

# THE BOURNE ACADEMY KNOWLEDGE ORGANISER

everyone is a learner, everyone is a teacher



Year 8  
Summer Term 2025-26

**A**mbitious  
**S**elf Confident  
**P**hysically Literate  
**I**ndependent  
**R**esilient  
**E**emotionally Literate

Name: .....

House: .....

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## Excellence at The Bourne Academy: Using your Knowledge Organisers'

'Don't just practise until you get it right practise until you can't get it wrong.' - Daniel Willingham

### Routines for Excellence

- You will get out your TBA Knowledge Organiser Booklet at the start of every lesson along with your Knowledge Organiser practise exercise book
- Your teacher will set you sections of the Knowledge Organiser to learn, off by heart, in every lesson.
- Your teacher will set you quizzes to test your knowledge every lesson.
- Your teacher will regularly set you questions that require you to APPLY your knowledge
- Your TBA Knowledge Organisers are saved on Show My Homework and on TBA website

### How to revise with your Knowledge Organisers'

#### Self-quizzing

**Look/read, cover, write** and then **green pen check** your answers to show you where your 'knowledge gaps' are. Repeat until you have mastered the knowledge...until you can't get the knowledge wrong



Look/Read



Cover



Write



Check

#### Low-stakes testing

Your teachers will always have a '**Do now**' activity on the board at the start of lesson. Do as much as you can from memory. Use your Knowledge Organiser to **green-pen check** what you have accurately remembered. **Then green pen correct**. Repeat, each time **checking** and **correcting** until you have mastered your knowledge gaps.



## HOW DO WE REVISE WITH OUR KNOWLEDGE ORGANISERS?

### RECORD IT

Record yourself on your phone or tablet reading out the information. These can be listened to as many times as you want.



### TEACH IT

Teach someone your key facts and then get them to test you, or even test them.



### FLASH CARDS

Write the keyword/date on one side and the explanation on the other. Ask someone to quiz you on either side.



### BACK 2 FRONT

Write down the answers and then write what the questions the teacher may ask to get those answers.



### HIDE AND SEEK

Read through your Knowledge Organiser, put it down and try to write out as much as you can remember. Then keep adding to it until it is full.



### SKETCH IT

Draw pictures to represent the facts or dates. It could be a simple drawing or something that reminds you of the answer,



### POST ITS

Using a pack of post it notes, write out as many of the keywords or dates as you can remember in 1 minute.



### PRACTICE

Some will remember knowledge by simply writing the facts, over and over again.





### READ ALOUD

Simply speak the facts and dates out loud as you're reading the Knowledge Organiser. Even try to act out some of the facts - it really helps you remember.





1. Plastic and the Environment	2. Artists	3. Pollution
 <p>Plastic in the Ocean:  <b>Around 13 million tonnes of plastic end up in the ocean every year</b>, and plastic makes up 80% of all marine debris found from surface waters to deep-sea sediments. Marine species ingest or are entangled by plastic debris, which causes severe injuries and death.</p>		<p><b>The ocean is said to be Earth’s life support, with 97% of the world’s water held by the ocean. We rely on it to regulate our climate, absorb CO2 and it is the number one source for protein for over a billion people.</b></p> <p>However, at the rate we are polluting the ocean with around 13 million tonnes of plastic a year, the damage we are doing to marine life and our ecosystem is becoming irreparable.</p> <p>Our actions over the next 10 years will determine the state of the ocean for the next 10,000 years to come.</p> <p>Plastic pollution has become one of the most pressing environmental issues, as rapidly increasing production of disposable plastic products overwhelms the world’s ability to deal with them. Plastic pollution is most visible in developing nations, where collection systems are often inefficient or non-existent. But the developed world, especially in countries with low recycling rates, also has trouble properly collecting discarded plastics.</p>
<p><b>4. Keywords</b></p>	<p>Look at these artists for inspiration:</p> <ul style="list-style-type: none"> <li>• Cindy Lane</li> <li>• Amy Genser</li> <li>• Alejandro Duran</li> <li>• Mandy Barker</li> <li>• John Dahlsen</li> <li>• Steve McPherson</li> <li>• Angela Haseltine Pozzi</li> <li>• Gilles Cenazandotti</li> <li>• Dale Chihuly</li> </ul>	



### 5. Shocking ocean plastic statistics

More than **1 million seabirds** and **100,000 marine animals die** from plastic pollution every year.

**100% of baby sea turtles** have plastic in their stomachs.

There are now **5.25 trillion** macro and micro pieces of plastic in our ocean and **46,000 pieces** in every square mile of ocean, weighing up to 269,000 tonnes.

Every day around **8 million pieces of plastic** makes their way into our oceans.

The Great Pacific Garbage Patch is around **1.6 million square kilometres** – bigger than Texas.

The world produces **381 million tonnes** in plastic waste yearly – this is set to double by 2034.

**50% of this is single-use** plastic and only **9% has ever been recycled**.

**Over 2 million tonnes** of plastic packaging are used in the UK each year.

**88% of the ocean's surface** is polluted by plastic waste.

**Between 8 to 14 million tonnes** enters our oceans every year.

Britain contributes an estimated **1.7 million tonnes of plastic** annually.

The US contributes **38 million tonnes** of plastic every year.

Plastic packaging is the biggest culprit, resulting in **80 million tonnes** of waste yearly from the US alone.

On UK beaches there are **5000 pieces of plastic and 150 plastic bottles** for each mile.

More than **1 million plastic bags** end up as rubbish every minute.

The world uses over **500 billion plastic bags** a year – that's **150 for each person on Earth**.

**8.3 billion plastic straws** pollute the world's beaches, but only 1% of straws end up as waste in the ocean.

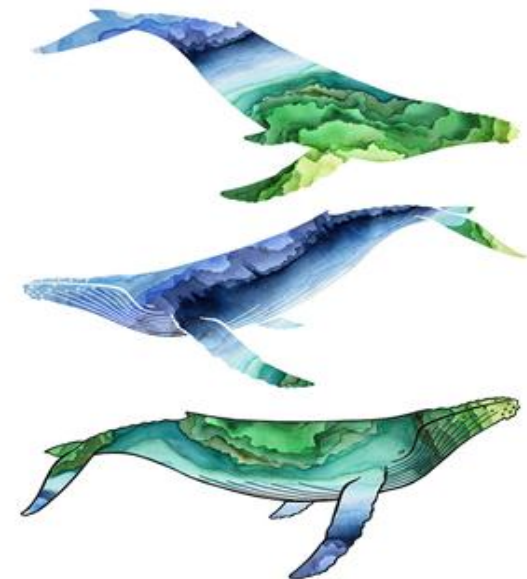
Since 2020 the **number of plastics in the sea is higher than the number of fish**.

**1 in 3 fish** caught for human consumption contains plastic.

Plastic microbeads are estimated to be **one million times more toxic than the seawater** around it.

Products containing microbeads can release **100,000 tiny beads** with just one squeeze.

### 6. Cindy Lane's work: Watercolour painting





### Section A: What are plastics?

Plastics are simply chains of like molecules linked together. These chains are called polymers. Therefore, many plastics begin with “poly,” such as polyethylene, polystyrene, and polypropylene. Polymers often are made of carbon and hydrogen and sometimes oxygen, nitrogen, sulphur, chlorine, fluorine, phosphorous, or silicon. The term “plastics” encompasses all these various polymers.

Although there are many polymers, plastics in general are lightweight with significant degrees of strength. Plastics can be moulded, extruded, cast and blown into seemingly limitless shapes and films or foams or even drawn into fibres for textiles. Many types of coatings, sealants and glues are actually plastics too.

**How many plastic items do use daily at home and when at school?**

**How many of those items are one-use plastics (disposed of after use)?**

### Section B: How is plastic made?

To make today’s plastics, chemists start with various elements (atoms such as carbon, hydrogen, oxygen and so on) derived from natural resources (fossil fuels). Chemists combine various atoms to make molecules, which are simply two or more atoms held together by chemical bonds. When making plastics, these molecules generally are called monomers. These monomers then are combined by chemical bonds into a chain or a network—this is called polymerization. The resulting materials are called polymers, or plastics.

**Do you think these processes are environmentally friendly?**

**Do you think that plastic manufacture is sustainable?**

### Section C: How many types of plastic are there?

There is no exact number. It’s sort of like asking how many types of bread there are. Plastics are not simply one material made the same way every time. Although plastics can be broken down into broad types or categories, there actually are thousands of different plastics, each with its own composition and characteristics.

**How many different types of plastic can you think of?**

### Section D: Is plastic biodegradable?

Biodegradability of plastics depends largely on the type of plastic and where it ends up. Many plastics do not biodegrade to any significant degree, regardless of environmental conditions, while some do so very slowly if exposed to air, water, and light. Both types are best recycled or used for their stored energy.

**Which plastic products do you think pose the biggest threat to animals?**

The plasticity during production enables plastics to be moulded, extruded, or pressed into solid objects of different shapes. Adaptability, plus a wide variety of beneficial properties, such as being lightweight, durable, and flexible, alongside cheap manufacturing methods, has contributed to widespread acceptance in contemporary society. Most modern plastics come from fossil fuel-based petrochemicals such as natural gas or petroleum. However, the most recent plastic manufacturing processes use alternatives manufactured from renewable materials such as corn or cotton derivatives.



(1) Key Word	Definition
a) <b>Kneading</b>	Working dough to stretch the gluten and trap air for structure.
b) <b>Fermentation</b>	When yeast feeds on sugar to produce carbon dioxide and make dough rise.
c) <b>Gluten</b>	A protein in wheat flour that gives bread elasticity and structure.
d) <b>Proving</b>	Allowing dough to rest and rise before baking so it becomes light and airy.
e) <b>Contamination</b>	When harmful bacteria are spread from one food or surface to another.
f) <b>Cross-Contamination</b>	Transfer of bacteria between raw and cooked foods.
g) <b>Bacteria</b>	Microscopic organisms that can cause food poisoning if not controlled.
h) <b>Macronutrients</b>	The organs responsible for gas exchange in mammals, birds, reptiles, and amphibians.
i) <b>Micronutrients</b>	Vitamins and minerals needed in small amounts for health.
j) <b>Personal Hygiene</b>	Actions that keep the body clean to prevent the spread of bacteria in food.

**(3) Health and Safety**

The temperature **danger zone is between 5°C and 63°C**, where bacteria multiply rapidly.

Cross-contamination happens when harmful bacteria are transferred from raw food to ready-to-eat food.

Food spoilage occurs when food deteriorates due to bacteria, enzymes, or oxidation. Food poisoning is an illness caused by consuming food contaminated with harmful bacteria such as **Salmonella, E. coli, or Listeria**.

**(4) Dietary needs**

Dietary needs and intolerances affect how food is prepared and served. Some people require special diets for health reasons, such as diabetes or coeliac disease. Catering staff must avoid cross-contamination, provide suitable alternatives, and clearly label foods.

Dietary needs can also be influenced by religious beliefs and personal choices. For example:

- **Religious diets:** Some religions restrict certain foods, such as halal (no pork, meat must be halal), kosher (no pork, meat must be kosher), or avoiding meat on specific days (e.g., Lent for Christians).
- **Vegetarian diets:** Avoid meat; may eat dairy and eggs.
- **Vegan diets:** Avoid all animal products, including meat, dairy, eggs, and honey.
- **Pescatarian diets:** Eat fish but avoid other meats.

These requirements must be considered in catering to ensure meals are suitable and respectful.

**(2) Carbohydrates** are the body's main source of energy and include simple sugars and complex starches. **Protein** is essential for growth, tissue repair, and the production of enzymes and hormones, and can be classified as high biological value (HBV) or low biological value (LBV). **Fats**, also known as lipids, provide concentrated energy and include saturated and unsaturated types which affect health differently. **Vitamins** are organic compounds that support body processes, such as Vitamin C for immune function and Vitamin D for bone health. **Minerals** are inorganic elements such as calcium for strong bones and iron to prevent anaemia. **Energy balance** is achieved when the energy consumed from food equals the energy used through physical activity.



**1a. Customer Needs**

What reasons might customers require different types of food?

**1b. Special diets**

Create a table like the example below. Include vegetarian, vegan, Hindu, Jewish, coeliacs, dairy intolerance.

Diet	Reasons for following this diet	Foods to avoid and why
------	---------------------------------	------------------------

**1c. Life stages**

The amount of energy we use over our lifetimes changes with age. Explain how that would affect the amount of carbohydrates we should eat. Vitamin D and calcium are also important at different stages of our lives. Explain why we need it and how it differs when we get older.

**1d. Organoleptic**

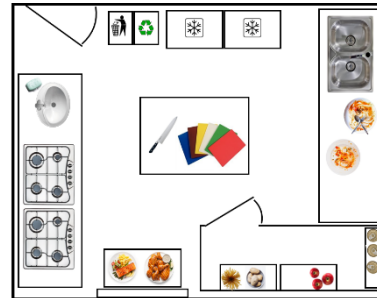
Describe how food can be produced and presented so that our 5 senses were being used when we were eating it.

Why is food more enjoyable if we can use all of our senses when eating it?



**2a. Kitchen Workflow**

Write a paragraph explaining what a good kitchen workflow should look like and how it helps keep a kitchen hygienic and safe.



**2b. Kitchen operations**

For each of the following kitchen operations, write 3 rules about hygiene and safety. The rules should be about how to avoid any accidents or food poisoning. For example, when receiving food check the sell by dates to make sure it is safe to eat.

- Receiving
- Storing
- Preparation and cooking
- Holding and serving.
- Cleaning

**3a. Front of house**

Describe the job roles of front of house staff. What are their main duties?

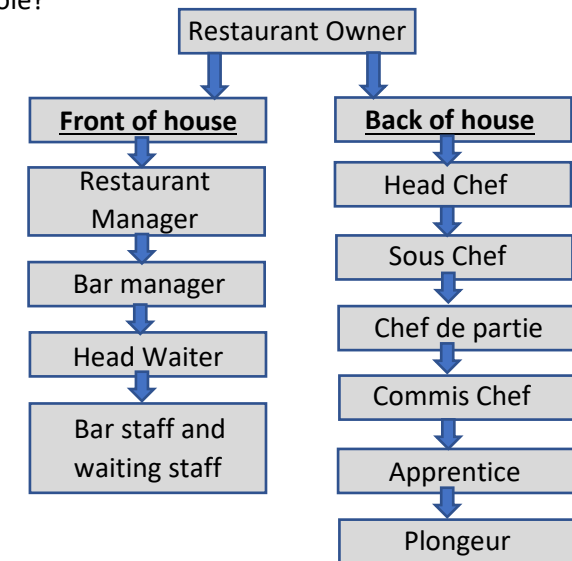
**3b. Back of house**

Describe the job roles of back of house staff. What are their main duties?



