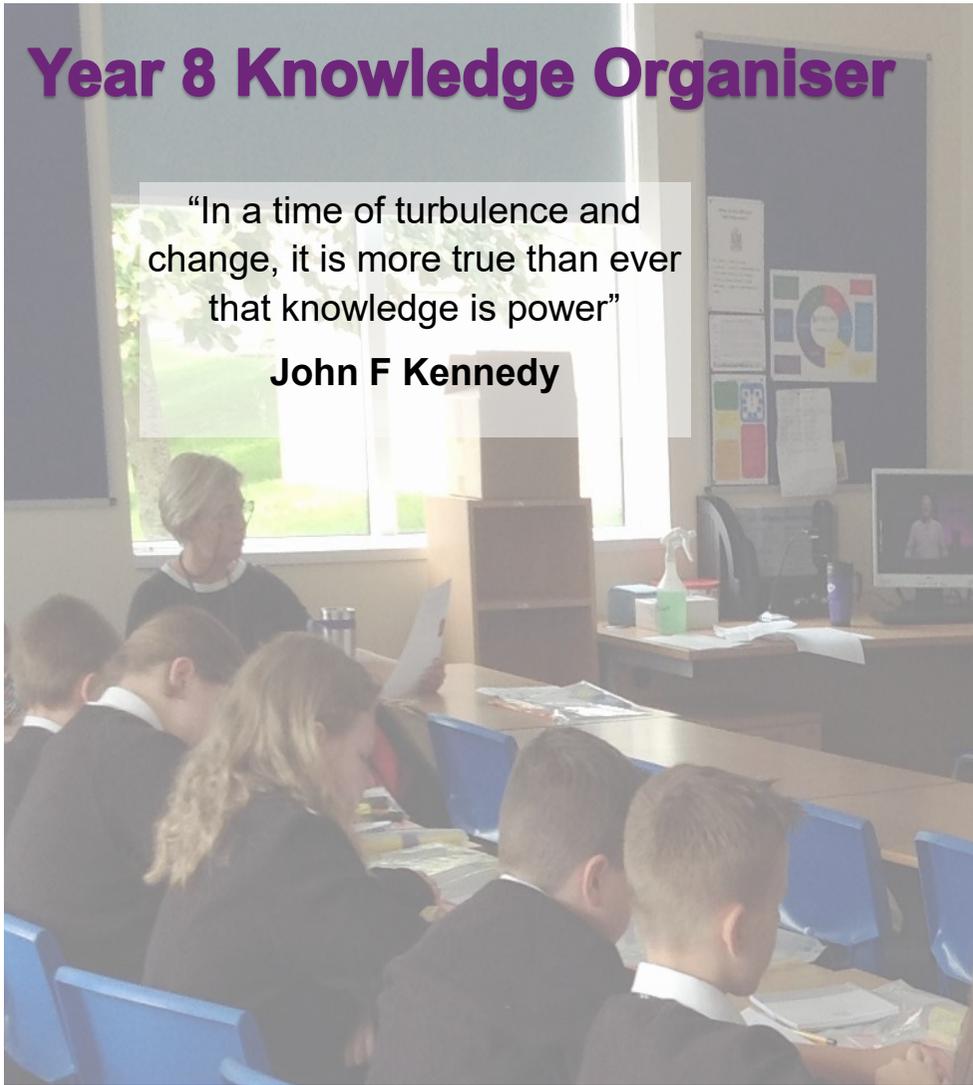


Year 8 Knowledge Organiser

“In a time of turbulence and change, it is more true than ever that knowledge is power”

John F Kennedy

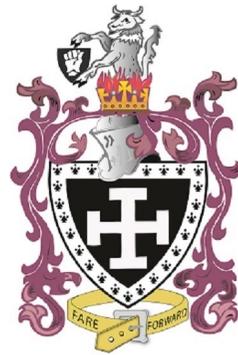


Autumn 2



Inspiring Education for All

**Buckler's Mead
Academy**



Name:

Tutor:

Ready, Responsible, Respect

How to use your knowledge Organiser

Self –Quizzing.



Your knowledge organiser contains all of the key information you need to know for each subject area.

Your knowledge organiser will allow you to revise this key information and make sure it is stored and retrieved from your long-term memory.

The best way to use this resource is by self-quizzing through the “**look, cover, write and check**” method.

First look through and read the information on a section of your Knowledge Organiser.

Then Cover the section so you can no longer see the information.

Next Try and **write out or mind map** the key definitions or facts that you need to know.

Now Uncover the section of your Knowledge Organiser and check how correct you were.

Finally Correct anything that you wrote down that was incorrect.

Look



Cover



Write



Check



KNOWLEDGE ORGANISER.

Lichtenstein's technique, which often involved the use of stencils, sought to bring the look and feel of commercial printing processes to his work. Through the use of primary colours, thick outlines and Benday dots.

Lichtenstein endeavoured to make his works appear machine-made.



Benday dots



Pop Art, noun: A type of modern art that started in the 1960s and uses images and objects from ordinary life.

Things to look for in a **Pop Art painting:** Bright colours, patterns, bold outlines, repeat patterns, faces, food and words.

Reading Homeworks.

Bold Colours

<https://artlitr.com/roy-lichtenstein-6-interesting-facts/>

Britto.com/romeros-story



Bold lines

Pop Art was the art of popular culture. It was the visual art movement that characterized a sense of optimism during the post war consumer boom of the 1950's and 1960's. It coincided with the globalization of pop music and youth culture, personified by Elvis and the Beatles. Pop Art was brash, young and fun and hostile to the artistic establishment. It included different styles of painting and sculpture from various countries, but what they all had in common was an interest in mass-media, mass-production and mass-culture.



Useful Websites:

www.pinterest.com

www.moma.org/popart

Some Artists to look at:

Andy Warhol

Roy Lichtenstein

Keith Haring

Claes Oldenburg

Jasper Johns



Pop Art appreciates popular culture, or what we also call "material culture." It does not critique the consequences of materialism and consumerism; it simply recognizes its pervasive presence as a natural fact.

Observational drawings



Art & Photography

Community

Opportunity

"Inspiring Education for All"

Enjoyment

Success



Year 8 Knowledge Organiser – Key Christian Beliefs and Practices

List all three parts of the Trinity:
God – The Father (Creator)
God – The Son (Jesus)
God – the Holy Spirit

What do we mean by the 'Nature' of God? God is caring loving and powerful, the creator of everything.

Thinking about the nature of God, which characteristic do you think is the most important and why?
Omnipotence – All powerful
Omni benevolence – All loving
Omniscience – All knowing
Just – Fair and balanced

Salvation - . Being saved or protected from the power and effects of sin.

Resurrection - coming back to life after death

Atonement - The action of making amends for a wrong or injury. The reconciliation of God and humankind through Jesus

Trinity - the three parts of the Christian God; Father, Son, and Holy Spirit.

Holy Spirit - The third part of the Trinity; God as spiritually active in the world.

Pentecost - the day that the Holy Spirit descended upon the disciples of Jesus.

What type of person was Jesus?

A Messiah – A special person who saved us from our sins, our saviour, who atoned for our sins. A kind and respectful person who taught us to be kind and loving. He taught us to forgive those who trespass against us.

What is the original sin?

This is the idea that all humans are born sinful. For many Christians, this is seen as a result of Adam and Eve's disobedience of God.

Explain what the following quote means:
'For as in Adam all die, so also in Christ shall be made alive.'

Death was given to Adam and Eve and all humans as a punishment, but Jesus will help us to become alive again after death, with God in heaven.



Which part of the Trinity do you think is the most important and why?
YOUR OPINON.

Christianity is based on the belief that 'Jesus was born and died to bring humans closer to God.' Give reasons to support this argument.

1. Jesus' death restored the relationship between humans and God.
2. God understands human suffering now, because Jesus, who is God, experienced it.
3. Jesus' crucifixion/death atoned for our sins, this meant that humans' sins were taken away and they could be closer to God.
4. Through understanding Jesus, humans can develop a better understanding of God.

Give three reasons to suggest why each of the following festivals is important to Christians.
Christmas:

1. Attending Church services to remember Jesus.
2. Carol services to prepare for the coming of Jesus into the world.
3. Giving presents to each other symbolises the giving of presents to Jesus from the Three Wise Kings.

Easter:

1. Easter eggs given to children celebrate new life, presenting Jesus' resurrection.
2. Christians attend Church services to remember Jesus' sacrifice.
3. Without Jesus' sacrifice, atonement and forgiveness from God would not have happened.

8.1 Python

Opening Python

Start and Finish.

Parallelograms are used for inputs or outputs.

A rectangle represents a process (something happening).

A rhombus or diamond shape is used for a decision or choice.

The circle is a node and is used when there is not enough space on a page for the flow chart.

Python rules and conventions

Variable names can not start with a number. Change the name of the variable name to lname and you will find the program no longer runs.

The only special character you can use in a variable's name is the underscore `_`, otherwise it's just letters and numbers (but not starting with a number).

