each other to get the same resource	Name the process by which organisms evolve?	natural selection
DNA	A molecule found in the nucleus of cells that contains genetic information	Which organisms did Charles Darwin study on the Galapagos islands?	finches (a type of bird)
Dominant	A dominant allele will always be expressed if it is present	What is meant by "peer review"?	where a scientist's work is checked by another scientist who works in a similar area of science
Evolution	Theory that animals and plant species descended from species in the past	Which other scientist "peer reviewed" Darwins work?	Alfred Wallace
Extinct	When no more individuals of a species remain anywhere in the world	Define the term "extinct"	when there are no more individuals of a species left in the world
Fossil record	Fossils of a species that show how a species has changed over time	Give 3 reasons why a species may become extinct	changes to the environment, destruction of habitat, outbreak of a new disease, introduction of new predators, competition for resources (any sensible answers)
Gene	A section of DNA that determines an inherited characteristic	Define the term "endangered"	a species that is at risk of becoming extinct
Genetic modification	A technique in which scientists insert foreign genes into organisms to change their characteristics	Define the term "biodiversity"	a measure of the variety of all the different species of organisms on Earth
Mutation	A change to the DNA that can cause disease	What is the purpose of a gene bank?	to store genetic samples from different species to use for research or produce new individuals
Natural selection	Process of organisms most suited to the environment survive and reproduce	Define the term "conservation"	protecting a natural environment, to ensure that habitats are not lost

Keyword	Definition	Retrieval Question	Retrieval Answer
Population	Group of organisms of the same kind living in the same place	Give an advantage and a disadvantage of captive breeding programmes	Adv: create stable, healthy populations of a species, re-introduce the species back into its habitat. Dis: difficult to maintain genetic diversity, small numbers of breeding partners, organisms may not be suitable for release in the wild
Punnet square	A diagram used to show possible allele combinations inherited from the parents	State 2 ways biodiversity benefits humans	rich varied food supply, useful products e.g. medicines from plants (any sensible answers)
Recessive	A recessive allele will only be expressed if 2 alleles are present	What is the purpose of DNA?	genetic material needed to make an organism
Retrieval Question	Retrieval Answer	Retrieval Question	Retrieval Answer
Define the term "peer review"	where a scientist's work is checked by another scientist who works in a similar area of science	Where can DNA be found in the cell?	inside the nucleus (arranged in strands called chromosomes)
Name 2 of the scientists involved in the discovery of the DNA molecule	Erwin Chargaff, Maurice Wilkins, Rosalind Franklin, James Watson, Francis Crick	Describe the structure of DNA	double-helix (twisted ladder)
Which are the only individuals who will have identical DNA?	twins	What is the section of a DNA molecule called?	gene
Define the term "allele"	different forms of the same gene	What is a mutation?	a change in the DNA
Describe the differences between dominant and recessive alleles	dominant alleles always produce the characteristic in an organism (you only need one copy), recessive alleles require two copies for the characteristic to be expressed in the organism	What is the result of a mutation?	it affects the organisms characteristics
What do you use to produce a genetic cross?	Punnett square	Describe 3 features of a DNA molecule	two strands, twisted in a double-helix shape, joined by 4 chemicals called bases (Adenine, Thymine, Cytosine and Guanine)
What is the probability of a mother and father having a baby boy?	50%	State an advantage of genetic modification	quick, precise
Define the term "genetic modification"	altering an organisms genes	Name 2 useful chemicals produced by genetically modified bacteria	vaccines and antibiotics

Key Words		
1	Anthropometrics	The study of the human body and its movement, often involving research into measurements relating to people. It also involves collecting statistics or measurements relevant to the human body, called Anthropometric Data .
2	Ergonome	Ergonomes are models of people in normal proportions.
3	Ergonomics	Defined as the science of fitting a workplace to the user's needs, <i>ergonomics</i> aims to increase efficiency and productivity and reduce discomfort
4	Triangulation	Triangulation involves the use of triangular shapes to give stability to structures
5	Biomimicry	a practice that learns from and mimics the strategies found in nature to solve human design challenges
6	Crating	Using sketched 3D cubes/ cuboids to help structure more complex drawings
7	Attachment Techniques	Ways to join pieces of material together. In the case of this project it refers to modelling materials
8	Mood Board	an arrangement of images, materials, pieces of text, colours, textures etc. Intended to embody or project a particular style or theme.

