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
2021-22

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

Contents

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term

Excellence at The Bourne Academy: Using your Knowledge Organisers'

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

Routines for Excellence

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

How to revise with your Knowledge Organisers'
Self-quizzing

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


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?

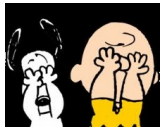
RECORD IT
Record yourself on your phone or tablet reading out the information. These can be listened to as many times as you want!

TEACH IT!
Teach someone your key facts and then get them to test you, or even test them!

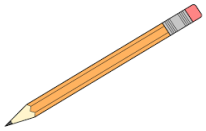
FLASH CARDS
Write the keyword / date on one side and the explanation on the other. Ask someone to quiz you on either side.

BACK 2 FRONT
Write down the answers and then write out 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.

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Knowledge Organiser: Year 8 Spring Term : Art & Design: Pop art

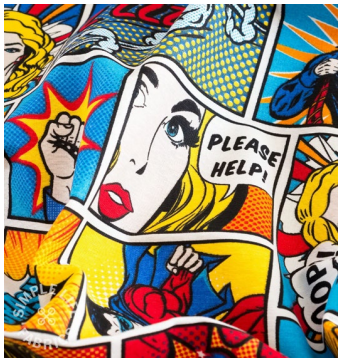
A. The Pop Art Movement

Pop art is an art movement that emerged in the United Kingdom and the United States during the mid-to late-1950s. The movement presented a challenge to traditions of fine art by including imagery from popular and mass culture, such as advertising, comic books and mundane mass-produced objects.

D. Keywords

- Primary Colour
- Secondary Colour
- Tertiary Colour
- Warm Colours
- Cool Colours
- Hue
- Tint
- Shade
- Outlines
- Mass Media
- Blend
- Complimentary
- Bright
- Tone
- Vibrant
- Harmonious
- Ben Day Dots
- Culture
- Everyday Objects
- Mass Production

B. Artists



- Andy Warhol
- Roy Lichtenstein
- Keith Haring
- Richard Hamilton
- David Hockney
- Claes Oldenburg
- Yayoi Kusama
- Keith Haring
- Tim Marrs
- Peter Max
- Jasper Johns

C. Elements of Art

Elements of art are stylistic features in a piece used to make the artwork interesting. Artists use a combination of these in their compositions/artwork:

- Line
- Shape
- Form
- Texture
- Pattern
- Tone
- Surface
- Media
- Expression
- Contrast
- Proportion
- Perspective
- Negative Space
- Mark Making
- Experiment
- Space
- Design
- Vibrant

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Knowledge Organiser: Year 8 Spring Term: Computing

(A) Microsoft Excel

Spreadsheet software used to organise calculate data, e.g. budget, tracking grades

Data Modelling = looking at data and using it to make future predictions/decisions

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

Database = is an organised collection of structured information stored on a computer

Record = Collection of data held for each person **Field** = Type of data collected, e.g.

Names

Field Field Field Field Unique Identifier

	Name	Age	Gender	Occupation	Username
Record →	Lisa Simpson	8	Female	Student	SaxophoneGirl#8
Record →	Homer Simpson	40	Male	Safety Inspector	Doughnut_King
Record →	Moe Szyslak	62	Male	Bartender	Barman.Moe#3

(B) Formulas = used to calculate values between different cells e.g.

=A1+B1 (add) = A1-B1 (subtract)

=A1*B1 (multiply) = A1/B1 (divide)

Functions = pre-set formulas that quickly perform a range of complex tasks e.g.

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

Sort = organises data, such as alphabetically

1	Apple
2	Banana
3	Carrot

Filter = makes it easier to find specific data by only showing certain types of data

Name	Age	Gender
Lisa Simpson	8	Female

Filter selected to only show females from database

(C) Data = numbers, text and symbols. This data can be used for calculations in a spreadsheet

Theme = having consistent formatting throughout all pages of a document

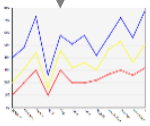
Charts/Graphs = are used to visually represent data to easily compare data and spot patterns

1. Select data
2. Click "Insert"
3. Choose chart

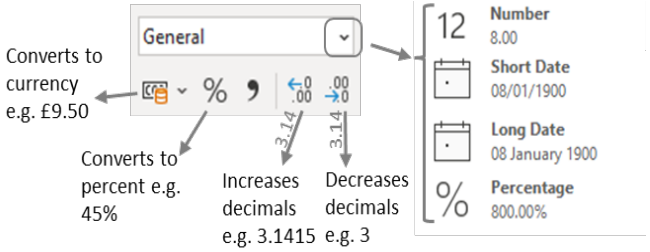
Bar Chart
Used to show **comparisons**

Pie Chart
Used to show **proportions**

Line Graph
Used to show **trends**



Data Types = this is the format of the values in the selected cells.