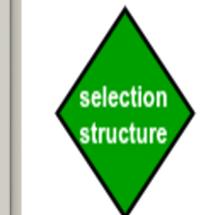
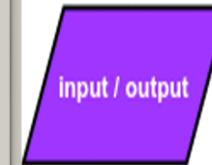
The name of your variable should be descriptive.

Variable names begin with a lowercase letter.

Keep the names of variables short otherwise you are likely to make typing errors later on.

Functions

Notice how 'else' is used for any other answer the computer doesn't understand. Here it sends you back and runs 'q1' again.



Key Terms

Variables—A variable is something that changes in a computer

Branching—is where a program decides whether to do something or not.

Function—A relation or expression involving one or more variables.

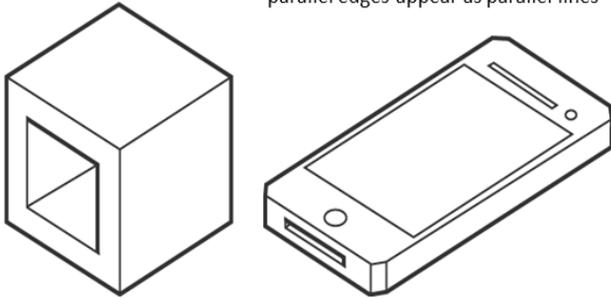
Selecting—Python's `select()` function is a direct interface to the underlying operating system implementation.

Nodes—are the foundations on which various other data structures linked lists and trees can be handled in **python**.

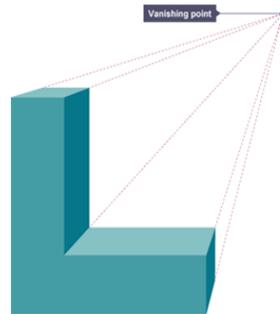
Isometric Drawing

There are 3 main rules to isometric drawing:

- horizontal edges are drawn at 30 degrees
- vertical edges are drawn as vertical lines
- parallel edges appear as parallel lines



Isometric drawings, sometimes called isometric projections, are a good way of showing measurements and how components fit together. Unlike perspective drawings, they don't get smaller as the lines go into the distance. Isometric drawings are used to show a graphical representation of a 3D object. They are used by architects and engineers to communicate their ideas to the client and manufacturer, showing the product or design to scale.



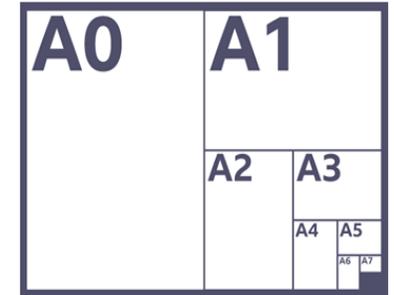
One Point Perspective

This shows an object from the front in a realistic way as it gets smaller going into the distance. The front view goes back towards a vanishing point, which is a point on the horizon line where all lines meet.

Boards

Boards are selected by thickness, measured in microns. One micron is 1/1,000th of 1 mm. Sometimes the thickness of board is given in **sheets**, referring to the number of pieces of paper that have been glued together to make a sheet of board.

Foam Board = strong, lightweight and often used for model making, mounting photographs



Key word/s	Definition
Anthropometric	The study of the human body and its movement, often involving research into measurements relating to people. It also involves collecting statistics or measurements relevant to the human body, called Anthropometric Data. The data is usually displayed as a table of results, diagram or graph. Anthropometric data is used by designers to make items easier to use.
Ergonomics	Ergonomics involves the study of people and their relationship with the environment around them. It often involves research into the way people interact with products and the environment. Ergonomic products will be designed with the application of anthropometric data to improve their human use.
Primary Data	Data that is gathered first-hand directly from the client such as a questionnaire.
Secondary Data	Data which has come from second-hand sources such as the results of a survey carried out by someone else or data found on the internet.
Client	Also known as the user; the person or group of people who will buy and/or use the design solution.
Design Fixation	When a designer focuses too much on one particular design idea and doesn't consider alternatives.
Iterative design	A design strategy that follows a make-test-evaluate approach in a repetitive cycle until the perfect final outcome is produced.
User-Centred Design	A design strategy that considers the needs and wants of the user at each stage of the design process.
Systems Approach	A design strategy that starts with identifying the input, process and output elements of a system. The designer will then focus on one area at a time, e.g. the inputs/the process or the outputs, as this makes it easier to test and find errors in the system.
Collaborative Design	When a diverse team of specialists work closely together to create an innovative product.

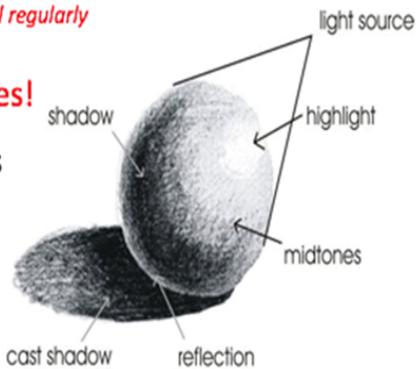
Success criteria for a good drawing

sharpen pencil regularly

Must haves!

FIVE tones

Shade in direction of the object



No Smudging **CONTRASTS!** in tone

Different mark-making

Specification

A detailed description of the design and materials used to make something.

Prototype

An early sample, model, or release of a product built to test a concept or process.

Design & Technology

Community

Opportunity

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Enjoyment

Success

DRAMA STRATEGIES:

Voice-Over: Narration heard over what is seen on stage.

Tableaux: participants make [still images](#) with their bodies to represent a scene. A tableau can be used to quickly establish a scene that involves many characters.

At this point, [thought tracking](#) can be used to find out more about each of the characters.

Soundscape: Using voices or body percussion to create (like a landscape, only in sound) a particular theme or mood. e.g., the city at night

Soliloquy: act of speaking one's thoughts aloud when by oneself or regardless of any hearers.

Flashback/Flash Forwards: improvised scenes which take place seconds, minutes, days, or years before or after.

Choral Speech: Speaking or chanting at the same time

Thought-Tracking: Speaking aloud the thoughts or feelings of a character in a freeze-frame.

Still Image/freeze frame: It is like pressing the pause button on a remote control, taking a photo, or making a statue.

Conscience Alley: One person walks down an alleyway made by the group and listens to thoughts or advice.

Cross-Cutting: two or more scenes are performed on stage at the same time. This makes it possible to juxtapose scenes or snippets of scenes that happen at different times or in different places, using separate areas of the performance space. The technique is used to highlight or contrast a particular theme or aspect of the story. Using different groupings, both scenes could

KEY WORDS OR PHRASES:

Style and Form: the methods used to tell a story i.e. mime or physical theatre.

Non-Naturalistic: where no-one is pretending that what is happening on stage is realistic. Non-naturalistic techniques include slow motion & Soundscape

Physical Theatre: theatre which emphasizes the use of physical movement, as in dance and mime, for expression.

Symbolism: Symbolism in terms of theatre can be done with colour, movement, characters, props, and costumes. (The symbol can bring about greater meaning than any literal suggestion and can usually be used to represent something different than what you will see at face value.)

Naturalism: theatre that attempts to create an illusion of reality through a range of dramatic and theatrical strategies

Protagonist: Main character in a play

Antagonist: opponent or foil of the main character

Proscenium Stage

Traverse Stage

Theatre-in-the-Round

Promenade Theatre

Thrust Stage

Choreography: the art or practice of designing choreographic/movement sequences.

Drama

'Oliver Twist' Knowledge Organiser

Key Vocabulary and Definitions		
Etymology (OE- Old English, F-French, L- Latin, G- Germanic, AG – Ancient Greek, N- Norse)		
Anti-Semitic (adjective)	hostile to or prejudiced against Jewish people	(G) antisemitisch
Champion (noun and verb)	(noun) winner (verb) vigorously support or defend the cause of.	(L) campionen: gladiator, fighter
Conclude (verb)	Come to an end Arrive at an opinion by reasoning	(L) concludere: to shut up, enclose
Discordant (adjective)	Disagreeing (of sounds) harsh and jarring because of a lack of harmony	(L) discordare: to differ, quarrel
Emerge (verb)	move out of or away from something and become visible	(L) emergere: bring forth, bring to light
Fervent (adjective)	having or displaying a passionate intensity	(L) ferventum: boiling hot, glowing
Hierarchy (verb)	a system in which members of a society are ranked according to relative status or authority.	(G) hierarkhia: rule of a high priest
Honourable (adjective)	principled, moral, just, fair, honest, virtuous, trustworthy	(L) honorabilis: of high rank
Loathsome (adjective)	causing hatred or disgust; repulsive	(OE) loath: disgust
Obscure (verb and adjective)	(verb) keep from being seen; conceal. (adjective) not discovered or known about; uncertain.	(L) obscurus: dark
Obtain (verb)	get, acquire, or secure (something)	(L) obtinere: gain
Resolve (verb)	Find a solution Decide firmly on a course of action	(L) resolvere: loosen, dissolve
Stealthily (adverb)	in a cautious and surreptitious manner, so as not to be seen or heard	(OE) stelan: steal
Tumult (noun)	a loud, confused noise, especially one caused by a large mass of people	(F) tumulte: uproar
Vulnerable (adjective)	exposed to the possibility of being attacked or harmed, either physically or emotionally.	(L) vulnus: wound