**3c. Staff hierarchy (employee structure)**

Choose 2 of the job roles below. Write a job advertisement for each of these roles. What characteristics and skills would be required for each role?





### 1. Digital Graphics

- a) **Photoshop** is an application for editing and creating raster-based graphics, such as photos.
- b) **Raster graphics** are images made of pixels.
- c) **Illustrator** is an application for editing and creating vector-based graphics, such as logos.
- d) **Vector graphics** are images made up of code.
- e) **Compression** means reducing the file size.
- f) **JPEG** is an image file type that has been compressed to create a smaller file size.
- g) **PNG** is an image file type with a small file size which can include transparent parts.
- h) **TIFF** is an uncompressed image for high quality resolution with a large file size.
- i) **Pixel** is the smallest unit of a digital image, often appearing as tiny dots, which together form the complete image on a screen.
- j) **Resolution** is the amount of detail an image holds, measured in dots per inch (DPI), where higher values mean more detail.
- k) **Layer** is a feature to stack images on top of each other, such as in front of a background.

### 2. Video Editing

- a) **CapCut** is a free video editing app with tools for trimming, effects, text, and transitions.
- b) **Timeline** is where video, audio, and effects are arranged in order to create a final edit.
- c) **Cut** is a basic edit that removes or separates clips to control the flow of a video.
- d) **Transition** is a visual effect used between clips, such as fades, to create smooth scene changes.
- e) **Trim** is shortening a video clip by adjusting its start or end points.
- f) **Keyframe** is a point in an animation or effect that marks the start or end of a change.
- g) **Frame rate** is the number of frames shown per second (fps), affecting how smooth the video appears.
- h) **Aspect ratio** is the width and height proportions of a video, such as 16:9 for widescreen.
- i) **Chroma key** is a technique that removes a background using a green screen when filming.
- j) **Rendering** is processing and exporting a video into a final playable format.

### 3. Web Design

- a) **URL - uniform resource locator** is the address of a website, such as:  
<http://www.bbc.co.uk>
- b) **HTTP** is the protocol the world wide web uses to transfer webpage data to your computer.
- c) **HTML** (Hypertext Markup Language) is the basic code used to structure text, images, and links on a website.
- d) **CSS** is the language used to format the layout of the webpage.
- e) **House style** is having the same consistent style throughout all pages of a website.
- f) **User interface (UI)** is the design of buttons, menus, and icons that help users interact with a website.
- g) **User experience (UX)** is how easy and enjoyable it is to use a website or app.
- h) **Wireframe** is a simple sketch of a website's layout that shows where content will go.
- i) **Navigation** is the menu system on a website that helps users find their way around easily.



**1. Data Dashboard**

**a) Data Modelling** is looking at data and using it to make future predictions/decisions

**b) Data Dashboard** is a visual display of data providing information at a glance to track, analyse and gain a deeper understanding


**c) Create an Interactive Dashboard**

1. Revise the Knowledge Organiser to understand what a data dashboard is.
2. Ask Mr Orme for the 'Weather Dashboard' booklet.
3. Open a new blank spreadsheet file
4. Import the CSV file (location in booklet) into your spreadsheet.
5. Work through the booklet to create an interactive spreadsheet

Add formatting to make your table of data stand out so it is clear. Add a title bar at the top and insert some suitable graphics.

Save your spreadsheet as '**Weather Dashboard**' in your computing folder

**2. Databases**

**Microsoft Access** 

**a) Creating a Database**

In Student Resources → !IT → Scholar open 'data for database extension'.

Now start a new database file (using Access) and create a database to record the information from the word document you just opened.

**b) Using Code to Control a text data file**

In Student Resources → !IT → Scholar open 'Using code to control a database'.

In Student Resources → !IT → Scholar copy 'datafile' into your computing folder (in your OneDrive area)

Also, open 'Python' and start a 'new file'. Save it in the same folder as where you saved the 'datafile'.

In Python, create the code needed to control the data saved in the CSV text file by following the instructions in the word document.

**3. Spreadsheet Software**

**a) Recording data in a spreadsheet**

In Student Resources → !IT → Scholar open 'data for spreadsheet extension'.

Now start a new spreadsheet file and create a table to record the information from the word document you just opened.

Then:

1. Add formulas to add up each team's scores
2. Add a function to find out the average score each team got over the season
3. Add a function to find out the maximum score each team got over the season

=SUM(A1:A10)      adds up total value  
 =MAX(A1:A10)      finds the highest value  
 =AVERAGE(A1:A10)      finds the average

Create a line graph to compare the results of how each team performed over the season.

Save in your computing folder.



<b>1. Choreographer</b>	Kendrick H2O Sandy
<b>a) Premier Year</b>	2013
<b>b) Company</b>	Boy Blue Entertainment
<b>c) Dance Style</b>	Hip-hop, including krumping, popping, locking, animation, breaking and waacking techniques.

## 2. Choreographic Approach

Exploring and abstracting hip-hop movement and 'signature' company movements in a contemporary way. Working closely with the accompaniment and paying particular attention to musicality.

Whilst the choreographer and the dancers created material for the work, Kenrick very specifically selects certain movement vocabulary and 'signature' motifs (Ninja Walk, Ninja Glide, Ninja Static and Chariots of Fire), choreographic devices, formations and use of space.

## 3. Choreographic Intention

Kenrick seeks to express himself by using hip-hop as a tool to create art that affects an audience in a theatrical setting. He wants the audience to feel that they are witnessing and sharing an emotional journey through the piece and appreciating hip-hop dance as an art form

## 4. Structure

a) **Genesis**- the start of life and a feeling starts to grow and create from the womb of expressionism. There is a sense of an electrical current affecting the dancers. He explores ideas of struggling to be free, find individual expression, conformity and order.

b) **Growth and struggle**- starting with an individual dancer's expression contrasted by others entering from stage right. What may appear aggressive suggests the struggle for the recognition of individual passion and expression.

c) **The connection and flow between people**- developing from a duet to a full ensemble. There are aspects of memory, manipulation, flow, merge and play between individuals in a relationship.

d) **Empowerment**- the energy is captured and released with a newfound raw, superhuman power. The release of individual energy (now more chaotic) continues to contrast with the powerful order of group unison. Within the idea of empowerment, this section also showcases the individual skills and expressionism of the core dancers.





<b>5. Physical Skills</b>		<b>6. Musical Theatre</b> Musical theatre combines songs, spoken dialogue, and dance to tell a story. A musical gives as much importance to the songs and music as other elements of the production.  Musical theatre is a genre which means that it's one set type or category of the many different types of theatre in existence. It's often quite stylistic and usually involves jazz dance.	<b>8. Background</b>  Broadway jazz, or theatre jazz originated in the 1920's. It was the first time dance was an important part of a play's plot, and viewers fell in love. It is a unique blend of ballet, modern, and jazz and is distinguished by its emphasis on exaggerated movements, high energy, and story-telling. It is almost always performed by a troupe of dancers, with few solos.
<b>a) Stamina</b>	Musical theatre jazz is often very energetic and requires performers to be able to dance and sing at the same time and sustain their energy throughout.		
<b>b) Coordination</b>	Dancers need to be able to move different parts of their body at the same time, often whilst singing as well.		
<b>c) Posture</b>	Having the correct posture (not slouching) allows dancers to appear more confident whilst performing.		
<b>d) Flexibility</b>	Having a good range of motion aids in making a dancer's work appear more seamless. Flexibility also reduces the risk of injuries and soreness. Not only does flexibility elongate your lines and enrich the look of your dancing, tightness can actually be bad for your body.	<b>7. Examples of Musicals:</b> <ul style="list-style-type: none"> <li>• Chicago</li> <li>• West Side Story</li> <li>• Wicked</li> <li>• Cabaret</li> <li>• Hamilton</li> </ul>	<b>9. Jack Cole</b>  Jack Cole is the father of Broadway jazz (although he referred to the style as "jazz-ethnic-ballet"). His work spanned three decades, starting in the 1920s. He choreographed for Broadway, night clubs, film, and television, and taught many jazz dance legends, such as Bob Fosse.



## Emancipation of Expressionism

### 1. Lighting

Co-designed by Kenrick Sandy with the Sadler's Wells Theatre lighting team. A prominent feature is the lighting from above the stage casting an intense blue colour on the dancers. Some are spotlights from above the stage used to highlight individual dancers and groups of dancers (each in their own light) and some create a wash of blue across the stage. The edges of the stage are not lit creating a very central focus. The lighting is designed to create moods and different moments as well as work with both the formations and the accompaniment. It is also used to highlight particular transitions.

### 2. Costume

The costume was designed to represent the company – casual, enhance the shape of the dancers and create a 'clean' look. The dancers wear short-sleeved pastel blue t-shirts, blue denim jeans and grey trainers with a white sole. Kenrick wanted the dancers' hair tied back where necessary to ensure facial expressions were clearly visible. Some dancers wear everyday jewellery to enhance both the individuality and everyday qualities of the piece.

### 3. Aural Setting

1. Original production and arrangement by Michael 'Mikey J' Asante of Boy Blue Entertainment.
2. Original production and arrangement by Michael 'Mikey J' Asante of Boy Blue Entertainment.
3. November composed by Max Richter.
4. Til Enda composed by Olafur Arnalds.

The music shifts from two urban pieces utilising powerful drum beats and electronic sounds, to a modern classical composition (November), to a fusion piece of music (Til Enda) that incorporates urban percussive elements and classical string instrumentation. This development relates to the journey that Kenrick wants the audience to experience.

### 4. Stimulus

The music Til Enda by Olafur Arnalds was a starting point for the piece. This final section of the work was created prior to earlier sections. The idea of emancipating expressionism (hence the title) was another AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee registered in England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX. 3 of 3 starting point for the work. The importance of being free to express ourselves both as individuals and through the use of hip-hop movement vocabulary are central to Kenrick's initial ideas for the work.



Knowledge Organiser: Year 8 Summer Term – Drama

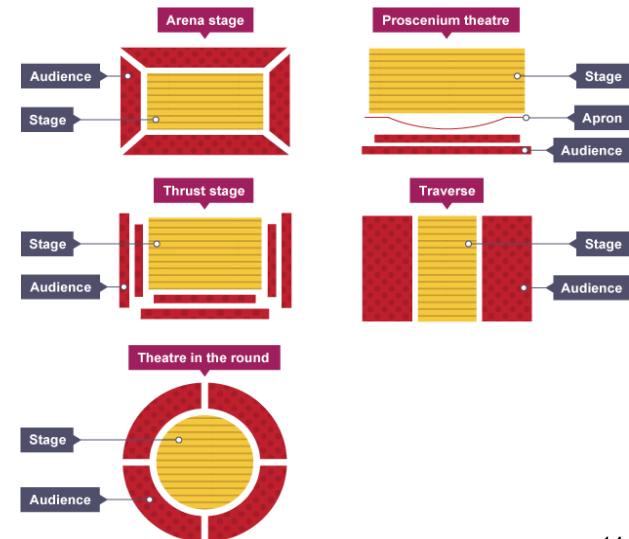
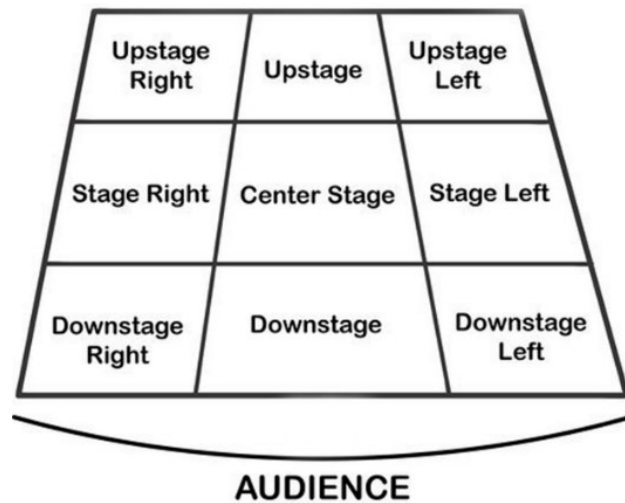
1. Key words	Definition
A. Mime	Mime is the theatrical technique of suggesting action, character or emotion without using words, using only gesture, posture, facial expression and movement.
B. Commedia Dell' Arte	A style of comedy theatre developed in Italy during the 16th to 18th centuries, with stock characters such as Punchinello, Harlequin, and a, in situations improvised from a plot outline. The characters wear half masks to allow them to use speech.
C. Trestle Masks	Trestle theatre masks are masks with clear emotions that cover the full face. This means actors do not talk when wearing the mask. Using physical performance skills to bring the character to life.
D. Tragedy	A tragedy is a type of play in which a noble character is brought to ruin through a combination of their own flaws, mistakes, and forces beyond their control, usually ending in suffering or death.
E. Tension	Tension in drama uses suspense to keep the audience engaged and wanting to know what will happen next. You can build tension using vocal skills, body language, space proxemics and pause.
F. Shakespeare	William Shakespeare was an influential English playwright, poet, and actor, born on 23 April 1564, and he wrote 37 plays and 154 sonnets that are still performed and celebrated around the world today.
G. Three witches	The three witches exist to give Macbeth ideas that spark his ambition, create an eerie and mysterious atmosphere, and show how fate and prophecy help lead to his downfall. They are creepy, strange, and supernatural characters who speak in riddles and cause trouble.



Bourne Scholars Knowledge Organiser: Year 8 Summer Term – Drama

<b>1. Higher Thinking Question</b>	<b>2. Learning lines</b>	
What am I showing the audience?	<b>Read and cover</b>	Read the line out loud, then cover the script with your hand and try and say the line without reading it. Repeat until you've learnt it
How am I communicating this?	<b>Gesture/Action</b>	For each line you need to add a choreographed movement or gesture for each line
What else can I do to support my acting skills?	<b>Vocal Skills</b>	Experiment with different vocal dynamics. Change the volume of your voice for each line. The first line you might shout, then whisper the second and say the third at a normal speaking volume. Add a Liverpool accent
How am I showing my character?	<b>Call and Response</b>	A partner reads you one of your lines and you repeat it back to them without looking at the script until learnt. Then add the next line putting them together.
What is my character feeling?	<b>Record</b>	Record yourself reading your script allowed and listen to it 10 minutes a day.

**3. Stage Positioning**





1. Context	Description
a) Kazuo Ishiguro	The Japanese-British author of 'Klara and the Sun'.
b) Capitalism	A societal system where the money is made by private corporations and kept by those who run them
c) Artificial Intelligence	When computers are designed to reason, learn, and solve problems in ways that are similar to how humans do.
d) Science Fiction	A type of storytelling that imagines future technology, space travel, or scientific ideas and explores how they might affect people and the world.