<table>
<tr><th colspan="2">A. Relationships</th><th>B. Action</th><th>C. Space</th><th>D. Dynamics</th></tr>
<tr><td colspan="2">WHO are we performing with?
This is who you are performing with including how many people are in your group.</td><td>WHAT are we performing?
This is the range of movement in your dance piece</td><td>WHERE are we dancing?
This focuses on how you use the space effectively</td><td>HOW are we performing?
This is how you perform each movement (i.e., the SPEED and ENERGY)</td></tr>
<tr><td>Solo</td><td>One Person</td><td rowspan="6">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</td><td rowspan="6">Directions-forwards, backwards, stage left, stage right, diagonal
Levels-low, medium, high
Pathways-zig zag, circle, linear, wavy
Group formations-straight line, triangle, 2 vs 2, arrowhead, etc</td><td rowspan="6">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</td></tr>
<tr><td>Duet</td><td>Two Dancers</td></tr>
<tr><td>Trio</td><td>Three Dancers</td></tr>
<tr><td>Quartet</td><td>Four Dancers</td></tr>
<tr><td>Quintet</td><td>Five Dancers</td></tr>
<tr><td>Unison</td><td>All together at the same time</td></tr>
<tr><td>Canon</td><td>One after another</td><td colspan="3" rowspan="5">E. Andrew Winghart is a Los Angeles-based director and choreographer known for his unique and high-energy compositions and intricately crafted staging patterns. Originally from Wisconsin, Andrew moved to Los Angeles to attend the University of Southern California on a full-tuition academic scholarship from which he graduated in May of 2014.</td></tr>
<tr><td>Contact Making</td><td>Connections with different parts of the body</td></tr>
<tr><td>Mirroring</td><td>True reflection of another’s actions</td></tr>
<tr><td>Questioning & Answer</td><td>Conversation through movement</td></tr>
<tr><td>Lead & Follower</td><td>One performs sequence, others copy.</td></tr>
</table>

F. How to create a choreography:

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

2. Create your main **motif** using the **RADS** table on the first page of this KO. Remember that you need to make sure that these **movements** clearly communicate your **stimulus**.

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

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

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

6. Evaluate and set targets for the next time your go through the **choreographic process.**

G. Choreographic Devices (Think change or add):

Levels – low, medium, high

Dynamics – how movements are performed (sharp, soft etc)

Size - making the movement smaller or larger.

Accumulation – adding dancers in to perform the same motif.

A. The Devising Process
• Discuss the different parts of the stimulus. What is interesting and does it have dramatic potential? • How are you going to develop it from a stimulus to a performance piece? Structure? Which Drama Techniques will you use? • Thoroughly research your stimulus. Are there any links? Begin to put them together to create a story line or plot. Show your chosen themes/settings/genres. • Rehearse and refine your piece. What could you make better more dramatic? Are your scenes and characters matching your intentions? How successful was your piece? Did you achieve your original intentions? • What feedback did you get from the audience? What would you do to develop your piece further / to a bigger scale production?

B. Impact		
Atmosphere (the mood felt by the audience and created by the performers)	**Audience Response (How the audience react)**	**Believability (Whether the audience believe what is happening on stage).**
Tense, Dangerous, Intriguing, Awe, Amazement, Anticipation, Surprising, Shocking, Awareness of Society, Comic, Pathos.	Applause, Laugher, Sympathy, Anger, Disappointed, Anti-Climax, Amusement, Admiration, Distaste, Contempt, Delight.	Natural, Believable, Realistic, Exaggerated.

C. Key Terms	
Stimulus	The 'starting point' to provide inspiration and ideas for devising a drama. Examples could be a poem, photograph is musical score.
Devising	A process in which the whole creative team develops a performance collaboratively (working together).
Structure	An important element to consider will be the structure of your performance. What is the start, middle and end?
Blocking	Selecting where the performance will stand and how they move on stage so that characters and their relationships are made clear to the audience. You will also need to think about set, lighting etc.
Rehearsal	a time when all the people involved in a play, dance, etc. practise to prepare for performance.
Drama Technique	Used to create and form a performance – can be used to tell a story, or be used to show different points of view.

