CHRIST THE KING

KNOWLEDGE ORGANISERS

#CtKCares

Year 8
Advent Term 1

1

SELF-QUIZZING

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 very easily become overwhelmed. Your long-term memory, on the other hand, is effectively limitless.

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

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

QUICK FACT

Did you know

Research shows students remember 50% more when they test themselves after learning something

50%

How often should I self-quiz?

Research shows that regular 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 different ways to learn the material in your knowledge organiser.

How to use my Knowledge Organiser

1. 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 your green 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 you struggled with.
2. Draw a mind map, jotting down everything that you can remember from the knowledge organiser. Check accuracy, correct in green pen and then repeat.
3. 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.
4. Use your knowledge organisers to create flashcards. These could be double sided with a question on one side and the answer on the other. Alternatively, a keyword on one side and a definition o

2

HOMEWORK SCHEDULE

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

This will consist of:

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

3

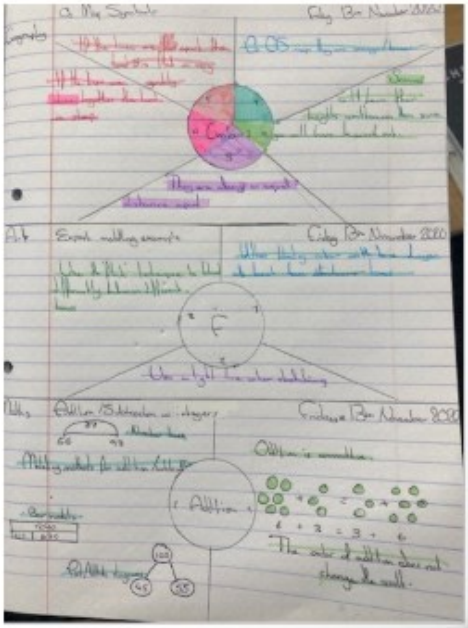
WHAT ARE THE HOMEWORK EXPECTATIONS?

Each homework must meet the following 5 requirements:

1. Write the complete **title and date in full** eg. *Tuesday 9th September 2017* on each page, **underlined**
2. You should include a **minimum of words** to summarise the topic. Do not copy the words from the text.
3. Make **full use of the page** for each topic by scaling your notes & images appropriately to use of all the space.
4. You must include **diagrams, sketches** or **cartoon doodles** to visually represent the topic, try to use humour.
5. **Highlight key words** and phrases, using underline, highlighter pens. Explain technical terms

HOW SHOULD I PRESENT MY WORK?

Please remember that the same rules apply to the presentation of your homework as apply 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:



QUICK TIP

Don't forget

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

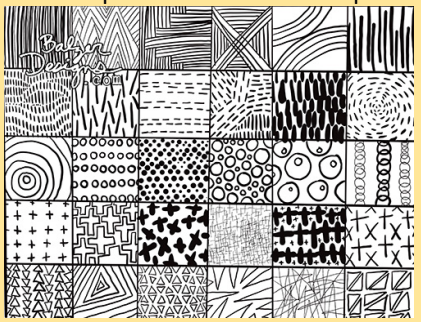
Portraits

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.

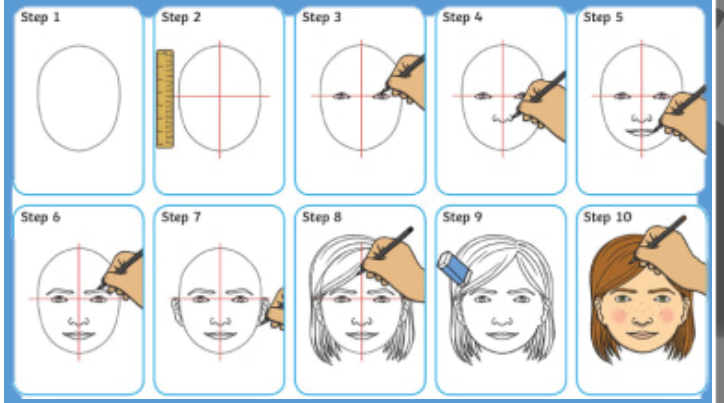
Portrait Keywords	
1. Proportion	The size of something compared to something else.
2. Symmetry	When on side of an object mirrors another
3. Form	a three dimensional shape
4. Tone	the quality of brightness, depth or hue of a colour
5. Texture	the way surfaces look and feel, i.e. rough, smooth, soft, etc
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.



Proportions and accuracy

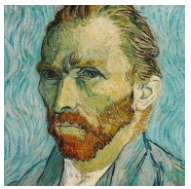


Remember to look closely at your features in a mirror and think about the shapes you draw

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.



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.

Freda 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 WELL ? WHAT DO I NEED TO DO TO IMPROVE ? HOW AM I COMMUNICATING MEANING ?

YEAR 8 SILENT FILM

characterisation

The act of changing [physicality] when in role

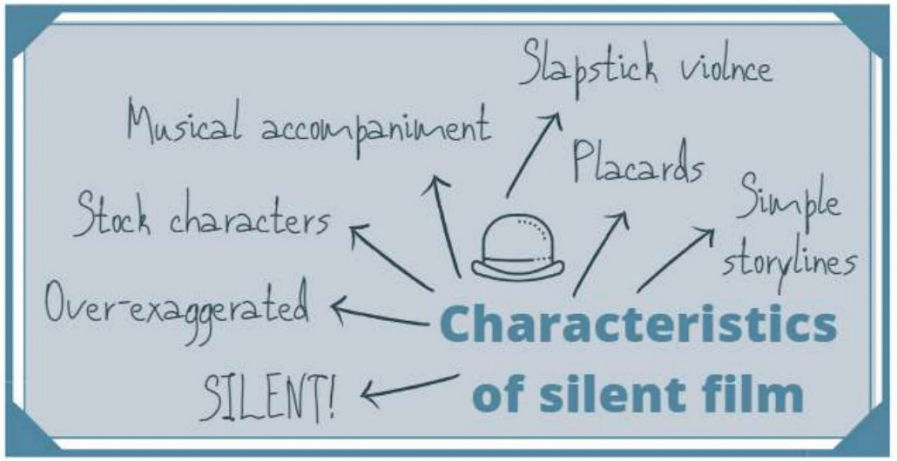
Why are clear characters important in mime?

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 villian?*



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 incresed 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 tays consitent throughout the performance.

DISAPPEARING OBJECTS
Don'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 ?

HAVE I INCLUDED ALL OF THE MAIN COMPONANTS OF A STORY IN MY PIECE ?

YEAR 8 FREE

Devising/ rehearsal techniques

A STILL-IMAGE IS... IT HELPS US TO...

HOT SEATING IS... IT HELPS US TO...

CHORAL MOVEMENT IS... IT HELPS US TO...

A FLASHBACK IS... IT HELPS THE AUDIENCE TO...

A THOUGHT-TRACK IS... IT HELPS THE AUDIENCE TO...

WHAT ARE THE MAIN COMPONENTS OF A STORY?

EXPOSITION
Beginning of a story- where the characters and setting are introduced to the audience.

RISING ACTION
Part of the story where the main characters start to face a series of conflicts and challenges.

CLIMAX
The most intense, exciting or dramatic part of the story. This is where the characters may try to deal with the problems they face.

RESOLUTION
The characters have dealt with all of the conflicts and the story is wrapped up.

MORAL
The message your story gives people about how to behave in the real world.

DILEMMA
A situation in which a difficult choice has to be made between two or more alternatives.

Key words

SEQUENCE
A number of actions or moments put togther in a specific order.

CONFLICT
A moment of disagreement or difficulty for the characters.

CLIMAX
The most intense, exciting or dramatic part of your story arc.

CONCLUSION
The final part of a story where all of the questions raised so far are answered and the conflict is resolved.

PLOT/STORY ARC
The rise and fall of the story line, imade up of 4 different sections.

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.

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

STEREOTYPE
A fixed and oversimplified image of a specific type of person e.g. a strict and boring teacher or a loud and rude teenager.

CATCHPHRASE
A sentence or phrase that sums up the personality of your character.

DEVISING
Working together in a group to create scenes from scratch in response to a stimulus.

ENSEMBLE
A group of people working together on stage to create a performance.

IMPROVISTION
Action that is created on the spot.

STRUCTURE
The way a scene or play flows from one section to the next.

Task A: Write 3 diary entries or monologues from different points in the story that show how your character is developing.
Task B: Draw and label a stickman diagram of your choral movement sequence.

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:

Point	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…
Evidence	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…
Technique	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 …
Effect	This suggests/shows/implies/connotes/indicates… The effect on the reader is…. This is used to show that… The connotations of this are…
Relate 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	
1	Steinbeck encourages us to empathise with the plight of migrant workers during the Great Depression.
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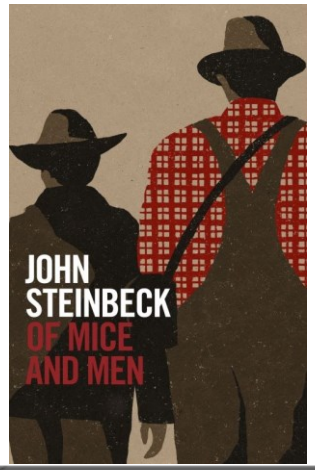
5	Steinbeck explores the tension between the inevitability of fate and the fragility of human dreams
6	Steinbeck explores the contrasts of Nature Vs Man
7	The novella is an indictment of the way society treats the dispossessed



	Key Vocabulary	Definition	Example
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	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	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	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	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	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	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.

Topic 1: Development and Inequality

1. Key words	
Development	Economic progress of a country and its improving quality of life
Development Indicators	Measurements used to compare quality of life in different countries
Inequality	Extreme differences in quality of life
Resource	An item with value or purpose e.g. food
Resource insecurity	Lack of a resource
Resource security	Plentiful supply of a resource
Malnutrition	Ill or weak due to too little food
Undernourished	Insufficient 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
Vaccination	Treatment to make an individual immune to a disease
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.

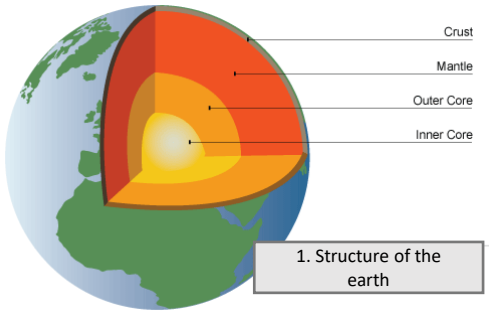
2. Development Indicators	
Birth rate	Number of babies born per 1000 of population
GNI	Gross National Income – the amount of money a country makes in a year
Infant Mortality Rate	The number of children who die before their first birthday per 1000 of population
Life expectancy	How long a person is expected 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.