2. Methods	Description
a) Unreliable narrator	A narrator who cannot always be trusted.
b) Symbolism	Where objects, characters, or events represent bigger ideas or deeper meanings beyond what they literally are.

3. Punctuation	Definition
a) Colon :	A punctuation mark used to introduce a list, explanation, or important detail that follows.
b) Dash -	A punctuation mark used to add extra information or emphasise a part of a sentence.

4. Characters	Summary
a) Klara	An Artificial Friend (AF) who observes the world and interacts with the people around her.
b) Josie	A young girl who spends time with Klara and is part of a family navigating everyday life.
c) Melania Housekeeper	The family's housekeeper who manages the household and assists the family.
d) Rick	A friend of Josie who interacts with her and the people around her.
e) Josie's Mother (Chrissie)	Josie's parent who makes decisions for the family and cares for Josie.
f) Dr Capaldi	A professional who provides guidance and support to families.
g) The Sun	A natural presence that Klara notices and interacts with throughout the story.



1. Extended vocabulary	Definition	2. Authors	Additional reading
a) <b>Altruistic</b>	To be kind, selfless and think about other people before you think of yourself.	a) <b>Ian McEwan</b>	'Machines Like Me'.
b) <b>Mercurial</b>	To be changeable and unpredictable in your behaviour.	b) <b>Philip Pullman</b>	'Northern Lights '.
c) <b>Morally ambiguous</b>	When it is unclear whether your actions or personality is good or bad.	c) <b>Kieran Millwood Hargrave</b>	'The Island at the End of Everything'.
d) <b>Condescended</b>	To be spoken to in a way that makes you feel inferior.	d) <b>Mark Haddon</b>	'The Curious Incident of the Dog in the Night-Time'.
e) <b>Indignant</b>	To be angry, shocked or surprised at unfair treatment.	e) <b>Lois Lowry</b>	'The Giver'.
f) <b>Ubiquitous</b>	To be everywhere all the time, inescapable.	f) <b>Isaac Asimov</b>	'I, Robot'.
		3. Extended activities	Tasks
		a) <b>Research</b>	Research a real world 'AI' e.g social robots, facial recognition, ChatGPT, medical robots and compare it to Klara as an artificial friend.
		b) <b>Observe</b>	Over several days or weeks, keep a diary of your observations of human interactions, gestures or routines and narrate them in Klara's voice.



### 1. Development Indicators

Indicator of development	Definition	Image
GNI per head	This is the total value of goods and services produced by a country plus money earned from other countries. It is divided by the number of people in a country	
Birth rate	The number of births per 1000 of a population in a year.	
Death rate	The number of deaths per 1000 of a population in a year.	
Infant mortality	The number of children that die before the age of one	
Life expectancy	The average number of years people can be expected to live	
Adult literacy	The percentage of adults who can read and write	
People per doctor	The average number of people there are per doctor in a country	
HDI (Human Development Index)	This uses a number of social and economic indicators combined together to give a country a score from 0-1 based on how developed it is	

### 2. Development Gap

The difference in development levels between the world's richest and poorest countries.

### 3. Development Gap Causes

Climate	Natural Hazards	Disease
Exploitation of Resources	Natural Resources	Landlocked Countries
Historical Development	Poor/Corrupt Government	High Dependency Ratio
Poor Education	Poor Medical Facilities	Lack of Clean Water

### 4. Global Hunger

- Approximately 1.2 billion people suffer from **under-nutrition** (deficiency of calories and protein)
- Some 2 to 3.5 billion people suffer from **malnutrition** (deficiency of vitamins and minerals)

### 5. Thar Desert

Opportunities and challenges in the Hot desert	
Opportunities	Challenges
<ul style="list-style-type: none"> <li>• There are valuable minerals for industries and construction.</li> <li>• Energy resources such as coal and oil can be found in the Thar desert.</li> <li>• Great opportunities for renewable energy such as solar power at Bhaleri.</li> <li>• Thar desert has attracted tourists, especially during festivals.</li> </ul>	<ul style="list-style-type: none"> <li>• The extreme heat makes it difficult to work outside for very long.</li> <li>• High evaporation rates from irrigation canals and farmland.</li> <li>• Water supplies are limited, creating problems for the increasing number of people moving into area.</li> <li>• Access through the desert is tricky as roads are difficult to build and maintain.</li> </ul>

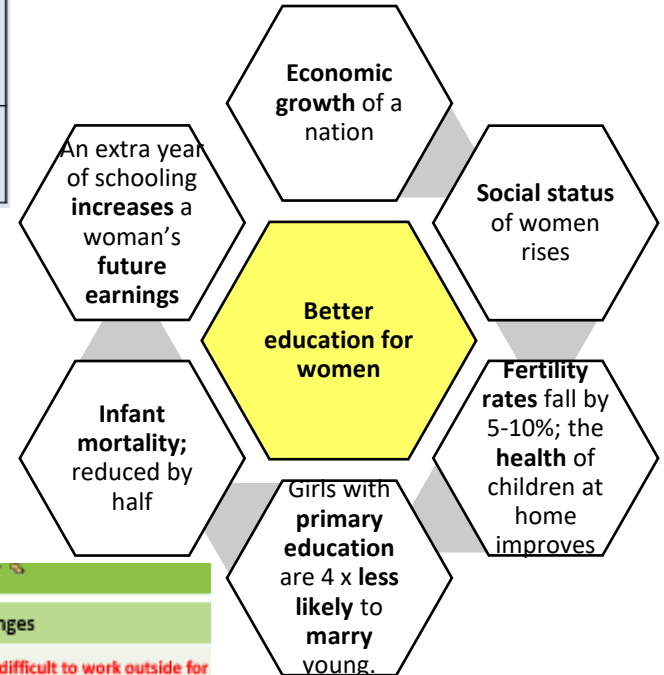
### 6. Thar Desert

Hot Desert: Case Study Thar Desert – India/Pakistan

The Thar Desert is located on the border between India and Pakistan in Southern Asia. With India soon becoming the most populated country in the world in the next five years. With this, more people will plan to live in the desert.



### 7. Smart Economics





8. Geography of Disease

The 3 primary poverty-related diseases (PRDs) across the world are;

- 1) **AIDS**, low income countries account for 95% of the global AIDS cases,
- 2) **Malaria** (90% of malaria deaths occur in sub-Saharan Africa),
- 3) **Tuberculosis (TB)**, low income countries account for 98% of active tuberculosis infections.

Together, these three diseases account for 10% of global deaths.

10. Aid – help or hindrance in Haiti?

- Jan 12<sup>th</sup> 2010; Magnitude 7 earthquake
- >300,000 killed
- 1.5 million people homeless
- GDP per capita before = \$1,172
- At the time of the quake, 70% of the population lived below the poverty line
- \$16 billion aid provided.
- Today, 60% population live below the poverty line.

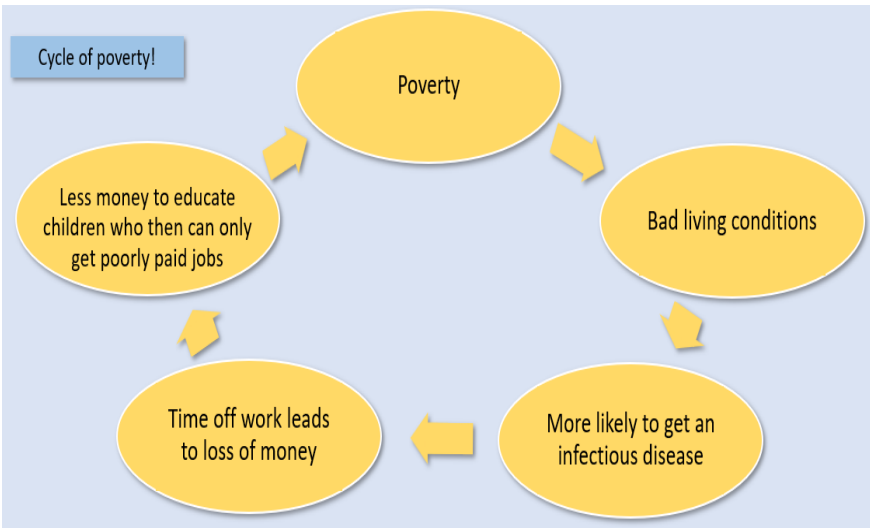
11. Lagos, Nigeria

**Case Study: Economic Development in Nigeria**

**Location & Importance**

Nigeria is a NEE in West Africa. Nigeria is just north of the Equator and experiences a range of environments. Nigeria is the most populous and economically powerful country in Africa. Economic growth has been based on oil exports.

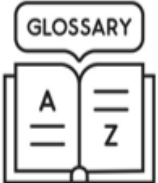

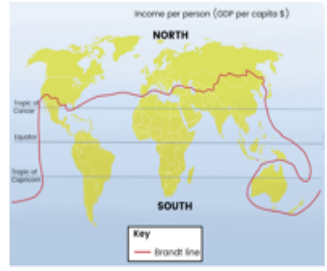

9. Cycle of Poverty



12. Millenium Development Goals (MDG's)

<p><b>1</b> Eradicate extreme poverty and hunger</p>	<p><b>2</b> Achieve universal primary education</p>	<p><b>3</b> Promote gender equality and empower women</p>	<p><b>4</b> Reduce child mortality</p>
<p><b>5</b> Improve maternal health</p>	<p><b>6</b> Combat HIV/Aids, malaria and other diseases</p>	<p><b>7</b> Ensure environmental sustainability</p>	<p><b>8</b> Develop a global partnership for development</p>



<p><b>1. Tier 3 Key Words: You must be able to use Geographical terminology in your written work.</b></p> <p>Create a glossary for the below key words;</p> <p>Development indicator, development gap, smart economics, aid, low income country, high income country, newly emerging country, poverty, malnutrition, development, adult literacy rate, GDP per capita.</p> <p>Then, use these words in written summaries about the topic theory.</p> 	<p><b>2. Geographical Writing: Part of being a Geographer is to write like a Geographer.</b></p> <p>Explain how disease can cause poverty and poverty can cause disease. Use as many of the key words below.</p> <table border="1" data-bbox="817 422 1444 790"> <thead> <tr> <th colspan="3">KEYWORDS</th> </tr> </thead> <tbody> <tr> <td>HIC</td> <td>Overcrowding</td> <td>Vaccinations</td> </tr> <tr> <td>LIC</td> <td>Tuberculosis</td> <td>Rural Areas</td> </tr> <tr> <td>GDP</td> <td>Pneumonia</td> <td>Transport</td> </tr> <tr> <td>Adult literacy Rate</td> <td>Clean Water</td> <td>Economic Growth</td> </tr> <tr> <td>Access to Healthcare</td> <td>Ebola</td> <td>Jobs</td> </tr> <tr> <td>Infant Mortality Rate</td> <td>Malnutrition</td> <td>Education</td> </tr> <tr> <td>Life Expectancy</td> <td>Poverty</td> <td>Economic Productivity</td> </tr> </tbody> </table>	KEYWORDS			HIC	Overcrowding	Vaccinations	LIC	Tuberculosis	Rural Areas	GDP	Pneumonia	Transport	Adult literacy Rate	Clean Water	Economic Growth	Access to Healthcare	Ebola	Jobs	Infant Mortality Rate	Malnutrition	Education	Life Expectancy	Poverty	Economic Productivity	<p><b>3. Identifying and explaining: Being able to identify links and explain them.</b></p> <p>Search up the Sustainable Development Goals (SDG's). Explain how each one could reduce poverty. Link to all theory from this topic.</p> 																					
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<p><b>4. Mapping: You need to be able to locate examples of Geographical events.</b></p> <p>Find a blank world map. Label the following countries; India, Pakistan, Nigeria, UK, USA, Australia, Haiti. Then search up 5 development indicators for each one. Use that information to determine whether they are LIC, HIC, or NEE. Colour code on the map which of those countries are LIC, HIC or NEE.</p> 	<p><b>5. Graphical Skills: It is important to be able to plot data.</b></p> <p>Plot the data onto a graph to compare the development indicators for each country.</p> <p>How do the countries compare? Why do you think there may be differences?</p> <table border="1" data-bbox="1097 917 1444 1444"> <thead> <tr> <th>Country</th> <th>Education Index 2013</th> <th>GDP/capita/PP</th> </tr> </thead> <tbody> <tr><td>Bangladesh</td><td>0.45</td><td>3580</td></tr> <tr><td>Brazil</td><td>0.66</td><td>15127</td></tr> <tr><td>Chad</td><td>0.26</td><td>1991</td></tr> <tr><td>China</td><td>0.61</td><td>15534</td></tr> <tr><td>Costa Rica</td><td>0.65</td><td>16614</td></tr> <tr><td>Germany</td><td>0.88</td><td>48729</td></tr> <tr><td>India</td><td>0.47</td><td>6572</td></tr> <tr><td>Kenya</td><td>0.51</td><td>3155</td></tr> <tr><td>Mexico</td><td>0.64</td><td>17861</td></tr> <tr><td>Niger</td><td>0.20</td><td>978</td></tr> <tr><td>Switzerland</td><td>0.84</td><td>62881</td></tr> <tr><td>United Arab Emirates</td><td>0.67</td><td>72418</td></tr> <tr><td>United Kingdom</td><td>0.86</td><td>42608</td></tr> <tr><td>United States</td><td>0.89</td><td>57466</td></tr> </tbody> </table>	Country	Education Index 2013	GDP/capita/PP	Bangladesh	0.45	3580	Brazil	0.66	15127	Chad	0.26	1991	China	0.61	15534	Costa Rica	0.65	16614	Germany	0.88	48729	India	0.47	6572	Kenya	0.51	3155	Mexico	0.64	17861	Niger	0.20	978	Switzerland	0.84	62881	United Arab Emirates	0.67	72418	United Kingdom	0.86	42608	United States	0.89	57466	<p><b>6. CATT: To reach the higher levels in Geography, you need to develop all explanations.</b></p> <p>One way of developing your explanations is to think about a multiplier effect. This is where one event/factor leads to another and leads to another.</p> <p>Use the sentence starters below to answer the following question: <i>is money the answer to poverty?</i></p> <p>C – consequently A – as a result T – this means that T – therefore</p> 
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<b>A. Summary</b>	
Advances in technology and tactics meant that World War II was very different to previous wars – and even more deadly. Bombs were bigger, tanks were faster, and planes could fly further.	