D		
Point	**Evidence**	**Explanation**
I was particularly proud of the way I… One strength of my acting skills was… In rehearsals I felt very pleased… The most effective aspect of my acting was… One of the highlights of my performance was… In rehearsals, I used…	I did this by… I showed this by… This was evident when… It was clear when… I developed this by… This was clearly showed when... This was demonstrated when… I presented this by…	The impact of this was… This had the effect on the audience of… This really showed… This made my character more believable because… This showed the audience that… This added to the appropriate mood/atmosphere because… This was effective because… The effect of this on the final performance was… This really worked because… I feel this was effective because…

Stimulus (The theme of the work)

Drama Techniques

Still Image
Narration
Mime
Alter Ego
Direct Address
Levels
Role Play
Flashback
Tableaux
Thought Tracking
Choral Speech

Rehearsal

Perform

1. Context	Description
Elizabethan era	In 1558 Queen Elizabeth started her 44-year reign as Queen of England.
Jacobean era	In 1603 Scottish king, James VI, became James I King of England.
Shakespeare	William Shakespeare was an English playwright, poet and actor.
Patriarchal society	Government or society controlled by men. Women were property of their fathers or husbands and they were expected to have children.
The Plague	An illness that struck England in 1592 and killed 10% of the population. It also forced theatres to shut.
Women and the supernatural	In Shakespeare's time people believed in witchcraft. King James I was particularly superstitious about witches and even wrote a book on it.

3. Form and structure	Description
Sonnet	One-stanza, 14-line poem, written in iambic pentameter.
Play	A piece of writing that is performed.
Setting	The place where the story takes place.
Foreshadowing	A hint of what is to come later in the story/play.
Iambic Pentameter	A line of verse with five metrical feet, each consisting of one short (or unstressed) syllable followed by one long (or stressed) syllable.

2. Plays	Description
Comedy	A light-hearted play that usually centres around a love story with a happy-ever-after ending.
Tragedy	A play involving a central character who has a fatal flaw that usually leads to their downfall.
History	A play loosely based around real-life historical figures from the past.
Titus Andronicus	A tragedy about a Roman general who returns from war with four prisoners that vow to take revenge against him.
Romeo and Juliet	A tragedy in which a young couple's love is doomed to failure and ends with their deaths in a misguided attempt to be together forever.
Macbeth	A tragedy in which Macbeth and Lady Macbeth's greed and ambition lead to the ruthless murder of the king, which sets off a spiral of events leading to both their eventual deaths.
A Midsummer Night's Dream	A comedy involving a love story, wedding plans, the misuse of magic and a case of mistaken identity.
Richard III	A history play about the ruthless behaviour of one man determined to become the king of England.
Julius Caesar	A history play involving an assassination plot against the Caesar (emperor of Rome).

4. Structural terminology	Example
Speaker	The person from whose point of view the text is written.
Headline	The title of an article.
Subheading	Headings placed throughout a text to signpost content in the section underneath.
Shift in focus	The change of focus in or between paragraphs.
Contrast	Opposite.

5. Topic Words	Definition
Argue	When you give reasons and evidence in support of an idea, action or theory, usually with the intention of persuading others to share your view.
Persuade	When you attempt to convince others to take action or make a change through reasoning or argument.
Non-Fiction	Writing that is informative or factual (e.g. newspaper articles, speeches, editorial opinion pieces, travel writing, memoirs, autobiographies, blogs, etc.).
Bias	A preference for or against a person or group, often without giving them an equal chance.
Viewpoint	The writer's way of looking at or thinking about something.

6. Punctuation	Symbol	
Comma	,	Used to separate items in a list or to separate main and subordinate clauses.
Dash	-	Used as parenthesis to emphasise information.
Brackets	()	Used as parenthesis to include extra information.