Tools, equipment and joining methods		
1	Craft Knife	As single bladed knife that easily cuts through a variety of different materials. The craft knives we use in school have a plastic handle and a retractable blade.
2	Cutting Board	self healing cutting mats are purpose-built to be extremely durable and resilient, creating the perfect cutting surface that reduces blunting but also ensures any worksurface is well protected from damage . They often have lines printed on them to help you when cutting straight lines
3	Metal Rule	Metal safety Rule's features a unique M profile which allows you to keep your fingers well away from any knife edge when used for cutting or scoring. They are made from metal to prevent the rule being damaged by the blade of a craft knife
4	Glue Gun	Heats up and melts specially made solid hot glue sticks. Once melted, the glue is then directed out of the nozzle of the gun
5	Tab	An extra rectangle added to a piece of card/ paper. Tabs are folded over, glued and used to add support when joining two piece s of material together
6	Flange	A number of tabs cut around the base of a tube. These are flattened down to give more surface area to glue the tube to a surface
7	Gusset	Triangular shaped support that add strength when joining two piece of material at a 90 degree angle
8	Split Pin	A metal pin that has two legs that can be spilt when joining two pieces of card of paper. It allows for rotational movement when modelling

S SUBSTITUTE:
Replace a thing, or concept with something else.

C COMBINE:
Unite! What? Who? Ideas? Materials?

A ADAPT:
Adjust to a new purpose. Re-shape? Tune-up?

M MODIFY, MAGNIFY, MINIFY
Change the colour, sound, motion form, size.
Make it larger, stronger, thicker, higher, longer.
Make it smaller, lighter, slower, less frequent, reduce.

P PUT TO ANOTHER USE:
Change when, where, location, time, or how to use it.

E ELIMINATE:
Omit, get rid of, cut out, simplify, weed out...

R REARRANGE, REVERSE
Change the order, sequence, pattern, layout, plan, scheme, regroup, redistribute...

ITERATIVE DESIGN PROCESS

DESIGN → PROTOTYPE → EVALUATE → DESIGN

Forces

Compression, Shear, Bending, Tension, Torsion

Scaling is a drawing method used to enlarge or reduce a drawing in size while keeping the proportions of the drawing the same. Scales are generally expressed as ratios.

1:1	Full size		
1:2	Half of the original size	2:1	Twice the original size
1:5	A fifth of the original size	5:1	Five times larger than the original size
1:10	A tenth of the original size	10:1	Ten times larger than the original size
1:20	A twenty-fifth of the original size	25:1	Twenty five times larger than the original size

Key topics: Nutritional needs of others, health issues associated with a poor diet, religious diets and food choices, food origins, organic and intensive farming, food miles and seasonality.

1

Farm to Fork – How flour is made

On arrival at the mill the wheat is cleaned to remove dust, straw and other impurities.

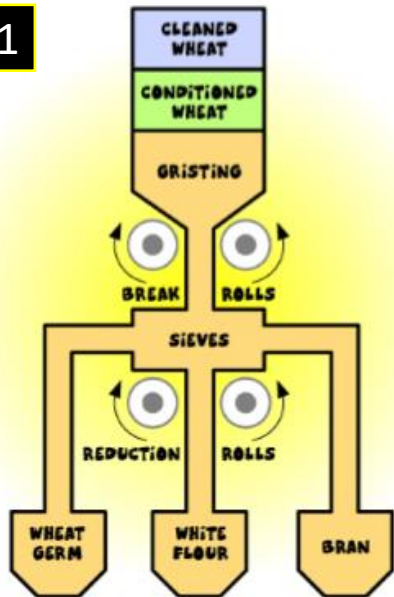
Conditioning with water softens the bran layer of the wheat and makes it easier to separate the parts of the wheat.




The wheat is blended with other types of wheat in a process called gristing to make different kinds of flour.