<b>B. Key Words</b>	
<b>1. Fascism</b>	A right-wing political system that puts the state above any one person, group or right
<b>2. Appeasement</b>	A policy of trying to placate or pacify a country or person by accepting their demands.
<b>3. Chancellor of Germany</b>	Head of government in Germany.
<b>4. Evacuated</b>	To move people from a dangerous place to somewhere safe.
<b>5. Censored</b>	When a government examine a book, film etc officially and suppress unacceptable parts of it.
<b>6. Battle of Britain</b>	The Battle between the RAF and the German Airforce (the Luftwaffe)
<b>7. Operation Pied Piper</b>	British government decision to evacuated children and other designated people to the countryside.
<b>8. Liberated</b>	To set someone or a country free from enemy occupation.
<b>9. Atomic bomb</b>	A bomb that derives its destructive power from the rapid release of nuclear energy

<b>C. Timeline</b>	
<b>1. 1933</b>	Hitler became Chancellor of Germany
<b>2. 1939</b>	On 1 September German troops invade Poland. Two days later Britain and France declared war on Germany.
<b>3. 1939</b>	For four days in September, the government took over Britain's entire transport system. All of the buses and trains were used to move the most vulnerable people in society from the towns that were certain to be bombed to the countryside.
<b>4. 1940</b>	German armed forces begin to advance through Western Europe. Known as Blitzkrieg. They trapped the British and French armies on the beaches around Dunkirk.
<b>5. May 26<sup>th</sup> 1940</b>	Small British ships rescued men from the beaches around Dunkirk and transferred soldiers to larger ships which brought them back to Britain.
<b>6. July – October 1940</b>	The Battle of Britain
<b>7. Sept 1940 – May 1941</b>	The Blitz. German bombing attack on major British cities.
<b>8. June 1944</b>	D-Day. The allies freed France, Belgium and the Netherlands from Nazi rule.
<b>9. Dec 1941</b>	The American Pacific Naval Fleet stationed in Pearl Harbour, Hawaii, were attacked by Japanese bombers.
<b>10. 6 August 1945</b>	The USA dropped the first atomic bomb on the Japanese city of Hiroshima.



<b>A. Summary</b>	
Western media portrays the Middle East as a region gripped by conflict. However, the stories often ignore the role of the West in the causes of conflict there.	

<b>B. Key Words</b>	
<b>1. Arabs</b>	People originally from the Middle East or North Africa, whose language is Arabic.
<b>2. Nomadic</b>	Moving around from place to place rather than living in one place only.
<b>3. Suez Canal</b>	Canal that connects the Mediterranean Sea to the Red Sea.
<b>4. League of Nations</b>	An international organization that aimed to help prevent wars between countries, set up after the First World War.
<b>5. United Nations</b>	An international organisation set up in 1945 to try to solve international problems and build peace around the world.
<b>6. Islamic fundamentalism</b>	A movement where some Muslims want to live similarly to how the prophet Muhammad lived. They follow the teachings of the Islamic holy text literally.
<b>7. Martyr</b>	Someone who died fighting for their religion.
<b>8. Extremist</b>	Someone with political opinions and aims that most people would see as unacceptable.

<b>C. Timeline</b>	
<b>1. 1900</b>	20 million people lived in the Ottoman Empire. It was a multi-ethnic empire, with Turks, Greeks, Arabs, Kurds, Armenians and many other ethnic minorities. Half the people in the Ottoman Empire were Turkish, and Turks were in charge.
<b>2. May 1916</b>	Sykes-Picot Agreement. A secret agreement was made to divide the Middle East between Britain and France.
<b>3. Nov 1917</b>	Balfour Declaration. Britain said Jewish people should have a 'national home' in Palestine.
<b>4. Nov 1947</b>	The UN agreed a plan to divide Palestine into a Jewish state and an Arab state.
<b>5. 14 May 1948</b>	Jews in Palestine declared the creation of a new independent state called Israel.
<b>6. 1956</b>	The Suez crisis
<b>7. 1978-79</b>	Iranian Revolution. Replaced the shah (Iranians leader) with an Islamic Republic and Shia, the new leader who was a religious scholar. Brought in strict religious laws and Western influences came under attack.
<b>8. 1980</b>	Leader of Iraq was Saddam Hussein. Iraq's Shia population was not treated well. Led to Iran-Iraq war.
<b>9. 2 August 1990</b>	Iraq invaded Kuwait, its small, oil-rich neighbour.
<b>10. 16 Jan 1991</b>	First Gulf War. UN forces attacked Iraq after they refused to leave Kuwait.
<b>11. 11 Sept 2001</b>	19 members of al-Qaeda attacked targets in the USA by hijacking aeroplanes and flying them into important buildings.



**1: Demonstrate knowledge and understanding of the key features of the periods studied.**

**1.1 Chronology**

- Draw a timeline showing the main events that led to the Second World War. Start with the First World War, right up to Hitler's invasion of Poland.

**1.2 Historical Terminology**

- Define the following words: allied nations, appeasement, attrition, axis nations, blitzkrieg, censorship, fascism, indoctrination, Luftwaffe, Nazi party, Propaganda, RAF.

**1.3 Key Features (Historical Knowledge)**

- Why were women so important to the home front war effort in the Second World War? Explain your view.

**2: Explain and analyse historical events and periods studied using historical concepts.**

**2.1 Change & Continuity**

- Create a continuum with 'change' at one end and 'continuity' at the other. Note down examples of change and continuity about the nature of war from conflicts you have studied in the Middle Ages right up to the Second World War.

**2.2 Cause and Consequence**

- Describe the short-term and long-term consequences of the following events: D-Day, Dunkirk, the Battle of Britain, Pearl Harbour and the dropping of the atomic bomb.

**2.3 Significance**

- How significant was Japan's attack on the US in pearl harbour in getting the USA involved in the Second World War?

**3: Analyse, evaluate and use primary sources to make judgements.**

**3.1 Valid inferences**

- What can you infer from the source about UN involvement in Iraq's invasion of Kuwait?



**Photograph from February 1991, a soldier from the UN force scans the Kuwaiti desert for Iraqi troops.**

**3.2 Nature, Origin, Audience, Purpose**

- What is the nature, origin, audience and purpose of the source?

**3.3 Usefulness**

- How useful is this source for an enquiry into UN involvement Kuwait following Iraq's invasion?

**4: Analyse, evaluate and make judgements about interpretations.**

**4.1 Identifying views**

- What is the view given by Obama following the death of bin Laden?

**4.2 Analysing interpretations**

- What evidence can you find to support Obama's view?

**4.3 Evaluating Interpretations**

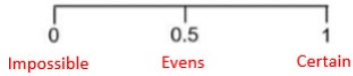

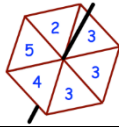

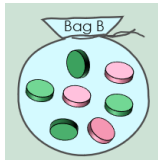
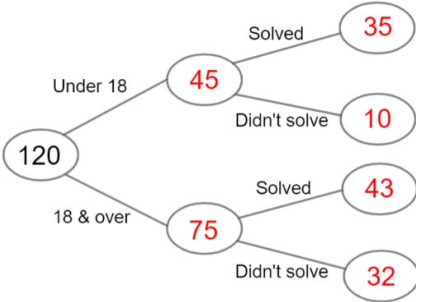
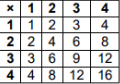
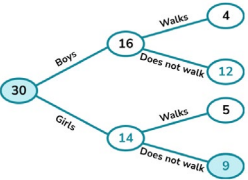
- Find two historians' interpretations which support the view that the West was the cause of conflict in the Middle East and two historians to counter this view.

*The death of bin Laden marks the most significant achievement to date in our nation's effort to defeat al Qaeda... The United States is not – and never will be – at war with Islam. Our war is not against Islam. Bin Laden was not a Muslim leader; he was a mass murderer of Muslims. Indeed, al Qaeda has slaughtered scores of Muslims in many countries, including our own. From a speech made by US President Barack Obama on 2 May 2011, announcing that Osama bin Laden had been killed.*

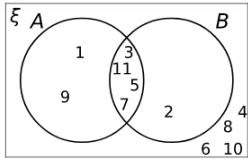
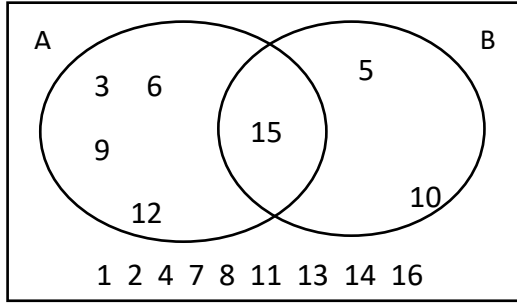
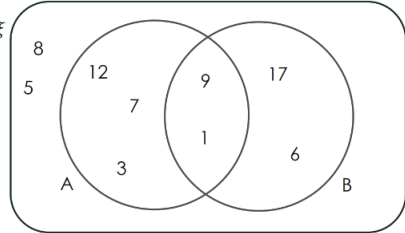


1. Keyword	Definition	Example	2. Worked Example
a. Polygon	A flat or plane, two-dimensional closed shape with straight sides.		<p>a. What is the sum of the interior angles in a hexagon?  <math>(n - 2) \times 180</math></p>
b. Regular Polygon	Have equal side lengths and equal angles.		<p>A hexagon has 6 sides</p> $(6 - 2) \times 180$ $(4) \times 180 = 720^\circ$
c. Irregular Polygon	Side lengths and angles are different.		<p>b. What is the interior angle of a regular octagon?  <math>(n - 2) \times 180</math></p>
d. Interior angle	An angle formed inside a polygon where two sides meet.		<p>An Octagon has 8 sides</p> $(8 - 2) \times 180$ $(6) \times 180 = 1080^\circ$ $1080 \div 8 = 135^\circ$
e. Exterior angle	The angle formed outside the polygon. The sum of the interior and exterior angle is $180^\circ$ .		<p>c. Calculate the exterior angle of a regular pentagon.</p>
f. Formula for interior angles	Sum of interior angles in a polygon.	$x = \text{sum of interior angles of a polygon}$ $n = \text{number of sides}$ $x = (n - 2) \times 180$	$\frac{360}{n} = x^\circ$ <p>A Pentagon has 5 sides</p>
g. Formula for exterior angles	Sum of exterior angles of a regular polygon is $360^\circ$ .	$x = \text{each exterior angle in a polygon}$ $n = \text{number of sides}$ $x = \frac{360}{n}$	$\frac{360}{5} = 72^\circ$
Sparx Codes	M679 M393 M653 M298 M999		



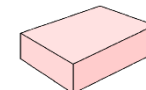
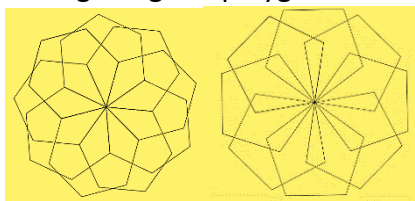
1. Keywords	Definition	Example	2. Worked examples
a. <b>Probability scale</b>	All probabilities must lie between 0 (impossible) and 1 (certain).		a. Place these words on the probability scale <i>Impossible, certain, evens, likely, unlikely</i>
b. <b>Event</b>	One or more outcomes of an experiment.	When flipping a coin the probability of getting tails is p(tails)	Answers
c. <b>Chance</b>	Used to describe the chance of something happening.	The probability of it raining this month is likely.	
d. <b>Probability</b>	$\frac{\text{number of outcomes that satisfy the event}}{\text{number of possible outcomes}}$	 <p>The probability of getting a 3 is <math>\frac{3}{6} = \frac{1}{2}</math></p>	b. Work out the probability of selecting pink in the bag below:
e. <b>Theoretical probability</b>	A number between 0 and 1 of something occurring.	$P(\text{yellow}) = \frac{1}{5}$ or 20% or 0.2 	 <p>Answer = <math>\frac{\text{three pink counters}}{\text{7 counters altogether}} = \frac{3}{7}</math></p>
f. <b>Experimental probability</b>	An estimated probability based on the results of an experiment.	I survey 100 cars, 24 of them are blue. The experimental probability of the next car being blue is $\frac{24}{100}$	c. Place the information below into a frequency tree.
g. <b>Independent event</b>	When the probability of one event does not depend on the outcome of another event.	If I roll a 6 on a dice, the probability of rolling another 6 is still $\frac{1}{6}$ .	120 students were given a 3 minute puzzle to solve. 45 students who tried were under 18 years old. 78 people solved the puzzle 32 people aged 18 and over did not solve the puzzle.
h. <b>Dependent event</b>	An event that depends on the outcome of another event.	If you miss the bus, the probability of being late for school increases.	Answer
i. <b>Sample space</b>	A way of recording all the outcomes of two events.	The sample space diagram shows the different outcomes when a spinner with 4 sides are multiplied together.	
j. <b>Frequency Tree</b>	Frequency trees <b>show the actual frequency of different events</b> . They can show the same data as a two-way table, but frequency trees are clearer.	 	
Sparx Independent Learning		M655 M941 M938 M755 M206 M718	



1.Keyword	Definition	Example	2. Worked examples
<b>a. Venn Diagrams</b>	The relationship between a group of different things and how they overlap.		<p>a. <math>\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16\}</math>                      A = multiples of 3                      B = multiples of 5</p> <p>i. Complete the Venn diagram to show this information.                      ii. A number is chosen at random from the universal set, <math>\xi</math>, find the probability that this number is in the set <math>A \cap B</math></p> <p><b>Answer</b></p> <p>i. Write all the number in set A multiples of 3  <math>\{3, 6, 9, 12, 15, \}</math>                      Write all the multiples in set B  <math>\{5, 10, 15\}</math>  <math>A \cap B = 15</math></p> <p>The remaining numbers in the set appear in the rectangle but not in the circles.</p>  <p>ii. Write down <math>P(A \cap B) = \frac{1}{15}</math></p>
<b>b. Universal Set</b> $\xi$	$\xi$ means the 'universal set' (all the values to consider in the question).	$\xi =$ integers less than 10 1, 2, 3, 4, 5, 6, 7, 8, 9,	
<b>c. Intersection</b> $\cap$	$A \cap B$ means the parts that belong to A and B		
<b>d. Union</b> $\cup$	$A \cup B$ means both A and B	<ul style="list-style-type: none"> <li>• The numbers 9 and 1 are in the intersection</li> <li>• The numbers 12, 7, 3, 9, 1, 17 and 6 are the union between set A and B.</li> <li>• The complement of A are 17, 6, 8, and 5</li> </ul>	
<b>e. Complement</b> '	$A'$ means 'not in set A' (called complement).	<ul style="list-style-type: none"> <li>• The numbers 9 and 1 are in the intersection</li> <li>• The numbers 12, 7, 3, 9, 1, 17 and 6 are the union between set A and B.</li> <li>• The complement of A are 17, 6, 8, and 5</li> </ul>	
<b>f. AND rule for Probability</b>	When two events, A and B, are independent: $P(A \text{ and } B) = P(A) \times P(B)$	What is the probability of rolling a 4 and flipping a Tails? $P(4 \text{ and } Tails) = P(4) \times P(Tails) = \frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$	
<b>g. OR rule for Probability</b>	When two events, A and B, are mutually exclusive: $P(A \text{ or } B) = P(A) + P(B)$	What is the probability of rolling a 2 or rolling a 5? $P(2 \text{ or } 5) = P(2) + P(5) = \frac{1}{6} + \frac{1}{6} = \frac{1}{3}$	
<b>Sparx Independent Learning</b>		M829 M419 M834	



