THE BOURNE ACADEMY
KNOWLEDGE ORGANISER

everyone is a learner, everyone is a teacher

Ambitious
Self Confident
Physically Literate
Independent
Resilient
Emotionally Literate

Year 8
Spring Term 2025-26

Name: .....
House: .....

Contents

The Bourne Academy
Knowledge Organiser: Year 8 Spring Term

Excellence at The Boume 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

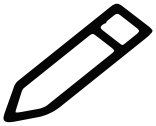
- You will get out your TBA Knowledge Organiser Booklet at the start of every lesson along with your Knowledge Organiser practise exercise book
- Your teacher will set you sections of the Knowledge Organiser to learn, off by heart, in every lesson.
- Your teacher will set you quizzes to test your knowledge 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

Plastic in the Ocean:

Around 13 million tonnes of plastic end up in the ocean every year, 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.

4. Keywords

a. **Warm colours**: reds, oranges, and yellows
b. **Cool colours**: blues, greens, and purples
c. **Watercolour**: pigment suspended in a water-based solution
d. **Wax resist**: a technique using wax to repel water
e. **Tint**: a mixture of a colour with white
f. **Plastic**: synthetic material that uses polymers as a main ingredient
g. **Single-use**: something made for use once and thrown away or recycled
h. **Crisis**: an unstable or dangerous situation

2. Artists

Look at these artists for inspiration:

- Cindy Lane
- Amy Genser
- Alejandro Duran
- Mandy Barker
- John Dahlsen
- Steve McPherson
- Angela Haseltine Pozzi
- Gilles Cenazandotti
- Dale Chihuly

3. Pollution

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 CO_2 and it is the number one source for protein for over a billion people.

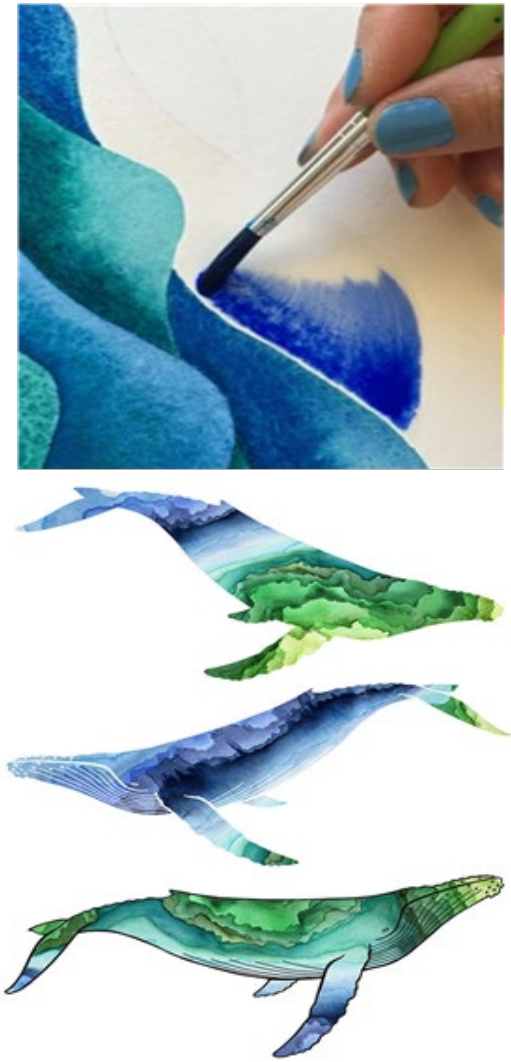
However, at the rate we are polluting the ocean with around 13 million tonnes of plastic a year, the damage we are doing to marine life and our ecosystem is becoming irreparable.
Our actions over the next 10 years will determine the state of the ocean for the next 10,000 years to come.

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.

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.

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term - Computing

1. Spreadsheets

Microsoft Excel

a) Spreadsheet software is used to organise and calculate data, such as tracking grades.

b) Data modelling is looking at data and using it to make future predictions/decisions, such as getting the weather forecast.

c) Data dashboard is a visual display of data providing information track, analyse, and quickly gain a better understanding.

d) Formulas used for spreadsheet calculations.

e) Functions are pre-set formulas that quickly perform a range of complex tasks, such as:

=SUM(A1:A10) adds up total value.
=MAX(A1:A10) finds the highest value.
=AVERAGE(A1:A10) finds the average.
=COUNT(A1:A10) counts how many cells.

2. Databases

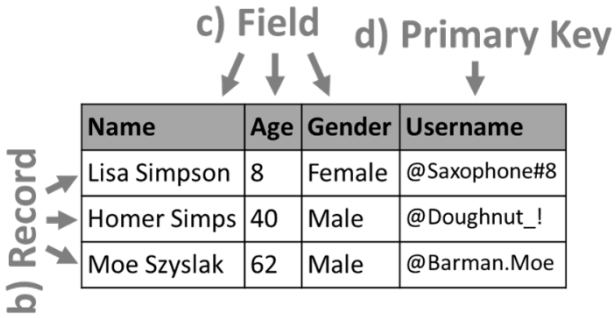
Microsoft Access

a) Database is a structured set of data that is set up to easily access, manage and update.

b) Record is a collection of data held for each person. Records are stored in rows.

c) Field is the type of data collected, such as 'Name', 'Age' or 'Gender'. Stored in columns.

d) Primary key is the column that contain values that uniquely identify each row.



Name	Age	Gender	Username
Lisa Simpson	8	Female	@Saxophone#8
Homer Simps	40	Male	@Doughnut_!
Moe Szyslak	62	Male	@Barman.Moe

e) Entry is adding data into a database.

f) Query is finding out and getting information from a database.

g) Report is an easy-to-read summary often presented in an A4 printable format.

3. Data

a) Data is raw (unprocessed) numbers, text and symbols.

b) Information is data that has been given meaning and structure.

c) CSV is a plain text file that contains a list of data. Can be imported into a spreadsheet.

d) Import is when data (such as from a CSV file) is inserted into a database or spreadsheet.

e) Data types are the format of the values in the cells, such as: £5.99, 21/03/23, 46%.

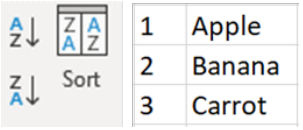
f) Charts/Graphs are used to visually represent data to easily compare data and spot patterns.

g) User Interface is how the user interacts with the database system, such as clickable buttons.

h) Test plan is used to make sure your database works with real-life examples.

i) Filter makes it easier to find specific data by only showing certain types of data.

j) Sort organises data, such as numerically.



4. Networks

a) Network is a group of connected computers sharing information.

b) Local area network (LAN) is a network that links computers that are located close enough together to be hard-wired.

c) Wide area network (WAN) is a network that extends over a large geographical area, connecting more than one local area network.

d) Wireless refers to a technology such as radio or microwaves used to transmit signals rather than using wires or cables.

e) Ethernet are the type of cables used to connect computers to a network, rather than being wireless.

f) Protocols are a set of procedures that allow data to be transferred between devices.

g) Internet is a public worldwide system of computer networks.

h) Intranet is a private operated network where data content and access are controlled.

i) Topology is the way in which computers are arranged in a network, such as star topology.

5. 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.

6. Photoshop

a) Photoshop is an application for editing and creating photos or other raster-based graphics.

b) Raster graphics are images made of pixels.

c) Vector graphics are images made up of code.

d) Rasterize is the process of converting vector graphics into pixels, making them editable.

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.

1. Data Dashboard

a) Create an interactive dashboard

i) See the Year 8 Spring Knowledge Organiser to see what a data dashboard is.
ii) 2. Ask Mr Orme for the "Weather Dashboard" booklet.
iii) 3. Open a new blank spreadsheet file
iv) 4. Import the CSV file (location in booklet) into your spreadsheet.
v) 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 (in your documents).

b) Characteristics of Data & Information

In Student Resources → !IT → Scholar
open "Characteristics of Data & Information".

Watch the video, read through all the information, then have a go at the quiz until you get at least 80%.

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 documents).

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.
(Ask if you'd like a printed version instead).

Use F5 to run and test your program.

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.

i) Add formulas to add up each team's scores.
ii) Add a function to find out the average score each team got over the season.
iii) 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.

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 "Sport Results" in your computing folder (in your documents).

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term - Dance

1. Physical Skills	2. Performance Skills	3. Technical Skills	4. Mental Skills
Posture Alignment Posture Balance Co-ordination Extension	Projection Focus Facial expressions Musicality Sensitivity Phrasing	Action Space Dynamics Relations Timing Rhythm	Repetition Mental rehearsal Feedback Movement memory

5. Basic Dance Actions:

The six basic dance actions are used whenever you are learning or creating choreography.

a. Gesture
b. Jump
c. Turn
d. Travel
e. Balance
f. Fall

6. Choreographic devices

Choreographic devices are used to enhance, exaggerate and embody actions. They include:

a. Motif and development
b. Repetition
c. Contrast
d. Highlights
e. Climax
f. Manipulation of number
g. Unison and canon.

7. Stimuli

A stimulus is something which inspires the idea for a dance.

a. Visual – pictures, objects, patterns.
b. Auditory - music or sound.
c. Tactile – fabrics and textures.
d. Ideational – an idea or story.
e. Kinaesthetic – movement.

8. Relationships

Relationships are ways in which dancers interact, the connections between dancers. Examples of different relationships in dance include:

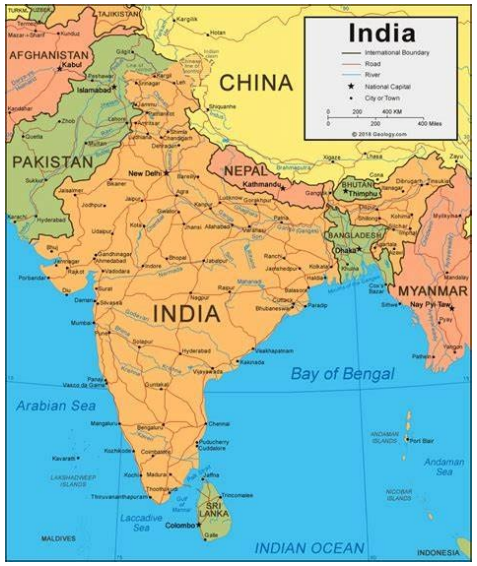
a. lead and follow
b. mirroring
c. action and reaction
d. accumulation
e. complement and contrast
f. counterpoint
g. contact
h. formations.

9. Bollywood

Bollywood dance originates from India and became popular in the 1950s-1960s.

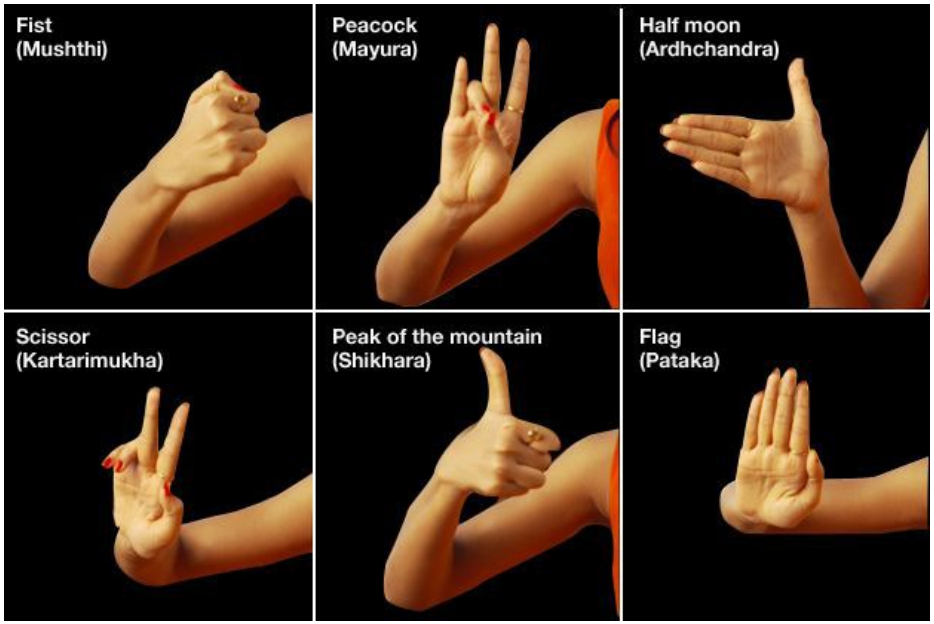
Classical dance forms such as Bharatanatyam and Kathak and folk dances such as Bhangra, each have their own unique styles, but they often share signs and meanings that are combined to create modern Bollywood dances.

Bollywood features various hand gestures, along with dramatic facial expressions.