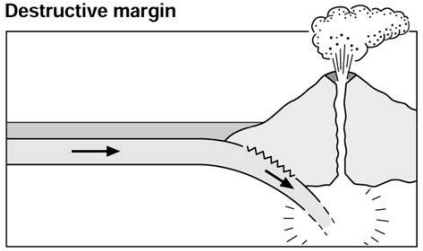
5. Types of aid	
Bilateral aid	A government in one country provides aid to the government of another country
Multilateral aid	Aid from several countries is collected and distributed by an organisation e.g. The World Bank
Top-down aid	A government decides how to invest aid in their country
Bottom-up aid	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

Topic 2: Tectonic Hazards



1. Structure of the earth

4



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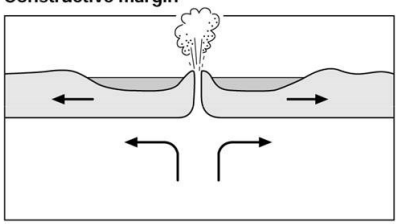

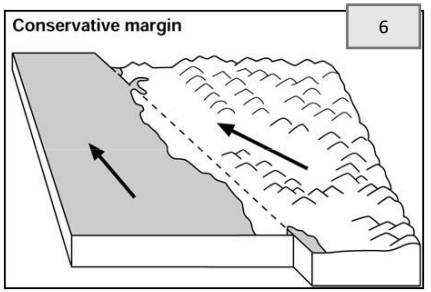

2. Plate tectonic theory key words	
Plate	A large rigid section of the earth's surface
Plate Margin	The boundary of two plates
Tectonic	The structure of the earth and processes within.
Continental Drift	Gradual movement of continents across time
Convection	Movement in a fluid of rising less dense heat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

A simple cross section of a volcano

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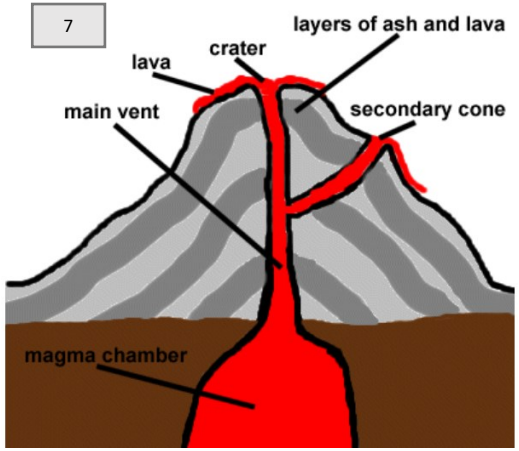


8. Volcanic Hazards	
Lava	Molten rock which erupts from the ground
Ash	Small pieces of shattered roc, minerals and gas thrown from the volcano
Volcanic Bomb	balls of molten rock that solidify as they fall
Lahar	Mud flows, made from pyroclastic materials, rocks and water.
Pyroclastic flow	Pyroclastic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

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

9. Reasons for living near volcanoes
Fertile soil
Tourism
Precious minerals
Geothermal energy
Social factors

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

HALF TERM ONE – continuity and change

1. Industrial revolution - key features	
Industry	Manufacturing goods in mills and factories
Agriculture	Farming
Transport	Railways, canals, steam ships
Revolution	A complete change
Population	The number of people in an area
Economy	The money produced by a nation
Society	The people that live in a nation

2. Industrial revolution – living conditions	
Housing	One room per family. Little furniture, damp, dirty.
Water supply	One shared outside pump, dirty and diseased
Toilets	One shared outside toilet, dirty, over flowing
Social reformers	Charles Booth and Seebohm Rowntree worked to improve things

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

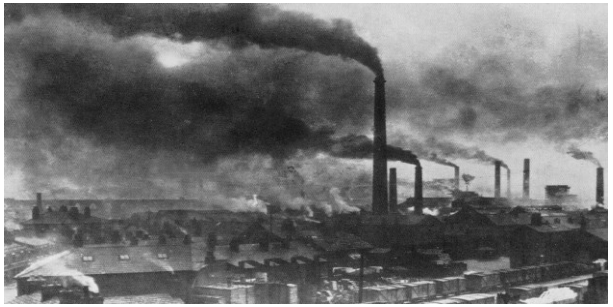
4. Jack the Ripper case study	
Environment	Whitechapel. Polluted, over crowded, dirty, smog, alley ways and rookeries. Work houses, gin palaces, dark, dangerous, crime.
Victims	5 victims. Annie Chapman. Elizabeth Stride. Mary Jane Kelly. Mary Ann Nichols. Catherine Eddowes.
Profile	Tall, dark, wore a 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

5. Political reforms	
Elections before 1832	No secret ballot, corruption, bribery, violence, drunkenness, chaos
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.

6. Local history	
Causes of the Reform Riots	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. They looted and took everything and then set the buildings on fire.
Consequences of the Reform Riots	Ring leaders arrested and put on trial with London Judges. Made an example of. Sentenced to death e.g. George Beck, or transportation e.g. Valentine Marshall.

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

8. Timeline of key dates	
1779	Richard Arkwright opened a cotton spinning mill (factory)
1811	The first large scale Luddite riot in Arnold
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
1860	First iron warship, HMS Warrior
1870	Education Act
1888	Jack the Ripper
1889	Charles Booth's survey
1901	Death of Queen Victoria



HALF TERM TWO – The British Empire

1. The Empire - key features	
Empire	A large group of countries ruled by a single nation
Trade	Buying and selling of goods between countries
Trade Triangle	A system of profit from slavery involving 3 countries – Britain, Africa and The West Indies
Import	Bringing goods into the country
Export	Moving goods out of the country
Economy	The money produced by a nation

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, Typhus, skin rubbed raw. Deaths common.

3. Slave trade – life on the plantations	
Auctions	Sold to the highest bidder on a stage along with other goods e.g. cotton, tools, cloth
Work	6 days a week. At least 12 hours a day. Back breaking field work picking cotton in gangs.
Living conditions	Small wooden huts, no amenities, straw bed.
Punishments	Whipping, hanging, amputations, chains.

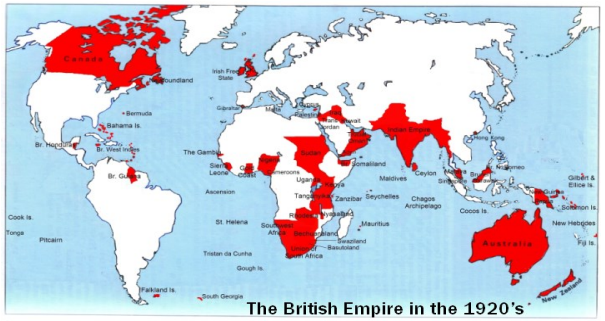
4. Abolition of Slavery	
Why?	.1. Economic reasons 2. White kindness 3. Black activism 4. Religious reasons
How?	Abolitionism movement campaigned and pushed the British government to end slavery in the British Empire in 1833.
Opposition	Plantation owners and investors demanded financial compensation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

5. India case study	
Gaining control	By 1668 Britain had three trading posts. Surat, 1612, Madras, 1638, Bombay, 1668 British trading stations in India were run by one company - the EIC.
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.
Gandhi	Indian lawyer who moved to South Africa to practice law and tireless campaigner for Indian independence.
The Amritsar Massacre	April 13, 1919, British troops fired on a large crowd of unarmed Indians in an open space known as the Jallianwala Bagh in Amritsar killing several hundred people and wounding many hundreds more.

6. Ireland case study	
Causes	Between 1845 and 1852, a fungal disease affected farms across Ireland. This completely destroyed the potato crop which was the staple diet of the population at the time.
Events	The potato harvest failed for seven years! As a result, about 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. Writing to argue - key words	
To an extent/ how far	How much you agree/ disagree with an argument
On one hand	Presenting a point of view
On the other hand	Presenting an alternative point of view
Judgement	Outlining and explaining your view in conclusion
PEEL	Point, Evidence, Explain, Link

8. 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 (trade triangle)
1833	The Abolition of Slavery Act
1845	The start of the Irish potato famine
1852	The end of the Irish potato famine
1857	The Indian Mutiny
1869	Mahatma Gandhi was born
1919	The Amritsar Massacre



The British Empire in the 1920's

CHRIST THE KING - KNOWLEDGE ORGANISERS

Y8 MATHS

Year 8 Mathematics

Term 1A: 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
- Model solutions in different representations

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 Frac/tion: 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

Numerator / Denominator

$\frac{3}{5}$

Number of parts represented: Numerator

Number of parts to make up the whole: Denominator

ALL PARTS of a fraction are of equal size

Repeated addition = multiplication by an integer

$4 \times \frac{2}{5} \rightarrow \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$

Integer (Whole number)

Each part represents $\frac{1}{5}$

How many parts are shaded?

What each part represents

$= \frac{8}{5}$

$= 1\frac{3}{5}$

Each whole is split into the same number of parts as the denominator

Revisit

When adding fractions with the same denominator - add the numerators

Multiplying unit fractions

$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$

Parts shaded

Total number of parts in the diagram

Modelled:

3

4

Multiplying non-unit fractions

$\frac{3}{4} \times \frac{2}{3}$

Shade in 3 parts

Repeat it on this many rows

This many columns

This many rows

$\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$

Parts shaded

Total number of parts in the diagram

Modelled:

3

4

Quick Multiplying and Cancelling down

$\frac{\cancel{3}^{1}}{5} \times \frac{4}{\cancel{9}_{3}}$

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

Quick Solving

Multiply the numerators

Multiply the denominators

$\frac{1 \times 4}{5 \times 3} = \frac{4}{15}$

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 an integer by an unit fraction

$1 \div \frac{1}{4} = 4$

How many quarters are in 1?

"There are 4 quarters in 1 whole. Therefore, there are 20 quarters in 5 wholes"

$5 \div \frac{1}{4} = 20$

Dividing any fractions *Remember to use reciprocals*

$\frac{2}{5} \div \frac{3}{4}$

$\frac{2}{5} \times \frac{4}{3}$

Multiplying by a reciprocal gives the same outcome

Represented

$= \frac{8}{15}$

Year 8 Mathematics

Term 1B: Working with Fractions

What do I need to be able to do?

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

1. Find a fraction of a given amount
2. Use a given fraction to find the whole or other fractions
3. Find a fractional increase/decrease
4. Multiply and divide mixed numbers together, both positive and negative

Keywords

Fraction: how many parts of a whole we have

Equivalent: of equal value

Whole: a number with no fractional or decimal part.

Percentage: parts per 100 (uses the % symbol)

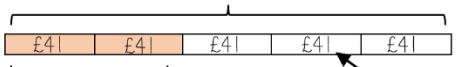
Place Value: the value of a digit depending on its place in a number. In our decimal number system, each place is 10 times bigger than the place to its right

Convert: change into an equivalent representation, often fraction to decimal to a percentage cycle.

Fraction of a given amount

Find $\frac{2}{5}$ of £205

The bar represents the whole amount

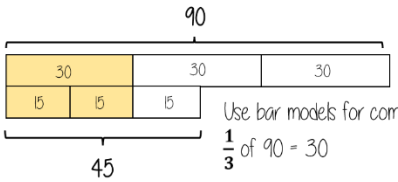


2 out of the 5 equal parts

2 x £41 = £82

£205 ÷ 5 = £41

Each part of the bar model represents £41



Use bar models for comparisons

$\frac{1}{3}$ of 90 = 30

$\frac{2}{3}$ of 45 = 30

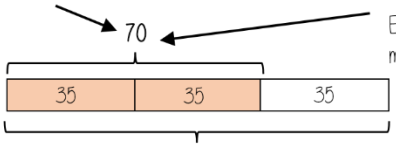
$\therefore \frac{1}{3}$ of 90 = $\frac{2}{3}$ of 45

Use a fraction of amount

$\frac{2}{3}$ of a value is 70. What is the whole number?