<b>1. Mathematical Vocabulary</b>		<b>2. Mathematician Research</b>	
Define each of the words given. Give an example for each.	a. Chiliagon b. Stratified sample c. Subset	Who are they? What are they famous for? What contributions have they made to maths?	Alan Turing
<b>3. Watch</b>	<a href="#">BBC Magic Numbers Mysterious World of Maths 3of3 720p HDTV x264 AAC MVGroup.org - YouTube</a> ( 59 mins 2 secs)		
<b>4. Thinking Mathematically</b>			
<b>a. Polygon Pictures</b> Here are some examples of pictures made by taking a regular polygon and rotating it by a fixed angle about one of its vertices. Can you work out the polygon used and the angle of rotation in each picture? How many other angles in each picture can you calculate? Create your own polygon picture.		<b>b. Cuboids</b> i. Find a cuboid (with edges as integer lengths) that has a surface area of exactly 100 square units. ii. Is there more than one cuboid with a surface area of 100 square units? iii. Can you find them all? iv. Can you provide a convincing argument that you have found them all? v. Repeat for 200 square units. vi. Repeat for 300 square units. vii. Are there any similarities between them?	
<b>c. Chances Are</b> Here are five competitions you could enter. Which one offers you the best chance of winning? i. You win a prize if a fair coin is flipped 4 times. You get heads at least 3 times in a row. ii. You win a prize if you flip a fair coin and get twelve heads in a row. iii. Our gardener has ranked her seven favourite plants in order. If you rank them in the same order, you win. iv. Choose the top 4 from 10 famous pictures and put them in the correct order to win. v. Throw five fair dice and get five sixes to win the first prize. vi. You throw four ten-sided dice and win first prize if you get four sixes. vii. In a room of 100 pupils, 2 people with the same birthday. viii. 3 tiles with the letter X on them and 3 tiles with the letter O on them are placed in a row. When the tiles are placed in a random order from left to right, two adjacent tiles will have the same letter on them.		<b>5. Short Problems</b> a. In Tom's pocket there are 8 watermelon jelly babies, 4 vanilla jelly babies and 4 butter popcorn jelly babies. What is the smallest number of jelly babies he must take out of his pocket to be certain that he takes at least one of each flavour? b. At Kaynem Daly High School, the Maths Club has 15 members, and the Science Club has 12. If a total of 13 students belong to only one of the two clubs, how many belong to both clubs. c. Convince yourself that when you roll two dice you are more likely to score 9 than 10 when you sum their values. If I roll 3 dice, which is more likely, a total score of 9, or a total score of 10? What is the least likely score? What is the most likely score? d. The faces of a cuboid have areas of 12, 18 and 24 square centimetres. What is the volume of the cuboid? Is it possible to have a triangular prism with the same volume and surface area?	





1. Keywords and definitions	
a. Motif	A short musical idea, melody or rhythm.
b. Riff/Ostinato	Short, repeated musical patterns often used in solo.
c. Chords	2 or more notes played at the same time.
d. Root Note	The note at the bottom of the chord and usually the chord name.
e. Octave	8 notes away from the current note you are playing. For example the note of C then find another C, 8 notes away – that is an octave higher than the last note you played.
f. Tempo	The speed of the music.
g. Improvisation	Music created 'on the spot' (previously unprepared performance)
h. Seventh Chord	A <b>TRIAD</b> (root, third and fifth) with a fourth note added which is seven notes about the root/tonic. <b>C7</b> = C , E, G (triad) + <b>B flat</b> .

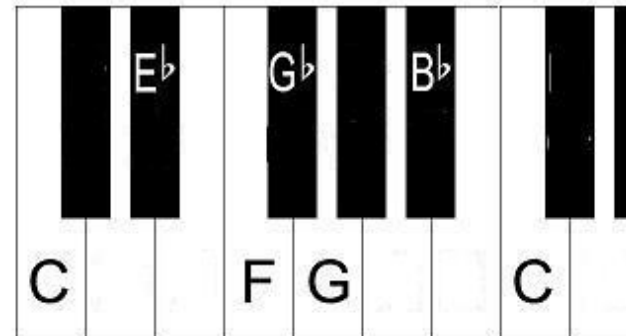
**2. Blues chord sequence**

This Blues chord sequence is called a 12 bar blues. It lasts for 12 bars in total.

C/// <b>CHORD I</b>	C/// <b>CHORD I</b>	C/// <b>CHORD I</b>	C/// <b>CHORD I</b>
F/// <b>CHORD IV</b>	F/// <b>CHORD IV</b>	C/// <b>CHORD I</b>	C/// <b>CHORD I</b>
G/// <b>CHORD V</b>	F/// <b>CHORD IV</b>	C/// <b>CHORD I</b>	C/// <b>CHORD I</b>

**3. Blues Scale**

A scale is a set of notes that can be used within a composition. A Blues Scale include flats (b) which make the music sound Blues.





Bourne Scholars Knowledge Organiser: Year 8 Summer Term - Music

**1. Note durations**

A note duration means how long a note lasts for when you play it on an instrument.

The basics of notation (written music) shows you the notes pitch (specific note i.e. A or E) and the notes duration (how long it is played for). The chart below shows you the basic note durations and how many beats they are held for.

Note Name	Word	Symbol	Note Duration
Semibreve	Food		4 beats
Minim	Tea		2 beats
Crotchet	Chips		1 beat
Quaver	Bur		½ a beat
Pair of Quavers	Bur-ger		2x½ beat = 1 beat

**2. Rests**

A rest is a note duration of silence. The diagram on the right shows new symbols but instead of a pitched note, this is a period of silence in the music.

They use the same duration names as a pitched note, i.e. minim, but you would call it a 'minim rest'.

Rest	Name
	Semibreve
	Minim
	Crotchet
	Quaver

**3. Dotted notes**

If a dot is added to a note (or rest), add on half of what the note is already worth:

3 beats    \*2 (+1)

1 ½ beats    \*1 (+ 1/2)

¾ beat    \*1/2 (+ 1/4)

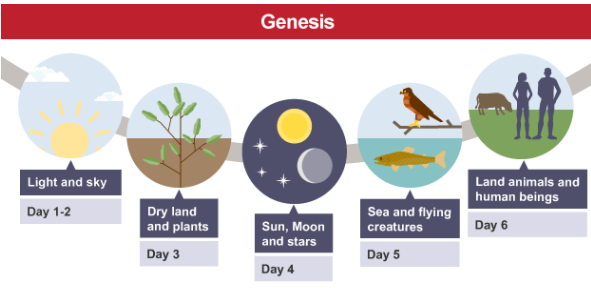
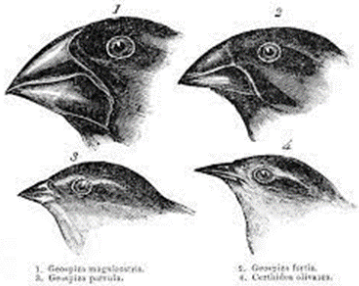


1. Running Technique	
<b>a) Sprinting (100m, 200m, 400m)</b>	Find a down start position with strong foot in front. Drive through the balls of feet and rise gradually but powerfully until upright. Pump arms quickly. Keep high knee lift with short ground contact.
<b>b) Middle Distance (800m, 1500m)</b>	Maintain an upright posture. Keep shoulders relaxed and breathing steady. Use controlled arm actions close to the body. Keep a strong stride picking up heels. Use pacing strategies to conserve energy.
2. Jumping Technique	
<b>a) Long Jump</b>	Build up speed in a controlled measured run up. Take off powerfully from the board with one foot by driving knee upwards. Extend hips and arms in flight. Land with feet together, leaning forward to avoid falling backwards.
<b>b) Triple Jump</b>	Build up speed in a controlled measured run up. Perform a strong hop (one foot to the same foot) from the board. Maintain balance into the step onto the other foot. Drive upwards and forwards from this foot into the pit. Use long jump technique in the flight and landing phase.
3. Throwing Technique	
<b>a) Javelin</b>	Take three cross steps with the javelin drawn back with a straight arm. Plant front foot firmly, rotate the hips and shoulders forward and release overarm. Flick the wrist upon release.
<b>b) Discus</b>	Begin side on holding the discus to the side in the fingertips only. Swing the discus smoothly to build momentum. Rotate hips and shoulders to generate power. Release at shoulder height, rolling the discus off of the index finger.
<b>c) Shotput</b>	Hold the shotput in the fingertips and place under the chin against the neck. Adopt a side on stance. Bend knees to load power. Drive through the legs and hips explosively and push (not throw) the shot outwards.



1. Higher Order Thinking	2. Research
<p>a) Evaluate whether technique or physical fitness has a higher impact on performance in sprinting.</p> <p>b) Design the perfect endurance runner. What mental and physical characteristics would they have and why?</p> <p>c) Predict how changing the angle of release in throwing events impacts the outcome of the throw.</p>	<p>a) Keely Hodgkinson is an Olympic 800m champion and holds the indoor 800m world record. In her training she has said she will never run the 800m. Research what training sessions she typically does and why she does not complete the 800m.</p> <p>b) Pick an athletics event that we do not cover in lessons from the list below. Research the key rules and techniques for these events.</p> <p>Pole Vault                      Hammer Throw                      Steeplechase                      High Jump</p>
3. Application	4. Analysis
<p>a) Apply your knowledge of long jump to the high jump. What are the similarities and what are the differences?</p> <p>b) Create a training session for a shotput thrower that does not include throwing the shotput to help them to become more powerful and throw further.</p>	<p>Pick an event in athletics that you would like to improve. Highlight your key areas for improvement and practice those areas. Reattempt the event in three weeks and discuss the improvements you have made. If you have not made any improvements, discuss why.</p>



<p><b>A. Key Words</b></p> <p>1) Creation: Explanation of how the world was created</p> <p>2) Evolution: Process by which different living creatures are believed to have developed from earlier, less complex forms.</p> <p>3) Big Bang: Explosion which created the universe</p> <p>4) Literal Christians: Belief – the Bible should be understood word for word</p> <p>5) Liberal Christians: Belief – people should be free to understand the holy books how they choose.</p> <p>6) Design Argument: William Paley suggested that the design which can be identified in the world suggests a designer</p>	<p style="text-align: center;"><b>Genesis</b></p>  <p><b>B. Christian Creation Story according to Genesis 1</b></p> <p>God is the only creator.</p> <p>God existed before he created the world.</p> <p>The world was well planned and is sustained by God.</p> <p>God blessed creation, which means that all creation is holy.</p> <p>God created everything in Heaven and on Earth in six days.</p> <p>On the seventh day, God rested.</p>	<p><b>D. Islam</b></p> <p>Allah is the Creator and Sustainer of life.</p> <p>Muslims believe Allah created the heavens and the earths from formless matter over six long periods of time.</p> <p>He created humans out of clay, moulding Adam and breathing life and power into him.</p> <p>He took Adam to paradise and made for him a wife.</p>	<p><b>E. The Big Bang</b></p> <p>About 13.8 billion years ago the whole Universe was a very small, extremely hot and dense region.</p> <p>From this tiny point, the whole Universe expanded outwards to what exists today.</p> <p style="text-align: center;"><b>Evolution</b></p> <p>Charles Darwin observed that although individuals in a species shared similarities, they were not exact copies of each other; there were small differences or variations between them.</p> <p>He also noticed that everything in the natural world was in competition.</p> <p>The winners were those that had characteristics which made them better adapted for survival</p>
	<p style="text-align: center;"><b>C. William Paley’s Watch Analogy</b></p> <p>He suggested that if you were walking and found a watch, by accident, you would think that it must have been designed by a watch-maker.</p> <p>In the same way, when looking at the world with its complex patterns and structures you would come to the conclusion that there must be a cosmic world maker, a designer God.</p>		



<p><b>A. Challenge Tasks</b></p> <ol style="list-style-type: none"> <li>1. Create 10 true or false statements on today's topic</li> <li>2. Transform your learning into a series of images using up to 5 words</li> <li>3. Plan an alternative lesson about what we have learnt today</li> <li>4. Construct a timeline showing your learning through today's lesson</li> <li>5. Produce a summary of today's lesson – then reduce the number of words used to a single sentence or three bullet points</li> <li>6. Turn today's learning outcomes into questions</li> <li>7. Select 5 key terms that you have used today and create a summary using all of the terms</li> <li>8. Create 5 questions your teacher might ask about today's learning</li> <li>9. Use a thesaurus to add more ambitious vocabulary into your work</li> <li>10. If today's lesson were an album or a newspaper heading, what would it be called? What songs would be on it?</li> <li>11. Include three quotations / arguments to support your answer</li> <li>12. Add a justified conclusion to your evaluative writing</li> </ol>	<p style="text-align: center;"><b><u>Research Tasks</u></b></p> <p style="text-align: center;"><b>B. Life After Death</b></p> <ol style="list-style-type: none"> <li>1) Research Descartes ideas on the soul</li> <li>2) Research different Christian ideas on the afterlife – what is judgement day?</li> <li>3) Research different ideas on judgement day, does it happen straight away as in the parable of the Rich man and Lazarus or at a set time as in the parable of the Sheep and the Goats</li> <li>4) Research other ideas on life after death</li> </ol> <hr/> <p style="text-align: center;"><b>C. Creation</b></p> <ol style="list-style-type: none"> <li>1) Research Charles Darwin on Evolution</li> <li>2) Research Stephen Hawkins on the Big Bang</li> <li>3) Research William Paley and intelligent design</li> <li>4) Research the primordial soup theory in Islam</li> <li>5) Who are 'old earth creationists'?</li> <li>6) Who are 'new earth creationists'?</li> </ol>	<p><b>D. Wider Links Challenge</b></p> <ol style="list-style-type: none"> <li>1) Use the internet to research life after death</li> <li>2) Evaluate, 'is death the end?'</li> <li>3) Evaluate, 'Is reincarnation the most convincing idea on the after life?'</li> <li>4) Describe the impact of today's learning on your wider outlook</li> <li>5) Explain how you might use today's learning outside of school</li> <li>6) Describe how today's learning relates to another of your subjects</li> </ol> <div style="text-align: right;">  </div>
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(1) Key Word	Definition
a) Consumer	An animal that eats other animals, or plants
b) Continuous variation	Differences between living things change gradually over a range of values, for example height, or weight.
c) Decomposer	Organism that breaks down dead plant and animal material, allowing nutrients to return to the soil.
d) Discontinuous variation	Differences between organisms can only be a limited number of values, for example sex, or eye colour.
e) DNA	A molecule found in the nucleus of a cell that carries genetic information
f) Ecosystem	The living things (plant, animal etc.) in a given area.
g) Environment	The surrounding air, water and soil where an organism lives.
h) Food chain	Part of a food web. It starts with a producer and ends with a consumer
i) Food web	Shows how food chains in an ecosystem are linked.
j) Gene	A section of DNA that determines an inherited characteristic
k) Inherited characteristics	Features that are passed from parents to their offspring
l) Species	A group of living things that have more in common with each other than with other groups.
<p><b>(2) Variation</b></p> <p>There is <b>variation</b> between individuals of the same species. Some variation is <b>inherited</b>, and some variation is caused by the <b>environment</b>. Variation is important for the survival of a species in a constantly changing environment.</p>	

**(3) Chromosomes, DNA and genes**

The nucleus of all cells (except red blood cells) contains structures called **chromosomes**. Chromosomes are made of long, tightly coiled strands of **DNA**. A gene is a section of DNA that is responsible for a particular characteristic, like eye colour. Humans have about 20, 000 genes.