10. Gestures

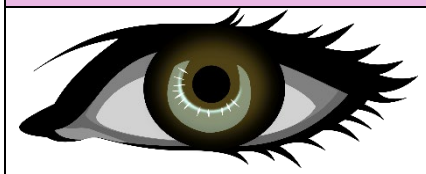
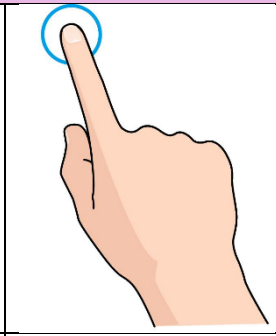
Hand gestures are used in Bollywood dance for storytelling, expression and enhancing visual appeal. These gestures in Bollywood dance are calling mudras and convey emotion, actions and have symbolic meaning. Gestures serve as a bridge between tradition, storytelling and entertainment.



1. Relationships	2. Action	3. Dynamics	4. Space
WHO are we performing with? This is who you are performing with including how many people are in your group.	**WHAT are we performing?** This is the range of movement in your dance piece	**HOW are we performing?** This is how you perform each movement (i.e., the SPEED and ENERGY)	**WHERE are we dancing?** This focuses on how you use the space effectively
Solo-1 dancer Duet-2 dancers Trio- 3 dancers Quartet- 4 dancers Quintet- 5 dancers **a. Unison**- all together at the same time **b. Canon**-one after another **c. Contact-making** - connections with different parts of the body **d. Mirroring**-creating a true reflection of another person's actions **e. Questioning and Answer**-a conversation through movement **f. Lead and Follow-**one person performs a sequence and the rest of the group copies it afterwards **g. Formations** - shapes you create when standing in a space	All dance actions fit into one of the following categories: **jumps, turns, travels, balances, stillness, and transfer of weight** Examples of actions: kicks, rolls, spins, leans, falls, leaps, runs, swings, twist, crouch, etc	Slow, fast, smooth, sharp, jerky, effortless, hard, strong, weightless, aggressive, powerful, free-flowing, soft, graceful, quiet, calm, and sudden. Dynamics are like punctuation in a sentence and are used to create impact and interest in a dance piece	**Directions**-forwards, backwards, stage left, stage right, diagonal **Levels**-low, medium, high **Pathways**-zig zag, circle, linear, wavy

5. Dance Structures	6. Describe your Dance
Every dance we choreograph will be made up of different sections. The structure is the order we put the section of our dance in. There are four basic structures that we can use when choreographing dances:	a. Begin with **Action** content: Eg. Lift your right arm to the side and then above your head before rotating your left shoulder.
a. Binary The two sections are different from each other.	b. Then add the **Space**: E.g Face the audience, standing centre stage.
b. Ternary The three sections are different from each other.	c. Move on to describe the **Dynamics**: E.g Lift your hand slowly, gently over 8 counts.
c. Rondo In this structure there is a section that is always repeated.	d. Finally, the **Relationship**: E.g Mirroring each other.

7. What are the Different Types of Stimulus?

				
a. Visual	**b. Auditory**	**c. Tactile**	**d. Kinesthetic**	**e. Ideational**
Things you can see. E.g Paintings, Pictures, Sculptures, Objects, Patterns, Shapes.	Things you can hear. E.g Music, Natural Sounds, Spoken Poems, Voices, Found/Created Sounds.	Things you can touch. E.g Props, Costumes, Clothing, Material, Objects.	Movement itself or movement ideas. E.g Different Dance Styles, Phrases, Sequences, Movements, Dynamics.	An idea, emotion, story or narrative. E.g Stories, Experiences, Plays, Films, Narrative, Books, Fairy Tales, Emotions.

8. How to create choreography

Step 1. Select your stimulus. This could be a piece of music, poem or artwork for example!

Step 2. Create your main motif using the RADS table. Remember that you need to make sure that these movements clearly communicate your stimulus.

Step 3. Use choreographic devices to extend your choreography and engage the audience.

Step 4. Rehearse and refine. This should be a lengthy process. Be picky!

Step 5. Time to perform. Use all those skills from your first KO.

Step 6. Evaluate and set targets for the next time you go through the choreographic process.

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term – Drama

1. Key Words	Definition	2. Commedia Character	Character Description
A. Commedia Dell' Arte	A style of comedy theatre developed in Italy during the 16th to 18th centuries, with stock characters, who wear half masks to allow them to use speech.	A. Arlecchino	Also known as the Harlequin, he can be the nimble acrobatic tricky servant. Childlike, he can often be played as not too bright but usually wins in the end.
B. Mime	Communicating action, character or emotion without words.	B. Pantalone	A wealthy, miserable old man. A merchant.
C. Trestle masks	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.	C. Il Dottore	The Doctor is a smug, know it all professor, who really knows very little. He can be a doctor of anything, and he can dispense potions and pills, for example a love potion.
D. Stock characters	Characters that are easily identified in a piece of theatre and are in more than one performance.	D. Il Capitano	The pretentious, self-promoting, extravagant and sonorous; ridiculous and cowardly; he boasts of his imaginary conquests at war. Fancies himself as a winner with the women.
E. Slapstick comedy	A style of performance using exaggerated physical activity that create humour.	E. Pulcinella	The argumentative, servant; a loner; he has a fatalistic philosophy and takes great pleasure in violence.
F. Rule of three	Performing a moment of comedy three times with increasing comedic impact each time.	F. Columbina	The captivating lady's maid; coquettish and clever; she manages the plot with wit and benevolence; adored by everyone.

3. Physical performance skill	Definition	4. Vocal Performance Skill	Definition
A. Gesture	Any movement of the actor's head, shoulder, arm, hand, leg, or foot to convey meaning.	A. Tone	a quality in the voice that expresses the speaker's feelings or thoughts, often towards the person being spoken to
B. Movement	Stage blocking or the movements of the actors on stage during performance.	B. Volume	the level of sound produced by an actor
C. Facial expression	Look on face which shows emotions.	C. Pace	The speed at which an actor speaks
D. Posture	Physical alignment of a performer's body, or a physical stance taken by a performer.	D. Pause	a short period where an actor stops speaking before starting again. Used to create meaning or dramatic tension.
E. Body Language	Non-verbal communication by movement or position.	E. Diction	When an actors speaks clearly to deliver their lines.

5. Evaluating Performance	Step One Before Performance	Step Two During Performance	Step Three After Performance Be ready to share your evaluation
A. What went well?	Select either a physical or vocal performance skill to evaluate	While you watch the performance look out for specific examples of how the skill is being used and the impact it has.	The way the group used _____ was very successful because it showed the audience that…… .
B. Even Better If…			The group could improve further by adding ……. This would have shown the audience that…… .

1. Higher Thinking Questions	**2. Mask Techniques**	
A. What am I showing the audience?	A. Four Rules of Mask	1. Never put the mask on or take it off in front of the audience 2. Never touch the mask 3. Do not talk whilst wearing the mask 4. Ensure that you face the front, as much as possible, whilst performing
B. How am I communicating this?		
C. What else can I do to support my acting skills?		
D. How am I showing my character?		
E. What Is my character feeling?	B. Three Steps to Building a Character	1. Copy exaggerated facial expression of the mask 2. Develop exaggerated body language to suit the character. 3. Develop an exaggerated walk to suit the character
F. How do I react to the other characters on stage?	C. Clocking	Ensuring that your face is always focused in the direction of the audience.
	D. Passing the Focus	Moving the audience's attention from one character on the stage to another.
	E. Major & Minor Characters	Major Character: The character that the audience should focus on (of higher importance). Minor Character: The character that the audience should NOT focus on (of less importance).

3. Developing your Evaluation

It created a....
This uncovered... due to...
This created impact by…
This enhanced the performance because…
This helped....
This was detrimental to the performance because…
This was effective because…
They could improve…
Consequently...
Subsequently...
This was evidenced through…
This portrayed...

1. Key themes	Definition
a) Conflict	Conflict is serious disagreement and argument.
b) Racism	Racism is when a person is treated worse, excluded, disadvantaged, harassed, bullied, humiliated or degraded because of their race or ethnicity.
c) Power	The ability to control the behaviour or outcomes of others.
d) Inequality	The unfair situation in society when some people have more opportunities, money, etc. than other people:

2. Form and structure	Description
a) Monologue	A long speech by one character in a play.
b) Stage directions	An instruction in the text of a play indicating the movement, position, or tone of an actor, or the sound effects and lighting.
c) Aside	A passage in a play that is intended to be heard by the audience but unheard by the other characters in the play.
d) Acts	An act is the traditional way a playwright breaks up the action of a play.
e) Scenes	Scenes are the sections that make up the acts. Often a new scene is used to introduce new characters or setting.

3. Characters	
a) Callum	Callum is intelligent and hard-working. He is a Nought. He has a romantic relationship with Sephy.
b) Sephy	Sephy (short for Persephone) is the daughter of the powerful Kamal Hadley. She is a Cross.
c) Meggie	Meggie is Ryan McGregor's wife, she worked for the Hadley family as a member of household staff. However, she was sacked by them.
d) Ryan	Ryan McGregor joins the Liberation Militia. However, as a result of his loyalty to this cause, and his devotion to his family, Ryan is a Nought.
e) Jude	Leader of the terrorist group Liberation Militia and despises all Crosses.
f) Lynette	The older sister of Callum and Jude McGregor; and the daughter of Meggie and Ryan McGregor.
g) Kamal	Kamal Hadley is Sephy's father and a government official, and he regards Crosses as superior to Noughts.
h) Jasmine	Jasmine Hadley is Sephy's mother and despite her family's power and status, she suffers throughout the play due to her husband's neglect.
i) Minerva	Minerva is the older sister of Sephy. She often disagrees with Sephy's positive opinions of Noughts.

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Knowledge Organiser: Year 8 Summer Term - English (Noughts and Crosses: The Play)

4. Key Vocabulary	Definition
a) Dystopian	An imagined society where there is suffering and injustice.
b) Segregation	The action or state of setting someone or something apart from others.
c) Extremism	Taking extreme and violent actions based on beliefs.
d) Radicalisation	The process by which people come to support or partake in terrorism or extremism.
e) Inequality	The unfair situation in society when some people have more opportunities, etc. than other people.
f) Rebellion	Opposing the ideas of the people in authority and planning to change the system, often using force.
g) Retaliation	The act of hurting someone or doing something harmful to someone because they have done or said something harmful to you.
h) Justice	Fairness in the way people are dealt with.
i) Division	Difference or disagreement between two or more groups, typically producing tension.

5. Context	Overview
a) Malorie Blackman	The original author of 'Noughts and Crosses'. Her motivation for the story was: 'I wanted to turn society as we know it on its head in my story, with new names for the major divisions in society. I wanted to see this new world through the eyes of the main two characters, Callum (a nought) and Sephy (a Cross). Race and racism are emotive issues that most people are loathe to discuss, but I think they should be discussed, no matter how painful.'
b) Apartheid	From 1948-1994, the South African government enforced apartheid. This meant that black and white people were forced to live separately, go to different schools and black people could not vote. White people got privileges and ruled the country.
c) Stephen Lawrence	On 22 April 1993, Stephen Lawrence, an 18-year-old Black man, was stabbed to death at a bus stop in Eltham, south-east London by a group of White youths in an unprovoked, racist attack. Stephen's murder changed attitudes to racism.
d) The Little Rock Nine	Life in America in the 1950's meant that in some states Black American children attended 'Black only' schools. The Little Rock Nine was a group of African American high-school students who challenged racial segregation.

1. Extended Vocabulary	Definition
a) Dual narrative	A story that is told from two different perspectives.
b) Story theatre	The structure of Noughts & Crosses is known as story theatre; characters stand back and comment on the action as well as take part. It tends to use very little set and few props, which are carefully selected and designed.
c) Epic theatre	This is a type of political theatre that addresses contemporary (modern) issues in society.
d) Denouement	The final part of a play or narrative where the strands of a plot are drawn together.
e) Degrading	Behaviour that makes someone feel less respected or inferior.
f) Oppression	The prolonged cruel or unjust treatment of a group of people by a higher power or authority.
g) Intolerance	Unwillingness to accept views, beliefs, or behaviour that differ from one's own.
h) Liberation	The action of setting someone free from imprisonment, slavery or oppression.

2. Context	Information
a) Civil Rights	Civil rights are an essential component of democracy. They're guarantees of equal social opportunities and protection under the law, regardless of race, religion, or other characteristics.
b) Play Production	*Noughts & Crosses* was adapted and directed for the Royal Shakespeare Company by British theatre director and writer, Dominic Cooke in 2007.
3. Extension activities	**Details**
a) Compare	Find the plot summary of Romeo and Juliet and compare it to the plot of Noughts and Crosses.
b) Tableaux	Choose 4 key moments in the play and create a still image snapshot of the scenes. Include staging information, props used and characters.
c) Analyse	Use the following analytical verbs to explain what Malorie Blackman's aim in writing this play was: subvert / challenge / criticise / defy / emphasise.
d) Research	Research the following figures who have been influential in racial equality: Rosa Parks, Frederick Douglass, Medgar Evers and Annie Lee Cooper. What did they fight for?