Spellings: able/ible

Accessible, available, capable, considerable, defensible, edible, honourable, incompatible, indefensible, responsible, sustainable, terrible, variable, visible, vulnerable

Terminology	
Adjective	words that describe nouns: enormous, doglike, silly, yellow, fun, fast, angry, courageous, grotesque, ancient etc.
Adverb	words that describe verbs and adjectives: anxiously, cautiously, always, once, never, repeatedly, recently, consequently etc.
Alliteration	same letter or sound at the beginning of adjacent or closely connected words: ten tiny tigers.
Antagonist	the principal source of conflict for the protagonist: Lord Voldemort, the notorious dark wizard, is the antagonist in the Harry Potter novels. May also be a force or institution, such as a government, with which the protagonist must contend.
Character	A person in a novel, play or film: Oliver Twist, Bill Sikes, Fagin etc.
Imagery	Descriptive or figurative language that helps the reader form a mental picture: using the senses, similes, metaphors
Metaphor	A metaphor is a figure of speech where we describe something as something else, for effect: Love is a battlefield.
Nomenclature	Devising or choosing a name for things—in this case characters in texts can often have names that reveal their personality
Noun	Name of a person, a place, an animal or a thing: child, children, team, table, London, school, Paris, Egypt, Monday, Macbeth etc.
Onomatopoeia	the formation of a word from a sound associated with what is named: pop, crack, cuckoo, sizzle etc.
Personification	the attribution of human characteristics to something non-human: the trees whispered
Quotation	Words taken directly from the text: "Mr Sowerberry, a tall, gaunt man."
Protagonist	the leading character or one of the major characters in a play, film or novel: Oliver Twist
Simile	a figure of speech involving the comparison of one thing with another thing using 'as' or 'like'
Verb	doing or action word, including to have and to be: jump, skip, tremble, teach, learn etc.

SPaG Focus

Full stop .	a punctuation mark (.) used at the end of a sentence or an abbreviation.
Capital letters	1. Start of sentences 2. First word inside speech marks 3. Proper nouns—names of people, places, days of the week, months of the year, organisations 4. Pronoun 'I'

Roots and Stems

Arch: ruler, leader, most important
Con: with or jointly
E: out or away
Ob/op: in the way, against

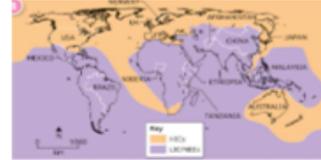
Themes

Childhood
Crime and punishment
Good and evil

Key Terms	
HIC	high-income country; a well-developed country that has good healthcare, lots of well-paid jobs and good housing
LIC	low-income country; a developing country that has poor healthcare, few jobs and poor-quality housing
NEE	newly emerging economy, a country that has begun to get richer and develop quickly
Malnourished	being weak or ill because of having too little food
Development	the economic progress of a country and improvements to quality of life
Development indicator	a measurement of a country's level of development
Life expectancy	how long a person can be expected to live
GNI	gross national income, the amount of money a country makes in a year
Literacy rate	how many people can read and write, as a percentage total population over the age of 15
Infant mortality rate	the number of children who die before their first birthday per 1000 live births
Conflict	disagreement, which can sometimes become violent, between groups of people
Diarrhoea	symptom of an infection in the intestine that can kill if left untreated
Colonise	one country rules another country
Migrant	a person who moves from one place to live in another
Push Factor	negative things that make people want to move to a new area
Pull Factor	are positive things that make people want to move to a new area
Resources	something that has a value or purpose, such as food, water and energy
Resource insecurity	lack of resources like food, water and energy
Resource security	plentiful supply of resources like food, water and energy
Famine	an extreme shortage of food, which can cause illness and death
Drought	a long period of very little or no rain
Aid	money, food and emergency supplies donated to help improve people's lives
Food insecurity	lack of enough food for a country to feed its people
Food security	enough nutritious food for people to stay healthy
Over nutrition	eating too much unhealthy food – eg. junk food or consuming too many calories
Obesity	being very overweight
Contaminated	infected by a poisonous or polluting substance, such as chemicals or human waste
Sanitation	having clean water, good sewerage and good waste disposal to help prevent disease and protect people's health
Fairtrade	a global organisation that farmers get a fair price for the crops and goods they sell

9.1 Global development

- ✓ Most people in HICs are rich, while most people in LICs are poor.
- ✓ Many people in poor countries do not have enough food to eat, and access to a education, or services such as healthcare, and clean water.
- ✓ Inequality between rich and poor countries means that it is more difficult for poorer countries to develop economically and improve the quality of people's lives.
- ✓ The development of a country can be measured using indicators, such as life expectancy, GNI, birth rate, literacy rate and HDI.



9.2 Escaping inequality

- ✓ Some countries may find it difficult to develop economically because of their location or climate, a lack of good healthcare and education, for social and political reasons, or because of the legacy of their colonial past.
- ✓ People may choose to leave their home country to escape poverty, war or persecution, and to seek opportunities for a better quality of life.
- ✓ The journey for migrants is sometimes dangerous.



6.3 Food inequality

- ✓ A country experiences food insecurity when it does not have enough food to feed its people. This can cause undernutrition and famine, and the price of available food increases, making it difficult for people to afford.
- ✓ South Sudan is a poor country that has been experiencing a famine since 2017 because of poverty, conflict and drought.
- ✓ Food security is where a country has enough nutritious food for people to eat and stay healthy.
- ✓ Food security can result in overnutrition, where people eat too many calories. In many HICs have problems with obesity, which is caused by eating more calories than is healthy, drinking alcohol, an unhealthy lifestyle and lack of exercise.



9.4 Health inequality

- ✓ In HICs, higher standards of living and access to good healthcare means that people are healthier than in LICs, where people are poorer, living standards are lower, and many people do not have access to healthcare.
- ✓ In India, many people cannot access or afford healthcare, especially in rural areas. In Japan there is a modern healthcare system that is available to everyone, with regular health checks and most of the cost met by the government.



9.5 The Geography of Chocolate

- ✓ Trade in cocoa beans is not always fair, as the farmers who grow the beans are paid a very low price. This is very little compared to what is paid to the other people involved in the production of chocolate.
- ✓ Fairtrade ensures that farmers are paid fairly for their products, that their products are grown in an environmentally friendly way, and in safe conditions. Farmers are also given money to improve their communities.



Geography

"Inspiring Education for All"

Key Terms	
Economy	the wealth of a country
Disposable income	the amount of money left to spend on what you want, once bills have been paid
Colonies	areas controlled by another country
Subsistence farmers	farmers who grow only enough food to feed themselves and their families, leaving little to sell
Informal work	jobs that pay cash-in-hand. Workers don't pay tax but also don't receive benefits such as sick pay
Sparsely populated	few people live there
Terrain	the physical characteristics of land, such as rocky or mountainous
Oases	places in a desert where water is found
Traditional societies	groups of people who have lived in a place for a very long time, passing down knowledge and customs through many generations
Nomads	people who move from place to place, travelling with their animals to find grazing
Semi-nomadic	nomadic people who move from place to place, but may also stay in one area for a while to grow crops
Desertification	where the land is being turned into desert, often through overuse
Over-grazing	when animals eat too many plants so the vegetation cannot recover properly
Hydro-electric power	electricity made by water flowing through turbines in a dam
Political	to do with governments and decisions they make
Telecommunications	communication using technology, such as radio and phone
Corrupt	not honest

Year 8 Topic 2 Focus on Africa

10.1 What is Africa like?

- ✓ Africa is a continent, with 54 countries.
- ✓ The countries of Africa are very diverse, with many geographical, social and cultural contrasts.
- ✓ Africa has many different types of landscapes, from deserts to rainforests and mountains.
 - ✓ Africa has many natural resources, such as oil, diamonds, gold, and valuable crops such as cotton, cocoa, coffee and tea.



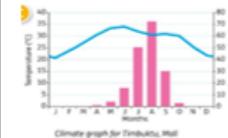
10.2 Africa Populations

- ✓ Africa has been the home to many different groups and civilisations throughout history.
- ✓ Africa today is very culturally and ethnically diverse, and has thousands of different ethnic groups.
- ✓ More and more people in Africa are moving to towns and cities. In rural areas most people are subsistence farmers, and in cities many people do informal work.
- ✓ Africa has more young people than anywhere else in the world – this brings benefits, but could also bring challenges in the future.



10.3 The Sahara

- ✓ Few people live in the Sahara because it is very dry and very hot. It is difficult to find water, and there is little vegetation. The rocky and sandy terrain makes it hard to get from place to place.
 - ✓ To get enough water, people in the Sahara live near oases, or move from place to place.
- ✓ The causes of desertification are drought, lower rainfall due to climate change, population growth, and human activity such as overgrazing.
- ✓ The Great Green Wall is a scheme to create a wide boundary of trees and vegetation along the southern edge of the Sahara, to help reduce desertification.