**(4) Inherited Characteristics**

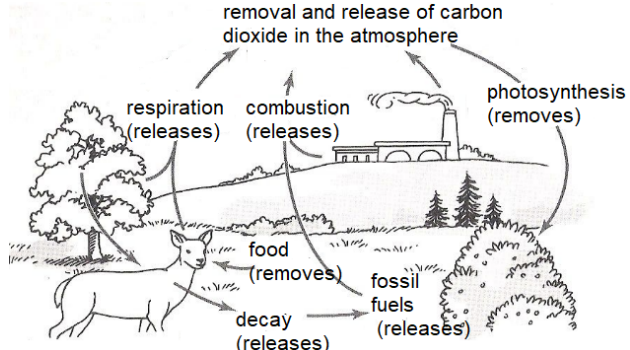

Human body cells have 23 pairs of chromosomes, half of which are from each parent. Human gametes (sex cells) each contain 23 chromosomes. When fertilisation occurs, the fertilised egg becomes a cell with 23 pairs of chromosomes, half from each parent. This is how characteristics are passed to offspring.

**(5) Continuous and discontinuous variation**

Continuous variation varies over a range of values, for example weight, height, skin colour. Continuous variation often shows a smooth distribution curve.

Discontinuous variation can only have certain values, for example tongue rolling, or blood type.



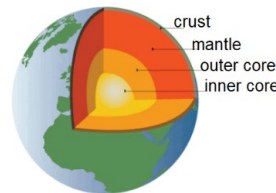
(1) Key Word	Definition	
a) Atmosphere	The thin layer of gases that surround the planet	
b) Carbon cycle	The processes that remove and release carbon into the atmosphere.	<p data-bbox="1151 284 1429 319"><b>(3) The Carbon Cycle</b></p>  <ul data-bbox="1164 678 2016 829" style="list-style-type: none"> <li>• Photosynthesis and consuming food remove carbon from the atmosphere.</li> <li>• Respiration, combustion and decay releases carbon into the atmosphere.</li> </ul>
c) Climate	The average weather conditions over long periods and large areas.	
d) Combustion	Burning in oxygen.	
e) Electrolysis	Breaking apart a substance using electricity.	
f) Extraction	Separating a metal from its ore.	
g) Finite resource	Finite resources are non-renewable and will eventually run out.	
h) Fossil fuels	Remains of dead organisms that are burned as fuel and release carbon dioxide.	
i) Global warming	The gradual increase in the average temperature of the Earth.	
j) Greenhouse Effect	Energy from the sun is transferred to the gases in the atmosphere	
k) Natural resources	Materials that occur naturally (for example wood), that we can make use of.	
l) Recycling	Processing materials, so that we can use them again.	
<p data-bbox="255 1305 734 1340"><b>(2) Composition of the Atmosphere</b></p> <p data-bbox="255 1345 1102 1417">Earth's atmosphere contains 78% nitrogen (N<sub>2</sub>), 21% oxygen (O<sub>2</sub>) and less than 1% carbon dioxide (CO<sub>2</sub>) and other gases.</p>		<p data-bbox="1151 855 1778 890"><b>(4) Global Warming and the Greenhouse Effect</b></p> <p data-bbox="1151 895 2065 967">Greenhouse gases like CO<sub>2</sub> help to keep the planet warm by absorbing IR radiation and scattering it back to the Earth's surface.</p> <p data-bbox="1151 1015 2029 1161">Unfortunately, the levels of CO<sub>2</sub> in the atmosphere have increased, and now much more IR radiation is absorbed and scattered back to Earth. This has led to 'global warming' – an average increase in temperature on the surface of the planet.</p> <p data-bbox="1151 1185 1496 1220"><b>(5) Recycling and Reusing</b></p>  <p data-bbox="1151 1265 2029 1449">Recycling materials, such as metals uses less of the Earth's limited resources. It takes less energy to recycle metal than to extract it, so less carbon dioxide is released into the atmosphere. Less rubbish is sent to landfill as well, which means that less methane (CH<sub>4</sub>) is released into the atmosphere.</p>



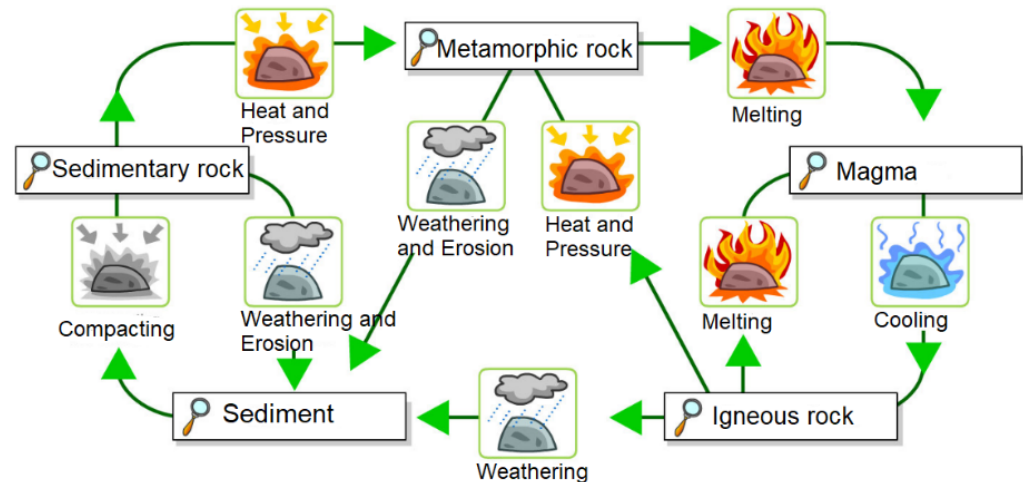
(1) Key Word	Definition
a) Erosion	The movement of rock by water, ice or wind
b) Igneous rocks	Formed from cooled magma
c) Metamorphic rocks	Formed from existing rocks which have been exposed to heat and pressure for a long time.
d) Minerals	The chemicals that rocks are made from.
e) Rock cycle	The processes that change rocks from one type to another
f) Sediment	Small fragments of rock and soil that form layers.
g) Sedimentary rocks	Rocks formed from layers of sediment - they may contain fossils.
h) Strata	Layers of sedimentary rocks
i) Weathering	Wearing down of rocks by weather, or chemical processes

**(2) Composition of the Earth**

- The **crust** is a hard, thin, rocky layer.
- The **mantle** has some of the properties of a solid but can flow very slowly.
- The **core** is made of liquid iron and nickel. It produces the Earth's magnetic field.



**(3) The Rock Cycle**



The rock cycle involves changing the three types of rock (igneous, sedimentary and metamorphic) from one to another.

- Igneous rocks are broken down by weathering into sediment, and then compressed by heat and pressure into metamorphic rocks (metamorphic means that there has been a chemical change).
- Metamorphic rocks are deep under the earth and can eventually melt to become magma.
- Magma erupts from volcanoes and cools down to form igneous rock.

The rock cycle is a continuous process that takes millions of years to complete, and never stops.

Weather and other processes break rocks down and build them up into new forms.



(1) Key Word	Definition
a) Artificial satellite	An object, such as a communication satellite
b) Day	The time it takes for the Earth to turn once on its axis
c) Light year	The distance light travels in a year (over 9 million, million km)
d) Orbit	The path taken by a satellite, planet, or star as it moves around a larger body.
e) Satellite	Any object that is in orbit around a larger body
f) Stars	Bodies which emit (give out) light, and which may have a solar system of planets.
g) Weight	The force acting on an object due to the gravitational field strength (GPS) of a large body like the Earth, or the Sun.
h) Year	The time it takes for a planet to make a complete orbit around the sun

**(2) Gravity and the Universe**

The Sun is a star at the center of our Solar System. Its gravitational field holds the planets in orbit around it. The more mass an object has, the stronger its gravitational field.

The Sun is one of millions of stars in the Milky Way – our galaxy. All the stars in the Milky Way are held together by gravitational forces.

**(3) Gravity and Weight – Revision**

$$W (N) = \text{mass (kg)} \times g (N/kg)$$

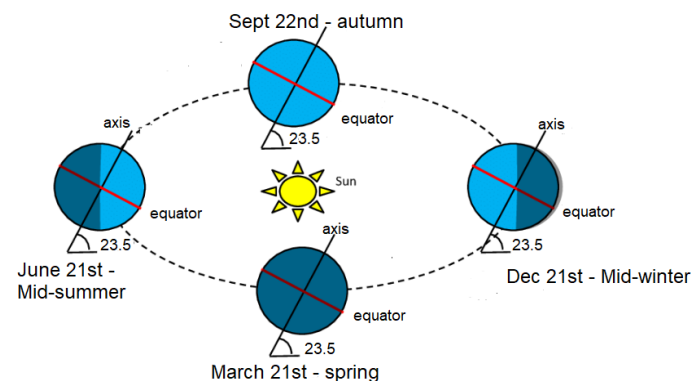
On Earth, gravitational field strength is 10 N/kg



**(4) The rotation of the Earth on its axis**

The Earth takes 24 hours to complete one rotation on its axis. The Earth has a tilt on its axis which causes the seasons.

In the summer, the northern hemisphere (half of the Earth) is tilted towards the sun but in the winter, it is tilted away from the sun



**In summer...**

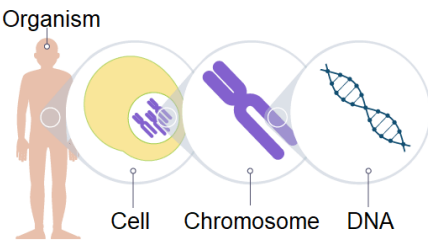
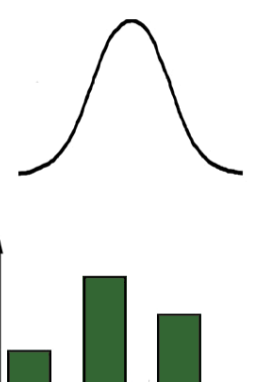
The Earth spends more time in sunlight.  
More sunlight is focused on a smaller area  
Warmer, longer days

**In winter...**

The Earth spends less time in sunlight.  
Less sunlight is focused on a larger area.  
Colder, shorter days

**(5)** Light travels at 300, 000 km/s but it takes over 8 minutes for light to travel from the Sun to the Earth. We measure distances in space in 'light years' – the distance light can travel in one year (9.46 trillion km). Space is huge!



<b>(1) Key Word</b>	<b>Match the Definitions to Key Words</b>	<b>(3) Chromosomes, DNA and genes</b>
a) Consumer	A section of DNA that determines an inherited characteristic	a) Give the definition of chromosome.
b) Continuous variation	Part of a food web. It starts with a producer and ends with a consumer	b) How many pairs of chromosomes are in each human cell?
c) Decomposer	The surrounding air, water and soil where an organism lives.	c) How many pairs of chromosomes are in gamete cells?
d) Discontinuous variation	Differences between organisms can only be a limited number of values, for example sex, or eye colour.	d) State the definition of gene and describe how it is different from a chromosome
e) DNA	The living things (plant, animal etc.) in a given area.	
f) Ecosystem	The differences within, and between species	
g) Environment	A group of living things that have more in common with each other than with other groups.	
h) Food chain	A molecule found in the nucleus of a cell that carries genetic information	
i) Food web	Features that are passed from parents to their offspring	
j) Gene	Organism that breaks down dead plant and animal material, allowing nutrients to return to the soil.	
k) Inherited characteristics	Differences between living things change gradually over a range of values, for example height, or weight.	
l) Species	Shows how food chains in an ecosystem are linked.	
m) Variation	An animal that eats other animals, or plants	
<b>(2) Variation</b> a) State the different types of variation. b) Give an example of the different types of variation c) How can identical twins show variation? What type of variation is this?		
		<b>(5) Continuous and discontinuous variation</b>  a) State the definition of continuous variation. b) Give 3 examples of continuous variation. c) Describe how to record continuous variation. d) State the definition of discontinuous variation. e) Give 3 examples of discontinuous variation.

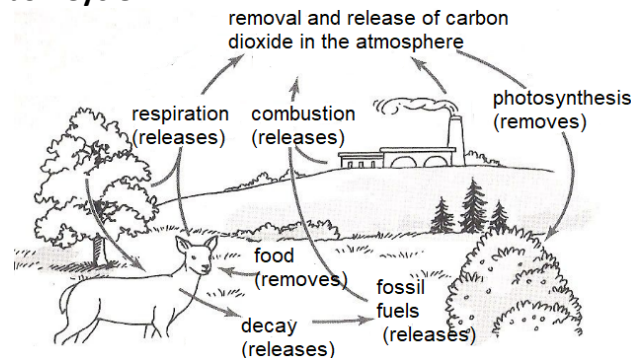


(1) Key Word	Match the Definitions to Key Words
a) Atmosphere	The gradual increase in the average temperature of the Earth.
b) Carbon cycle	Materials that occur naturally (for example wood), that we can make use of.
c) Climate	Remains of dead organisms that are burned as fuel and release carbon dioxide.
d) Combustion	Finite resources are non-renewable and will eventually run out.
e) Electrolysis	Processing materials, so that we can use them again.
f) Extraction	Burning in oxygen.
g) Finite resource	Separating a metal from its ore.
h) Fossil fuels	The processes that remove and release carbon into the atmosphere.
i) Global warming	The average weather conditions over long periods and large areas.
j) Greenhouse Effect	Breaking apart a substance using electricity.
k) Natural resources	The thin layer of gases that surround the planet
l) Recycling	Energy from the sun is transferred to the gases in the atmosphere

**(2) Composition of the Atmosphere**

- a) What is the percentage composition of oxygen in our atmosphere?
- b) During the early years of the earth there was a lot of volcanic activity and very little plants or animals. Describe how you think the composition of oxygen in our atmosphere has changed over time.