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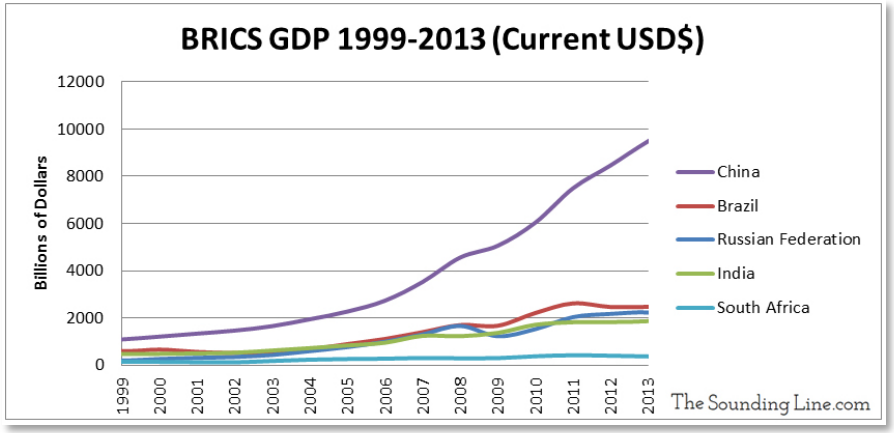
Knowledge Organiser: Year 8 Spring Term - Geography

1.What makes a superpower?

2.What is the right balance of power?

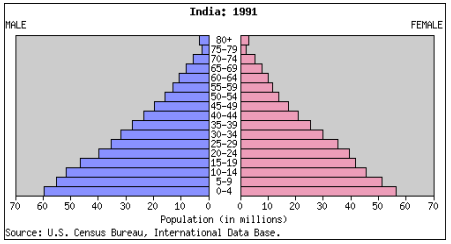
- In the 21st century it has been argued that the most powerful countries use **‘smart power’**: a combination of hard and soft powers to get their own way.
- Hard power can be dangerous as they can cause huge loss of life and retaliation.
- Soft power alone may not persuade one nation to do as another says.
- **Trade can be seen to be one type of smart power.**

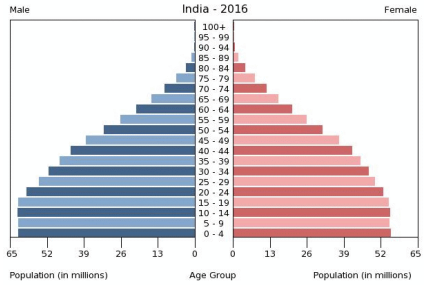
3.How have superpowers changed?

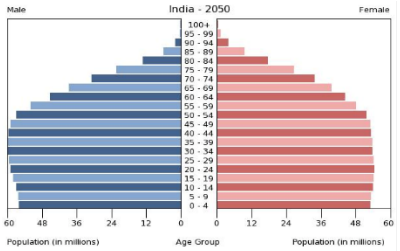


4.Rise of China

5.Rise of India







6.Globalisation

Globalisation is where people, places, trade and communication are more connected than ever due to improvements in technology, travel and industry.

7.Europe & Colonisation

Colonisation resulted in up to 18 million slaves being stolen from Africa and sent to work in European countries or the Americas.	
Africa is a very resource rich continent, with gold, diamonds, minerals, oil and gas.	
European countries divided up the continent between them.	
African countries started to gain independence from the 1950's onwards.	

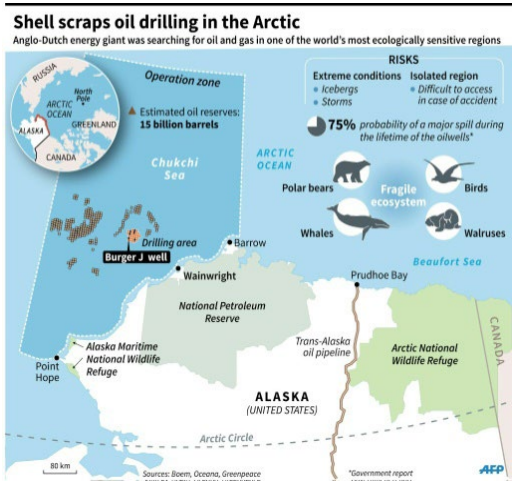
8.Oil in the Arctic

- ¼ of world's undiscovered oil and natural gas may be located in the Arctic Ocean.
- Receding ice caps is increasing the chances of accessing that.

9.Coltan & DRC

- Population: 70 million
- Life expectancy: 48 years
- Has 70% of the globe's coltan.
- Average annual income: $300 (£200).
- With 13% of the world's hydropower potential, its network of rivers could power much of Africa.
- Just 9% of the population has access to electricity.
- Minerals found there would make the DRC one of the richest countries in the world.

8.Oil in the Arctic



10.Russia's resources

11.Resources

Resource Challenges

Resources are things that humans require for life or to make our lives easier. Humans are becoming increasingly dependent on exploiting these resources, and as a result they are in high demand.

12.Russia's red river

- Norilsk is a heavily polluted industrial city and its home to **Norilsk Nickel**, a mining giant company.
- Russia's natural resources and environment ministry said that the blood red colour was possibly caused by a "**break in a Norilsk Nickel slurry pipe**."

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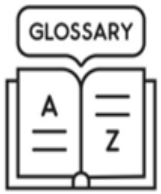
Bourne Scholars Knowledge Organiser: Year 8 Spring Term – Geography

1. Tier 3 Key Words: You must be able to use Geographical terminology in your written work.

Create a glossary for the below key words;

Superpower, hard power, soft power, smart power, resources, exploitation, colonisation, climate change, globalisation, acid rain, renewable energy, non-renewable energy, interdependence.

Then, use these words in written summaries about the topic theory.



2. Geographical Writing: Part of being a Geographer is to write like a Geographer.

Search up acid rain.
Then explain it. See how many words below you can include in your explanation.

Nitrogen Oxide	Sulphur Dioxide	Dissolve
Coal-fired power station	Statue	Rainwater
Fish	Factory	Transport

3. Identifying and explaining: Being able to identify links and explain them.

Identify reasons for China operating in Africa.
Explain why it's created interdependence.

Chinese have paid for new roads, railways, schools and hospitals	During the ebola crisis. China was the first to reach the worst affected areas providing $120 million of medical aid	Often the new roads are built by Chinese workers not providing jobs for local Africans
Africa relies on being able to trade with China and can sell its natural resources (oil, wood, copper) to them	China has military troops in Africa to help keep peace in some countries such as Sudan	1 million Chinese citizens now live in Africa

4. Mapping: You need to be able to locate examples of Geographical events.

Find a blank world map.
Label each MINT and BRICs countries onto the map.
Then search up the human and physical reasons for them emerging as superpowers. Add these to the map.

How might this impact current superpowers?

5. Graphical Skills: It is important to be able to analyse data.

The data shows the most powerful countries in the world. Use the data to explain why they are superpowers. What world events may impact their superpower status? Why?

Country	Overall ranking	Active personnel*	Budget (billions)	Tanks	Aircraft	Aircraft carriers	Submarines
United States	1	2,363,675	$587.8	5,884	13,762	19	70
Russia	2	3,371,027	$44.6	20,216	3,794	1	63
China	3	3,712,500	$161.7	6,457	2,955	1	68
India	4	4,207,250	$51	4,426	2,102	3	15
France	5	387,635	$35	406	296	4	10
United Kingdom	6	232,675	$45.7	249	856	2	11
Japan	7	311,875	$43.8	700	1,594	4	17
Turkey	8	743,415	$8.2	2,445	1,018	0	12
Germany	9	210,000	$39.2	543	698	0	6
Egypt	10	1,329,250	$4.4	4,110	1,132	2	5
Italy	11	267,500	$34	200	822	2	7
South Korea	12	5,829,750	$43.8	2,654	1,477	1	15

6. CATT: To reach the higher levels in Geography, you need to develop all explanations.

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.

Use the sentence starters below to answer the following question: *what makes a perfect superpower?*

C – consequently
A – as a result
T – this means that
T – therefore

Knowledge Organiser: Year 8 Spring Term - History (Conflict in the 20th Century)

A. Summary
In the 20th century, millions of people fought and died in some of the most horrific wars in history. Key causes of conflict were new political ideas such as communism and fascism.

B. Key Words	
1. Proletariat	A collective noun used by Marxists to describe the class of workers
2. Capitalist	An economic and political system in which money and property are controlled by private individuals
3. Communism	An economic and political system in which all property is owned by the state and shared out amongst everyone equally.
4. Dictator	A single strong leader who can do what they want and has complete power.
5. Propaganda	Communications (for example, posters and films) designed to mislead people by giving a very biased view.
6. Police state	A country where the government uses the police to spy on the people and stamps out any opposition.
7. Axis powers	Countries that fought on the side of Nazi Germany in the Second World War (Italy and Japan)
8. Puppet state	A country that appears to be independent but is actually largely controlled by another country.

C. Timeline	
1. Late 19th century	A new political idea called communism was created. This was based on the ideas of German philosopher Karl Marx.
2. 1920s	Increasing numbers of people in Europe became drawn to a new political idea known as fascism. This emerged largely due to unhappiness with democratic governments.
3. 1924	Josef Stalin became the leader of the USSR (Soviet Union) and set about a ruthless programme of industrialisation in which millions of Soviet citizen died.
4. August 1945	America dropped a nuclear bomb, named 'Little Boy', over the city of Hiroshima. Three days later, a second bomb, nicknamed 'Fat Man', was dropped over the city of Nagasaki.
5. 1949	China became communist after a long civil war. The Leader was Mao Tse Tung.
6. 25 June 1950	North Korea launched a full-scale invasion of the south.
7. 1959	After a civil war in Cuba, communists win. The US now had a communist country in its own 'back-yard'. The communist regime infuriated Americans by seizing American property in Cuba and nationalising it.
8. 1961	President John F. Kennedy agreed to the Bay of Pigs invasion in attempt to remove communism from Cuba. It was a complete failure and was an embarrassing humiliation for Kennedy.
9. 1962	USA realised that the USSR had constructed missile bases in Cuba. The implications on US security were enormous, people believed nuclear war was imminent. Due to Kennedy's naval blockade, nuclear war was avoided.
10. 1965	President Johnson authorised the first US combat troops to take part in the Vietnam war following the Gulf of Tonkin incident.

A. Summary
The murder of six million Jews during the Second World War, known as the Holocaust, was a crime worse that any other in human history. However, anti-Semitism has long historical roots.

B. Key Words	
1. Anti-Semitism	Hostility or prejudice directed against Jewish people.
2. Blood Libel	Libel means to make a false and damaging claim about someone or something. 'Blood Libel' refers to the lies spread about Jews committing ritualistic murders.
3. Stereotype	A widely held, but heavily simplified and often untrue view of someone or something.
4. Aryan	In the 19th and 20th centuries, some people believed that Europeans were descended from the ancient 'Aryan' race who were racially superior to other races.
5. Synagogue	A Jewish place of worship
6. SS	Elite Nazi troops. Some operated within the army, others as police. They were heavily involved in running concentration and extermination camps during the holocaust.

C. Timeline	
1. 1066	Jews were involved to England by William the Conqueror to be money lenders
2. 1290	Jews were forced to leave England until the ban was lifted by Oliver Cromwell in 1656.
3. 1881	Jews were accused for being involved in the assassination of Tsar Alexander II.
4. 1905	A book known as The Protocols of the Elders of Zion was published in Russia.
5. 1933	Nazis ordered a boycott of all Jewish shops.
6. 7 April 1933	A law was passed which restricted employment in the German Civil Service to Aryans.
7. 1935	The Nuremberg Laws stated that Jews were forbidden from having sexual relations with Aryans, Jews were forbidden from marrying Aryans and Jews were stripped of their rights as German citizens.
8. November 1938	Nazis unleashed an unprecedented wave of violence against Jews. They looted and smashed 7,000 Jewish businesses. Jewish cemeteries, schools and homes were ransacked. At least 250 synagogues were burned or damaged. Dozens of Jews were murdered.
9. September 1939 – May 1940	German troops took control of most of Europe. Millions more Jews found themselves under Nazi control. Many were forced into ghettos.
10. January 1942	Nazi officials met at the Wannsee Conference, near Berlin. They discussed the 'Final Solution to the Jewish problem'.
11. April 1943	The Nazis made a final attempt to clear the ghetto of Jews and move them to extermination camps. They were met by determined and ferocious armed resistance. Jewish fighters managed to hold out for an entire month.

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 Russian Revolution. Start with Russia before 1905 and finish with the victory of the Bolsheviks.

1.2 Historical Terminology

- Define the following words: Revolutionary, Nationalist, Militaristic, Reichstag, Concentration camps, Allied Powers, Manhattan Project, Proxy war, Nationalise, CIA, Guerrilla, Napalm, Civil Rights Movement.

1.3 Key Features (Historical Knowledge)

- Why has the nature of war changed so much through the 20th century? Explain your answer.

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 what caused war between 1918 and 1990, and what war was like. Place points on the continuum according to how much of a change you think each was.