70 ÷ 2 = 35

Each part of the bar model represents 35

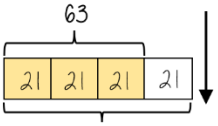


35 x 3 = 105

The whole number is 105

The wording of the question is important to setting up the bar model

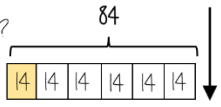
$\frac{3}{4}$ of a number is 63



Find the whole

What is $\frac{1}{6}$ of the number?

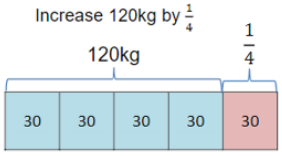
= 14



Use the whole to find a given part

Fractional increase

Increase 120kg by $\frac{1}{4}$



120 ÷ 4 = 30

120 + 30 = 150

Therefore 120kg increased by $\frac{1}{4}$ is 150kg

Find one part first by splitting 120kg into 4 parts. You then know each part is worth 30kg.

You then need to add an extra part because you are increasing (remember each part is now worth 30kg)

Fractional decrease

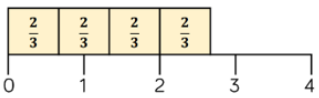
Decrease 120kg by $\frac{1}{4}$

For decreases you follow the same process but remove one part.

So here you are left with 90kg.

Multiplying and dividing mixed numbers by fractions

Calculate:



$2\frac{2}{3} \times \frac{1}{4}$ Convert all fractions to improper fractions where possible

$\frac{8}{3} \times \frac{1}{4}$ Carry out the multiplication of fractions as usual

$\frac{8}{12} = \frac{2}{3}$ Simplify your answer

You can do the same process for division:

$2\frac{2}{3} \div \frac{1}{4} = \frac{8}{3} \div \frac{1}{4} = \frac{8}{3} \times \frac{4}{1}$

Check back at the dividing fractions section

Do not forget to simplify!

$= \frac{32}{3}$

$= 10\frac{2}{3}$

Year 8 Mathematics

Term 1C: Fractions, Decimals and Percentages

What do I need to be able to do?

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

- Convert fluently between fractions, decimals and percentages (FDP)

Keywords

Percent: parts per 100 – written using the % symbol

Decimal: a number in our base 10 number system. Numbers to the right of the decimal place are called decimals

Fraction: a fraction represents how many parts of a whole value you have

Place value: the numerical value of a digit decided by its position in the number

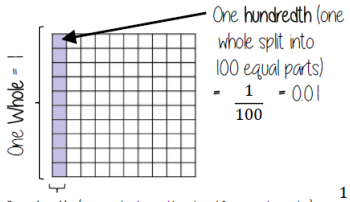
Interval: a range between two numbers

Tenth: one whole split into 10 equal parts

Hundredth: one whole split into 100 equal parts

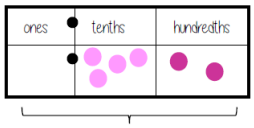
Recurring: a decimal that repeats in a given pattern

Tenths and hundredths



One **hundredth** (one whole split into 100 equal parts) = $\frac{1}{100}$ = 0.01

One **tenth** (one whole split into 10 equal parts) = $\frac{1}{10}$ = 0.1



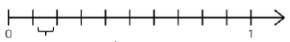
0 ones, 5 tenth and 2 hundredths

0 + 0.1 + 0.1 + 0.1 + 0.1 + 0.1 + 0.01 + 0.01

= 0 + 0.5 + 0.02

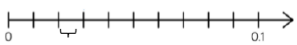
= 0.52

On a number line



One whole – split into 10 equal parts

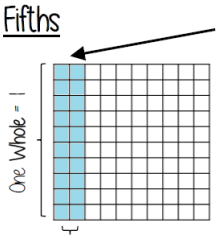
One tenth = $\frac{1}{10}$ = 0.1

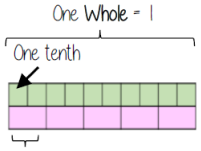


One tenth – split into 10 equal parts

One hundredth = $\frac{1}{100}$ = 0.01

Fifths

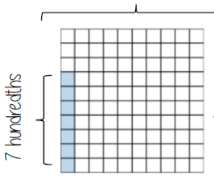




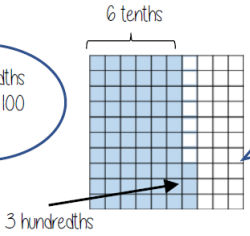
One **fifth** (one whole split into 5 equal parts) = $\frac{1}{5}$ = 0.2

Percentages on a hundred grid

100% = a whole = 100 hundredths



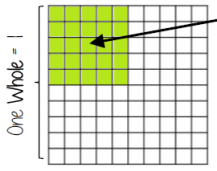
7 hundredths
7 out of 100
7%

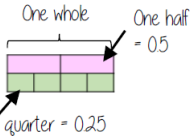


6 tenths and 3 hundredths
63 hundredths
63%

Quarters

One **quarter** (one whole split into 4 equal parts) = $\frac{1}{4}$ = 0.25





Simple pie charts

A pie chart has 360° so all FDP calculations are out of 360

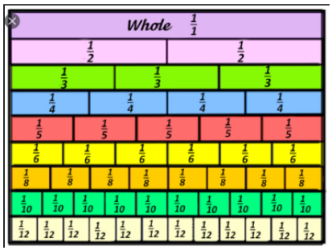
Split into 10 parts
= 10% = 36°

Split into 2 parts
= 50% = 180°

Split into 5 parts
= 20% = 72°

Equivalent fractions

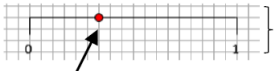
Represent equivalence with fraction walls



Fractions – on a diagram

The denominator is represented by EQUALLY sized parts – this is split into quarters

Fractions – on a number line



This point is at the 6th part

6 is the numerator

One whole split into 18 equal parts

18 is the denominator

$\frac{6}{18} \leftarrow \frac{3}{9} \leftarrow \frac{1}{3}$

Convert FDP

$\frac{70}{100}$ → This also means 70 ÷ 100 → 70 out of 100 squares → 70 "hundredths" = 7 "tenths" = 0.7

→ 70 hundredths = 70%

Using a calculator

→ S⇌D → Convert to a decimal

This will give you the answer in the simplest form

× 100 converts to a percentage

Be careful of recurring decimals

e.g. $\frac{1}{3}$ = 0.3333333 = $0.\dot{3}$

The dot above the 3

Year 8 Mathematics

Term 1D: Percentages

What do I need to be able to do?

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

- Convert between FDP less than and more than 100
- Increase and decrease using multipliers
- Express an amount as a percentage
- Find percentage change

Keywords

Percent: parts per 100 – written using the % symbol

Decimal: a number in our base 10 number system. Numbers to the right of the decimal place are called decimals

Fraction: a fraction represents how many parts of a whole value you have

Equivalent: of equal value

Reduce: to make smaller in value
Growth: to increase/to grow

Integer: whole number, can be positive, negative or zero

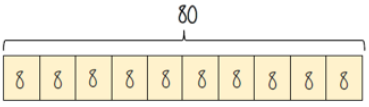
Invest: use money with the goal of it increasing in value over time (usually in a bank)

Find the percentage of an amount (Mental methods)

10% = $\frac{1}{10}$ of the whole 50% = $\frac{5}{10}$ = $\frac{1}{2}$ of the whole

20% = $\frac{2}{10}$ = $\frac{1}{5}$ of the whole 5% = $\frac{1}{20}$ of the whole

Find 65% of 80



Method 1:
65% = 10% x 6 + 5%
= (8 x 6) + 4
= 52

Method 2:
65% = 50% + 10% + 5%
= 40 + 8 + 4
= 52

Find the percentage of an amount (calculator methods)

Using a multiplier

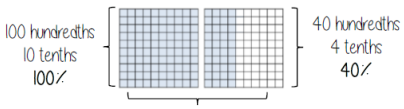
Find 65% of 80

Fraction, decimal, percentage conversion

65% = $\frac{65}{100}$ = 0.65 ← The multiplier

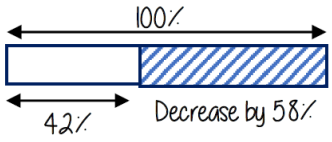
0.65 x 80 = 52

Convert FDP < and > 100%



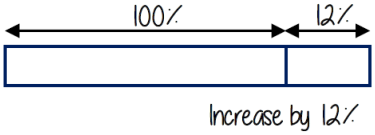
100% + 40%
1 + 0.40
= 140

Percentage decrease: Multipliers



100% - 58% = 42%
1.00 – 0.58 = 0.42 ← Multiplier Less than 1

Percentage increase: Multipliers

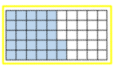


100% + 12% = 112%
1.00 + 0.12 = 1.12 ← Multiplier More than 1

Express as a % - Non-calculator

Percent – per hundred

7 per every 10 are orange → $\frac{7}{10}$ → This means that 70 per every 100 are orange → $\frac{70}{100}$ → 70%



27 per every 50 shaded → $\frac{27}{50}$ → 54 per every 100 shaded → $\frac{54}{100}$ → 54%

Denominator 100 | Equivalent fractions

Express as a % - Calculator

$\frac{13}{30}$ → $\frac{13}{30}$ → × 100 → 43.3333...% → 43%

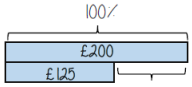
Can't use equivalence easily to find 'per hundred'

This the same as 13 ÷ 30

Decimal percentages are still a percentage

Percentage change

I bought a phone for £200. A year later sold it for £125



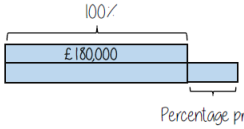
All values of change compare to the ORIGINAL value

Percentage loss

$\frac{75}{200}$ × 100 = 37.5%

Difference in value / Original value × 100

I bought a house for £180,000, I later sold it for £216,000



Percentage profit

Money made (profit value) → $\frac{36000}{180000}$ × 100 = 20%

Choose appropriate method

The language and wording of the question is the key

Have you represented the question in a bar model?
Can you use a calculator?

Year 8 French – HT1

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

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

Negative opinions
Je n'aime pas
Je déteste

+ le/ la/ les

beaucoup—a lot
tellement—much
vraiment—really

Mon horloge française

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.

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?*

 Dans mon collège on doit porter un uniforme scolaire. Je trouve ça nul!	1	*In my school, we must wear a school uniform. I find that it is rubbish!*
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. 	2	*We wear black trousers or black skirts with a black and yellow blazer. We also wear a black tie. I like my uniform.*
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. 	3	*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.*
 Dans mon college il y a un terrain de foot. Cependant, il n'y a pas de piscine. C'est dommage!	4	*In my school there is a football ground. However, there is not a swimming pool. What a pity!*
Hier, j'ai mangé du poulet avec des frites à la cantine. C'était délicieux! 	5	*Yesterday I ate chicken and chips at the canteen! It was delicious!*
Si j'avais le choix, je voudrais étudier en France 	6	*If I had the choice, I would like to study in France*
 parce que les vacances d'été sont plus longues qu'en Angleterre.	7	*because the summer holidays are longer than in England.*

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

Musical knowledge 1: the essentials

Layers of sound

Melody = tune. **One note at a time.** Can be sung or played on an instrument.