10.4 Nigeria- a country of contrasts

- ✓ Nigeria has a variety of different landscapes, with mountains, high plateaus and two major rivers.
- ✓ Nigeria has four different biomes: desert, rainforest, tropical savannah and semi-arid savannah.
- ✓ Nigeria has the largest population of any African country, with hundreds of different ethnic and tribal groups, and a high proportion of young people.
- ✓ Around half the population live in towns and cities. There are famous Nigerians in sport, literature and the performing arts.

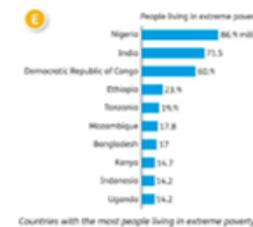
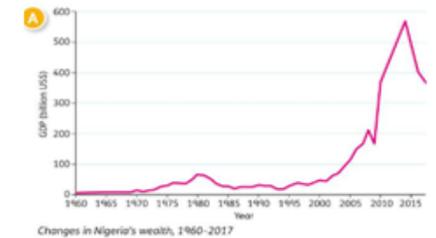


Abuja is the capital of Nigeria



10.5 Opportunities and Challenges in Nigeria

- ✓ Nigeria has experienced rapid economic development in recent decades. New industries have developed, bringing jobs and increased wealth.
- ✓ Nigeria's economic development has improved the quality of life for many people, with better health, education and job opportunities. Rapid economic growth in Nigeria has also brought economic, social and environmental challenges for many people.



Dirty water and sewage flow next to houses in this slum

Geography

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success



How did Europeans impact America?

Key Figures

Harriet Tubman – An ex-slave who became a leading figure in the Underground Railroad, helped hundreds of slaves escape.

Nat Turner – A slave who led a violent rebellion against their owners. The rebellion resulted in many deaths.

Pocahontas - A Native American girl who married an English soldier and visited Queen Elizabeth
George Washington – The First President of the USA, he was a leader in making the USA an independent country.

Thomas Jefferson – A ‘founding father’ of the USA, he was the leading author of the Declaration of Independence

Abraham Lincoln – President of the USA, led the North during the Civil War and ended slavery



Key Points

Declaration of Independence – A document signed by the ‘founding fathers’ that said the USA was no longer controlled by Britain

The Underground Railroad – A secret organisation that helped slaves escape and move north

Manifest Destiny – A belief that it was Americans’ right to move west and take land in the name of Christianity

Emancipation Proclamation – A law passed by Lincoln that made Slavery illegal in the United States

The US Civil War – A war between the Northern states and the Southern States, the North was against slavery, the South supported slavery

Battle of Little Bighorn – The most famous battle with Native Americans, it was a total failure for the US army



Key Words

Democracy – A way of running a country. People vote for who they want to be in charge.

Pilgrim – People who move to a different country for religious reasons.

Indigenous people – people who are originally from an area (e.g. Native Americans)

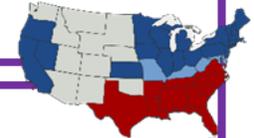
Independence – Not being controlled by another country

Resistance – Refusing to accept something and showing it, it can be violent or non-violent

Colony – A country that is controlled by another country. e.g. America was a *colony* of Britain

Migration – people moving from one part of a country to another part

Civil War – A war between two groups from the same country

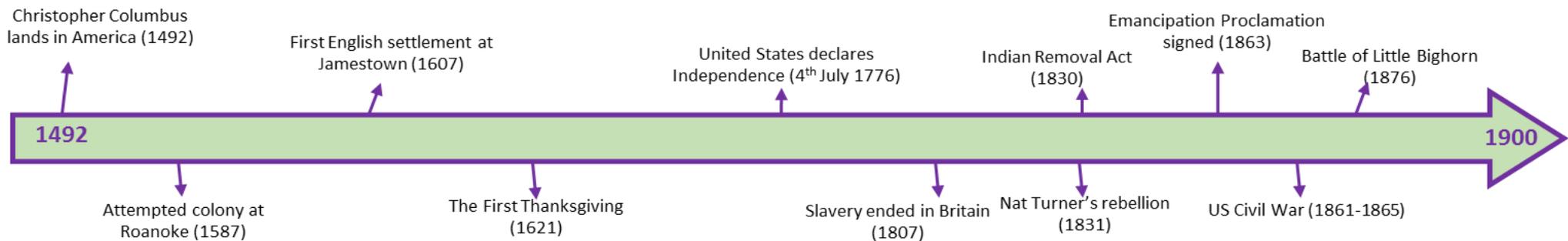


Key Questions

Why did Slavery end? There were many reasons – Slaves had long resisted and rebelled against their masters, finally, Abraham Lincoln ended Slavery during the Civil War with the Emancipation Proclamation

What is a State in the USA? A state is a division of the USA, states can control some laws by themselves. Originally there were 13 states, now there are 50.

Did Christopher Columbus really discover America? No, people had been living in America for thousands of years, Europeans found out about it with Christopher Columbus.



History

Community

Opportunity

“Inspiring Education for All”

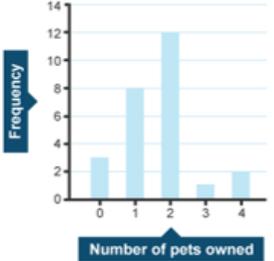
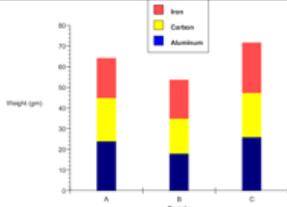
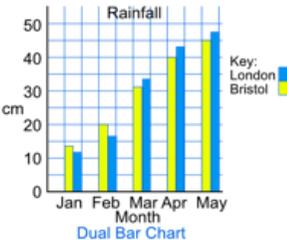
Enjoyment

Success

Topic: Algebra

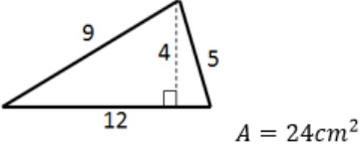
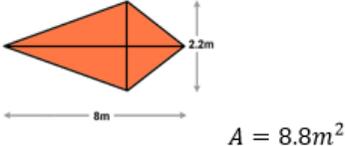
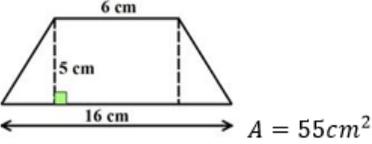
Topic/Skill	Definition/Tips	Example
1. Expression	A mathematical statement written using symbols, numbers or letters ,	$3x + 2$ or $5y^2$
2. Equation	A statement showing that two expressions are equal	$2y - 17 = 15$
3. Identity	An equation that is true for all values of the variables An identity uses the symbol: \equiv	$2x \equiv x+x$
4. Formula	Shows the relationship between two or more variables	Area of a rectangle = length x width or $A = L \times W$
5. Simplifying Expressions	Collect 'like terms' . Be careful with negatives. x^2 and x are not like terms.	$2x + 3y + 4x - 5y + 3$ $= 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$
6. x times x	The answer is x^2 not $2x$.	Squaring is multiplying by itself, not by 2.
7. $p \times p \times p$	The answer is p^3 not $3p$	If $p=2$, then $p^3=2 \times 2 \times 2=8$, not $2 \times 3=6$
8. $p + p + p$	The answer is $3p$ not p^3	If $p=2$, then $2+2+2=6$, not $2^3 = 8$
9. Expand	To expand a bracket, multiply each term in the bracket by the expression outside the bracket.	$3(m + 7) = 3m + 21$
10. Factorise	The reverse of expanding . Factorising is writing an expression as a product of terms by ' taking out ' a common factor .	$6x - 15 = 3(2x - 5)$, where 3 is the common factor.
11. Solve	To find the answer/value of something Use inverse operations on both sides of the equation (balancing method) until you find the value for the letter.	Solve $2x - 3 = 7$ Add 3 on both sides $2x = 10$ Divide by 2 on both sides $x = 5$
12. Inverse	Opposite	The inverse of addition is subtraction. The inverse of multiplication is division.