**(3) The Carbon Cycle**



- a) Describe the ways in which carbon is removed from the atmosphere.
- b) Describe the ways in which carbon is put into the atmosphere.
- c) Too much carbon in the atmosphere can be dangerous for life on earth. Explain why, include the name of the gas containing carbon.

**(4) Global Warming and the Greenhouse Effect**

- a) Draw and label a diagram depicting the process of the greenhouse effect.
- b) Why is the greenhouse effect important for life on earth?
- c) Explain what is meant by the term global warming.
- d) Describe the ways in which humans are impacting the rate of global warming.

**(5) Recycling and Reusing**

- a) What is a benefit of recycling in terms of the earth's resources?
- b) What is a benefit of recycling in terms of global warming?
- c) Why is it important to recycle now for the benefit of future generations?
- d) Find and write the definition for sustainable development.
- e) How is reusing different to recycling?



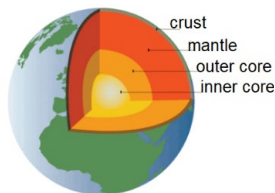
(1) Key Word	Match the Definitions to Key Words
a) Erosion	Wearing down of rocks by weather, or chemical processes
b) Igneous rocks	The processes that change rocks from one type to another
c) Metamorphic rocks	Small fragments of rock and soil that form layers.
d) Minerals	Layers of sedimentary rocks
e) Rock cycle	Rocks formed from layers of sediment - they may contain fossils.
f) Sediment	The movement of rock by water, ice or wind
g) Sedimentary rocks	Formed from existing rocks which have been exposed to heat and pressure for a long time.
h) Strata	Formed from cooled magma
i) Weathering	The chemicals that rocks are made from.

**(2) Composition of the Earth**

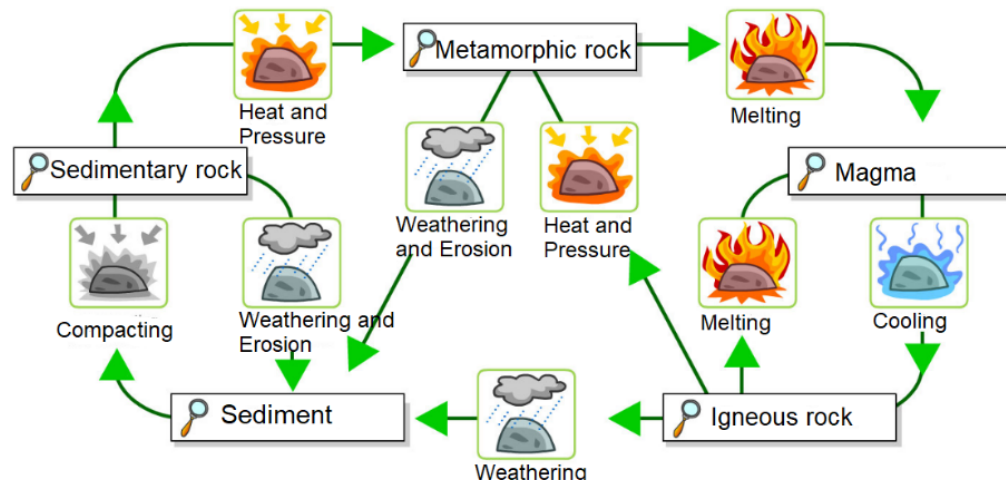
a) Describe the composition of the earth. (Include what each layer is made up of).

b) The mantle is a liquid, although it has some properties of a solid. Why is it considered to be a liquid?

c) Describe what produces the earth's magnetic field?



**(3) The Rock Cycle**



- a) State the 3 types of rock.
- b) Explain how each type of rock is formed.
- c) Rocks are a good way of understanding the properties of the earth from millions of years ago. Explain how.
- d) Describe the process of weathering.
- e) Coastal areas, for example Kent and Dorset, have cliffs made from chalk. Coastal erosion is happening at a rate of 0.4 meters per year. Explain what local councils can do to reduce the rate of coastal erosion and why it is important to do so.
- f) Explain how burning fossil fuels increase the rate of weathering?
- g) Describe ways in which the rates of weathering can be reduced.



(1) Key Word	Match the Definitions to the Key Words
a) Artificial satellite	The path taken by a satellite, planet, or star as it moves around a larger body.
b) Day	The force acting on an object due to the gravitational field strength (GPS) of a large body like the Earth, or the Sun.
c) Light year	Any object that is in orbit around a larger body
d) Orbit	An object, such as a communication satellite
e) Satellite	The time it takes for a planet to make a complete orbit around the sun
f) Stars	The distance light travels in a year (over 9 million, million km)
g) Weight	The time it takes for the Earth to turn once on its axis
h) Year	Bodies which emit (give out) light, and which may have a solar system of planets.

**(2) Gravity and the Universe**

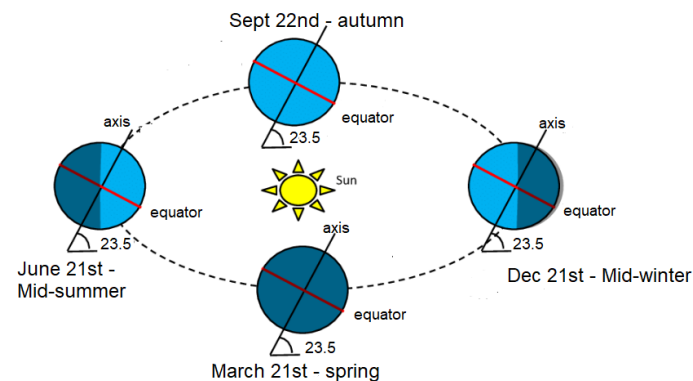
- a) Compare the relative gravitational field strength of earth and Jupiter.
- b) Name the planets in order from the sun.
- c) How would the gravitational field strength of the sun change the further away you get?

**(3) Gravity and Weight – Revision**

- a) Recall the equation to calculate weight.
- b) Calculate the weight of an object on earth with a mass of 40 kg
- c) Calculate the mass of an object on earth with a weight of 2300 N.

**(4) The rotation of the Earth on its axis**

- a) If the northern hemisphere of the earth was pointing towards the sun, what is the season? Explain why.
- b) How many rotations on its axis will the earth make in 2 years? Explain your answer.



- c) Explain the difference in the earth tilt, relative time in sunlight, temperature and length of day in the summer and the winter. What causes the difference?
- d) Planets and moons are not the only type of satellite. State the definition for artificial satellite and give an example.

**(5) Speed of Light**

- a) Give the value for the speed of light and provide the units.
- b) Recall the equation to calculate speed.
- c) A planet emits a light from the surface. It takes 60 days for the light to travel to earth. How far away is the planet?



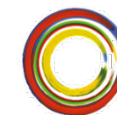
Unit 8: Describing my street			aa	a la derecha	<i>on the right</i>
<b>a</b>	¿Qué hay en tu calle?	<i>What is there on your street?</i>	<b>ab</b>	a la izquierda	<i>on the left</i>
<b>b</b>	¿Dónde está tu casa?	<i>Where is your house?</i>	<b>ac</b>	al lado	<i>next to</i>
<b>c</b>	¿Qué sitios hay en tu barrio?	<i>What places are there in your neighbourhood?</i>	<b>ad</b>	cerca	<i>near</i>
<b>d</b>	En mi calle hay...	<i>In my street there is...</i>	<b>ae</b>	delante	<i>in front</i>
<b>e</b>	Cerca de mi casa hay...	<i>Near my house there is...</i>	<b>af</b>	detrás	<i>behind</i>
<b>f</b>	...un aparcamiento	<i>...a carpark</i>	<b>ag</b>	enfrente	<i>in front</i>
<b>g</b>	...un campo de fútbol	<i>...a football pitch</i>	<b>ah</b>	en la esquina	<i>on the corner</i>
<b>h</b>	...un centro comercial	<i>...a shopping centre</i>	<b>ai</b>	lejos	<i>far</i>
<b>i</b>	...un edificio	<i>...a building</i>	<b>aj</b>	a diez minutos a pie	<i>ten minutes on foot</i>
<b>j</b>	...un polideportivo	<i>...a leisure centre</i>	<b>ak</b>	a diez minutos en coche	<i>ten minutes by car</i>
<b>k</b>	...un parque pequeño	<i>...a small park</i>	<b>al</b>	de la biblioteca	<i>to/from the library</i>
<b>l</b>	...un restaurante chino	<i>...a Chinese restaurant</i>	<b>am</b>	de la carnicería	<i>to/from the butcher</i>
<b>m</b>	...un supermercado	<i>...a supermarket</i>	<b>an</b>	de la panadería	<i>to/from the bakery</i>
<b>n</b>	...un teatro	<i>...a theatre</i>	<b>ao</b>	de la piscina	<i>to/from the swimming pool</i>
<b>o</b>	...una tienda de ropa	<i>...a clothes shop</i>	<b>ap</b>	de la tienda de música	<i>to/from the music shop</i>
<b>p</b>	...una biblioteca	<i>...a library</i>	<b>aq</b>	del campo de fútbol	<i>to/from the football pitch</i>
<b>q</b>	...una carnicería	<i>...a butcher</i>	<b>ar</b>	del centro comercial	<i>to/from the shopping centre</i>
<b>r</b>	...una estación de tren	<i>...a train station</i>	<b>as</b>	del colegio	<i>to/from the school</i>
<b>s</b>	...una iglesia	<i>...a church</i>	<b>at</b>	del estadio	<i>to/from the stadium</i>
<b>t</b>	...una mezquita	<i>...a mosque</i>	<b>au</b>	del museo	<i>to/from the museum</i>
<b>u</b>	...una panadería	<i>...a bakery</i>	<b>av</b>	del parque	<i>to/from the park</i>
<b>v</b>	...una piscina municipal	<i>...a local pool</i>	<b>aw</b>	al final de la calle	<i>at the end of the Street</i>
<b>w</b>	...una sinagoga	<i>...a synagogue</i>	<b>ax</b>	entre el cine y la piscina	<i>between the cinema and the pool</i>
<b>x</b>	...una zapatería	<i>...a shoe shop</i>	<b>ay</b>	no hay ningún polideportivo	<i>there aren't any leisure centres</i>
<b>y</b>	Mi casa está...	<i>My house is (+location)</i>	<b>az</b>	no hay ninguna tienda buena	<i>there aren't any good shops</i>
<b>z</b>	Mi edificio está	<i>My building is (+location)</i>	<b>ba</b>	cerca de donde vivo	<i>near to where I live</i>



<b>bb</b>	en barrio	<i>in my neighbourhood</i>	y	un sótano	<i>a basement</i>
<b>bc</b>	por aquí	<i>around here</i>	z	un garaje	<i>a garage</i>
Unit 9: Describing my home and furniture			aa	un jardín	<i>a garden</i>
a	¿Cuántas habitaciones hay en tu casa?	<i>How many rooms are in your house?</i>	ab	me gusta mi casa porque	<i>I like my house because</i>
b	¿Te gusta tu casa? ¿Por qué?	<i>Do you like your house? Why?</i>	ac	no me gusta mi casa porque	<i>I don't like my house because</i>
c	¿Qué hay en la cocina / el salón?	<i>What is there in your kitchen?</i>	ad	es acogedor(a)	<i>it is cosy</i>
d	Vivo en una casa	<i>I live in a house...</i>	ae	es antiguo/a	<i>it is old</i>
e	Vivo en un piso	<i>I live in a flat...</i>	af	es bonito/a	<i>it is pretty/nice</i>
f	Vivo en un edificio	<i>I live in a building...</i>	ag	es feo/a	<i>it is ugly</i>
g	en el campo	<i>...in the countryside</i>	ah	es espacioso/a	<i>it is spacious</i>
h	en el centro de la ciudad	<i>...in the centre of the city</i>	ai	es grande	<i>it is big</i>
i	en la costa	<i>...on the coast</i>	aj	es luminoso/a	<i>it is well lit</i>
j	en la montaña	<i>...in the mountains</i>	ak	es pequeño/a	<i>it is small</i>
k	en las afueras	<i>...on the outskirts</i>	al	está bien amueblado/a	<i>it is well furnished</i>
l	En mi casa hay...	<i>In my house there is...</i>	am	está limpio/a	<i>it is clean</i>
m	...cinco habitaciones	<i>...five rooms</i>	an	está sucio/a	<i>it is dirty</i>
n	por ejemplo	<i>for example</i>	ao	En la cocina hay	<i>In the kitchen there is</i>
o	como	<i>like</i>	ap	un horno	<i>an oven</i>
p	el dormitorio de mis padres	<i>my parents' bedroom</i>	aq	un lavaplatos	<i>a dishwasher</i>
q	mi dormitorio	<i>my bedroom</i>	ar	una despensa	<i>a pantry</i>
r	una cocina	<i>a kitchen</i>	as	una mesa	<i>a table</i>
s	una sala de juegos	<i>a gameroom</i>	at	una nevera	<i>a fridge</i>
t	un comedor	<i>a dining room</i>	au	una silla	<i>a chair</i>
u	un cuarto de baño	<i>a bathroom</i>	av	En el salón hay	<i>In the living room there is</i>
v	un salón	<i>a living room</i>	aw	un sillón	<i>an armchair</i>
w	también hay	<i>there is also</i>	ax	un sofá	<i>a sofa</i>
x	un desván	<i>an attic</i>	ay	una alfombra	<i>a rug</i>



az	una mesita	<i>a coffee table</i>	r	...hice...	<i>...I did...</i>
ba	En mi dormitorio hay	<i>In my bedroom there is</i>	s	...equitación	<i>...horse riding</i>
bb	un armario	<i>a wardrobe</i>	t	...footing	<i>...jogging</i>
bc	un escritorio	<i>a desk</i>	u	...natación	<i>...swimming</i>
bd	una cama	<i>a bed</i>	v	...pesas	<i>...weights</i>
be	un espejo	<i>a mirror</i>	w	...senderismo	<i>...hiking</i>
bf	un ordenador	<i>a computer</i>	x	...turismo	<i>...sightseeing</i>
bg	estantería	<i>a bookshelf</i>	y	...jugué...	<i>...I played...</i>
bh	cortinas	<i>curtains</i>	z	...al fútbol	<i>...football</i>
<b>Unit 10: Saying what I did my neighbourhood</b>			aa	...al golf	<i>...golf</i>
a	¿Adónde fuiste el fin de semana pasado?	<i>Where did you go last weekend?</i>	ab	...al rugby	<i>...rugby</i>
b	¿Con quién fuiste?	<i>With whom did you go?</i>	ac	...al tenis	<i>...tennis</i>
c	¿Qué hiciste el sábado?	<i>What did you do on Saturday?</i>	ad	...toque...	<i>...I played (+instrument)...</i>
d	Anteayer...	<i>The day before yesterday...</i>	ae	...el piano	<i>...the piano</i>
e	Ayer...	<i>Yesterday...</i>	af	...el violín	<i>...the violin</i>
f	Hace tres días...	<i>Three days ago...</i>	ag	...la batería	<i>...the drums</i>
g	El fin de semana pasado...	<i>Last weekend...</i>	ah	...la guitarra	<i>...the guitar</i>
h	El viernes pasado ...	<i>Last Friday...</i>	ai	...vi...	<i>...I saw/watched...</i>
i	...compré...	<i>...I bought...</i>	aj	...un espectáculo de circo	<i>...a circus</i>
j	...una camiseta de fútbol	<i>...a football shirt</i>	ak	...un partido de fútbol	<i>...a football game</i>
k	...un videojuego	<i>...a videogames</i>	al	...una comedia	<i>...a comedy</i>
l	...ropa nueva	<i>...new clothes</i>	am	...una película de acción	<i>...an action film</i>
m	...fui...	<i>...I went...</i>	an	...visité...	<i>...I visited...</i>
n	...a la pista de patinaje	<i>...to the skating rink</i>	ao	...un castillo	<i>...a castle</i>
o	...a un concierto de Rosalía	<i>...to a Rosalía concert</i>	ap	...una galería de arte	<i>...an art gallery</i>
p	...de paseo al parque	<i>...for a walk in the park</i>	aq	...un museo	<i>...a museum</i>
q	...de compras	<i>...shopping</i>	ar	...un palacio histórico	<i>...a historic palace</i>



as	...unas ruinas romanas	...some Roman ruins
at	...en el bosque	...in the woods
au	...en el casco antiguo	...in the old town
av	...en la calle peatonal	...in the pedestrian street
aw	...en la plaza mayor	...on the town square
ax	...cerca de mi casa	...near my house
ay	...de mi barrio	...in my neighbourhood

**Gramática**

Key verbs and time phrases in three tenses.