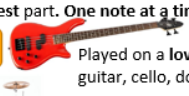
1. Melody

See opposite

2. Chords

Bass line = the **lowest** part. **One note at a time.**

3. A bass line



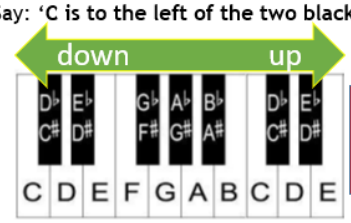
Played on a **low-pitched instrument** such as bass guitar, cello, double bass, tuba.

4. A beat

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

Notes on a keyboard

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**'

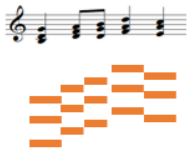


A note by itself CANNOT be major or minor!

3. Every black note has two names: **sharp #** and **flat b**
4. F*l*at = *l*ower than white note
5. S*h*arp = *h*igher than white note

Chords

1. Chord = 2+ notes played together



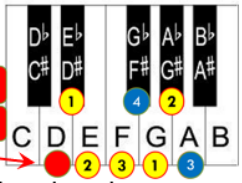
2. Chords can be **major or minor**

Major = 4 then 3 semitones. Sounds **happy**	Minor = 3 then 4 semitones. Sounds **sad**

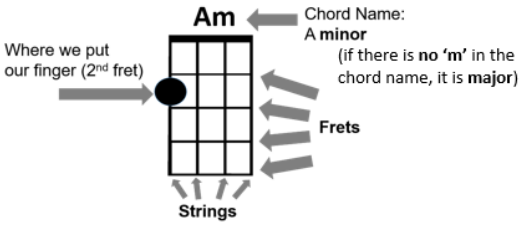
Semitone = the next note, counting white AND black

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

D major
D F# A



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



Left hand side of chord diagram = string **nearest your chin**

Musical knowledge 2: rhythm notation

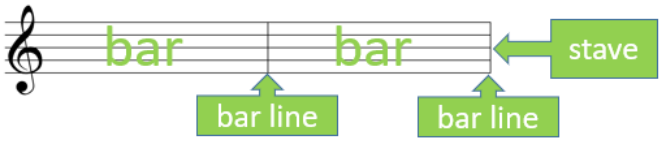
Definitions

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

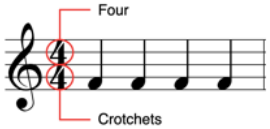
2. Rhythm = long and short notes, and the gaps between them:

Bars and time signatures

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.
3. The top number tells us how many beats are in a bar. The bottom number tells us what sort of beats they are.



How to read rhythms

1. **These are the basic types of notes.**
American note names are more logical: here, the UK names are in brackets.

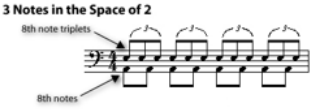
Note/Rest Name	Note Symbol	Rest Symbol	Note/Rest Value (Length)
Whole Note/Rest (Semibreve)	𝅝	𝄻	4 beats
Half Note/Rest (Minim)	𝅗𝅥	𝄼	2 beats
Quarter Note/Rest (Crotchet)	♩	𝄽	1 beat
Eighth Note/Rest (Quaver)	♪	𝄾	1/2 beat

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.
3. **A dot after a note adds on half as much again:** 𝅗𝅥. = 𝅗𝅥 + ♩ = 3 beats

♩. = ♩ + ♪ = 1½ beats

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

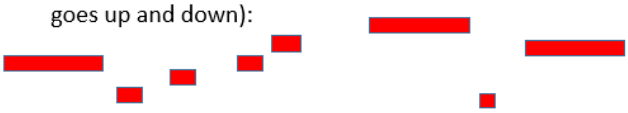


Musical knowledge 3: pitch notation

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

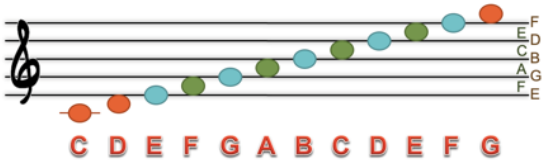
Treble Clef

MELODY

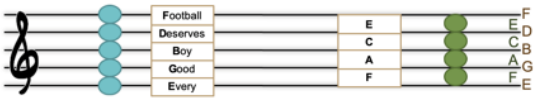
Register– how high or low the notes are
Range – the distance from the lowest note to the highest: wide or narrow
Sequence – a pattern that repeats, ascending or descending
Scalic (moving in a scale) or **broken chord** (moving in chord shapes) movement
Steps (going to a next-door note) or **leaps** (jumping 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.



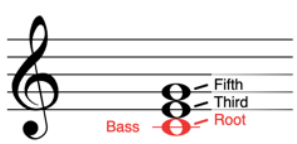
4. You can remember the notes on the **lines** with **'Every Good Boy Deserves Football'**, and the notes in the **spaces** spell **'FACE'**. Remember to go **upwards** when doing this!

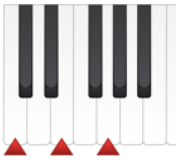
Musical knowledge 4: a cappella

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:

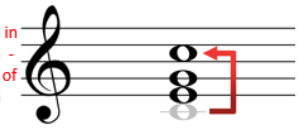
Root position chords follow the 4+3 or 3+4 pattern.



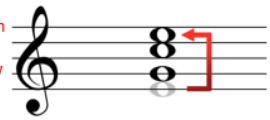


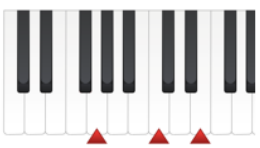
C major chord in **root position** (called this because the root note is in the bass (at the bottom)

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

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?

Question using key words

How are **melodies** used? Are they simple or complex?

- √ Are the notes high or low in **pitch**? Do the notes make sudden leaps or move in small steps?
- √ Are the **dynamics** (volume) loud or soft?
- √ How would you describe the **structure**? How many different sections of music can you hear?
- √ How would you describe the **style** of
- √ music? Which **genre** of music would you describe it as?

Definitions

T.DRIPS

Use **TDRIPS** – **T**empo, **D**ynamics, **R**hythm, **I**nstrumentation, **P**itch, **S**tructure to describe music.

Key words

Tempo Fast, Slow, Allegro, Lento

Dynamics Forte, Piano

Rhythm Straight, Syncopated

Instrumentation

Pitch Treble Clef, Bass Clef, High or Low

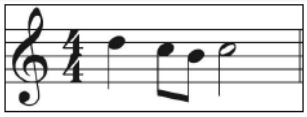
Structure Strophic, Rondo, Ternary

LISTENING SKILLS

Appraisal

'an act of assessing something.'

"What am I hearing?"



Musical knowledge : Composing 6

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

Definitions

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.

Key Notes

Using music notes in composition

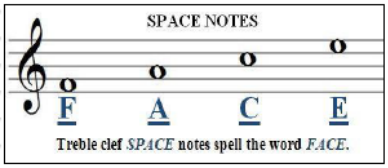
Crotchet: a note worth 1 beat.

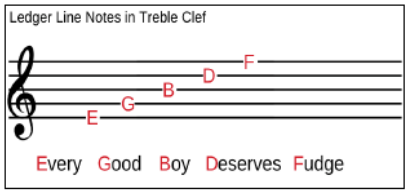
Quaver: a note worth ½ a beat.

Minim: a note worth 2 beats.

Semibreve: a note worth 4 beats.

Key words

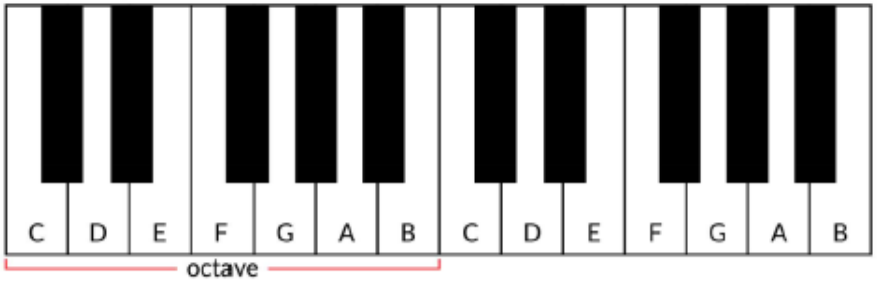




KEYBOARD SKILLS

Exploring Treble Clef Reading and Notation

A. Layout of a Keyboard/Piano

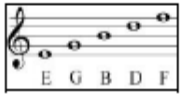


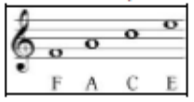
A piano or keyboard is laid out with **WHITE KEYS** and Black Keys (see section G). C is to the left of the two Black Keys and the notes continue to G then they go back to A again. Notes with the same letter name/pitch are said to be an **OCTAVE** apart. **MIDDLE C** is normally in the centre of a piano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

B. Treble Clef & Treble Clef Notation

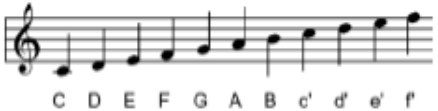
A **STAVE** or **STAFF** is the name given to the five lines where musical notes are written. The position of notes on the stave or staff shows their **PITCH** (how high or low a note is). The **TREBLE CLEF** is a symbol used to show high-pitched notes on the stave and is *usually* ised for the right 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 **LINES** and 4 **SPACES**.

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





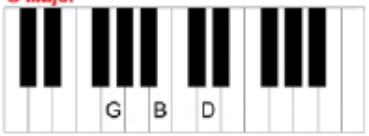
Notes from **MIDDLE C** going up in pitch (all of the white notes) are called a **SCALE**.



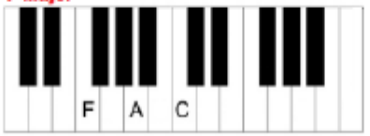
C. Keyboard Chords

C Major

G Major



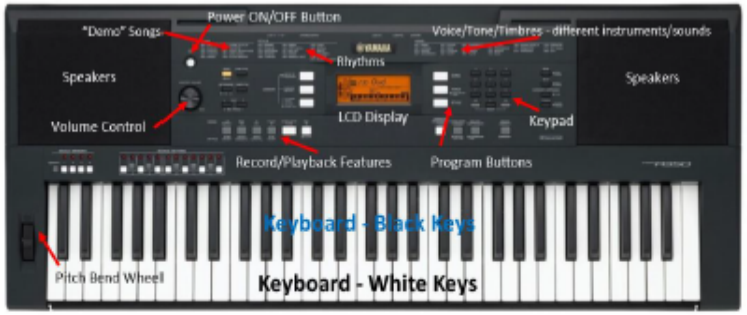
F Major



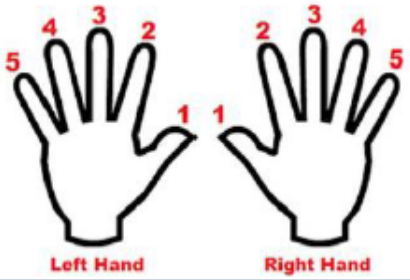
A Minor

Play one – Miss one – play one – miss one – play one

D. Keyboard Functions

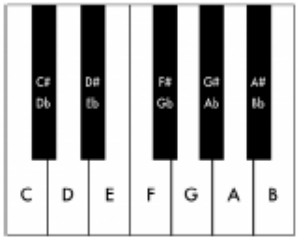


E. Left Hand/Right Hand (1-5)



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.