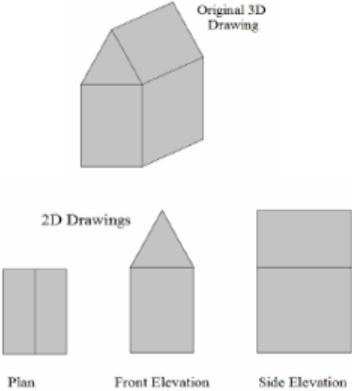
Topic: Presenting Data

1. Frequency Table – Set 3 Only	A record of how often each value in a set of data occurs .	<table border="1"> <thead> <tr> <th>Number of marks</th> <th>Tally marks</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>1</td> <td> II</td> <td>7</td> </tr> <tr> <td>2</td> <td> </td> <td>5</td> </tr> <tr> <td>3</td> <td> I</td> <td>6</td> </tr> <tr> <td>4</td> <td> </td> <td>5</td> </tr> <tr> <td>5</td> <td> </td> <td>3</td> </tr> <tr> <td>Total</td> <td></td> <td>26</td> </tr> </tbody> </table>	Number of marks	Tally marks	Frequency	1	II	7	2		5	3	I	6	4		5	5		3	Total		26
Number of marks	Tally marks	Frequency																					
1	II	7																					
2		5																					
3	I	6																					
4		5																					
5		3																					
Total		26																					
2. Bar Chart - Set 3 Only	Represents data as vertical blocks. x – axis shows the type of data y – axis shows the frequency for each type of data Each bar should be the same width There should be gaps between each bar Remember to label each axis.																						
3. Types of Bar Chart - Set 3 Only	Compound/Composite Bar Charts show data stacked on top of each other. Comparative/Dual Bar Charts show data side by side.	 																					
4. Pie Chart -- Set 3 Only	Used for showing how data breaks down into its constituent parts . When drawing a pie chart, divide 360° by the total frequency . This will tell you how many degrees to use for the frequency of each category. Remember to label the category that each sector in the pie chart represents.	 <p>If there are 40 people in a survey, then each person will be worth $360 \div 40 = 9^\circ$ of the pie chart.</p>																					

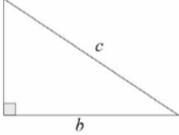
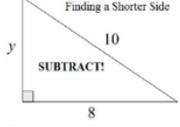
Topic: Area – Set 1 Only

1. Area of a Circle	$A = \pi r^2$ which means 'pi x radius squared'.	If the radius was 5cm, then: $A = \pi \times 5^2 = 78.5cm^2$
2. Circumference of a Circle	$C = \pi d$ which means 'pi x diameter'	If the radius was 5cm, then: $C = \pi \times 10 = 31.4cm$

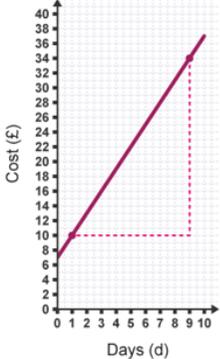
3. Area of a Triangle	Base x Height ÷ 2	
4. Area of a Kite	Split in to two triangles and use the method above.	
5. Area of a Trapezium	$\frac{(a + b)}{2} \times h$ "Half the sum of the parallel side, times the height between them. That is how you calculate the area of a trapezium"	

6. Plans and Elevations	This takes 3D drawings and produces 2D drawings. Plan View: from above Side Elevation: from the side Front Elevation: from the front	
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Topic: Pythagoras Theorem – Set 1 Only

1. Pythagoras' Theorem	For any right angled triangle : $a^2 + b^2 = c^2$ 	 $a = y, b = 8, c = 10$ $a^2 = c^2 - b^2$ $y^2 = 100 - 64$ $y^2 = 36$ $y = 6$
2. 3D Pythagoras' Theorem	Find missing lengths by identifying right angled triangles . You will often have to find a missing length you are not asked for before finding the missing length you are asked for.	Can a pencil that is 20cm long fit in a pencil tin with dimensions 12cm, 13cm and 9cm? The pencil tin is in the shape of a cuboid. Hypotenuse of the base = $\sqrt{12^2 + 13^2} = 17.7$ Diagonal of cuboid = $\sqrt{17.7^2 + 9^2} = 19.8cm$ No, the pencil cannot fit.

Topic: Real Life Graphs Sets 1 and 2

1. Real Life Graphs	Graphs that are supposed to model some real-life situation. The actual meaning of the values depends on the labels and units on each axis. The gradient might have a contextual meaning. The y-intercept might have a contextual meaning. The area under the graph might have a contextual meaning.	 A graph showing the cost of hiring a ladder for various numbers of days. The gradient shows the cost per day. It costs £3/day to hire the ladder. The y-intercept shows the additional cost/deposit/fixed charge (something not linked to how long the ladder is hired for). The additional cost is £7.
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Maths

"Inspiring Education for All"

Community

Opportunity

Enjoyment

Success

Year 8 French Food and drink. Christmas and Celebrations. Year 8 French Knowledge Organiser Nov-Dec 2020

Key Ideas

- La révision
- La nourriture
- Les spécialités régionales
- Les quantités
- Noël en France et dans les autres pays
- Les traditions

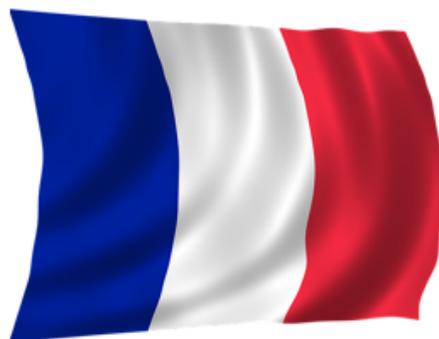
Key Vocabulary

Les noms

Une baguette	A French stick loaf
Une crêpe	A type of thin pancake
Un croque-Monsieur	Cheese and ham on toast
Un croque-Madame	A cheese and ham toastie with a fried egg on top
Une tranche de	A slice of
Une bouteille de	A bottle of
Un kilo de	A kilo of
Je voudrais	I would like
Noël	Christmas
Un sapin de Noël	A Christmas Tree
Les cadeaux	presents
Le Nouvel An	New Year
Joyeux Noël	Happy Christmas
Le Saint-Sylvestre	New Year's Eve

Key Phrases

Je voudrais une baguette au jambon, s'il vous plaît	I would like a ham sandwich please
C'est tout ?	Is that all?
Qu'est-ce que vous désirez ?	What would you like ?
Ça coûte 10 euros	That costs 10 euros
J'adore Noël parce que c'est.....	I love Christmas because it is...
J'aime manger les crêpes parce qu'elles sont délicieuses	I like eating pancakes because they are tasty
Pour Noël on m'a offert un nouveau vélo	For Christmas I received a new bike
Pour célébrer le Nouvel An, je suis allé (e) en ville	For New Year I went into town...
J'ai mangé	I ate
J'ai bu	I drank
J'ai reçu	I received
Je vais prendre...	I am going to have/take



Les verbes

acheter	to buy
commander	to order
faire les courses	to do the shopping
manger	to eat
boire	to drink
prendre	to take/have
fêter	to celebrate

Les adjectifs

délicieux	delicious
dégoûtant	disgusting
content(e)	happy
intéressant	interesting
joli(e)	pretty
ennuyeux	boring
amusant	fun

Key Ideas

- Wieder lernen
- Essen
- Spezialitäten
- Quantitäten
- Weihnachten in Deutschland und in den anderen deutschsprachigen Ländern
- Traditionen

Key Vocabulary

<u>Die Nomen</u>	
<u>Wurst</u>	sausage
<u>Schmalzbrot</u>	Toast with fat/dripping on in
<u>Lebkuchen</u>	gingerbread
<u>Stollen</u>	A spiced Christmas cake
<u>Eine Scheibe</u>	A slice of
<u>Eine Flasche</u>	A bottle of
<u>Ein Kilo</u>	A kilo of
<u>Ich möchte</u>	I would like
<u>Weihnachten</u>	Christmas
<u>Ein Tannenbaum</u>	A Christmas Tree
<u>Die Geschenke</u>	presents
<u>Das Neujahr</u>	New Year
<u>Frohe Weihnachten</u>	Happy Christmas
<u>Silvester</u>	New Year's Eve

Key Phrases

Ich möchte ein Schinkenbrot, bitte	I would like a ham sandwich please
<u>Sonst noch etwas ?</u>	Anything else?
Wie kann ich Ihnen helfen ?	How can I help you ?
<u>Das kostet 10 euros</u>	That <u>costs</u> 10 euros
Ich liebe Weihnachten, weil es.....ist	I love Christmas because it is...
Ich mag Pommes essen, weil sie lecker sind	I like eating chips because they are tasty
Für Weihnachten habe ich ein neues Fahrrad bekommen	For Christmas I received a new bike
Für Silvester bin ich in die Stadt gegangen	For New Year I went into town...
<u>Ich habe.....gegessen</u>	I <u>ate</u>
<u>Ich habe.....getrunken</u>	I <u>drank</u>
<u>Ich habe.....bekommen</u>	I <u>received</u>
<u>Ich werde.....haben</u>	I <u>am going to have</u>



Die Verben

<u>kaufen</u>	to buy
<u>bestellen</u>	to order
<u>einkaufen</u>	to do the shopping
<u>essen</u>	to eat
<u>trinken</u>	to drink
<u>haben</u>	to have
<u>feiern</u>	to celebrate

Die Adjektiven

<u>lecker</u>	delicious
<u>ekelhaft</u>	disgusting
<u>froh</u>	happy
<u>interessant</u>	interesting
<u>hübsch</u>	pretty
<u>langweilig</u>	boring
<u>lustig</u>	fun