2.2 Cause and Consequence

- Describe the short-term and long-term consequences of the following events: USA dropping the nuclear bomb on Japan, North Korea invades South Kore and the Cuban Missile Crisis.

2.3 Significance

- How significant was USA dropping the atomic bomb in starting the Cold War? Consider other causes and evaluate the most significant.

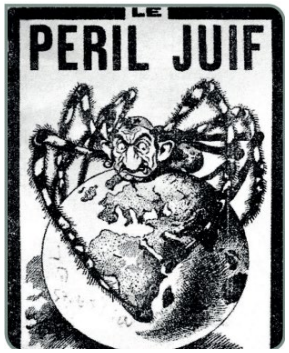
3: Analyse, evaluate and use primary sources to make judgements.

3.1 Valid inferences

- What can you infer from the source about anti-semitism in Europe during the 20th century?

3.2 Nature, Origin, Audience, Purpose

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



An illustration from a 1931 French edition of *The Protocols of the Elders of Zion.* The caption says, 'The Jewish Danger'

3.3 Usefulness

- How useful is this source for an enquiry into anti-semitism in Europe during the 20th century? Why could it be limited?

4: Analyse, evaluate and make judgements about interpretations.

4.1 Identifying views

- What is the view given by Kershaw about how much of a direct role Hitler played in the Holocaust.

4.2 Analysing interpretations

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

4.3 Evaluating Interpretations

- Find two historians' interpretations which support Kershaw's and two historians who counter his view. Who do you agree with? Why?

Nazi activists at different levels of the regime were adept in [good at] knowing how to 'work towards the Fuhrer' without having to wait for a precise Fuhrer order. It seems unlikely that Hitler ever gave one single, explicit order for the 'Final Solution'…he needed do no more than provide…authorisation at the appropriate time to Himmler
From 'Hitlers role in the Final Solution', by Ian Kershaw, published in 2008.

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Knowledge Organiser: Year 8 Spring Term - Hospitality & Catering

(1) Key Word	Definition
a) **Debone**	To remove bones from meat or poultry before cooking.
b) **Hygiene**	Keeping yourself and your kitchen clean to prevent food poisoning.
c) **Gluten**	A protein in wheat flour that gives bread elasticity and structure.
d) **Emulsify**	Mixing two liquids that normally separate, like oil and vinegar in coleslaw dressing.
e) **Contamination**	When harmful bacteria are spread from one food or surface to another.
f) **Cross-Contamination**	Transfer of bacteria between raw and cooked foods.
g) **Bacteria**	Microscopic organisms that can cause food poisoning if not controlled.
h) **Macronutrients**	The organs responsible for gas exchange in mammals, birds, reptiles, and amphibians.
i) **Micronutrients**	Vitamins and minerals needed in small amounts for health.
j) **Personal Hygiene**	Actions that keep the body clean to prevent the spread of bacteria in food.

(3) Macronutrients

Nutrient	Function	Examples
Protein	Growth and repair of cells	Meat, fish, beans, eggs
Fat	Energy, warmth, protects organs	Butter, oil, cheese, nuts
Carbohydrate	Main source of energy	Bread, pasta, rice, potatoes

Macronutrients are nutrients needed by the body in large amounts, including **protein**, **fat**, and **carbohydrates**, which provide energy, growth, and repair.

(4) Micronutrient

Nutrient	Function	Food Source	Deficiency
Vitamin A	Good eyesight, healthy skin	Carrots, eggs	Poor vision
Vitamin C	Healing, immune system	Citrus fruits, peppers	Scurvy
Vitamin D	Strong bones and teeth	Oily fish, sunlight	Rickets
Iron	Carries oxygen in blood	Red meat, spinach	Anaemia
Calcium	Healthy bones and teeth	Milk, cheese	Weak bones

Micronutrients are vitamins and minerals that support good health.

(2) Vegetable cuts

Vegetable cuts are used to improve presentation, ensure even cooking and create professional results. The main cuts include **julienne**, which are thin matchstick-sized strips often used for salads or stir-fries; **brunoise**, which are tiny, neat cubes made from julienne pieces; **baton**, which are thicker rectangular sticks used for crudités or chips; and **chiffonade**, which involves rolling leafy vegetables or herbs like spinach or basil and slicing them into fine ribbons.

1a. Customer Needs
What reasons might customers require different types of food?

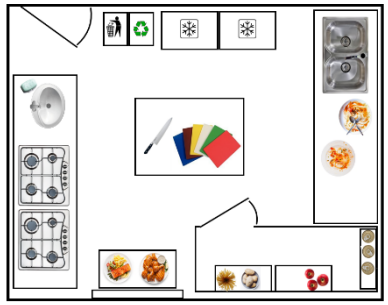
1b. Special diets
Create a table like the example below. Include vegetarian, vegan, Hindu, Jewish, coeliacs, dairy intolerance.

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.



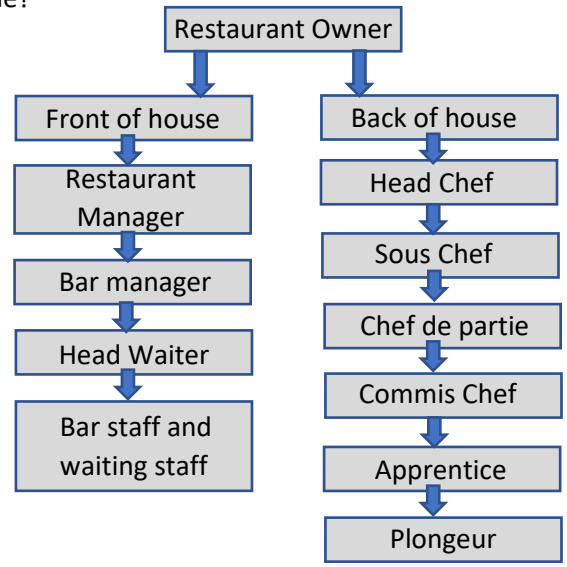
2b. Kitchen operations
For each of the following kitchen operations, write 3 rules about hygiene and safety. The rules should be about how to avoid any accidents or food poisoning. For example, when receiving food check the sell by dates to make sure it is safe to eat.

- 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?



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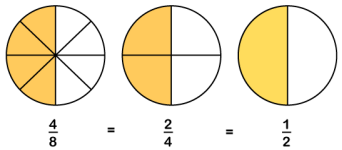
Knowledge Organiser: Year 8 Spring Term - Mathematics (Fractions Decimals Percentages)

1. Keywords

Keyword	Definition	Example
a. Convert	Change from one form to another	Convert 0.25 into a percentage and a fraction
b. Decimal	A non-integer (not a whole number), expressed using a decimal point	
c. Equivalent	Equal in value (the same amount)	$\frac{7}{10} = 0.7 = 70\%$
d. Fraction	A number that represents an **equal** part of a whole. It contains a numerator (top) and a denominator (bottom). The numerator is *divided* by the denominator.	$\frac{1}{4}$ means 1 out of 4 equal parts 
e. Equivalent Fractions	Fractions that have the same value but look different.	
f. Percentage	An amount expressed as a value out of 100	50% means 50 out of 100

2. Worked examples

a) Convert $\frac{13}{20}$ into a **percentage**

Find an equivalent fraction so the denominator is 100

$$\frac{13}{20} \times \frac{5}{5} = \frac{65}{100}$$

This means $\frac{13}{20} = 65\%$

b) Convert 65% into a **decimal**

Write as a fraction out of 100, then divide the numerator by the by 100

$$\frac{65}{100} = 65 \div 100 = 0.65$$

$$65\% = 0.65$$

c) Convert 0.4 into a **fraction**

Turn the decimal into a percentage by multiplying by 100

$$0.4 \times 100 = 40$$

Turn the percentage into a fraction over 100, then simplify

$$\frac{40}{100} \overset{\div 20}{=} \frac{2}{5}$$

$$0.4 = \frac{2}{5}$$

Sparx independent learning codes:

M410, M671, M335, M601, M958, M264, M553, M701, M922

The Bourne Academy

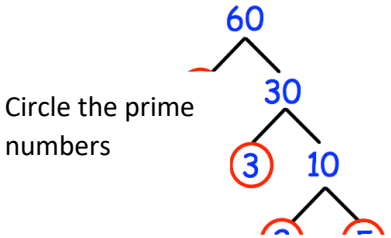
Knowledge Organiser: Year 8 Spring Term - Mathematics (Prime Factor Decomposition)

1. Keywords

Keyword	Definition	Example
a. Index	A number raised to a power to show how many times the number is multiplied by itself	$2^3 = 2 \times 2 \times 2$
b. Prime number	A prime is a number that has only two factors which are 1 and itself	2 is a prime number because it can only be divided by 1 and itself
c. Product	Multiply	The product of 4 and 5 is 20 because 4 x 5 = 20
d. Factor	Factors are the **positive integers (whole numbers) that can divide a number evenly.**	$30 \div 5 = 6$ 5 and 6 are factors of 30
e. Multiple	The result of multiplying a number by an integer (whole number)	The first four multiples of 3 are: 3, 6, 9, 12
f. Lowest Common Multiple (LCM)	The smallest number that is a multiple of each number	The LCM of 3 and 4 is 12
g. Highest Common Factor (HCF)	The biggest number that divides exactly into two or more numbers	The HCF of 6 and 15 is 3

2. Worked examples

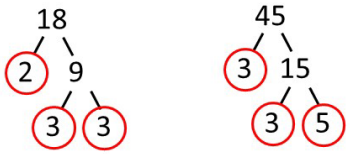
a) Express 60 as a product of its prime factors



$60 = 2 \times 2 \times 3 \times 5$

In index form

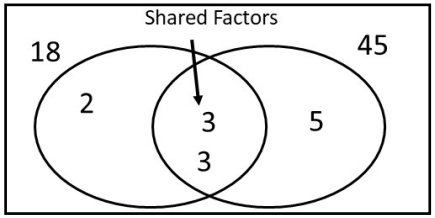
1. Complete Prime Factorisation for both numbers



$18 = 2 \times 3 \times 3$

$45 = 3 \times 3 \times 5$

2. Input the Prime Factors into a Venn diagram



b) Find the HCF and LCM of 18 and 45

3. HCF = Product of shared factors

$3 \times 3 = 9$

4. LCM = Product of all factors in the diagram

$2 \times 3 \times 3 \times 5 = 90$

Sparx independent learning codes:

M823, M322, M108, M365

1. Keywords

Keyword	Definition	Example
a. Ratio	A way in which amounts can be **divided** or **shared**	**Share** £60 in the ratio $3:2$
b. Simplest form	Ratios can be **simplified** by finding **common factors.**	6:8 ÷ 2 ÷ 2 → 3:4
c. Equivalent ratios	When both sides of a ratio can be **multiplied or divided by the same number** to give an equivalent ratio.	8:12 ÷ 2 ÷ 2 → 4:6 ÷ 2 ÷ 2 → 2:3
d. Direct proportion	Ratios are in direct proportion when they **increase or decrease in the same ratio.**	500 sheets of paper $= 2.5kg$ 50 sheets of paper $= 0.25kg$
e. Inverse proportion	Ratios are in inverse proportion when one increases as the other decreases.	It takes **5 builders 4 days** to build a roof. It will take **10 builders 2 days** to build a roof if they work at the same rate.
f. Conversion	To change a value from one form or unit to another.	There are 100 centimetres in 1 metre

Sparx independent learning codes:
M885, M801, M267, M525, M543, M478, M681, M472, M665, M448

2. Worked examples

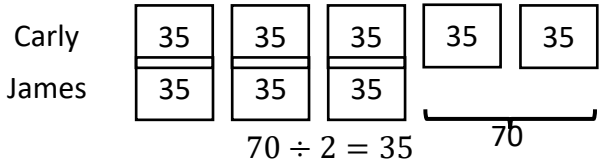
a) Will and Olly share £40 in the ratio $3:2$
Work out how much money each of them gets

$3 + 2 = 5$
$40 \div 5 = 8$

$W : O$
$3 : 2$ (×8 on each side)
$24 : 16$

Will gets £24 and Olly gets £16

b) Carly and James share some money in the ratio $5:3$
Carley gets £70 more than James.
Work out how much money James gets.



$70 \div 2 = 35$
$3 \times 35 = 105$
James gets £105

The Bourne Academy

Bourne Scholars Knowledge Organiser: Year 8 Spring Term - Mathematics

1. Mathematical Vocabulary

Define each of the words given.
Give an example for each.

a. Irrational numbers
b. Surds
c. Recurring fractions

2. Mathematician Research

Who are they?
What are they famous for?
What contributions have they made to maths?