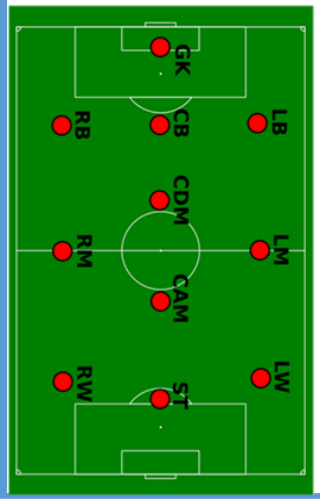
Football

Key Words:

1. Dummy
2. Cruyff Turn
3. Drag back
4. Swerve
5. Curl
6. One-touch
7. Pass and move
8. Jockeying
9. Step overs
10. Nutmeg

Formations:

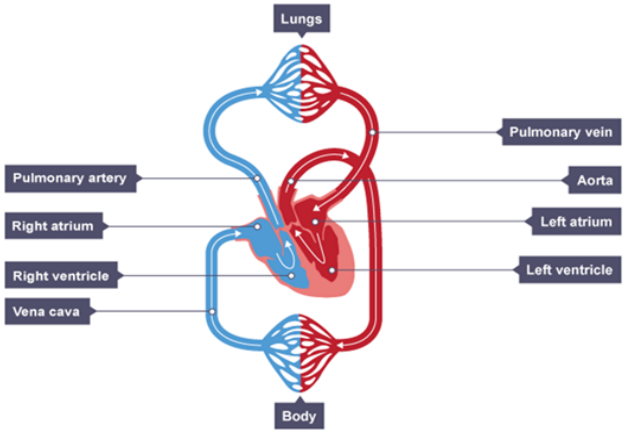
Formations will alter to suit a teams strengths/ counter an opponents threat



Key Skills		
1	**Short pass**	A short side foot pass enables a team to quickly pass a ball and help maintain pos-
2	**Long pass**	A long pass is an attacking skill that allows players to switch the direction of the attack very quickly to create space, find a team-mate or to catch out the opposition.
3	**Control**	Good control of the football is an essential skill to maintain possession of the ball from the opposition and, if done accurately, gives the player more time to make the
4	**Block tackle**	The block tackle is an essential skill for winning the ball back in football. It is mainly used when confronting an opponent head on and it is important to complete it with good timing and technique to prevent injury or fouls
5	**Throw-in**	The throw-in is the legal way to restart the game if the ball has gone out of play from
6	**Heading**	The header can be an attacking or defensive skill and is used to try and win the ball when it is in the air

Striking the ball	
Chip	The play strikes the ball at the bottom and the ball goes over a player
Lob	A player strikes a bouncing ball from underneath the ball, sending it over a player
Curl	The player strikes the ball with the inside of their foot hitting the balls lightly to the side to create a curve
Swerve	The player strikes the ball with the outside of their boot to create swerve

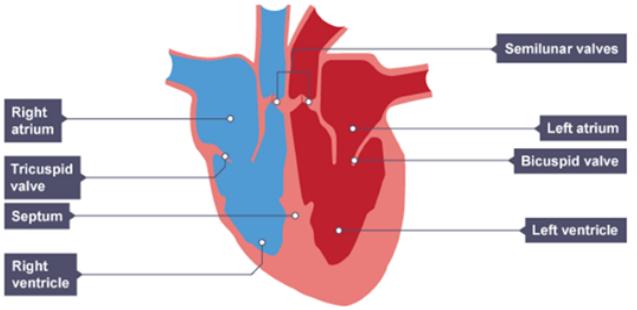
Cardiovascular System



Blood Pressure: when heart contracts it pushes the blood into blood vessels which creates blood pressure.

1. Systolic value – blood pressure whilst the heart is contracting

2. Diastolic value – blood pressure whilst the heart is relaxing



Key Words		
1	Artery	carries blood away from the heart (usually oxygenated blood, except for the pulmonary artery).
2	Vein	carries blood back to the heart (usually deoxygenated blood, except for the pulmonary vein)
3	Capillary	allows diffusion of gases and nutrients from the blood into the body cells
4	Heart Rate (HR):	number of times the heart beats per minute.
5	Red Blood Cells	transport oxygen around the body
6	White Blood Cells	fight infection
7	Platelets	clot to prevent blood loss during injury
8	Plasma	liquid part of the blood

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	• Usually, the tallest and strongest player. • They are positioned under the basket to get rebounds and block shots.
2. Forward	• 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	• 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

Trampolining

Key Words:

- Routine
- Contacts
- Rotation
- Difficulty
- Execution

Skills:

- Full Twist
- Seat Drop
- Front Drop
- Back Drop
- Front Somersault

Famous trampolinists:

Karen Cockburn

Dong Dong

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.

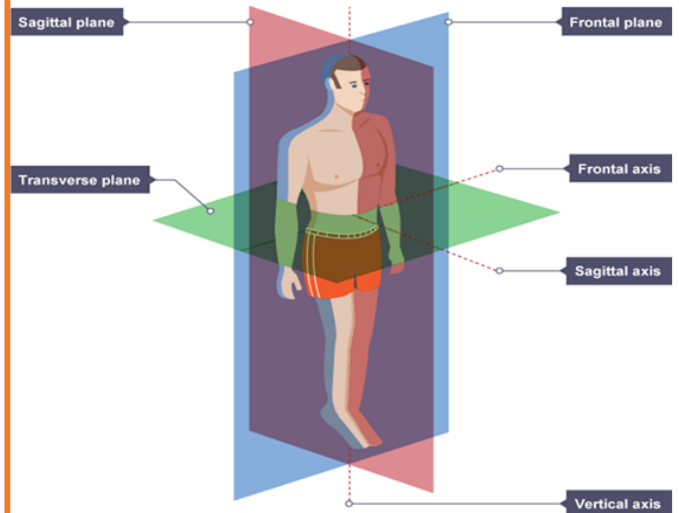
History of Trampolining

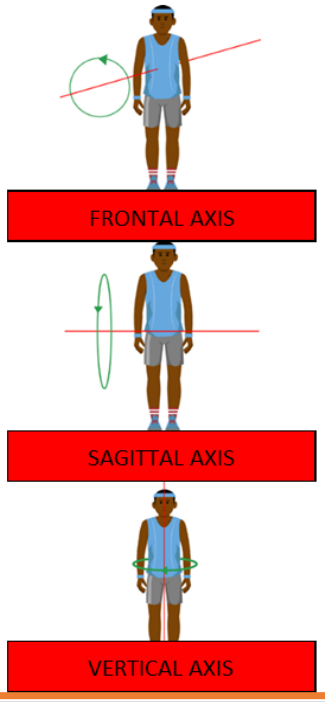
In the early 1930s, an American man, named George Nissen, observed trapeze artists perform a series of exciting tumbling tricks when bouncing of the safety net.

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.





Unit 1: Church History

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)

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 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. **20** 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 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 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 Pharoah's dreams. The pharaoh made him the second most powerful man in Egypt.

Key Words		
1	Covenant Box	A special box containing the stone tablets on which the Ten Commandments were inscribed
2	Exile	Being forced ti kuve 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 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

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 Pharoah's daughter.
2	Moses left Egypt to work as a shepherd in Midian because the pharaoh want 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 our 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.

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)

P2 Chapter 1: Forces

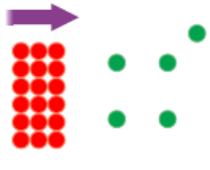
Knowledge organiser

Activate
Question • Progress • Succeed

Friction and drag

- **Friction** is a force which will slow down a moving object due to two surfaces rubbing on one another
- The greater the friction, the faster an object will slow down, or the greater the force it will need to overcome the force of friction. For example, it is easier to push a block on ice than on concrete, as the ice is smoother and causes less friction

- When an object is moving through a fluid, either liquid or gas, the force which slows it down is known as **drag**
- The fluid particles will collide with the moving object and slow it down, meaning that more force is needed to overcome this
- Both drag and friction are **contact forces** as the two surfaces in friction, and the object and fluid particles in drag, come into contact with one another
- Both drag and friction are forces so they are measured in **Newtons** (N)



A solid moves through a gas.

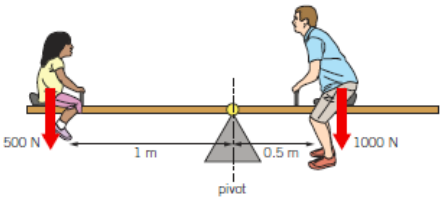
A solid moves through a liquid.

Turning forces

- A **moment** is the turning effect of a force, it is measured in Newton meters
- We can calculate a moment with the equation:

moment (Nm) = force (N) × distance from the pivot (m)

- The size of the moment will increase as the distance from the **pivot** or the size of the force increases
- When an object, such as a seesaw, is balanced, the clockwise and the anticlockwise moments will be equal and opposite, which is known as **equilibrium**
- When forces are equal and opposite to each other, there is no **resultant force**

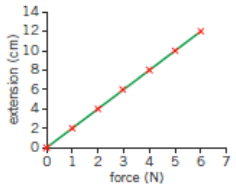


clockwise moment = force × distance on the right
= 1000 N × 0.5 m
= 500 Nm

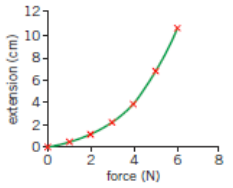
anticlockwise moment = force × distance on the left
= 500 N × 1 m
= 500 Nm

Hooke's law

- Some objects, like springs, can be stretched, the amount that they stretch is known as their **extension**
- A force needs to be applied to the spring for it to be stretched, we can achieve this by adding masses which exert the force weight
- A spring will continue to stretch until it passes it's **elastic limit**
- If an object obeys **Hooke's law** it will have a **linear relationship**: if the force applied to the spring is doubled, the extension will double too
- If an object does not obey Hooke's law, it will not have a linear relationship



This graph shows how the extension of a spring changes as you pull it



This graph shows the relationship between force and extension

Gas pressure

- **Gas pressure** is caused by the particles of a gas colliding with the wall of the container which they are in
- The more often that the particles collide with the wall of the container, the higher the pressure of the gas will be
- Gas pressure can be increased by:
  - Heating the gas so the particles move more quickly and collide with the container with a higher energy
  - Compressing the gas so there are the same amount of particles within a smaller volume meaning that there are more collisions
  - Increasing the amount of particles within the same volume so there are more collisions

- **Atmospheric pressure** is the pressure which the air exerts on you all of the time, nearer the ground there are more particles weighing down on you so the pressure is greater
- The higher you go, the smaller the atmospheric pressure, this is because there will be less particles weighing down on you

Pressure in solids

- The pressure which is exerted on a solid is known as **stress**
- The greater the area over which the force is exerted over, the lower the pressure, this is why snowshoes have a large area to prevent you sinking into the snow
- **Pressure** can be calculated using the following equation:

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Pressure in liquids

- Liquids are **incompressible**
- The particles in a liquid are already touching, meaning that there is little space between them to compress
- Liquids will transfer the pressure applied to them, this is seen in hydraulic machines
- As the ocean gets deeper, the pressure will increase, this is because the pressure depends on the weight of the water above
- The greater the number of water molecules above, the higher the pressure will be

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

air resistance · atmospheric pressure · contact force · drag · elastic limit · equilibrium · extension · friction · gas pressure · Hooke's law · incompressible · linear relationship · moment · newton · pivot · pressure · resultant force · stress