	Past			Present			Future		
Time phrases	Ayer/ Anteayer/ La semana pasada El fin de semana pasado/ Anoche/ El miércoles pasado			Normalmente/ los lunes/ Cuando hace calor/ Los fines de semana/ A veces/ De vez en cuando			Mañana/ La semana que viene/ El martes que viene/		
	I	He/She	We	I	He/She	We	I	He/She	We
<b>Jugar (to play)</b>	jugué	jugó	jugamos	juego	juega	jugamos	voy a jugar	va a jugar	vamos a jugar
<b>Hacer (to do)</b>	hice	hizo	hicimos	hago	hace	hacemos	voy a hacer	va a hacer	vamos a hacer
<b>Llevar (to wear)</b>	llevé	llevó	llevamos	llevo	lleva	llevamos	voy a llevar	va a llevar	vamos a llevar
<b>Ver (to watch)</b>	vi	vio	vimos	veo	ve	vemos	voy a ver	va a ver	vamos a ver
<b>Gustarse (to like)</b>	me gustó/ me gustaron	le gustó/ le gustaron	nos gustó/ nos gustaron	me gusta/ me gustan	le gusta/ le gustan	nos gusta/ nos gustan	me gustará/ me gustarán	le gustará/ le gustarán	nos gustará/ nos gustarán
<b>Visitar (to visit)</b>	visité	visitó	visitamos	visito	visita	visitamos	voy a visitar	va a visitar	vamos a visitar

**The verbs for “To be”**

<b>SER</b>	<b>Estar</b>
Description – Soy muy grande – <i>I am very big</i> Occupation – Eres enfermera - <i>You are a nurse</i> Characteristics – Es simpático – <i>He is kind</i> Time – Son las dos y cuarto – <i>It is quarter-past two</i> Origin – Somos de España – <i>We are from Spain</i> Relation – Sois primos – <i>You are cousins</i>	Position – Están al lado de la mesa – <i>They are next to the table</i> Location – Estoy en el banco – <i>I am in the bank</i> Action – Está comiendo – <i>He/She is eating</i> Condition – Está sucio - <i>It is dirty</i> Emotion – Estás contento – <i>You are happy</i>



<b>1. Grammatical theory</b>		<b>2. Spanish/Hispanic Cultural Research: Use one of the tablets in HU6 to find out the following information and write a paragraph.</b>	
i. What is the difference between changing verbs in the present tense and changing them in the past (preterite) tense?		i. Who is he? ii. What is he famous for? iii. Where did his family come from originally?	Lin Manuel Miranda
<b>3. Dictionary corner</b>	Look up 5 adjectives that are different to the ones that we have studied in the lesson to describe where you live. 1_____ 2_____ 3_____ 4_____ 5_____		
Write an extended sentence to include each one.			
<b>4. Key Verbs</b>			
What are the verb endings for the three different kinds of verbs in Spanish in the <i>preterite</i> tense? Write them out below.			
Personal pronoun	AR verbs – e.g. hablar	ER verbs – e.g. Comer	IR verbs – e.g. Vivir
Yo (I)	<u>hablé</u> <u>I talked</u>	_____	_____
Tu (you sing)	_____	<u>comiste</u> <u>you ate</u>	_____
él/ella (he/she)	_____	_____	<u>vivió</u> <u>he/she/it lived</u>
nosotros (we)	_____	_____	_____
vosotros (you pl)	_____	_____	_____
ellos/ellas (they)	_____	_____	_____
<b>5. Understanding grammar</b>			
Find the answers to the following questions			
a. Why is the following sentence incorrect? Ayer voy a la playa.			
b. Research the verb “to go” in the preterite. How would you change it to say “Yesterday my brother went to the beach” (NB – to go is irregular)			
<b>6. Idioms</b>			
Find out the meanings of these idioms.			
1) Ver todo color de rosa		_____	
2) Encontrar tu media naranja		_____	
3) Tener memoria de pez		_____	



Knowledge Organiser: Year 8 Summer Term - TED

**1. Ergonomics and Anthropometrics**

**Ergonomics** relates to how people comfortably and effectively use products, the 'fit' between the users and products they use.

An ergonomic phone would be easy to hold, have buttons shaped to be comfortable and easy to press, its edges will be rounded, and the ear and mouth pieces will be at suitable distances from your ear and mouths.

**Anthropometrics** are human body measurements. We use average measurements such as height, finger lengths and hand spans to ensure products are the correct size and safe to use. Anthropometric data is different for different ages, user groups and cultures.

**2. Usability**

Products must be designed to provide a workable solution to the primary user. It is important designs consider all of the primary user needs and provide a solution that is accessible.

The primary user is the person who will use your product most.

A stakeholder is someone who provides, sells or helps control the use of the product. This could include a teacher, a shop keeper, a sports coach or a parent.

**3. New Technologies**

These technologies often disrupt current design and manufacturing techniques and force industry to change.

These include:

Laser cutter

3D Printer

CAD Software

CNC Lathe

Robotics

Automated Manufacture

**4. Life-cycle Assessment (LCA)**

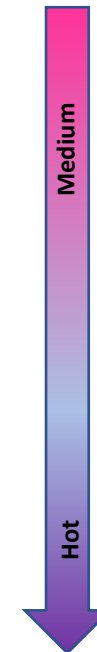
**LCA** evaluates the environmental impact of a product from 'cradle to grave': from the extraction of raw materials required to manufacture the product to end of use and disposal. It allows change to be instigated.

**5. Product Analysis**

A product analysis looks at current products and assesses whether they are successful or require improving.

When carrying out a successful product analysis you always ask yourself the following questions in relation to the product you are looking at....

1. Who is the product designed for? How do you know this?
2. How has the designer made the product easy to use?
3. What features does the product have which makes it a good product?
4. What features does the product have which could make it hard to use?
5. What materials have been used and why? Why Are their properties suitable for the product?
6. How would you improve the product? What would you develop further? Why would you make that change?





Knowledge Organiser: Year 8 Summer Term - TED

**6. Sustainability**

**Sustainability** is the measure of how much manufacturing, materials and use of energy damages the environment.

**Sustainable Materials** can be recycled, reused and disposed of with minimal impact on the environment.

**Sustainable Energy** is energy that is created and used without a big negative impact on the environment.

**Sustainable Design and Manufacturing** is the planning for products to be manufactured to have a minimal negative effect on the environment.

Sustainability aims to reduce the impact products have on the environment. Designers and manufacturers can do this by following the rules of the **6 R's**:

Reduce, Reuse, Recycle, Repair, Rethink, Refuse.

**7. Electronic Components**

Different components have different functions:

**Input Components:** sets an electrical circuit in action. (Switch, LDR, Sensor)

**Process Components:** work together to ensure current and signals are sent between input components and output components. (Transistor, PIC Chip, Resistor)

**Output components:** is what the circuit results in and ultimately does. (LED, Motor, Buzzer, Speaker)

**8. Material Properties**

**Material properties** are the characteristics of materials and the way they perform.

**Durable:** Withstands wear and tear over time.

**Hard:** Withstands scratching.

**Tough:** Withstands sudden impact.

**Strength to Weight ratio:** Strong but still lightweight.

**Ductile:** Can be stretched.

**Conductor:** Allows heat or electricity to pass through.

**Insulator:** Does not conduct heat or electricity.

**Corrosion resistance:** Resistance to rust, chemicals and UV light.

**Malleable:** Can be shaped, bent and pressed into shape under pressure/force.

**9. Risk Assessments**

A **risk assessment** helps you work safely in the workshop. It evaluates how safe a task is.

**Hazards** are accidents that can occur.

**Risk** is how likely the hazard will happen.

**Control measures** are what you can do to avoid being injured.

**10. Forces**

**Force** is when pressure is applied to an object. A force can be a push or a pull.

**Shear** A good example of shear force is seen with a simple scissors. The two handles put force in different directions.

**Tension** is a pulling force.

**Compression** is a force that presses against an object from opposite directions.

**Torsion** is a twisting force.

**11. Metals**

There are three main groups of metals:

**Ferrous metals** contain iron. They are magnetic and will rust (corrode). Types of ferrous metals include mild steel.

**Non-ferrous metals** do not contain iron. They are non-magnetic and will not rust (corrode). Types of non-ferrous metals include aluminium and copper.

**Alloys** are a mix of metal. This means alloys have improved properties and are suitable for a range of different products. Types of alloys include pewter, brass and bronze.



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**12. PPE**

**PPE** stands for Personal Protective Equipment. This equipment keeps you safe during practical work. PPE includes:

- |                            |               |
|----------------------------|---------------|
| <b>Goggles</b>             | <b>Aprons</b> |
| <b>Protective footwear</b> | <b>Visors</b> |

**13. CAD/CAM**

**CAD** stands for Computer Aided Design, it is used in lots of different industries such as construction, engineering and product design.

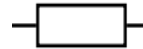
It is used because it is accurate, gives realistic 3D views of designs, is easy to correct mistakes without having to draw a drawing all again, and CAD drawings can be sent all over the world via email.

**CAM** stands for Computer Aided Manufacturing, it is when machines are controlled by computers to make/produce/manufacture products.

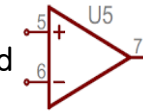
It is used because it is quicker, more accurate, reduces waste, never needs a break and can produce thousands of the same identical product per hour day in day out.

**14. Electronic Circuit symbols**

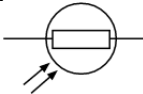
**Resistors** control the flow of current within a circuit. They stop high rates of current damaging electronic components.



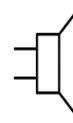
**PIC Chips** are programmed to send signals. Between inputs and outputs. They control circuits.



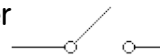
An **LDR** is a resistor which senses light. It allows current to run through it when it is dark.



**Speakers** turn electrical signals into sound waves.



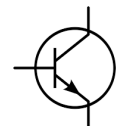
**Switches** are used to turn circuits on and off. They control when power enters a circuit and either complete or break the flow of current.



An **LED** is a type of bulb and emits light when current runs through it. LED stand for Light Emitting Diode.



**Transistors** act as a switch or latch within a circuit.



**15. Biomimicry**

This is where designs mimic naturally occurring designs found in nature.

Divers use flippers inspired by animals with webbed feet.

Kayak oars are designed to be aerodynamic like the fins on

**16. Design Iteration**

Iteration means to develop. When we iterate a design we develop it to become better. Every time we iterate an idea we will improve it. Iteration creates products that are developed to be better for the primary user, easier to use and perform better.

**17. Quality control**

We carry out regular checks to ensure mistakes are not made. Mistakes lead to wasted materials which impacts landfill (Pollutes the environment), wasted time and loss of profits. QC checks lead to higher quality products.



**1. Higher Order Thinking: Putting knowledge into context**

Pick an everyday object or product. Something you can see or something you use at school or at home. Now keeping that object or product in mind, pick one of the questions below to discuss it in more depth. Each question is worth 6 marks.

**Ergonomics and Anthropometrics:**

Explain how the product been designed to fit the user and be comfortable to use? Discuss if it could be more considerate and be modified to fit the user better?

**Material properties:**

Discuss which materials and properties are required for this product to function at its best? Why are the materials suitable for the product and the way it is used?

**Sustainability and Renewable energy:**

Discuss whether you think the product is good for the environment. Describe how could it have been designed or manufactured to be more environmentally friendly?

**Aesthetics:**

Is the product visually appealing? Will it appeal to its user? Evaluate how you could develop the product to be aesthetically pleasing and suitable for its target user group?

**2. Describe and Explain**

Pick an area to discuss. How has this new technology had a positive impact on designing and manufacturing?

- Laser cutter
- 3D Printer
- CAD Software
- CNC Lathe
- Robotics
- Automated Manufacture
- Cloud Computing
- Email
- Virtual Reality
- Internet of things

**3. Careers**

Using your own internet research explore the following design and engineering job sectors:

- Product Designer
- Mechanical Engineer
- Aeronautical Engineer
- Fashion Designer
- Graphic Designer
- Environmental Engineer

**4. Visit, Watch, Do.**

Visit this link to a sketch-a-day YouTube channel. Pick a video tutorial and develop your drawing skills by following the instructions and demos.

[https://www.youtube.com/channel/UCBtSgEZk914z5InEs\\_U2J3w](https://www.youtube.com/channel/UCBtSgEZk914z5InEs_U2J3w)



**5. Analyse and Develop**



1. Who is the product designed for? How do you know this?
2. How has the designer made the product easy to use?
3. What features does the product have which makes it a good product?
4. What features does the product have which could make it hard to use?
5. How would you improve the product? What would you develop further? Why would you make that change?











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