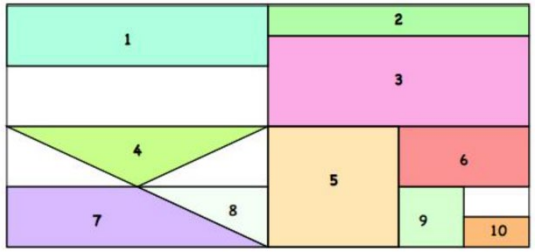
Ada Lovelace

3. Watch

BBC Magic Numbers Mysterious World of Maths 2of3 720p HDTV x264 AAC MVGroup org - YouTube (58 mins and 58 secs)

4. Thinking Mathematically

a. Fractions Rectangle



The large rectangle above is divided into a series of smaller quadrilaterals and triangles. Each of the shapes is a fractional part of the large rectangle. Can you untangle what fractional part is represented by each of the ten numbered shapes?

b. Counting Factors

i. Charlie wants to work out the factors of 360. What is the most efficient way to do this?
ii. Charlie ended up using prime factors and looked at all the different ways that the number could be made up.
iii. Charlie realises that there are 24 factors. How many other numbers have exactly 24 factors?
iv. What is the smallest number with exactly 100 factors?
v. Which number less than 1000 has the most factors?

c. Thousands and Millions

i. Do human beings live for as long as a **million** hours?
ii. If you have been alive for a **million** seconds, how many birthdays have you had?
iii. What year was it one **billion** minutes ago?
iv. How long would it take to count to a **million**?
v. Suppose you were worth your weight in £1 coins. How much would you be worth?
vi. Could you fit the population of London into **one hundred thousand** double-decker buses?
vii. Could you run **one thousand metres** in one minute?
viii. Could you eat exactly **one tonne** of food in a year without altering your weight dramatically?
ix. Could you walk as much as **one hundred thousand** miles during your lifetime?
x. Could **one thousand** drink cans fit into one cubic metre?

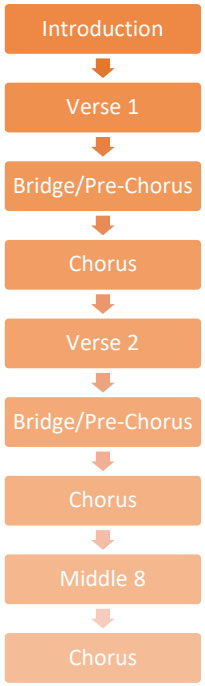
5. Short Problems

a. The time shown on a digital clock is 5:55. How many minutes will pass before the clock next shows a time for which all the digits are the same?
b. A boy has the same number of sisters as brothers. Each of his sisters has only half as many sisters as brothers. How many brothers and sisters are in the family altogether?
c. An athletics club has two types of member: junior and adult. The junior members are either boys or girls. There are 16 more adult members than there are junior members. The ratio of girls to boys to adults is 3:4:9. In total, how many members does the club have?
d. The Bean family are very particular about beans. At every meal all Beans eat some beans. Pa Bean always eats more beans than Ma Bean but never eats more than half the beans. Ma Bean always eats the same number of beans as both children together, and the two children always eat the same number of beans as each other.
At their last meal they ate 23 beans altogether.
How many beans did Pa Bean eat?

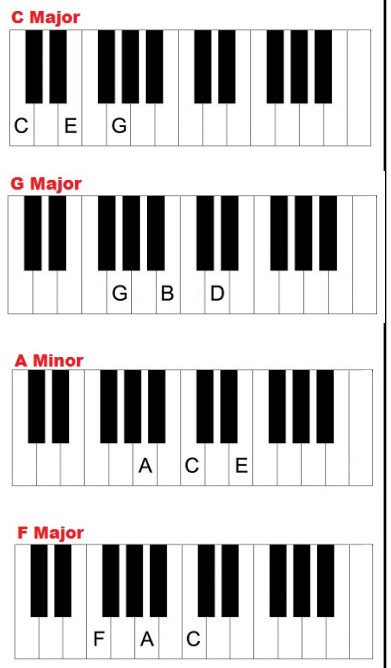
1. The 4 chord song keywords

a. Intro	The first section of a song which sets the mood of the song and is sometimes, but not always, an instrumental section using the song's chord pattern.
b. Pre-Chorus	An optional section of music that occurs before the chorus which helps the music move forward and "prepare" for what is to come.
c. Middle 8	A section (often 8 bars in length) that provides contrasting musical material often featuring an instrumental.
d. Melody	The main tune of the song often sung by the Lead singer.
e. Structure	The different sections or parts of a piece of music and how they are ordered, the overall shape of the music.
f. Texture	The layers that make up a song e.G., Melody, hooks/riffs, chords, bass line, drums.
g. Lyrics	The words of the song.
h. Riff	The catchy part of a song usually played on guitar or keyboard.
i. Rhythm	The different lengths of notes e.g Chips, Bur-Ger.
j. Verse	A section of a song. The lyrics change for each verse but the melody stays the same.
k. Chorus	A section of a song. The lyrics and melody are repeated in each chorus.

2. Typical structure of a pop song



3. Chords



4. Chord Charts

- A lot of pop songs only use 4 chords throughout. This makes them catchy and easy to learn.
- Chord charts are an easy method of writing and reading music. They tell you how many beats each chord is played for by using a forward slash / to indicate the remaining beats.

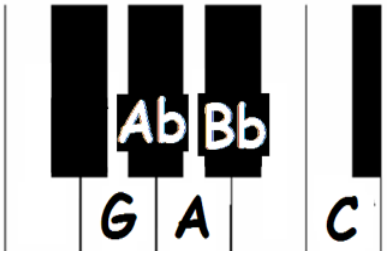
e.g:

C/// | G/// | Am/// | F///

5. Blues Keywords

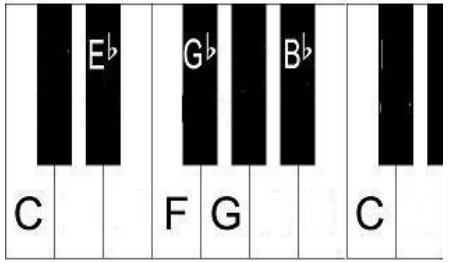
a. Improvisation	Music created 'on the spot' (previously unprepared performance)
b. Chord/triad	3 notes played at the same time (root, third and fifth)
c. Twelve Bar Blues	A specific sequence of chords (1, 4 and 5). For example, C – F – G
d. Seventh Chord	A triad (root, third and fifth) with a fourth note added which is seven notes about the root/tonic. C7 = C , E, G (triad) + B flat.
e. Swing/ swung rhythm	Performing a regular 'straight' rhythm with a 'lilt' in a "one and a, two and a" style (using triplets) common in swing music.
f. Scale	A series of notes which can be used when improvising.
g. Bass line	The lowest pitched part of the music often played on bass instruments such as the bass guitar or double bass. RIFFS are often used in BASS LINES.
h. Blues notes	Additional or extra sharpened or flattened notes in a melody.

6. The Bass Line



Played low pitch, on the left side of the keyboard with your left hand. It is a descending line starting on the note of C.

7. The Blues Scale



The notes of the Blues Scale are used to create melodies and improvisation, on right side of the keyboard with your right hand, in Blues music.

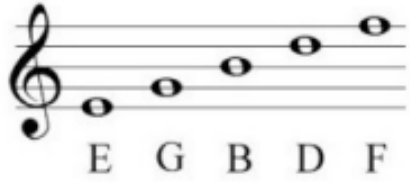
8. Notes on the Bass Guitar

9. The Structure of Blues Music

Twelve Bar Blues Chord Sequence			
CHORD I **1**	CHORD I **2**	CHORD I **3**	CHORD I **4**
CHORD IV **5**	CHORD IV **6**	CHORD I **7**	CHORD I **8**
CHORD V **9**	CHORD IV **10**	CHORD I **11**	CHORD I **12**

1) Notes on the Stave

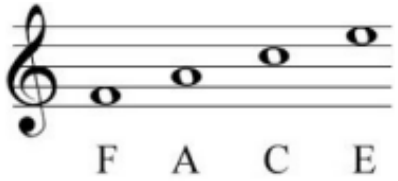
Notes on the lines.



I remember where the pitches are by the rhyme, from bottom to top:

Fit _____
Don't _____
Boots _____
Green _____
Eddie's _____

Notes in the spaces.

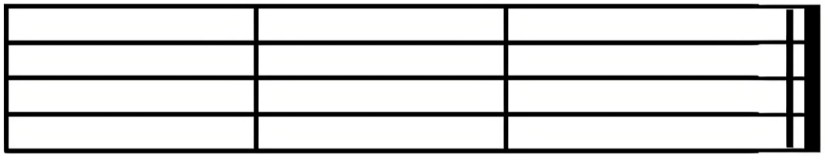


I remember where the pitches are by the rhyme, **FACE** in the spaces:

_____
E
_____
C
_____
A
_____
F
_____

2) Bar Lines

Music on the stave is divided into bar lines. If the time signature is 4/4, after the fourth beat there is a bar line. The lines divide the music into chunks of 4 beats.

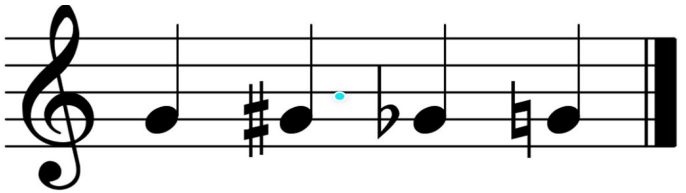


Bar Lines

A double bar line is placed at the end of the stave to signify the end of the music

3) Accidentals in music

Sharps (#) and flats (b) are accidentals. They are written into the music.
This is G#. You play the black note to the right of the G on the keyboard.
This is Gb. You play the black note to the left of the G on the keyboard.
A key signature at the beginning saves writing all the accidentals into the music.
If the key signature shows F#, then all the Fs in the music are played sharp.



1. Tactical Awareness	
a) Shot selection	Choosing the most effective type of shot for the situation, such as using a drop shot to bring an opponent closer to the net or a lob to push them back.
b) Positioning	Placing yourself in the best location on the court to return the next shot. Good positioning helps you move less and react faster.
c) Exploiting Weaknesses	Identifying what your opponent struggles with (e.g. backhand shots or slow movement) and playing shots that force them into those situations.
d) Recovery	Returning to a balanced and central ready position after every shot so you're prepared for the next one efficiently.
e) Disguise	Intentionally making a shot look like one type (e.g. a smash) but playing a different one (e.g. a drop shot) to outsmart your opponent and reduce their reaction time.
2. Technique	
a) Forehand	Side-on stance, contact in front of body, smooth swing, follow through towards target.
b) Backhand	Turn body, use backhand grip (thumb on handle), step into shot, controlled follow through.
c) Drop Shot	Same preparation as a clear/smash, soft touch, aim just over the net, recover quickly.
d) Smash	Side-on, contact at highest point, strong wrist snap, drive the shot downwards, return to ready position.
e) Lob	Relaxed grip, hit under/behind shuttle/ball, aim high and deep, regain central court position.

3. Rules and Regulations of Pickleball	
a)	The serve must be hit underarm, below the waist, and the ball must be hit into the opponent's diagonal service box.
b)	After the serve, the receiving player must let the ball bounce once before returning it.
c)	The serving team must also let the return bounce once before hitting. (This is called the Two-Bounce Rule.)
d)	Players cannot hit the ball out of the air (no volleys) while standing in the Non-Volley Zone (the "Kitchen"), the area near the net.
e)	Once the two-bounce rule is complete, players may volley (hit in the air) as long as they are outside the Kitchen.
f)	Only the serving team scores points. Games are usually played to 11 points, but you must win by 2.
g)	A fault happens if the ball goes out, hits the net and fails to go over, is volleyed in the Kitchen, or a bounce is missed.

4. Key Vocabulary	
a) Rally	A continuous sequence of shots hit back and forth between players during play. It ends when the ball is missed or goes out.
b) Footwork	The way a player moves their feet into the best position to hit the ball effectively. Good footwork helps maintain balance and control.
c) Grip	The way a player holds the racket. Different types of grips allow players to hit different shots accurately with power.
d) Serve	The shot that starts a point. The player must follow the specific serving rules for the sport they are playing (e.g. underarm in pickleball).
e) Follow Through	The continuation of the racket's movement after the ball has been hit. A good follow through helps improve control and accuracy.
f) Anticipation	Predicting what your opponent is going to do next so you can move early and prepare your next shot more effectively.

1. Higher Order Thinking	2. Research
a) Compare how accuracy is used differently in badminton and volleyball. b) Justify why reaction time is more important than power in some net games, but power is more important in others. c) Evaluate the performance of a professional tennis player (do not name them). Identify which technical skills (e.g., footwork, timing, shot selection) make them effective and why.	a) Choose one net game and identify the key movement patterns required (e.g., side-to-side movement, lunging, jumping). Explain why these movements are needed. b) Research and complete the Ruler Drop Test. Record your score and suggest one method to improve reaction time.
3. Application	**4. Analysis**
a) Watch a pickleball rally. Describe the strengths and weaknesses of both players' shot selection and movement. b) Create a simple hand-racket or balloon-volleyball activity suitable for Year 4 students to develop accuracy. Explain how your game helps improve control and coordination.	Tennis can be played on clay, hard and grass courts. Watch an example of each. a) Write down what differences you can see in each game (e.g., how the ball bounces) b) Analyse how players change how they play tennis based on the surface that they use.