It is then milled through steel rollers with teeth that break the grains open

The fragments of wheat grain are separated by sieves.

The bran, wheatgerm and endosperm have all been separated out. They can now be blended to make different types of flour.



Key terms	Definition
Halal 	refers to foods that are allowed to be eaten according to Islamic law, and how and animal is slaughtered.
Kosher 	Is a word used to describe food and drink that complies with Jewish religious dietary law, and refers to how and animal is slaughtered.
Organic 	Food produced without the use of chemical fertilisers, pesticides or other artificial chemicals.
Intensive farming	A way of producing large amounts of crops, by using chemicals and machines as well as keeping animals indoors to restrict movement.
Seasonal	The times of the year when the harvest or the flavour of a food is at its peak.
Food miles	The distance food is transported from the time of its making, until it reaches the consumer.

2

Quantity (yield)



Intensive Farming

High yield, large amounts of food produced.

Organic Farming

Lower yield of crops and more is lost and less is grown.

Pesticides



Keep pests away resulting in more crop.

Pesticides restricted, natural predators encouraged

Animals



Battery rearing of animals in enclosures, less humane and can cause disease to spread quickly through the animal population..

Animals have a better quality of life with access to outdoors. Animals not given antibiotics.

Labour



Artificial chemicals and machines means fewer people are needed for work

More people are needed to work the farms.

Fertilisers



If too much is used, it can wash in to streams and lead to pollution.

Only natural fertilisers are used along with crop rotations.

Cost



Low cost of production but a high initial set up, maximum output is achieved resulting in a lower cost for consumers

Production is lower and more space is needed, resulting in higher cost produce for consumers.

4



Farmed animals that have been inspected to **VERY high welfare standards** – providing them with physically and mentally stimulating environments from birth to slaughter.



This symbol means that the food you buy has been **responsibly sourced** from **British** farmers, safely produced and comes from crops and animals that have been well cared for

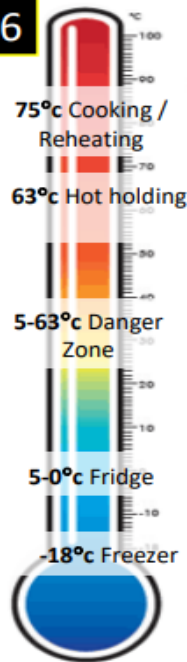


This logo is stamped on to egg to certify that they are **British** and that the **hens have been vaccinated** against Salmonella.



This symbol means that the product is certified to **high organic standards** and provides an assurance of organic authenticity.

6



5

Food Safety

Microorganism	Tiny living things, such as bacteria, yeasts and moulds which cause food spoilage.
Pathogen	Harmful bacteria which can cause food poisoning.
High Risk Food	Foods which are ideal for the growth of bacteria or micro-organisms (e.g., chicken and shellfish).
Contamination	When food is affected with micro-organisms.



READY TO EAT FOOD
Such as dairy products, yogurt & cream

READY TO EAT FOOD
Such as cream cakes, butter, cooked meats, leftovers & other packaged food.

RAW MEAT, POULTRY & FISH
Always cover & keep in sealed containers.

SALAD, FRUIT & VEGETABLES
Keep ready to eat fruit and vegetables in sealed bags or containers, always wash before use.

Prevent Cross Contamination

Use correct colour coded chopping boards and knives at all times

RAW MEAT

RAW FISH

COOKED MEATS

SALADS & FRUITS

VEGETABLES

DAIRY PRODUCTS

ALLERGENS

7

Different ages have different nutritional needs



Age	Definition
Young children	Diet should be based on the Eatwell guide. Children have small stomachs and should have small meals more frequently. Dairy is important for calcium. They should be encouraged to try new foods.
Children	They are very active and growing rapidly. Need a balanced diet, sugar and snacking should be avoided.
Teenagers	Growth is in spurts, protein required for muscles and calcium for skeleton. Teenage girls begin menstruation (blood loss – loss of iron). Teenagers deal with stress and this can lead to poor eating habits.
Adults	Stop growing so needs don't vary much. Eatwell guide should be followed. Metabolic rate slows through age. Muscle is lost and fat gained.
Elderly	Usually less active and need less energy. Taste and smell can change which affects enjoyment. Calcium, vitamin D and B12 are important.