Keyword	Definition	Retrieval Question	Retrieval Answer
Air resistance	The force on an object moving through the air (also known as drag)	What is the unit of measurement for a force?	Newtons (N)
Atmospheric pressure	The pressure caused by the weight of the air above a surface	What is friction?	A contact force between two moving objects
Contact force	A force when 2 objects are touching	When is friction greatest?	On a rough surface
Drag	The force slowing down an object as it moves through a liquid or gas	Name 2 drag forces	Water resistance and air resistance
Elastic limit	The point beyond which a spring will not return to its original length when the force is removed	When does drag occur?	When an object moves through water or air, pushing particles out of the way
Equilibrium	When the moments are equal and opposite	How do you calculate resultant force?	The difference between the two forces
Extension	The amount of stretch in an object	What 2 things can be happening to an object when its resultant force is zero?	Steady speed or not moving
Friction	A force which will slow down an object due to 2 surfaces rubbing on one another	What are the 2 things a force can do to an object?	Change the shape of an object or the direction it moves in
Gas pressure	Caused by the particles of a gas colliding with the wall of a container	What force does a solid provide to an object?	Reaction force
Hooke's Law	A law that says that if you double the force on an object, the extension will double	How is compression caused?	When forces squash an object
Incompressible	Cannot be compressed	How is tension caused?	When forces stretch an object
Linear relationship	When 2 variables are graphed and show a straight line through the origin	State Hooke's Law	When you double the force, the extension doubles
Moment	A measure of the ability of a force to rotate an object about a pivot	What is the elastic limit of a spring?	The point at which the spring will not go back to its original length when the force is removed
Newton	Unit for measuring force (N)	How do you measure the extension of a spring?	Using a ruler, apply weights to the spring and measure the extension
Pivot	The point about which a lever or see-saw balances or rotates	What is a moment?	The turning effect of a force

Keyword	Definition	Retrieval Question	Retrieval Answer
Pressure	The ratio of force to surface area, in N/m^2 and how it causes stresses in solids	What is the unit of measurement for a moment?	Newton metres (Nm)
Resultant force	Single force which can replace all the forces acting on an object and have the same effect	State the equation for calculating a moment	Moment (Nm) = force (N) x perpendicular distance from the pivot (m)
Stress	The effect of a force applied to a solid Stress = force/area	What is a pivot?	The turning point

Retrieval Question	Retrieval Answer	Retrieval Question	Retrieval Answer
What causes liquid pressure?	Water molecules pushing on each other and on surfaces	What is the law of moments?	The sum of the clockwise moments is equal to the sum of the anticlockwise moments
What does incompressible mean?	Cannot be compressed	Describe what is meant by the centre of gravity	Where the weight of an object acts through a specific point
How does liquid pressure change as you go dive deeper in the ocean?	Increases the deeper you go	What is gas pressure?	The force that gases exert when they collide with the walls of a container
Describe why an object float	If up thrust balances the weight of an object	What happens to particles in gas when they are compressed?	They get closer together, collide more often and the pressure increases
Define up thrust	The pressure on the bottom of object that is submerged in water	How does atmospheric pressure change with altitude?	It decreases the higher up you go
What is the unit of measurement for stress?	Newtons per metre squared (N/m2)	Where on Earth does air have the greatest density?	Near the ground
State the equation for calculating stress?	Stress (N/m2) = force (N) ÷ area (m2)	What is the equation to calculate fluid pressure?	Fluid pressure (N/m2) = force (N) ÷ area (m2)
What happens to the stress as the area of an object increases?	Decreases	In which direction does stress act?	Downwards (on the ground)

P2 Chapter 3: Energy

Knowledge organiser

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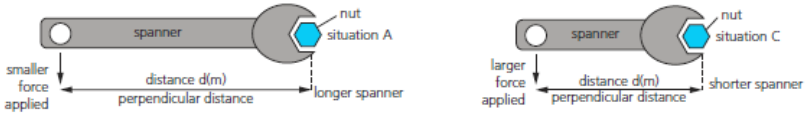
Work

- 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 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:

work done (J) = force (N) × distance moved (m)

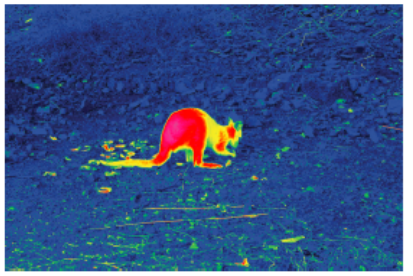
- A **simple machine** makes it easier to lift things, they reduce the force needed
- A **force multiplier** uses a smaller **input force** (what you apply) to to generate a larger **output force** (what is created)
- If you increase the distance from the pivot, less input force is needed to be used 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**



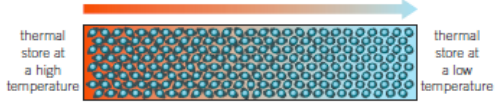
Energy and temperature

- 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 measures 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 (^{o}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

P2 Chapter 7: Earth

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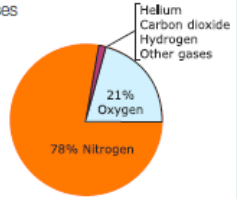
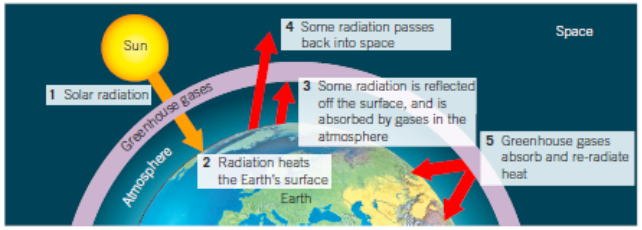
The atmosphere

- 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



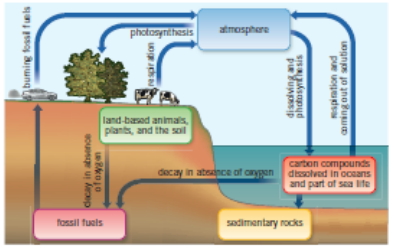


Global warming

- **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:
  carbon + metal oxide → metal + carbon dioxide
  carbon + copper oxide → copper + 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
• Resources will last longer • It uses less energy than extracting new materials • It reduces waste and pollution	• 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,

B2 Chapter 9: Ecosystems

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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

glucose + oxygen → carbon dioxide + 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

glucose → 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

glucose → ethanol + 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 deadpatches
magnesium	making chlorophyll	leaves will turn yellow

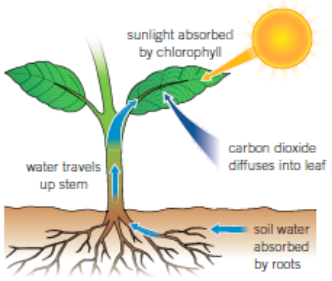
Fertilisers can be used to stop plants from suffering with mineral deficiencies

Photosynthesis

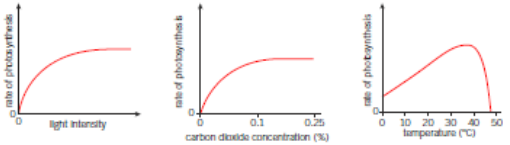
- **Photosynthesis** is the process which occurs in the chloroplasts to produce glucose using sunlight

water + carbon dioxide + sunlight → glucose + 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**

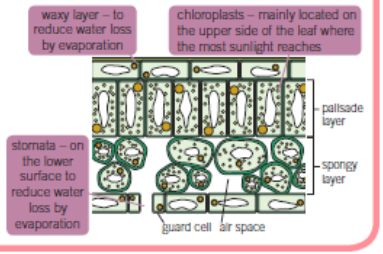


- The rate of photosynthesis can be affected by:
  - Light intensity – the higher the light intensity the higher the rate of photosynthesis up to a point
  - Carbon dioxide concentration – the higher the carbon dioxide concentration the higher the rate of photosynthesis up to a point
  - Temperature – 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

B2 Chapter 8: Organisms

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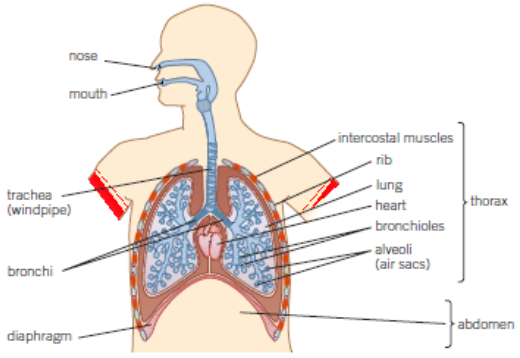
Gas exchange and breathing

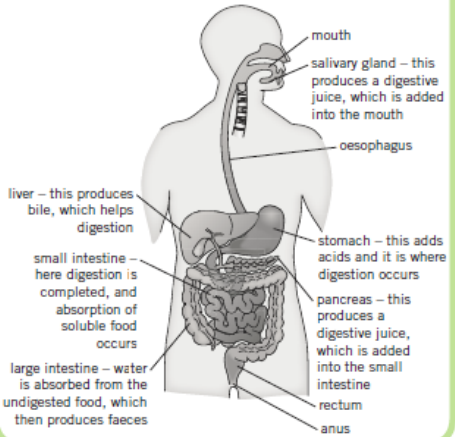
- **Gas exchange** is the process of taking in oxygen and giving out carbon dioxide
- This occurs in the **respiratory system**
- The proportions of gases in the air we **inhale** and **exhale** changes due to using oxygen in **respiration** and producing carbon dioxide



What happens when you breathe in and out

when you breathe in (inhale)	• muscles between the rubs 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 pulledin and down • diaphragm relaxes and moves up • volume in the chest decrease • 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 form 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

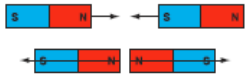
P2 Chapter 2: Electromagnets

Knowledge organiser

Activate
Question • Progress • Succeed

Magnets

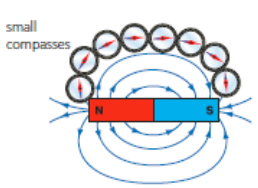
- A **magnet** has two poles, a north and a south pole
  - North poles **attract** south poles
  - South poles **attract** north poles
  - South poles **repel** south poles
  - North poles **repel** north poles



- **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

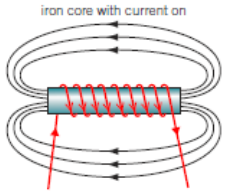
- A **magnetic field** is an area where a magnetic material will experience a force
- A **permanent magnet** will have it's own magnetic field
- **Magnetic field lines** represent the field, these always travel out of the north pole of the magnet, and into the south pole
- The closer together the magnetic 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

↓

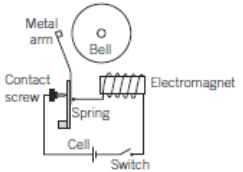
The coil and core are no longer magnetic meaning the spring is no longer attracted and returns to its original position

↓

The bell is rung once

↓

The circuit is complete again, restarting the process

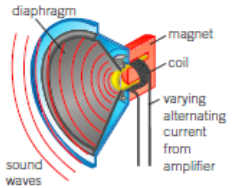


Circuit breakers

- 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	Ringing 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

B2 Chapter 10: Genes

Knowledge organiser

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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

Organisms show variation in characteristics caused by their genes → Organisms with the best adaptations survive and reproduce, weaker organisms die out and do not pass on their genes → Genes from the successful organisms are passed onto the next generation, passing on their successful characteristics → Over a long period of time the best adaptations continue to be passed on which can lead to a new species being formed