KS3 Spanish - Knowledge Organiser - Autumn 1							
1: Alphabet and Phonics		3: Asking somebody their age		4: When is your birthday?		5: Do you have siblings?	
Key sounds	Pronunciation	English	Spanish	English	Spanish	Spanish	English
a, b, c, d	ah, beh, theh, deh	1	uno	16	dieciséis	Tengo un hermano	I have a brother
ll	y	2	dos	17	diecisiete	Tengo una hermana	I have a sister
ñ	ny	3	tres	18	dieciocho	Tengo dos hermanos	I have two brothers
ci (i)	thee (ee)	4	cuatro	19	diecinueve	Tengo tres hermanas	I have three sisters
ce (e)	theh (eh)	5	cinco	20	veinte	No tengo hermanos	I don't have siblings
co	koh	6	seis	21	veintiuno	TASK 6: translate the following:	
ca	kah	7	siete	22	veintidós	1. Tengo tres hermanos y una hermana (y= and)	
cu	koo	8	ocho	23	veintitres	2. I have five sisters and a brother.	
que	keh	9	nueve	24	veinticuatro	3. I have seven siblings.	
qui	key	10	diez	25	veinticinco	TASK 7: Explain the two possible translations for 'hermanos'	
rr	rrr	11	once	26	veintiséis	6: Personality and adjective agreement	
j	a bit like 'h' or at the back	12	doce	27	veintisiete		
	of your throat 'jhuh'	13	trece	28	veintiocho	Spanish	English
Rules: most Spanish letters are phonetic. They sound		14	catorce	29	veintinueve	soy	I am
how they are spelt. Remember the rules above to sound		15	quince	30	treinta	eres	you are
like a native Spanish speaker!		¿Cuántos años tienes?	How many years do you have?	31	treinta y uno	es	he/she/it is
TASK 1: Read the following words out loud in Spanish:				¿Cuándo es tu cumpleaños?	When is your birthday?	generoso/a	generous
equitación, césped, cinco, cuatro, catorce, educación		tengo tres años	I have three years			simpático/a	nice

2: Greetings		tienes	you have	Mi cumpleaños es el...de...	listo/a	clever
		tengo	I have	My birthday is the... of...	tímido/a	shy
Spanish	English	Star structure: tengo ganas de cumplir ... años		January	enero	tonto/a
hola	hello	I'm looking forward to turning... years old		February	febrero	divertido/a
¿Qué tal?	How are you?	In Spanish we do not say 'I am eleven years old'.		March	marzo	tranquilo/a
fenomenal	great	Instead we say 'I have eleven years.'		April	abril	listo/a
bien, gracias	good, thank you	It is important that you know the key verbs I have and		May	mayo	serio/a
regular	ok	you have. (tiene = he/she has)		June	junio	sincero/a
fatal	terrible	TASK 3: Translate:		July	julio	o at end of adjective
¿Cómo te llamas?	What's your name?	1. I have fourteen years		August	agosto	a at end of adjective
Me llamo...	I call myself	2. I have ten years.		September	septiembre	Soy sincero pero no soy tonto
¿Y tu?	and you?	3. You have twelve years.		October	octubre	TASK 8: translate:
hasta luego	see you later/soon	4. Tengo ganas de cumplir quince años		November	noviembre	1. Soy divertida y lista.
adios	goodbye	5. Practise your phonics by reading all numbers out loud		December	diciembre	2. Es tonto y generoso.
TASK 2: Write a dialogue in Spanish of two people meeting, then read out loud to practise your phonics.		in your perfect Spanish accent.		TASK 4: practise your phonics by reading out loud		3. Mi hermano es tranquilo.
				TASK 5: translate the following:		4. Eres simpática y tímida.
				1. Mi cumpleaños es el once de enero.		5. I am serious and nice but my brother is fun

				2. My birthday is the sixteen of July.		
				3. My birthday is the twenty nine of December.		

TASK 9: Bringing it all together. 1. Read the parallel texts out loud in both Spanish and English to practise your pronunciation.

Hola, me llamo Juan. ¿Qué tal? Tengo diez años y mi cumpleaños es el catorce de mayo. Tengo ganas de cumplir doce años. Tengo una hermana pero no tengo hermano. Mi hermana tiene catorce años. Es divertida y seria. Soy simpático y tranquilo. ¿Y tu? Hasta luego. Hello, my name is Juan. How are you? I am ten years old and my birthday is the 14th of May.

I am looking forward to turning twelve years old. I have one sister but I don't have a brother. My sister is fourteen years old. She is fun and serious. I am nice and calm. And you? See you later.

Find the Spanish for: I don't have a brother, and you?, she is, she has, I have, I am called, I'm looking forward to

Using the text to help you, translate: I am looking forward to turning fourteen years old.

TASK 10: Using the text from task 9, write your own version of this text. It does not have to be factual, simply use what is on this knowledge organiser. Don't forget to use a star structure!

MFL - Spanish

“Inspiring Education for All”

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Knowledge Organiser – Digestion

There are 7 different types of nutrients;

1. Carbohydrates; simple carbohydrates provide a quick source of energy. Complex carbohydrates release energy more slowly.
2. Lipids (fats and oils)
3. Proteins
4. Vitamins
5. Minerals
6. Water (needed in all cells and body fluids)
7. Dietary fibre

Food Tests

A food solution must be prepared by crushing the food and then adding a few drops of distilled water.

- **Starch** → If iodine is added to starch it will turn blue/black.
- **Sugar** → If Benedict's solution is added to a sugar and heated it will form an orange-red precipitate.
- **Lipids** → To test for fat, mix the substance with a small amount of ethanol and distilled water, if a milky white emulsion appears, then fat is present OR rub solid food into a piece of filter paper, if the paper turns translucent the food contains lipids.
- **Protein** → If Biuret solution is added to protein it will turn purple.

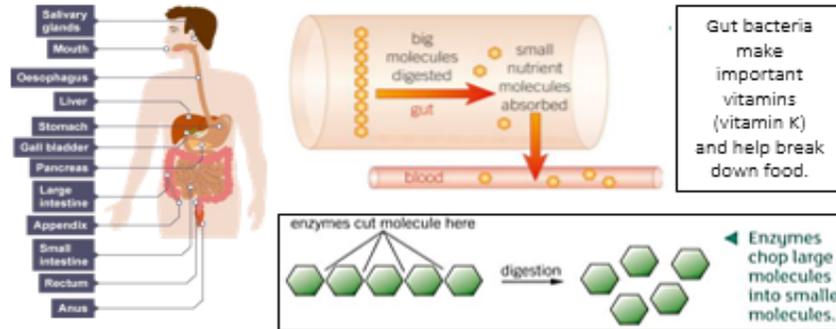
UNHEALTHY DIET

- Energy in food is measure in joules or kilojoules (1 kilojoule = 1000 joules).
- The amount of energy you need depends on your age, body size, gender and fitness.
- If energy in food is less than the energy you use, you will lose body mass (become underweight). Underweight people suffer from health problems, lack energy and are likely to have mineral deficiencies.
- Overweight people have an increased risk of heart disease, stroke, diabetes and some cancers.
- Vitamin and mineral deficiencies can damage a person's health; vitamin D deficiency can lead to weak bones (rickets).

DIGESTIVE SYSTEM

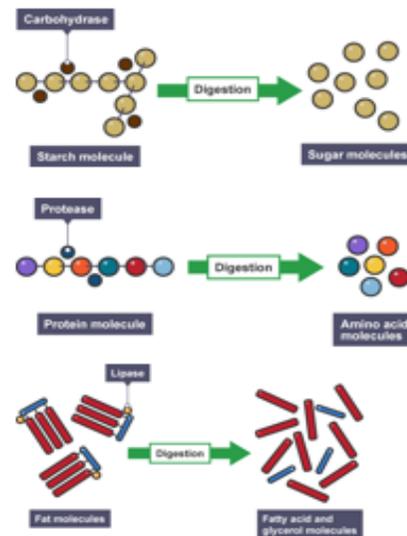
Mouth	Food is chewed and mixed with saliva. Teeth help to break the food into smaller chunks.
Gullet	Food passes down this tube.
Stomach	Food is mixed with digestive juices and acids.
Small intestine	Digestive juices from the liver and pancreas are added and digestion is completed. Small molecules of nutrients pass through the intestine wall into the bloodstream.
Large intestine	Only food that cannot be digested gets this far. Water passes back into the body, leaving a solid waste of undigested food called faeces.
Rectum	Faeces are stored here until they leave the body.
Anus	This is a muscular ring through which faeces pass out of the body.

The small intestine has a thin wall, covered in villi. These structures increase the surface area for absorption. They also contain blood capillaries to carry away absorbed food molecules.



Gut bacteria make important vitamins (vitamin K) and help break down food.

DIFFERENT TYPES OF ENZYMES: different enzymes break down different nutrients.



Carbohydrates are digested in the mouth (saliva), stomach and small intestine.

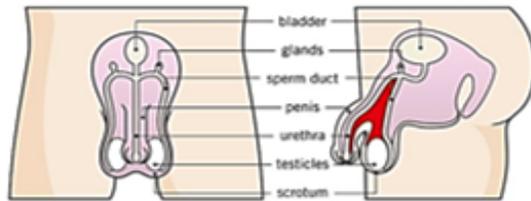
Proteins are digested in the stomach and small intestine. Acid in the stomach helps digestion and kills harmful microorganisms.

Lipids are digested in the small intestine. It is helped by bile (a substance made in the liver).