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term – Religious Studies

1. Key Words

a) Morality – Principles & standards determining right or wrong actions

b) Absolute Morality: Absolute morality is when a person has a principle and **never alters it**. They apply **this principle or moral standard to all situations**, no matter what the context or circumstance.

c) Relative Morality: When a person holds a moral principle but is prepared to adapt or adjust it in certain situations.

d) Forgiveness – To grant a pardon for a wrongdoing; to give up resentment and the desire to seek revenge.

e) Sin – deliberate immoral action, breaking a religious or moral law

f) Suffering - Pain or distress caused by injury, illness, loss, Emotional / psychological, physical, or spiritual

h) Good – considered morally right, beneficial or to our advantage

i) Evil – considered extremely immoral, wicked, or wrong

j) Free Will – Ability to make choices voluntarily and independently.

k) Justice – Fairness and equal provision

2. How do we make moral decisions?

Conscience, the Law, Past Experiences, Religious Leaders, Religious Teachings, Situation Ethics, Utilitarianism, Reason and Logic.

3. Gee Walker: practising Christian and mother of Anthony Walker, who was murdered in a racial attack in Liverpool in 2005

'Unforgiveness makes you a victim and why should I be a victim? Anthony spent his life forgiving. His life stood for peace, love and forgiveness and I

4. Mahatma Ghandi: Hindu leader - *'The weak can never forgive. Forgiveness is the a tribute of the strong.'*

5. Religious Attitudes towards forgiveness: Christians

- Forgiveness is a prominent theme within Christianity and within the Bible as a whole.
- Christianity is known as a religion of forgiveness, love and compassion, and these themes are evident in religious teachings and the example of Jesus and other leaders within the faith such as Martin Luther King. Jesus' teachings
- The Bible clearly instructs Christians to forgive: 'Do not judge, and you will not be judged.
- Do not condemn, and you will not be condemned. Forgive, and you will be forgiven.' Luke 6:37
- The importance of forgiveness is emphasised in the Lord's Prayer. Christians ask God to 'forgive their sins, as they forgive those who have sinned against them'.

6. Religious Attitudes towards forgiveness: Muslims

- The Qur'an states that those who forgive others will be rewarded by God and that forgiveness is the path to peace.
- Islam accepts that human beings are not perfect and that everybody makes mistakes in life and unknowingly sins.
- Within Islam there are two kinds of forgiveness: God's forgiveness and human forgiveness.
- Human beings need both as they make mistakes in their actions towards each other and their actions towards God.
- According to the Qur'an, there is no limit to God's forgiveness. The words 'God is Oft-forgiving, Most Merciful' are repeated many times throughout the Qur'an.
- In the Qur'an it says: 'God loves those who turn unto Him in repentance, and He loves those who keep themselves pure.

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term Religious Studies

1. Key Words

a) Good – considered morally right, beneficial or to our advantage

b) Free Will – Ability to make choices voluntarily and independently. Nothing predetermined

c) Justice – Fairness, equal provision, and opportunity

d) Punishment – Penalty for a crime or wrongdoing

e) Crime: An unlawful act breaking government laws which is punishable by the state, e.g., theft, speeding, assault

f) Suffering - Pain or distress caused by injury, illness, loss, Emotional / psychological, physical, or spiritual

2. Aims of Punishment

a) Protection – protecting society
b) Vindication – upholding the law / punishment justified
c) Deterrence – discouraging others
d) Reform – making someone change, e.g. through education or therapy
e) Reparation – repairing damage
f) Retribution – punishment inflicted as vengeance or revenge

3. Christian Attitudes towards the Death Penalty

Liberal Christians Most Christians believe that only God has the right to take a life.

Execution goes against the sanctity of life, as all life is precious and only God should end it. 'Thou shalt not kill' (Exodus 20:13), Jesus taught compassion and forgiveness

Jesus was forgiving to the adulterous woman (John 8) and his executioners to be forgiven when he was on the cross: 'Father forgive them, for they know not what they do'. Luke 23:33–34

Conservative Christians Some Christians advocate the death penalty, seeing it as following the Old Testament law of 'an eye for an eye'.

In the Old Testament it states: 'Whoever sheds the blood of man, by man shall his blood be shed' Genesis 9:6 In total, the Old Testament specifies 36 capital offences including crimes such as idolatry, magic and blasphemy, as well as murder.

Some Christians also argue that capital punishment upholds the commandment 'thou shalt not kill' by showing the seriousness of the crime of murder.

4. For Death Penalty

- Life terms in prison are very expensive – £40,000 per year.
- Some people cannot be reformed.
- Victims can experience closure.
- Needs to be an ultimate punishment for the worst crimes.
- Execution protect society from very dangerous murderers and terrorists

5. Against Death Penalty

- The death penalty is state-sanctioned murder
- Innocent people have been executed.
- The death penalty does not deter murderers. Only God has the right to end a life.
- Two wrongs do not make a right.
- The state should be a moral force for good.
- Forgiveness is important

6. Muslim Attitudes towards the Death Penalty

Islam accepts capital punishment. Some Muslims believe that capital punishment is a severe sentence but one that can be issued for the most severe crimes under Shar'iah law. Some Muslims agree that this 'just cause', for which the death penalty is permitted, is the crimes of murder.

'Nor take life which God has made sacred, except for just cause' (Qur'an 17:33

There is a growing number of Muslims who disagree with the death penalty and call for it to be abolished, as forgiveness is important.

A. Challenge Tasks	B. Research Challenge	C. Wider Links Challenge
1. Create 10 true or false statements on today's topic 2. Transform your learning into a series of images using up to 5 words 3. Plan an alternative lesson about what we have learnt today 4. Construct a timeline showing your learning through today's lesson 5. Produce a summary of today's lesson – then reduce the number of words used to a single sentence or three bullet points 6. Select 5 key terms that you have used today and create a summary using those terms 7. Create 5 questions your teacher might ask about today's learning 8. Use a thesaurus to add more ambitious vocabulary into your work 9. If today's lesson were an album or a newspaper heading, what would it be called? What songs would be on it? 10. Add a justified conclusion to your evaluative writing	**Good and Evil Individuals** 1. Research Elizabeth Fry on prison reform 2. Research John Howard on prison reform 3. Research Gee Walker on forgiveness 4. Research Azim Khamisa – founder of the Tariq Khamisa Foundation (Islam) on forgiveness 5. Research Mahatma Gandi (Hinduism) on forgiveness **Human Right Groups** 6. Research the role of prison chaplains 7. Research Amnesty International 8. Research Humanists – who are they? What do they stand for? 9. Research Christian attitudes towards crime 10. Research Muslim attitudes towards crime 11. Research your own role model / organisation that you think has helped support vulnerable members of society with avoiding crime.	1. Use the internet to find any examples of restorative justice 2. Evaluate are prisons effective? Do are they schools for criminals? 3. Evaluate is the death penalty effective as a form of punishment? 4. Describe the impact of today's learning on your wider outlook 5. Explain how you might use today's learning outside of school 6. Describe how today's learning relates to another of your subjects 7. Think of different careers that today's lesson might link to and could support

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term - Science (B5 Respiration and Photosynthesis)

(1) Key Terms	Definitions
a) Chlorophyll	Green pigment in chloroplasts of plant cells. It enables (allows) photosynthesis to take place.
b) Chloroplasts	Contain the green pigment (colour) chlorophyll, which absorbs the light energy plants need for photosynthesis.
c) Fertilisers	Chemicals that contain minerals that plants need to build new tissue (grow).
d) Lung	Soft organ that inflates to draw in oxygenated air and deflates to exhale (breathe out) air.
e) Mitochondria	Organelles in the cytoplasm of cells. Respiration takes place in the mitochondria.
f) Oxygen debt	The amount of extra oxygen required by the body for recovery after vigorous (hard) exercise.
g) Photosynthesis	Process carried out where plants make their own food. carbon dioxide + water → glucose + oxygen
h) Respiration	A chemical reaction in living things which oxygen is used to release the energy from food. glucose + oxygen → carbon dioxide + water (+energy)
i) Stomata	Pores in the bottom of a leaf which open and close to let gases in and out.

(2) Respiration – the process of releasing energy from glucose. It is a chemical reaction that takes place within all cells.

Aerobic respiration – respiration with oxygen

glucose + oxygen → carbon dioxide + water (+ energy)

Anaerobic respiration – respiration without oxygen

glucose → lactic acid (+energy)

Less energy is released during anaerobic respiration, and lactic acid builds up in the muscles, causing pain. Aerobic respiration is required for short, vigorous bursts of exercise.

Respiration is an **exothermic** reaction. This means that it releases energy.

Respiration is needed for life processes such as:

- growth and repair
- movement
- control of body temperature (in mammals)

(3) Photosynthesis

Plants do not eat but use energy from light, with carbon dioxide to produce glucose (food) through photosynthesis.

They use the glucose either as an energy source, or to store it for later use.

water + carbon dioxide (+ energy) → glucose + oxygen

Photosynthesis is an **endothermic reaction. This means that it absorbs energy.**

Photosynthesis takes place in organelles called chloroplasts, which contain a green pigment (dye) that helps the plant to absorb light energy.

Almost all life on the planet depends on photosynthesis.

(1) Key Words	Definitions
a) Activation Energy	The minimum (smallest)amount of energy that colliding particles must have for them to react.
b) Catalyst	A substance that increases the rate of a reaction but is not itself used up.
c) Carbon particulates	This is another word for soot (the black powder that forms on the bottom of barbeques or Bunsen burners).
d) Combustion	Another word for burning in oxygen.
e) Displacement	A more reactive metal will displace ('kick out') a less reactive metal in a reaction
f) Endothermic	Reactions that take in heat energy – the temperature will decrease.
g) Exothermic	Reactions that give out heat energy. The temperature will increase
h) Fuel	Contain hydrocarbons – compounds containing hydrogen and carbon atoms only.
i) Hydrocarbon	A molecule that is made of hydrogen and carbon only.
j) Oxidation	Reaction of other elements with oxygen
k) Reactivity series	List of metals in order of reactivity.
l) Thermal Decomposition	When a substance is broken down into 2 or more products by heat.

K
Na
Ca
Mg
Al
Zn
Fe
Cu
Au
Pt

(2) The Reactivity Series

The reactivity series of metals tells us how reactive a metal is. The more reactive metals are at the top and unreactive metals are at the bottom.

A more reactive metal can take the place of a less reactive metal in a reaction. We call this a displacement reaction.

copper sulfate + iron → iron sulfate + copper

(3) Exothermic and Endothermic Reactions

An **exothermic** reaction **releases energy** to the surroundings and there is an increase in temperature.

An **endothermic** reaction **absorbs energy** from the surroundings and there is a decrease in temperature.

(4) Combustion Reactions

Combustion means 'burning in oxygen'.

Complete combustion happens when there is plenty of oxygen for all the fuel to burn.

hydrocarbon + oxygen → carbon dioxide + water

Incomplete combustion happens when there is insufficient oxygen for the fuel to burn completely.

hydrocarbon + oxygen → carbon monoxide + water

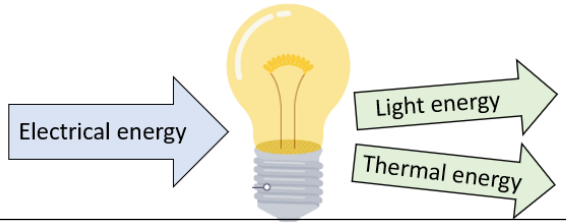
(1) Key Word	Definition
a) Dissipate	Spreads out wastefully into the surroundings
b) Energy Transfer	Changes from one form of energy to another form of energy.
c) Force	A push, a pull or a twist that acts on an object.
d) Joule (J)	Joules are the units of energy.
e) Power (P)	The rate of work done (how much work is done in a particular time), or the amount of energy transferred every second.
f) Watt (W)	Watts are the unit of Power. A kW is 1000 W
g) Work Done (J)	When a force moves a particular object a certain distance, we say that is work done. Energy is transferred as the object is moved.

(3) Energy Store	Description
a) Gravitational Potential (GPE)	Anything that can be lifted by against a gravitational field
b) Chemical	Energy that can be released by a chemical reaction.
c) Kinetic Energy	Anything that moves has a kinetic energy store.
d) Elastic Potential	Anything that is stretched, or compressed.
e) Thermal Energy	Everything has thermal energy. Hotter objects have more thermal energy.
f) Magnetic	Magnets that attract or repel each other.
g) Electrostatic	Electric charges that attract or repel each other.
h) Nuclear	Energy stored in the nucleus of atoms.

(2) Energy Transfers

Energy cannot be destroyed, or created. It can only be **transferred** from one energy store to another.