- 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

Possible alleles from mother

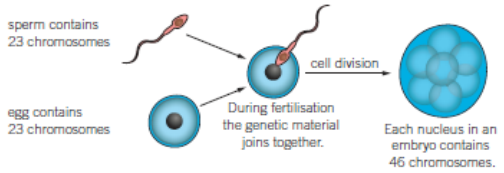
	B (dominant allele for browneyes)	b (recessive allele for blue eyes)
b (recessive allele for blue eyes)	Bb Offspring will have brown eyes as B is dominant	bb Offspring will have blue eyes as both alleles are recessive
b (recessive allele for blue eyes)	Bb Offspring will have brown eyes as B is dominant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

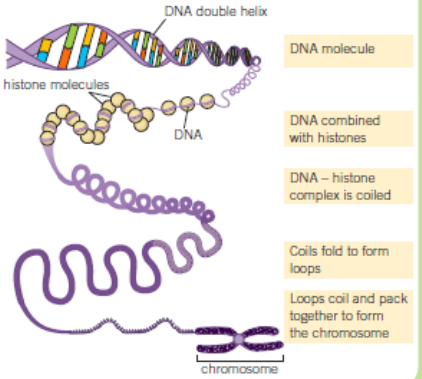
Inheritance

- **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

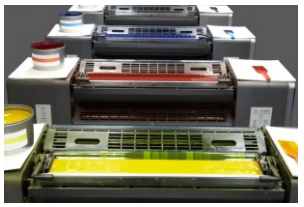
Retrieval Question	Retrieval Answer	Retrieval Question	Retrieval Answer
Define the term "peer review"	where a scientist's work is checked by another scientist who works in a similar area of science	Where can DNA be found in the cell?	inside the nucleus (arranged in strands called chromosomes)
Name 2 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 chacteristic 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?	Punett 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

Year 8 GR – Graphics Products

1

Key words

Die cutting	A process whereby a blade is used to cut through materials such as paper and card on a die press. The process allows you to make an identical cut into material numerous times.
Embossing	A pattern is raised against the background giving a relief
Debossing	A debossed pattern is sunken into the surface of the material (but might protrude somewhat on the reverse, back side).
Iconic Design	Iconic design is something recognisable and memorable, & comes in many forms. It comes in many forms such as architecture, branding, typography, automobiles, industrial design, popular culture
Lithographic printing	Lithographic and offset printing, is where the image of the content you want to produce is placed on a plate which is then covered in ink and used for printing. This process can be used to print on paper, cardboard and many other materials.
Dimensions	Measurement of something. Width, height, depth
Design Brief	A description of what is required from a new project or product. What it should do, who it is aimed at, how long it will take, etc.
Prototype	A 3D form of a design idea



https://www.youtube.com/watch?v=2vaoGoQfZ_4

Iconic design is something recognisable and memorable, and comes in many forms. Just like the DeLorean, **iconic design** is something recognisable and memorable. It comes in many forms such as architecture, branding, typography, automobiles, industrial **design**, and popular culture

A design that sets a bench mark for others to follow.
A ground breaking design, in terms of its technology or manufacturing techniques used during its production.
A design that improves on the past.
A design that sets new standards in terms of quality, functions/features or style.
A design that stands the test of time, remaining popular despite the passing of years.
A design that stays in the memory of those who see/use it.
A design that is often recognised immediately by consumers.
A design that inspires other designers.
Sets a trend.
A design that is innovative.
A design that is aesthetically pleasing.
A design that is often emulated/copied by other designers.
A design that has its place in history, or even helps change history.

2

Sony Walkman (1979) by Sony Design Center | **Volkswagen Beetle (1938) by Ferdinand Porsche** | **Coca-Cola Bottle (1915)**

3

The design was inspired by the coca leaf and the kola nut. The father of product design, Raymond Loewy, described it as the "perfect liquid wrapper." In 1955, Raymond Loewy was assigned to design the family-size package while maintaining the same proportion of the previous old design

The car inspired by Nazi leader Adolf Hitler became the most popular car in the world with the highest sales all time. Hitler wanted a cheap and simple car for mass production suitable for his new road network. In 1933, he assigned the project to Ferdinand Porsche, who took until 1938 to finish the design.

What made the **Sony Walkman** special is that it allowed people to listen to music while walking or moving from one place to another. Sony's Walkman became part of youth culture in the 80s and 90s. The Walkman was first sold in 1979, and within ten years, 50 million people owned it. The idea of the product was inspired by Sony co-founder Maseru Ibuka, as he wanted to find a portable way to listen to opera music.

Year 8 GR – Graphics Products

Symbols on packaging / products

Symbol	Name and Description
	**Mobius Loop**. • Internationally recognisable symbol for recycling. • Seen on many packages. • It is to remind the consumer of the potential recycling properties of a package they are about to throw away.
	**Recycle Aluminium** • The letters 'alu' mean aluminium. • It means the container is manufactured from aluminium and that it can be recycled and used again.
	**Fair Trade** • This means that the contents of the package has been produced in the Third World and that the producer (ie. the farmer) has received a fair and realistic price. • Monies also go to develop the community.
	**Lion Mark** • Created in 1988, when the Lion mark is displayed on a product it means that the manufacturer/retailer has agreed to the 'British Toy & Hobby Associations' Code of practice. • It is a consumer symbol that represents the manufacturers promise to conform to all relevant safety information.
	**Conformité Européene** • The letters "CE" are the abbreviation of French phrase "above" which literally means "European Conformity". • CE marking is an administrative marking with which the manufacturer or importer affirms its conformity with European health, safety, and environmental protection • It is not a quality indicator or a certification mark.
	**BSI Kitemark – British Standards Institute** • Trusted symbol for safe, reliable products and services. • The BSI Kitemark™ is a registered trade mark owned and operated by BSI. • It is one of the most recognised symbols of quality, safety and offers true value to consumers and businesses

4

4

Symbol	Note and description
	**Tidyman Symbol.** • This is seen on packages in the UK. It is there to remind people to place their rubbish in a bin rather than dropping it on the floor. • It is also aimed at making people aware that they have a responsibility to keep the environment around, tidy and litter free
	**Green Dot** • This one's a bit of a weirdo one - two interlocking green arrows means that the manufacturers have made a financial contribution to recycling services in Europe. • It doesn't mean the product itself is recyclable.
	**Dot not put in bin.** • Found on the packaging for batteries or products containing them • The crossed lines means that the batteries should not be disposed of in a dust bin after they have been used.
	**Keep dry** • This reminds those handling the package to keep out of the rain and not to store it in damp conditions. • it is normally found on card based packages.

5

Symbols	Note and description
	**Fragile.** • The broken wine glass suggests that the product inside the packaging could be easily damaged if dropped or handled minus care & attention.
	**Handle with care** • The two hands holding or protecting the package is another reminder that the contents should be handled with care.
	**Keep this way up** • The symbol seen opposite tells those handling the package that it must be stored the right way up. The arrows point towards the top.
	**Ecolable** • To promote products & services that are environmentally friendly. • Companies & businesses use this symbol / label have shown consistently, that they sell products & services ,that conserve the environment.

6

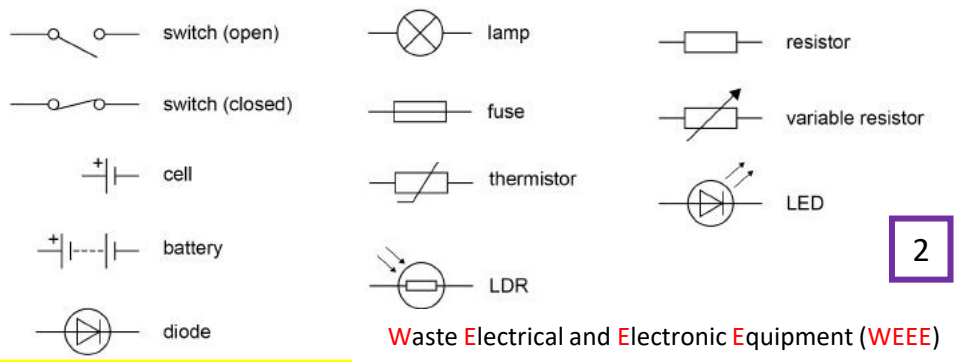
Year 8 DT – Resistant Materials

Key words and definitions

CAD	Computer Aided Design. Where software is used in the design of product or components. Examples: 2D Design, Serif, Google Sketchup
CAM	Computer Aided Machine. A machine is used to cut or produce pieces. Examples: Laser cutter, 3D printer, CAM router
Client	The person who you are working for.
PCB	Printed Circuit Board. This is used in electrical products to mount the components on one side and connect them on the under side. They are soldered to pads and the tracks carry the current
Soldering iron	This is a precision tool that heats to 220 degrees to pass heat into the pad and the leg of the component. It will then melt the solder which will flow across the heated parts
Solder	This is a alloy of tin and lead. It provides the adhesion across the joint of the leg and pad. It has a low melting point and cools quickly.
PVA	Poly Vinyl Acetate. Used to join wood together only
Compact	This means small. Items that can be collapsed to be made smaller
USB	Universal Serial Bus (USB) is an industry standard that enables communication and power supply between computers, peripherals and other electronic devices
Standard components	A components (not just electrical) that does the same function, is the same size and performance no matter where its purchased from.

1

Circuit Symbols you need to know!



2

Waste Electrical and Electronic Equipment (WEEE)

Levels of production. There are 4 scales of production that are relevant to product manufacture, each suited to a range of different product applications.

Level	Common points	Examples
One off production single custom product or prototype	• Production requires a far greater investment of time, resources and labour to produce a single product comparatively. • This is due to often products being manufactured by hand or using small scale machines without the use of jigs/moulds. • Designs can be specific.	wedding ring, statue
Batch production set number quantity of products	• Batch production is when a set number of identical products are to be produced using larger scale machines & use of jigs/moulds/templates to ensure accurate repetition along a production line. • Each batch of product can be adjusted depending on client requirements. Typically, CNC automation is used at this scale, reducing the workforce and skilled labour	Trainers Cars Dining room table and chairs Sofas caravans
Mass production large volume of identical products	• Mass production concerns a very high volume of identical products that are manufactured on a production line whereby they move along a number of stages • At this scale there is often a high level of automation through the use of CNC, robotics and AGV systems. • Due to the standardisation of the manufacturing process there is little flexibility to make design alterations & an incredibly high setup cost.	cars
Continuous production high volume produced 24/7	• Continuous production is when products are produced with minimal stoppage due to an incredibly high demand and often complete automation. • Production lines run 24 hours a day and require low skilled labour due to a consistent product outcome. This scale has a high setup cost & is very inflexible to change.	Polymer bottles biscuits

3

Year 8 DT – Resistant Materials

Successful steps for soldering are:

1. Start with the smallest components working up to the taller components, soldering any interconnecting wires last.
2. Place the component into the board, making sure that it goes in the right way around and the part sits flush against the board.
3. Bend the legs slightly to secure the part.
4. Make sure that the soldering iron has warmed up and if necessary, use the damp sponge to clean the tip.
5. Place the soldering iron on the pad.
6. Using your free hand, feed the end of the solder onto the pad. Remove the solder, then the soldering iron.
8. Leave the joint to cool for a few seconds.
9. Using a pair of cutters, trim the excess component lead
10. If you make a mistake heat up the joint and use a solder sucker

5

5

Standard components

Wing nut where nuts need to be removed by hand

Hexagonal nut used with bolts

Steel rod which has been threaded along its length.