KEYWORD	DEFINITION
Balanced diet	Eating food containing the right nutrients in the correct amounts.
Bile	Substance that breaks fat into small droplets.
Carbohydrase	Enzyme that breaks down carbohydrates into sugar molecules.
Carbohydrates	Nutrients that provide the body's main source of energy. There are two types; simple (sugars) and complex (starch).
Deficiency	A lack of minerals that causes poor growth.
Dietary fibre	Parts of plants and animals that cannot be digested. It helps the body to eliminate waste by providing bulk to keep food moving through the digestive system.
Digestion	Process in which large molecules are broken down into small molecules.
Digestive system	Group of organs that work together to break down food.
Enzymes	Substances that speed up the chemical reactions (biological catalysts) of digestion resulting in large molecules being broken into small molecules.
Food tests	Chemical test to detect the presence of particular nutrients in food.
Gut bacteria	Microorganisms that naturally live in the intestine and help food break down.
Lipase	Enzyme that breaks down lipids into fatty acids and glycerol.
Lipids	Nutrients that provide a store of energy and insulate the body. Sources are butter, milk, nuts.
Minerals	Essential nutrients needed in small amounts to keep you healthy. Sources are fruit and vegetables.
Nutrients	Essential substance that your body needs to survive, provided by food.
Obese	Extremely overweight.
Protease	Enzyme that breaks down protein into amino acids.
Proteins	Nutrient your body uses to build new tissue for growth and repair. Sources are meat, fish, eggs.
Starvation	Extreme case of not eating enough food.
Vitamins	Essential nutrients needed in small amounts to keep you healthy. Sources are fruit and vegetables.

Knowledge organiser – Human reproduction

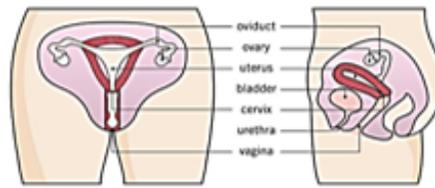
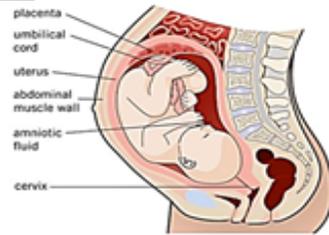
Changes during puberty		
Male	Both	Girls
Voice deepens	Body odour	Breast develop
Testicles and penis develop	Emotional changes	Ovaries start to release eggs
Sperm production starts	Pubic hair & underarm hair grows	Whole body gets curvier
Shoulders widen	Growth spurt	Periods start
Facial and chest hair grows	Sweat glands develop	Hips widen



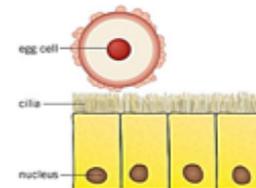
Part	Function
Glands	Produce nutrients for sperm (release semen).
Sperm duct	Tube that carries sperm from the testicles to the penis.
Penis	Carries sperm or urine out of the male's body. It swells with blood and stiffen (erection).
Urethra	Tube that carries urine or sperm out of the body.
Testicles / testes	Where sperm and testosterone are produced.
Scrotum	Skin that contains the testes.

Where does a baby grow?

The blood of the mother and fetus flow closely inside the placenta. Oxygen and nutrients diffuse from the mother to the fetus. Waste substances (carbon dioxide) diffuse from the fetus to the mother.



Part	Function
Oviduct	(fallopian tubes) carry an egg to the uterus.
Ovaries	Contains egg cells.
Uterus	(womb) where the baby develops.
Cervix	Ring of muscle at the entrance to the uterus. Keeps the baby in place.
Vagina	Receives sperm during sexual intercourse. Where the male's penis enters the female body.



How do sperm cells reach the egg cell?

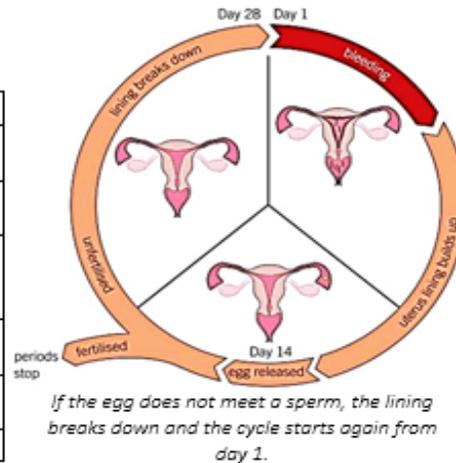
Sperm swims from vagina, through the cervix, into the uterus. Many will die. If it meets an egg, fertilisation can occur. The embryo is then implanted into the uterus lining.

Why do some couples have difficulty getting pregnant?

- Low sperm count / sperm cannot swim properly
- Egg cells are not released monthly / blocked oviduct.

MENSTRUAL CYCLE

- Each period lasts between 3-7 days.
- The cycle is 28 days and is controlled by hormones.
- Ovulation occurs on day 14.
- A woman does not have periods during pregnancy.



What happens during birth?

- At around 40 weeks, the cervix relaxes and uterus wall muscles contract. This pushes the baby out.
- The umbilical cord needs to be cut.
- The placenta is then pushed out.

CONTRACEPTION

- A condom is a thin layer of latex rubber that fits over an erect penis. It is very effective and protects against STIs.
- The 'pill' is a tablet take a female; it contains hormones. If taken correctly, it is very effective but doesn't protect against STIs.

KEYWORD	DEFINITION
Adolescence	The period of time when a child changes into an adult. It involves emotional and physical changes.
Amniotic fluid	Liquid that surrounds and protects the fetus (shock absorber).
Cilia	Tiny hair on the surface of cells.
Condoms	A barrier method of contraception that prevents semen being released into the vagina.
Contraception	A method of preventing pregnancy.
Contraceptive pill	A chemical method of contraception, which prevents ovulation.
Egg cells	The female sex cell.
Ejaculation	When semen is released from the penis.
Embryo	A ball of cells that forms when the fertilised egg divides.
Fertilisation	Joining of a nucleus from a male and female sex cell.
Fetus	The developing baby during pregnancy (from 8 weeks after fertilisation).
Gametes	(sex cells) The male gamete is a sperm and the female gamete is an egg. Join together to create a new organism.
Gestation	Process where the baby develops during pregnancy.
Menstrual cycle/period	The monthly cycle during which the uterus lining thickens and breaks down.
Menstruation	Loss of the lining of the uterus during the menstrual cycle.
Ovulation	Release of an egg cell during the menstrual cycle.
Placenta	The organ that allows transfer of nutrients and waste products between mother and fetus. It also acts as a barrier, stopping infections and harmful substances reaching the fetus.
Puberty	The physical changes that take place during adolescence.
Reproductive system	All the male and female organs involved in reproduction. The organ systems that produce sperm and egg, also where the fetus develops.
Sex hormones	Hormones that are involved in the reproductive system (e.g. testosterone and oestrogen)
Sexual intercourse	The process where the penis releases semen into the vagina.
Sperm cells	Male sex cell containing male genetic material.
Umbilical cord	Connects fetus to placenta.

Science

"Inspiring Education for All"

Community

Opportunity

Enjoyment

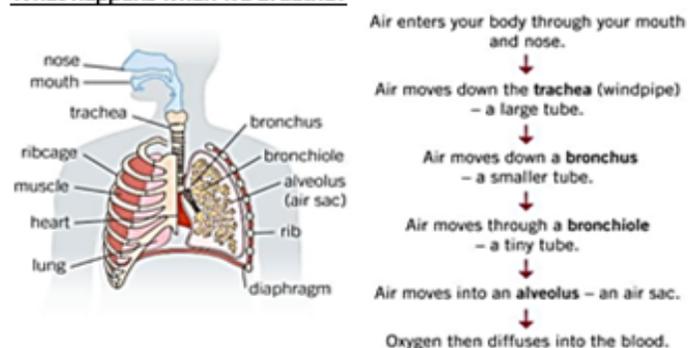
Success

Knowledge Organiser – Breathing

Gas exchange takes place inside your lungs. Lungs are made of elastic tissue and expand when you breathe in. As they are delicate, they are protected by your ribs.

Breathed in	Breathed out
21% oxygen	16% oxygen
0.03% carbon dioxide	4% carbon dioxide

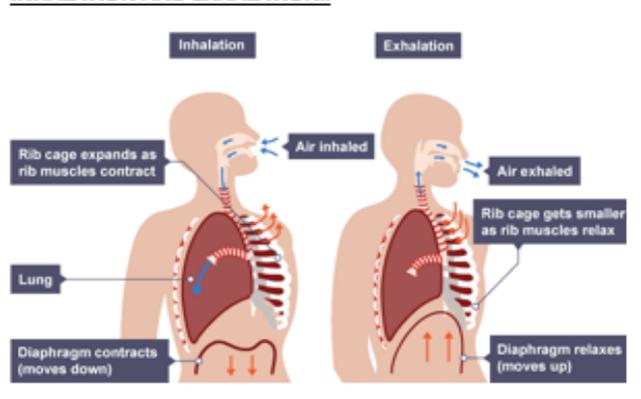
What happens when we breathe?