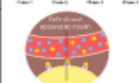
8

Diet Related Health Problems

Health Problem	Definition
Obesity	The most common over nutrition problem is obesity caused by too much energy being consumed, or high levels of inactivity. It is measured as a ratio of weight to height.
Dental Health	To maintain healthy teeth you need to have a balanced diet. Bacteria feeds on the sucrose found in food and produce acid.
CHD & High blood pressure	Coronary heart disease (CHD) is related to the amount of fat in the diet and is caused by a narrowing of the blood vessels to the heart. This reduces the flow of blood to the heart. High levels of cholesterol in blood increase the risk of CHD.
Type 2 Diabetes	This is a metabolic disorder caused by poor absorption of glucose. Diet plays a strong role in preventing type 2 diabetes, a condition that causes the level of sugar (glucose) in the blood to become too high.
Anaemia	A condition caused by insufficient iron in the body. Common symptoms include tiredness and lethargy.
Diverticulitis	A condition which affects the large intestine. It is linked to a low fibre diet and causes the lining of the bowel to become inflamed, infected and damaged.
Osteoporosis & rickets	Calcium is important for strong bones. Vitamin D is needed for calcium to be absorbed from food. Rickets is caused by a lack of calcium and vitamin D in children. Osteoporosis is a disease in which the bones start to lose minerals and their strength and break easily.



Cholesterol



The Central Processing Unit

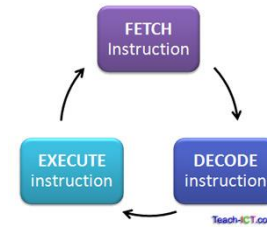
INSTRUCTIONS	A single action that can be performed by a computer processor.
CPU Central Processing Unit	The CPU is also known as the processor or microprocessor. The CPU is responsible for executing a sequence of stored instructions called a program.
Arithmetic Logic Unit ALU	The arithmetic and logic unit (ALU) is where the CPU performs the arithmetic and logic operations. Every task that your computer carries out is completed here
RAM	RAM is a fast temporary type of memory in which programs, applications and data are stored. Here are some examples of what's stored in RAM:
ROM	memory that cannot be changed by a program or user. ROM retains its memory even after the computer is turned off. For example, ROM stores the instructions for the computer to start up when it is turned on again.

Base Number system keywords

Binary	Counting using base 2 (0s & 1s) – the only language that computers truly understand. 0 means off, 1 means on.
Denary	Counting using base 10 (0-9) – these are our normal numbers that we use every day.
Bit	The smallest amount of data (stands for binary digit) (0 or 1).
Byte	8 bits.

Bits to Bytes

Bit	The smallest amount of data (stands for binary digit) (0 or 1).
Byte (B)	8 bits
Kilobyte (KB)	1024 bytes
Megabyte (MB)	1024 kilobytes
Gigabyte (GB)	1024 megabytes
Terabyte	1024 gigabytes



Fetch – Decode – Execute

1	Fetch	Gets the instructions that it needs to run from the RAM of the computer
2	Decode	Breaks down the codes (to binary – 0s and 1s) to perform instructions
3	Execute	Based on instructions it can perform difficult calculations or move data from one memory place to another create an output

Binary Place Values (for 1 byte)

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

Hardware

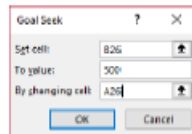
Hardware	The components kept inside a computer
Peripheral	A device which can add extra functionality to a computer system. Peripherals can either input or output data from the computer.
Input	A peripheral device which takes data from the real world and enters it into a computer systems.
Output	A peripheral device which takes data from a computer system and presents it into the real world.
Storage	Devices that store virtually all the data and applications on a computer.
Motherboard	Connects all components in the computer together.
Hard Drive	Stores information in long term memory.
Fan	Used to cool down the components and prevent them from overheating.
Assistive technology	Any object or system that increases or maintains the capabilities of people with disabilities.
Power Supply Unit (PSU)	Inputs power to the system.