Some energy transfers are useful to us, for example energy is transferred electrically to a light bulb and then light energy is transferred so that we can see. Some energy is always transferred as heat energy. This is not useful to us. **It is wasted energy**.

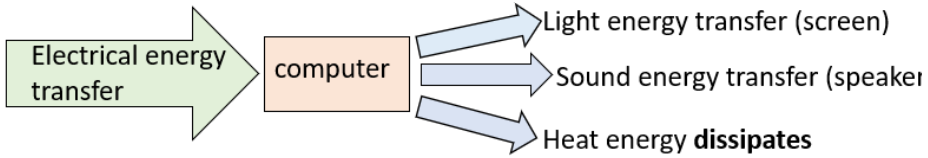


The heat energy **dissipates** into the surroundings. It is not useful energy.

(4) Energy Transfers

Energy Transfer	Description
a) Mechanically	When a force makes something move.
b) Heating	Hotter objects transfer energy to cooler objects
c) Electrically	When electric charges move around a circuit.
d) Light and Sound	Waves transfer energy between places.

Learn the energy transfers that take place when a computer is switched on.



(5) Energy and Work – moving objects

Energy is transferred when a force moves an object over a distance. Energy is transferred to the **kinetic energy store**. We call this **work done.**

Learn the equation to calculate work done

Energy transferred / Work done (J) — Force (N) — distance (m)

E = F x d

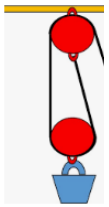
Work done = Force x distance

The bigger the force, the more work is done – the more energy has been transferred.

Remember – Energy transferred and work done are the same thing!

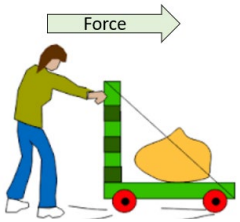
(6) Machines and Work done (energy transferred)

A simple machine is a device that can change the direction, or force of an object to make it easier to move. Machines transfer energy (do work).



The pulley reduces the distance the load is moved.

The trolley has wheels, which reduces friction.



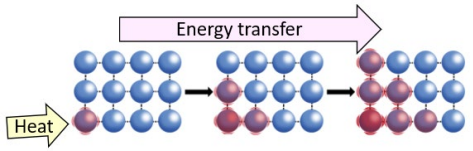
(7) Heating and Cooling

Hotter objects transfer energy to cooler objects by heating them. The hotter object cools down and the cooler object heats up.

Thermal energy is transferred in three ways:

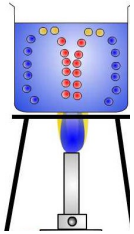
Conduction

Vibrating particles in a **solid** transfer energy to their neighbouring particles. The particles MUST be touching for heat transfer by conduction.



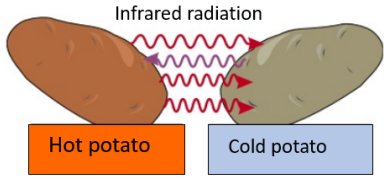
Convection

Particles in a **fluid** (liquid, or gas) can move. Convection happens when particles with more thermal energy rise in the liquid and take the place of particles with less thermal energy. This forms currents within the liquid.



Radiation

All objects transfer energy to the surroundings by infrared radiation (IR). the hotter an object is, the more IR it emits (gives off). Energy transfer by radiation happens even if the particles aren't touching (radiation can happen in a vacuum).



(8) Key Word	Definition
a) Finite resource	A resource that will run out.
b) Fossil fuel	A fuel formed from the remains of living organisms, for example coal and gas.
c) Geothermal	Heat energy from under the ground
d) Hydroelectric	Electricity generated by the movement of water
e) Kilowatt hour (kWh)	Unit used by energy suppliers. The energy used by a 1kW appliance for 1 hour.
f) Non-renewable	A resource that cannot be replaced when it is used up.
g) Power (W)	How quickly energy is transferred by a device
h) Renewable	An energy source that will not run out – it can be replaced.
i) Watt (W)	Watts are the unit of Power. A kW is 1000 W

(9) Energy in Food

Energy stored in food is released by **respiration**. The energy stored in food is shown on food packets. It is sometimes shown as calories, or kJ (kilojoules).

1 kJ = 1000J

Example 21kJ = 21 000 J

(10) Generating Electricity

Fossil fuels are a **non-renewable** energy source. They are described as **finite**. This means they will eventually run out. It is important to find alternative, and renewable (can be used again and again) methods of generating electricity. Some alternative methods are listed below. Each method is renewable and has advantages and disadvantages:

- Wind turbines – renewable and inexpensive to run but the wind does not always blow.
- Solar cells – renewable and inexpensive to run but very expensive to set up and it is not always sunny.
- Hydroelectric power stations – renewable and inexpensive to run but very expensive to set up.
- Tidal generators - renewable and inexpensive to run but very expensive to set up and hazardous for wildlife.




1) Key Terms	Match Definitions to Key Words
a) Chlorophyll	The amount of extra oxygen required by the body for recovery after vigorous (hard) exercise.
b) Chloroplasts	Process carried out where plants make their own food. carbon dioxide + water → glucose + oxygen
c) Fertilisers	Pores in the bottom of a leaf which open and close to let gases in and out.
d) Lung	Green pigment in chloroplasts of plant cells. It enables (allows) photosynthesis to take place.
e) Mitochondria	A chemical reaction in living things which oxygen is used to release the energy from food. glucose + oxygen → carbon dioxide + water (+energy)
f) Oxygen debt	Chemicals that contain minerals that plants need to build new tissue (grow).
g) Photosynthesis	Soft organ that inflates to draw in oxygenated air and deflates to exhale (breathe out) air.
h) Respiration	Organelles in the cytoplasm of cells. Respiration takes place in the mitochondria.
i) Stomata	Contain the green pigment (colour) chlorophyll, which absorbs the light energy plants need for photosynthesis.

2) Respiration

a)State the definition of respiration.
b) Write the equation for aerobic respiration.
c) Write the equation for anaerobic respiration.
d) State the difference between aerobic and anaerobic respiration.
5) Both types of respiration require glucose. Where does this glucose come from?
f) What store of energy does glucose contain?
g) What type of chemical reaction is respiration? Explain your answer.
h) When will your body undergo anaerobic respiration?
i) What is oxygen debt and how is this relevant to respiration?
j) What life processes is respiration needed for?
k) What happens to the rate of respiration when you go for a jog. Explain your answer.
l) Someone who has emphysema may become quite lethargic after a short period of activity. Explain why.
m) What organelle in your cells is the site of respiration?

3) Photosynthesis

a) State the definition of photosynthesis.
b) What organelle in a plant is the site of photosynthesis?
c) What type of chemical reaction is photosynthesis? Explain your answer.
d) In photosynthesis, where does the plant obtain water from?
e) In photosynthesis, what is the glucose produced used for?
f) How would you expect the rates of photosynthesis to be different when comparing a root hair cell and a leaf cell? Explain your answer.
g) Photosynthesis is a vital chemical reaction for plants. It is required for a plant to be able to survive. What would happen to the rate of photosynthesis if you moved a plant from outside to indoors?
h) Research how to measure the rate of photosynthesis.

1) Key Words	Match the definitions to Key Words
a) Activation Energy	When a substance is broken down into 2 or more products by heat.
b) Catalyst	Contain hydrocarbons – compounds containing hydrogen and carbon atoms only.
c) Carbon particulates	Reactions that give out heat energy. The temperature will increase
d) Combustion	Reactions that take in heat energy – the temperature will decrease.
e) Displacement	List of metals in order of reactivity.
f) Endothermic	The minimum (smallest)amount of energy that colliding particles must have for them to react.
g) Exothermic	Reaction of other elements with oxygen
h) Fuel	A substance that increases the rate of a reaction but is not itself used up.
i) Hydrocarbon	Another word for burning in oxygen.
j) Oxidation	This is another word for soot (the black powder that forms on the bottom of barbeques or Bunsen burners).
k) Reactivity series	A molecule that is made of hydrogen and carbon only.
l) Thermal Decomposition	A more reactive metal will displace ('kick out') a less reactive metal in a reaction

K
Na
Ca
Mg
Al
Zn
Fe
Cu
Au
Pt

2) The Reactivity Series

a) Complete the equations for the following reactions:

- Lithium + iron oxide →
- Lead + copper chloride →
- Calcium + magnesium Bromide →

b)Will the following reaction take place? Explain your answer.

Magnesium + potassium fluoride →

3) Exothermic and Endothermic Reactions

a) Describe what an exothermic reaction is.

b) Describe what an endothermic reaction is.

c) Describe what happens to the temperature of the surroundings in exothermic and endothermic reactions.

4) Combustion Reactions

a) What does combustion mean?
b) Give an example of a combustion reaction
c) What are the products of complete combustion?
d) How are the products of incomplete combustion different to complete combustion?
e) In terms of oxygen, what does oxidation and reduction mean?
f) In a combustion reaction, is the carbon in the fuel oxidised or reduced? Explain your answer in terms of oxygen.

(1) Key Word	Definition
a) Dissipate	Watts are the unit of Power. A kW is 1000 W
b) Energy Transfer	The rate of work done (how much work is done in a particular time), or the amount of energy transferred every second.
c) Force	A push, a pull or a twist that acts on an object.
d) Joule (J)	When a force moves a particular object a certain distance, we say that is work done. Energy is transferred as the object is moved.
e) Power (P)	Changes from one form of energy to another form of energy.
f) Watt (W)	Joules are the units of energy.
g) Work Done (J)	Spreads out wastefully into the surroundings

(3) Energy Store	Provide a description and an example of each store:
a) Gravitational Potential (GPE)	
b) Chemical	
c) Kinetic Energy	
d) Elastic Potential	
e) Thermal Energy	
f) Magnetic	
g) Electrostatic	
h) Nuclear	

(2) Energy Transfers

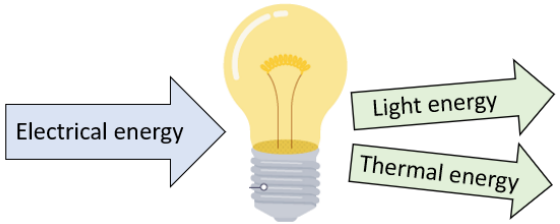
a) State the law of conservation of energy.

b) In the below diagram, what is the wasted energy? Explain why.

c) Sate the energy transfers in an electric kettle.

d) Identify the energy transfers for someone riding a bike.

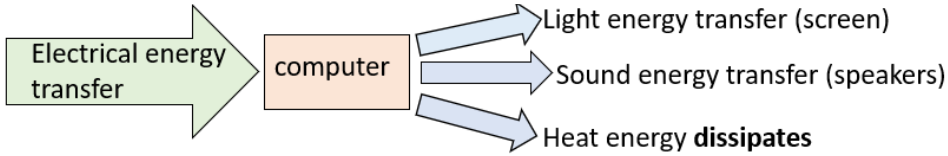
e) Identify the energy transfers of someone firing a bow and arrow.



(4) Energy Transfers

Energy Transfer	Give the description and an example:
a) Mechanically	
b) Heating	
c) Electrically	
d) Light and Sound	

Learn the energy transfers that take place when a computer is switched on.



(8) Key Word	Match Definitions to Key Words
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b) Fossil fuel	How quickly energy is transferred by a device
c) Geothermal	Watts are the unit of Power. A kW is 1000 W
d) Hydroelectric	A fuel formed from the remains of living organisms, for example coal and gas.
e) Kilowatt hour (kWh)	A resource that cannot be replaced when it is used up.
f) Non-renewable	Electricity generated by the movement of water
g) Power (W)	An energy source that will not run out – it can be replaced.
h) Renewable	A resource that will run out.
i) Watt (W)	Heat energy from under the ground

(9) Energy in Food

a) What is the main energy store in food?
b) How does the energy stored in food get released?
c) Devise an experiment of how you could compare the energy stored in different foods.

(11) Generating Electricity

a) State the definition of non-renewable energy source. Provide an example.
b) What is a fossil fuel and how are they produced?
c) How are fossil fuels used to generate energy?
d) What is the definition of renewable resources of energy. Give 4 examples.
e) What is biofuel and why is it said to be carbon neutral?

f) Explain why soar energy is not the best solution to replace fossil fuel.

g) You have been tasked to find a site for building a wind farm. Describe the ideal place to build a wind farm.

h) Some Scandinavian countries use geothermal energy to heat their homes. Explain how geothermal energy can heat entire homes.

i) Describe the energy transfers in a hydroelectric dam.

j) Hydroelectric, solar cells, tidal and wind turbines are all renewable resources of energy. State the negatives of relying on renewable resources of energy.

k) An electricity company advertises that “The electricity supplied to your house is 100% renewable”. However, the electricity supplied to most houses in the UK comes from the national grid. Explain why this advertisement is misleading.

l) Describe ways in which people can use less energy, so renewable resources are more sustainable.