ALVEOLI; there are millions in your lungs. This creates a large surface area. They have very thin walls (one cell thick). This allows gases to exchange quickly.

Why do we breathe in and out? We inhale to take in oxygen (used in respiration) and exhale to remove carbon dioxide (waste product- turns limewater cloudy). The harder you exercise, the faster your breathing rate and greater your depth of breathing. This allows you to take in more oxygen for respiration (transferring more energy to the muscle cells).

INHALATION AND EXHALATION#

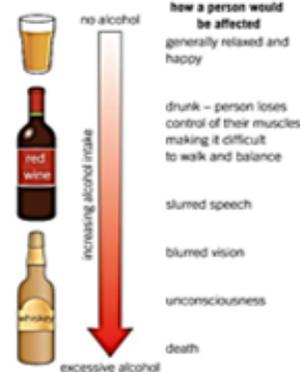


DRUGS change the chemical reactions taking place in your body. Sometimes they are helpful, many times they are not.

- Medicinal** → used to treat symptoms / cure an illness. They are prescribed by a doctor; paracetamol.
- Recreational** → normally have no health benefits and are harmful. Many are illegal (not prescribed); heroin, cocaine and cannabis. Tobacco and alcohol are recreational drugs but are legal.

The body can become dependent on a drug (addiction) and if a person with an addiction tries to stop, they may suffer withdrawal symptoms.

ALCOHOL contains ethanol. Ethanol is absorbed into the bloodstream and travels to the brain where it affects the nervous system. Different alcoholic drinks contain different amounts of alcohol. Excessive drinking leads to stomach ulcers, heart disease and brain and liver damage (cirrhosis). Pregnant women are told not to drink alcohol as it increases the risk of miscarriage and stillbirth (it diffuses into the baby's bloodstream). Alcohol also affects fertility of males and females.



The job of the liver is to break down harmful chemicals into harmless waste products.

SMOKING Tobacco smoke contains many harmful substances.

These include:

- Tar** → Causes lungs, mouth and throat **cancer**. It coats the inside of the lungs, including the **alveoli**, causing coughing. **It damages the alveoli, making it more difficult for gas exchange to happen.**
- Nicotine** → is **addictive** and also increases the heart rate and blood pressure, and makes blood vessels narrower than normal. This can lead to **heart disease**.
- carbon monoxide** → is a gas that takes the place of oxygen in red blood cells, reducing the amount of oxygen that the blood can carry. It means that the **circulatory system** has to work harder, causing heart disease

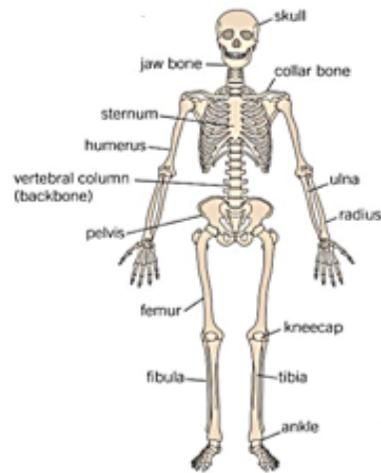
It also causes a low birth weight in babies born to mothers who smoke.

KEYWORD	DEFINITION
Addiction	A need to keep taking a drug in order to feel normal.
Alcoholic	A person who is addicted to alcohol.
Asthma	A lung disorder in which inflammation (swelling) causes the bronchi to swell and narrow the airways, creating breathing difficulties.
Contract	To get shorter or smaller.
Depressant	A drug that slows down the body's reactions by slowing down the nervous system.
Diaphragm	A sheet of muscle found underneath the lungs which is used in breathing.
Drug	Chemical substance that affects the way your body works.
Ethanol	The drug found in alcoholic drinks.
Exhale	Breathing out, to remove carbon dioxide.
Gas exchange	The transfer of gases (oxygen & carbon dioxide) between an organism and its environment.
Inhale	Breathing in, to take in oxygen.
Lung volume	Measure of the amount of air breathed in or out.
Lungs	The organ in which gas exchange takes place.
Medicinal drugs	Drugs that has a medical benefit to health.
Passive smoking	Breathing in other people's smoke.
Recreational drugs	Drug that is taken for enjoyment.
Respiration	Process that transfers energy in plants and animals. Glucose + oxygen → carbon dioxide + water
Ribs	Bones which surround the lungs to form the ribcage and protect the lungs.
Stimulant	A drug that speeds up the body's reaction by speeding up the nervous system.
Withdrawal symptoms	Unpleasant symptom a person with a drug addiction suffers from when they stop taking the drug (e.g. headache, anxiety and sweating).

Science

Knowledge organiser – skeleton & muscles

SKELETON AND ITS FUNCTION



1. **Support** → for the body and holds internal organs in place. Hard and strong bones create a framework for your muscles and organs.
2. **Protection** → of vital internal organs from being damaged; the skull is protected by the skull.
3. **Movement** → when a muscle pulls on a bone. The skeleton moves at joints.
4. **Making blood cells** → bone marrow in some bones produce red blood cells and some white blood cells.

JOINTS

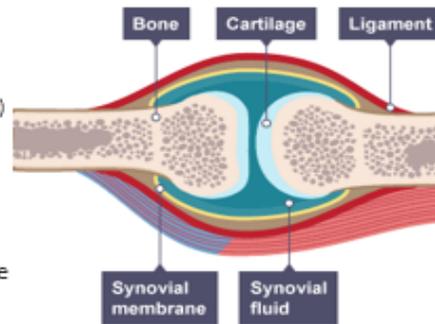
Most joints are flexible, some are joined rigidly and cannot move.

Hinge joint → movement backwards and forwards (knee/elbow)

Ball & socket joint → movement in all directions (hip/ shoulder)

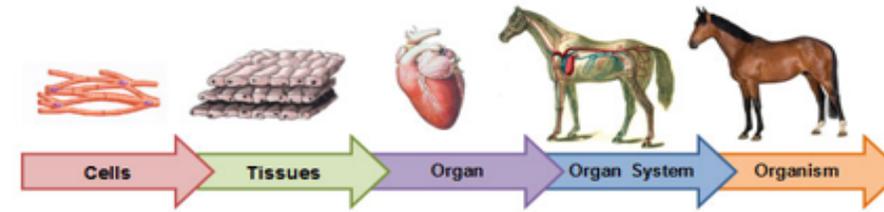
Fixed joint → do not allow any movement (skull)

If two bones just moved against each other, they would eventually wear away. This can happen in people who have a condition called arthritis. To stop this happening, the ends of the bones in a joint are covered with cartilage. This is kept slippery (reduces friction) by a liquid called synovial fluid.



LEVELS OF ORGANISATION

Multicellular organisms have five layers of organisation.



MUSCLES IN THE BODY

Muscles are a type of tissue – lots of muscle cells work together to cause movement. Muscles can only pull – they work by getting shorter (contract). Muscles are attached to bones by tendons. When a muscle contracts, it pulls on a bone. If the bone is part of a joint, the bone will move.



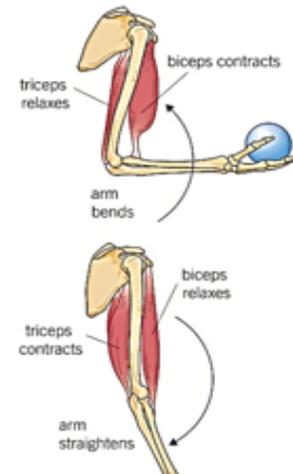
How do muscles work to bend and straighten the arm?

To bend the arm:

- Biceps muscle (front of the arm) contracts
- Triceps muscle relaxes
- Tendons of the biceps is attached to the radius. This allows the biceps to pull the lower arm up.

To straighten the arm:

- Biceps muscle relaxes
- Triceps muscle contracts
- Triceps pulls at the back of the elbow.



KEYWORD	DEFINITION
Antagonistic muscle pairs	A pair of muscles working together to create movement at a joint – as one muscle contracts, the other relaxes.
Bone	A tissue that forms a hard structure, used to protect organs and for movement.
Bone marrow	Tissue found inside some bones where new blood cells are made.
Cartilage	Smooth tissue found at the end of bones. This reduces friction between them preventing rubbing.
Cells	The smallest functional unit of a living organism. It contains parts to carry out life processes.
Circulatory system	Transports substances around the body in the blood.
Digestive system	Breaks down and absorbs food molecules.
Immune system	Protects against infections.
Joints	Parts of the skeleton where bones meet.
Ligaments	Connect bones in joints.
Multi-cellular	Living things made up of many types of cells.
Muscular skeletal system	Supports the body and causes movement.
Organ	Group of different tissues working together to carry out a function.
Organ system	A group of organs working together to carry out a function.
Reproductive system	Produces sperm and egg cells for the production of new organisms.
Respiratory system	Takes in oxygen and removes carbon dioxide from the blood.
Skeleton	All the bones in an organism.
Tendons	Connect muscle to bones.
Tissue	Group of cells of one type, working together to perform a function.