Vocabulary

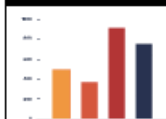
Absolute cell reference	Cell reference that does not adjust to its new location when copied or moved.
Autofill	Automatically replicates data and formulae into cells.
Autosum	A function that automatically adds the values in a range.
Break even	To not make a profit, not make a loss, but arrive at an outcome of zero.
Chart	A graphical way to show data.
Filter	Allows you to display only certain data to make it easier to find specific information in a table.
Formula	Equation that performs a calculation on values in a worksheet.
Function	A built-in formula that makes it easy for you to perform common calculations.
Goal seek	A process that automatically works out a specific required value by changing the value in a related cell.
Hide/unhide	Show or reveal selected rows or columns.
Model	a computer program that is designed to simulate what might (or what <i>did</i>) happen in a situation.
Print area	Setting the print area restricts what is going to be printed. This is important when trying to fit a large spreadsheet on to one page while printing.
Range	A group of cells on a worksheet identified by the cell in the upper left corner and the cell in the lower right corner, separated by a colon. For example, A1:B20.
Relative cell reference	Cell reference that adjusts automatically when moved or copied.
Replicate	Another word meaning "to copy", especially for formulae.
Sort	Arranging the contents of a range in ascending (A to Z) or descending (Z to A) order.
Spreadsheet	A grid of rows and columns containing numbers, text, and formulas. Used to solve number-based problems.
What if...? questions	Types of questions that explore different possible events or situations.
Worksheet	The workspace where you enter data.

Spreadsheet Functions

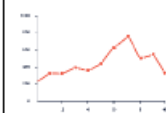
AVERAGE	Shows the average of values in a range	=SUM	Adds up the total value of the cells in a range
MAX	Displays the biggest value from the range	=MIN	Displays the smallest value from the range
IF	A logical function that can be helpful in decision-making. It tests to see if a condition is true or false, e.g. =IF(A1>75,"Pass","Fail") If the value in cell A1 is greater than 75, it will display Pass . If it is not, it will display Fail . Text strings must be inside quotation marks.		
COUNTIF	A logical function that counts the cells within a range that meet criteria you specify, e.g. =COUNTIF(A1:A25,"apples") This will show the number of cells from the range A1:A25 that contain the word apples .		
AVERAGEIF	A logical function that displays the average of values in cells within a range that meet criteria you specify, e.g. =AVERAGEIF(B5:B30,"male",D5:D30) This will show the average value from the cells in column D that are on the same row as a cell in column B that contains the word male .		
=SUMIF	A logical function that displays the sum total of values in cells within a range that meet criteria you specify, e.g. =SUMIF(D2:D20,"Toyota",E2:E20) This will add up and display the total values from column E that are on the same row as the cells in column D containing the word Toyota .		
Numerical operators			
>	greater than	<	less than
>=	greater than or equal to	<=	less than or equal to
=	equal to	<>	not equal to
Goalseek	A process that automatically works out a required value by changing the value in a related cell. In the example to the left, we are setting the value of B26 to 500 by changing cell A26. This can be very useful when working on an incomplete model.		



Representing Data Graphically



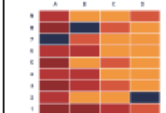
Bar charts are used to **compare variables**. They can appear vertically (also called a column chart) or horizontally.



Line graphs are used to show **trends over time**.



Pie charts are used to show the **components of a larger whole**.



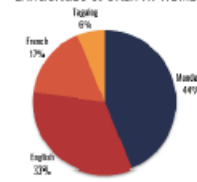
Conditional formatting applies formatting to a range based on the contents of the cells. A common approach is a **heat map** like the example to the left.

Key components of a chart

Title	No chart is complete without a descriptive title. Think carefully when naming a chart.
Axes	The horizontal and vertical axes of your chart should be labelled and use appropriate units.
Series	The name given to a row or column of numbers plotted in a chart.
Data labels	It is essential that data displayed graphically is well-labelled to enable the viewer to understand the data being presented.

Examples

LANGUAGES SPOKEN AT HOME



CLASS AVERAGE SCORE