Advantages of using LEDs over bulbs are:

Point	Explanation	Example
Power efficiency	LEDs use less power to produce the same amount of light, which means they are more efficient.	This makes them ideal for battery power applications.
Long life	LEDs have a very long life when compared to normal light bulbs.	They fail by gradually dimming over time instead of a harp burn out.
Low temperature	Due to the higher efficiency of LEDs	They can run much cooler than a bulb.
Hard to break LEDs	Are much more resistant to mechanical shock.	Making them more difficult to break than a bulb.
Small LED body size	This allows them to be used in many applications.	Which would not be possible with a bulb.
Fast turn on LEDs	Can light up faster than normal light bulbs.	Making them ideal for use in car break lights.

4

Disadvantages of using LEDs over bulbs are:

Point	Explanation	Example
Cost	LEDs currently cost more for the same light output than traditional bulbs.	However, this needs to be balanced against the lower running cost of LEDs due to their greater efficiency.
Drive circuit	To work in the desired manner, an LED must be supplied with the correct current.	This could take the form of a series resistor or a regulated power supply.
Directional LEDs	normally produce a light that is focused in one direction.	which is not ideal for some applications.

4

Advantages of CAD / CAM	Disadvantages of CAD / CAM
• Once set up you can produce large quantities of a product • Can save design ideas on a computer • Can e-mail design ideas • Quick and easy to produce prototypes / rapid prototypes • Can alter designs easily • Can easily reuse old designs • Reduces human error	• High skilled trades are lost • If there is an error with the design then all the products will be wrong • Very expensive to set up initially, moulds, machines, materials • Staff will require new training • Not good for one off products • Data could be lost from a computer file • Virus' and computer errors • Machines need regular maintenance

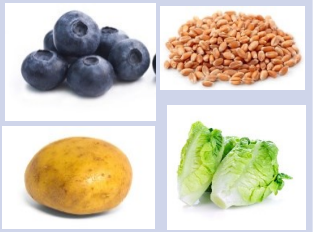
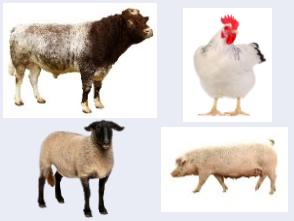
6

Year 8 FPN – Food Preparation & Nutrition

Where does my food come from?

Milk	**From a dairy cow; (Only Female cows can produce milk)**
Apple juice	From apples which grow on trees
A tomato	Technically a fruit which grows on a plant;
Mashed potato	Made from potatoes - a plant which grows under the ground.
Ham & bacon	Made from pork which is the meat from a pig
Toast	Made from bread; bread is made from flour; flour is made from the plant called wheat (it is milled).
Eggs	Usually from a Hen (Female Chicken)

6

Terminology	Example	Examples
Grown (Plants)		
Reared (Animals)		
Caught (Fish and Shellfish)		

2

Fruit and Vegetables grown in Spring

Month	Examples of fruits and vegetables grown in spring
March	• Beetroot • Cucumber • Leeks • Spring Greens • Spring Onions
April	• Carrots • Spinach • Watercress
May	• Lettuce • New Potatoes

3

Fruit and Vegetables grown in Summer

Month	Examples of fruits and vegetables grown in summer
June	• Broad Beans • Cauliflower • Raspberries • Strawberries
July	• Beetroot • Courgettes • Gooseberries
August	• Mushrooms • Potatoes • Sweetcorn • Tomatoes • White Cabbage

3

Some of the food we eat is seasonal in the UK.

Spring - March, April. May


Autumn - Sept, Oct, Nov


Winter - Dec, Jan, Feb


Summer - June, July, August


2

Year 8 FPN – Food Preparation & Nutrition

Key word	Definition
Food Provenance	Knowing where food was grown, caught or raised. It can also mean knowing how food was produced.
Source	A place, person, or thing from which something originates or can be obtained
Farming	The activity or business of growing crops and raising livestock
Free range	Animals (Livestock) kept in natural conditions, with freedom of movement.
Battery or Caged	Caged chickens are usually kept in very small confined cages their entire productive life
Diet	The kinds of food that a person, animal, or community habitually eats
Profit	Obtain a financial advantage or benefit.
Food Choices	How people decide on what to buy and eat
Staple Foods	A food that makes up the dominant part of a population's diet and are eaten regularly
Crops	A cultivated plant that is grown on a large scale commercially, especially a cereal, fruit, or vegetable.
Livestock	Animals such as cows, sheep, etc. that are kept or traded as a source of income

1

Fruit and Vegetables grown in Autumn

Month	Examples of fruits and vegetables grown in this month
September	• Celery • Damsons • Garlic • Kale • Parsnips
October	• Pears • Peas • Pumpkin • Red Cabbage • Runner Beans • Wild Mushrooms
November	• Apples • Savoy Cabbage

4

Fruit and Vegetables grown in Winter

Month	Examples of fruits and vegetables grown in this month
December	Brussels Sprouts Celeriac Cranberries Turnips
January	Mushrooms Onions
February	Purple Sprouting Broccoli Spring Onions

4

Factors that effect food choices	
Health	Culture
Weather	Religion
Cost	Allergies
Skills	Offers in shops
Peer Pressure	Advertising
Events	Food trends

This guarantees that the food and drink that you are buying is traceable, safe and farmed with care.

5

This is the UK's most successful food safety mark with nearly 90% of UK eggs now produced within the Lion scheme.

5

This only applied to wild fish or seafood from fisheries that have been certified to the MSC Fisheries Standard

Year 8 F&F – Fabric and Fibres

Key word	Definition	
Fabric	Textile fabrics are woven or knitted from **yarn**, which is made from **fibres**: 1	
Natural Fibre	Natural fibres are from **plants** and **animals**	They are renewable, sustainable and biodegradable.
Synthetic Fibre	Man-made fibres/ manufactured from fossil fuels (coal, oil and gas).	Cannot be replaced, do not decompose and contribute to environmental problems if they end up in landfills.
Regenerated Fibre	a mixture of manmade and natural	E.g. Polyester cotton is used to makes shirts. It improves the properties of the material.
Bonded	A nonwoven fabric in which the fibres are held together by a bonding material.	
Smart Textiles	Fabrics that can sense and react to environmental stimuli, which may be mechanical, thermal, chemical, biological, and magnetic amongst others.	
Sublimation Printing	A method of **printing** that transfers a design into a material or fabric using ink and heat.	
Fabric Embellishment	This is a method of adding surface decoration to fabric or garments. E.g. quilting, embroidery applique, patchwork, piping, beads and trims.	
Tessellation	Is an arrangement of shapes closely fitted together in a repeated pattern without gaps or overlapping. Triangles squares and hexagons are three polygons that tessellate.	
Cutting list	A cutting list, is as a material list, that simply lists all the parts that will be required to construct a project.	
Seam allowance	This is the area that is allowed for stitching, between the fabric edge and the stitching line on two pieces of material being sewn together.	

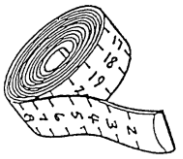
Fibre	Source	Used for
Polyester	is a synthetic fibre that comes from crude oil. When made into fabric, it tends to feel slippery and silky. Some polyester is blended with other fabrics to provide more stretch, or to reduce skin irritation.	Polyester is used to make shirts, jackets and furnishings. School blazer 2
Polyester wadding	Is made up fibres that are punched through a very fine scrim (netting), normally of polypropylene where it gets tangled up.	A bonded fabric used to quilt or form padding between two layers of fabric. It is soft and fluffy to touch.
Elastane/ Spandex	an elastic polyurethane material, Often mixed with cotton or polyester.	used for hosiery, underwear, and other close- fitting clothing such as leggings.

Equipment

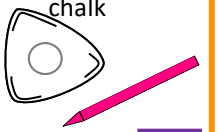
Pins

Heat press

Tape measure



Tailors chalk



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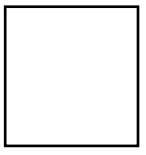
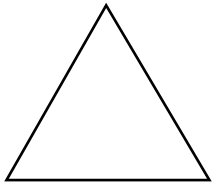
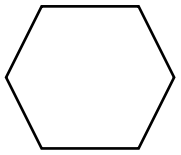
Tessellation

A regular tessellation is made up of regular polygons. Only **three** regular polygons tessellate: triangles, squares, and hexagons.







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Year 8 F&F – Fabric and Fibres

4

Fabric Embellishment		Smart textiles	
Quilting 	**Applique** 	**Thermochromic pigment** 	**Shape memory alloy** 
Beading 	**Piping** 	**Photochromic pigment** 	**Vilene** and **Bondaweb** are bonded fabric that stop the fabric from fraying and are used to stabilise the fabric - stopping it from stretching. They are smart textiles because they react with heat.

Adding colour

Dyeing techniques

- Fabric dyeing involves soaking fabric in a dye bath so that it absorbs the colour into the fibre. **Methods of dyeing include;** Tie dyeing, Batik, Dip Dye and Space dye.

Printing Techniques

- A Printing technique is a ***process*** of applying colour to fabric in definite patterns or designs.

Block Printing

- A technique for printing text, images or patterns using a block

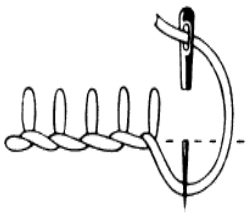
Screen Printing

- A printing technique where a mesh is used to transfer ink onto a substrate, except in areas made impermeable to the ink by a blocking

Sublimation Printing

- A method of **printing** that transfers a design into a material or fabric using ink and heat.

6

Embroidery Stitches	Image
Chain Stitch Bring the thread up at the top of the line and hold it down with the left thumb. Insert the needle where it last emerged and bring the point out a short distance away. Pull the thread through, keeping the working thread under the needle point.	
Blanket Stitch To make a blanket stitch, bring the needle and thread up through the first hole then down through the next, leaving a loop. Bring needle up through the loop, pull gently to tighten, and then push needle down through next hole. Repeat along edge.	

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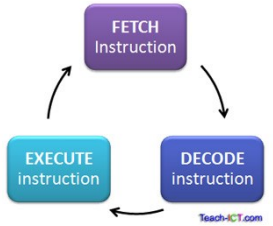
The Central Processing Unit	
INSTRUCTIONS	A single action that can be performed by a computer processor.
CPU Central Processing Unit	The CPU is also known as the processor or microprocessor. The CPU is responsible for executing a sequence of stored instructions called a program.
Arithmetic Logic Unit 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.



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

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.

Binary Place Values (for 1 byte)							
128	64	32	16	8	4	2	1
0	0	0	0	0	0	0	0

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

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 *did*) 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.

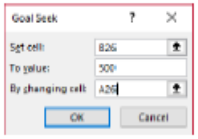
`=SUMIF(D2:D20,"Toyota",E2:E20)`

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

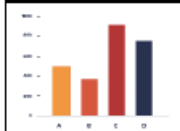


A process that automatically works out a required value by changing the value in a related cell.

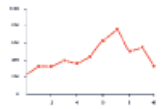
In the example to the left, we are setting the value of B26 to 500 by changing cell A26.

This can be very useful when working on an incomplete model.

Representing Data Graphically

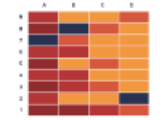


Bar charts are used to **compare variables**. They can appear vertically (also called a column chart) or horizontally.



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