(5) Energy and Work – moving objects

a) Give the equation of work done.

b) State the definition of work done.

c) A man pushes 2 boxes trough the same distance. One box with a mass of 20 kg and another with a mass of 80 kg. Which box caused the man to do more work? Explain your answer.

d) Work out the work done for the following scenarios:

- Force = 12 N Distance = 20 m
- Force = 36 N Distance = 100 m
- Force = 13 N Distance = 60 cm

e) Work out the distance for the following scenarios:

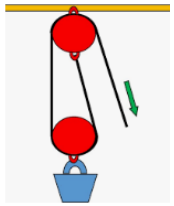
- Work = 16 J Distance = 20 m
- Work = 12 J Distance = 100 m
- Work = 26 J Distance = 60 cm

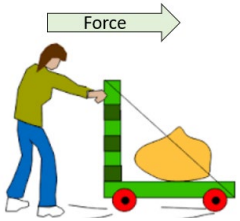
6) Machines and Work done (energy transferred)

a) Explain what a simple machine is and give some examples.

b) How does a pully help reduce work?

c) How does a pivot help reduce work?





(7) Heating and Cooling

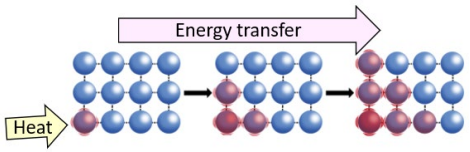
a) What is the main energy store of a radiator?

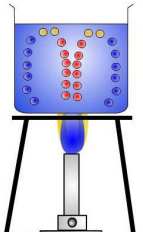
Thermal energy is transferred in three ways:

Conduction

b) Describe the process of conduction.

c) State the types of materials that are good thermal conductors. What is the material used for?





Convection

d) Describe the process of convection.

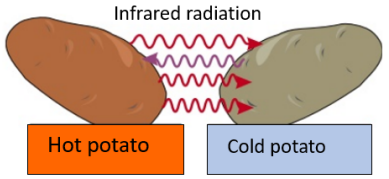
e) Describe how convection currents play a part in the movement of tectonic plates.

Radiation

f) Describe the process of radiation.

g) Describe how the thermal energy from the sun can reach us on earth.

h) What 3 things can happen to thermal energy that has been radiated?



Unit 4: Talking about clothes and the weather			aa	…un sombrero	*…a hat*
a	¿Qué ropa llevas en casa?	*What clothes do you wear at home?*	ab	…un traje	*…a suit*
b	¿Qué ropa llevas cuando hace frío/calor?	*What do you wear when it's cold/hot?*	ac	…un uniforme	*…a uniform*
c	Describe tu uniforme escolar	*Describe your school uniform*	ad	…un vestido	*…a dress*
d	Cuando…	*When…*	ae	…una bufanda	*…a scarf*
e	…hace calor/hace frío	*…it's hot/it's cold*	af	…una camisa	*…a shirt*
f	…salgo con mi novio/novia…	*…I go out with my boyfriend/girlfriend*	ag	…una camiseta sin mangas	*…a t-shirt*
g	…salgo con mis padres…	*…I go out with my parents*	ah	…una camiseta sin mangas	*…a vest/tank top*
h	En casa …	*At home*	ai	…una chaqueta	*…a jacket*
i	En la discoteca…	*At the nightclub*	aj	…una chaqueta deportiva	*…a sports jacket*
j	En la playa …	*At the beach*	ak	…una corbata	*…a tie*
k	En el colegio …	*At school*	al	…una falda	*…a skirt*
l	En el gimnasio …	*At the gym*	am	…una gorra	*…a cap*
m	Nunca …	*Never*	an	…botas	*…boots*
n	Por lo general…	*Usually*	ao	…calcetines	*…socks*
o	Siempre…	*Always*	ap	…chanclas	*…flip-flops*
p	…llevo…	*…I wear…*	aq	…pantalones	*…trousers*
q	…lleva…	*…he/she wears…*	ar	…pantalones cortos	*…shorts*
r	…un abrigo	*…a coat*	as	…pantuflas	*…slippers*
s	…un bañador	*…a swimsuit*	at	…pendientes	*…earrings*
t	…un chaleco	*…a waistcoat*	au	…sandalias	*…sandals*
u	…un chándal	*…a tracksuit*	av	…vaqueros	*…jeans*
v	…un cinturón	*…a belt*	aw	…zapatos	*…shoes*
w	…un collar	*…a necklace*	ax	…zapatos de tacón	*…high heels*
x	…un jersey	*…a jumper*	ay	…zapatillas (de deporte)	*…trainers*

	Unit 5: My Weekend Plans – food and leisure		aa	…un partido	*…a match*
a	¿Qué vas a hacer este fin de semana?	*What do are you going to do this weekend?*	ab	…una película	*…a film*
b	¿Cómo crees que será?	*What do you think it will be like?*	ac	…una serie en Netflix	*…a series on Netflix*
c	¿Qué vas a tomar para el desayuno?	*What are you going to have for breakfast?*	ad	Creo que será…	*I think that it will be*
d	¿Qué sueles comer para el amuerzo?	*What do you usually eat for lunch?*	ae	Creo que no será nada…	*I think that it won't be…at all*
e	¿Qué te gusta beber?	*What do you like to drink?*	af	bastante/muy/un poco	*quite/very/a little*
f	Este fin de semana	*This weekend*	ag	…aburrido	*…boring*
g	El sábado/domingo que viene	*Next Saturday/Sunday*	ah	…divertido	*…fun*
h	Este sábado/domingo	*This Saturday/Sunday*	ai	…emocionante	*…exciting*
i	Voy a…	*I am going…*	aj	…interesante	*…interesting*
j	Mi familia y yo vamos a…	*My family and I are going…*	ak	Para el desayuno…	*For breakfast…*
k	…hacer…	*…to do…*	al	…me gusta comer…	*…I like to eat…*
l	…deporte	*…sport*	am	…fruta	*…fruit*
m	…los deberes	*…homework*	an	…una tostada	*…a slice of toast*
n	…muchas cosas	*…a lot of things*	ao	…cereales con leche	*…cereal with milk*
o	…ir…	*…to go*	ap	Para el almuerzo…	*For lunch…*
p	…a un restaurant	*…to a restaurant*	aq	Para la cena…	*For dinner…*
q	…a un concierto	*…to a concert*	ar	…me gusta tomar…	*…I like to have…*
r	…al centro comercial	*…to a shopping centre*	as	…jamón	*ham*
s	…de compras	*…shopping*	at	…miel	*honey*
t	…jugar…	*…to play…*	au	…pescado	*fish*
u	…al fútbol	*…football*	av	…pollo asado	*roast chicken*
v	…a videojuegos	*…videogames*	aw	…queso	*cheese*
w	…tocar…	*…to play (an instrument)…*	ax	…un bocadillo	*a sandwich*
x	…el piano	*…the piano*	ay	…una ensalada	*a salad*
y	…la guitarra	*…the guitar*	az	…una magdalena	*a cupcake*
z	…ver…	*…to watch…*	ba	suelo beber…	*I usually drink…*

bb	voy a tomar…	*…I am going to have*	t	…restaurantes	*restaurants*
bc	…agua	*…water*	u	…una calle peatonal	*a pedestrian street*
bd	…café	*…coffee*	v	…un acuario	*an aquarium*
be	…chocolate caliente	*…hot chocolate*	w	…un centro commercial	*a shopping centre*
bf	…un vaso de leche	*…a glass of milk*	x	…un cine	*a cinema*
bg	…té	*…tea*	y	…un club juvenil	*a youth club*
bh	…zumo de naranja	*…orange juice*	z	…un parque	*a park*
Unit 6: Saying where I live			aa	…una pista de patinaje	*a skating rink*
a	¿Dónde vives?	*Where do you live?*	ab	…un poliderportivo	*a leisure centre*
b	¿Qué hay en tu ciudad?	*What is there in your town/city?*	ac	…un jardín botánico	*a botanical garden*
c	¿Te gusta tu barrio?¿Por qué?	Do you like your neighbourhood? Why?	ad	…muchas cosas que hacer	*many things to do*
d	Vivo en Londres	*I live in London*	ae	…muchas cosas que ver	*many things to see*
e	Vivimos en Edimburgo	*We live in Edinburgh*	af	…mucho que hacer para los jóvenes	*a lot to do for young people*
f	Está en…	*It is in…*	ag	…muchos jóvenes	*…many young people*
g	…el centro de Alemania	*…the centre of Germany*	ah	…muchas áreas verdes	*…many green spaces*
h	…el norte de Canadá	*…the north of Canada*	ai	…muchas calles bonitas	*…many pretty streets*
i	…el este de Escocia	*…the east of Scotland*	aj	…muchas instalaciones deportivas	*…many sports facilities*
j	…el sur de España	*…the south of Spain*	ak	…muchas tiendas	*…many shops*
k	…el oeste de Francia	*…the west of France*	al	…muchos edificios antiguos	*…many old buildings*
l	…el noroeste de Gales	*…the northwest of Wales*	am	…muchos restaurants	*…many restaurants*
m	…el suroeste de Inglaterra	*…the southeast of England*	an	(No) me gusta mi barrio porque…	*I (don't) like my neighbourhood because…*
n	Cerca de mi casa hay…	*Near to my house there is…*	ao	…es peligroso/es seguro	*…its dangerous/safe*
o	En el centro no hay…	*In the centre there isn't…*	ap	…está bien/mal cuidado	*…its well/badly looked after*
p	En mi barrio temenos	*In my neighbourhood we have…*	aq	…está limpio/sucio	*…its clean/dirty*
q	En mi calle no temenos	*On my street we don't have…*	ar	…(no) hay	*…there is (not)*
r	En mi ciudad hay	*In my town there is/are…*	as	…mucha contaminación	*…a lot of pollution*
s	cafeterías	*…cafés*	at	…mucho ruido	*…a lot of noise*

au	…mucho tráfico	*…a lot of traffic*
av	(no) se puede…	*you can(‘t)*
aw	…comer bien	*eat well*
ax	…hacer deporte	*do sport*
ay	…pasear	*go for a walk*

The Bourne Academy

Bourne Scholars Knowledge Organiser: Year 8 Spring Term - Spanish

1. Grammatical vocabulary	**2. Spanish Cultural Research**	
i. What is the stem of the verb? ii. What is an infinitive? iii. What are the three endings of infinitives in Spanish?	i. Who is she? ii. What is she famous for? iii. Where did she come from?	Rigoberta Menchú

3. Dictionary corner

Look up 5 adjectives that are different to the ones that we have studied in the lesson to describe free time activities.

1_____ 2_____ 3_____ 4_____ 5_____

4. Key Verbs

What are the verb endings for the three different kinds of verbs in Spanish? Write them out below.

Personal pronoun	AR verbs – e.g. hablar		ER verbs – e.g. Comer		IR verbs – e.g. Vivir	
Yo (I)	hablo	I talk				
Tu (you sing)			comes	you eat		
él/ella (he/she)					vive	he/she/it lives
nosotros (we)						
vosotros (you pl)						
ellos/ellas (they)						

5. Understanding grammar

Find the answers to the following questions

a. Why is the following sentence incorrect? Me gusta juego a videojuegos

b. Research how to give someone else's opinion and then change the above to "He likes videogames".

6. Idioms

Find out the meanings of these idioms.

1) Llover a cántaros _____

2) Hacer frío que pela _____

3) Estarse asando _____

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

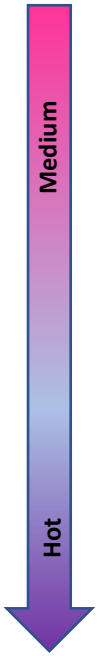
4. Life-cycle Assessment (LCA)

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?

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:

Goggles **Aprons**

Protective footwear **Visors**

13. CAD/CAM

CAD stands for **C**omputer **A**ided **D**esign, it is used in lots of different industries such as construction, engineering and product design.

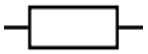
It is used because it is accurate, gives realistic 3D views of designs, is easy to correct mistakes without having to draw a drawing all again, and CAD drawings can be sent all over the world via email.

CAM stands for **C**omputer **A**ided **M**anufacturing, it is when machines are controlled by computers to make/produce/manufacture products.

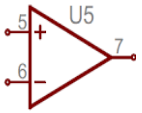
It is used because it is quicker, more accurate, reduces waste, never needs a break and can produce thousands of the same identical product per hour day in day out.

14. Electronic Circuit symbols

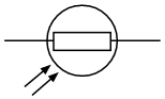
Resistors control the flow of current within a circuit. They stop high rates of current damaging electronic components.



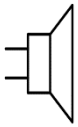
PIC Chips are programmed to send signals. Between inputs and outputs. They control circuits.



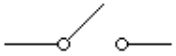
An **LDR** is a resistor which senses light. It allows current to run through it when it is dark.



Speakers turn electrical signals into sound waves.

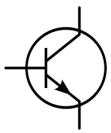


Switches are used to turn circuits on and off. They control when power enters a circuit and either complete or break the flow of current.



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 dolphins.

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

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?

Notes

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