7. Language terminology	Definition	Example
Anecdote	A short story about a real incident or person.	"I have a friend who wasn't given a promotion because she was female."
Emotive language	Words used to cause an emotional response in the audience.	They were terrified of what might happen to them as they were African American.
Imperative verb	Verb that is used to give an order or command.	Clean up after yourself.
Rhetorical question	Questions used to make a point. They do not require an answer.	Why shouldn't they feel upset at this?
Triple	Where using a trio (3) of words can be more persuasive.	This behaviour is abusive, cruel and illegal.
Repetition	Where you repeat the same word or phrase to make an idea clearer.	This is serious, incredibly serious.
Modal verbs	Verbs that suggest the likelihood, ability, permission or obligation.	It may rain today but it should be sunny tomorrow.

(A) Point de départ	*Introduction*	(B) J'aime/je n'aime pas	*I like/dislike*
Ma célébrité préférée	*My favourite celebrity*	Les dessins animés	*Cartoons*
Il est/elle n'est pas	*He is/she isn't*	Les feuilletons	*Soaps*
Laid/e	*Ugly*	Les infos	*The news*
Méchant/e	*Nasty*	Les jeux télévisés	*Gameshows*
Bête	*Stupid*	Les séries	*Series*
Drôle	*Funny*	Les séries policières	*Police series*
Egoïste	*Selfish*	Les émissions de…	
Modeste	*Modest*	cuisine	*Cookery*
Sérieux/sérieuse	*Serious*	science-fiction	*Science-fiction*
Paresseux/paresseuse	*Lazy*	télé-réalité	*Reality*
Travailleur/travailleuse	*Hard-working*		*…programmes*
Beau/belle	*Good-looking*	parce qu'ils/elles sont…	*Because they are*
Gentil/gentille	*Kind*	ridicules	*Ridiculous*
		divertissant(e)s	*Entertaining*
Il/elle a beaucoup de talent	*He/she has lots of talent*	passionnant(e)s	*Fascinating*
C'est mon chanteur préféré	*He is my favourite singer*	ennuyeux/ennuyeuses	*Boring*
C'est ma chanteuse préférée	*She is my favourite singer*	nuls/nulles	*Rubbish*

(C) Ma vie numérique	***My life online***	(D) Ma vie numérique	***My life online***
Je regarde la télé…	*I watch TV*	C'est facile	*It's easy*
Avant les cours	*Before lessons*	C'est varié	*It's varied*
Tous les soirs	*Every evening*	Ce n'est pas cher	*It's not expensive*
Dans le salon	*In the sitting room*	J'écoute de la musique en streaming	*I stream music*
Dans le bus	*On the bus*	Je te télécharge des chansons	*I download music*
Dans ma chambre	*In my room*	Je crée des playlists	*I create playlists*
Avec ma famille	*With my family*	Je joue sur ma Xbox	*I play on my Xbox*
		J'achète des jeux en ligne	*I buy games online*

(E) On va au ciné ?	***Shall we go to the cinema?***	**(F) Quels sont tes loisirs ?**	***What are your hobbies?***
Je vais au cinéma	*I go to the cinema*	Je bavarde/parle avec mes copains	*I chat with my friends*
Tu viens ?	*Are you coming?*	Je fais du vélo	*I ride my bike*
Ça dépend	*It depends*	Je lis	*I read*
Je vais regarder…	*I am going to watch..*	Je fais de la lecture	*I read*
Un film d'animation	*An animated film*	Je nage	*I swim*
Un film romantique	*A romantic film*	Je fais de l'équitation	*I go horse-riding*
Un film d'action	*An action film*	Je ne lis pas beaucoup	*I don't read much*
Un film d'horreur	*A horror film*	Je ne joue jamais aux jeux-vidéos	*I never play video games*
Un film de super-héros	*A superhero film*	Je ne fais rien	*I do nothing*
Désolé, je ne peux pas	*Sorry, I can't*		
Rendez-vous à quelle heure ?	*What time shall we meet?*		
Chez/chez toi	*At mine/at yours*		
A 19h	*At 7pm*		
A plus	*See you later*		
A demain	*See you tomorrow*		
A samedi	*See you on Saturday*		
(G) Tu as fait des achats ?	***Do you go shopping ?***	**(H) Normalement, hier et demain**	***Normally, yesterday and tomorrow***
Je suis allé/e au centre commercial	*I went to the shopping centre*	Normalement	*Normally*
		J'écoute de la musique	*I listen to music*
J'ai fait les magasins	*I went shopping*	Je lis des BD	*I read comics*
J'ai fait des achats	*I bought a few things*	Nous jouons en ligne	*We play online*
J'ai lu une annonce pour les soldes	*I read an ad for the sales*	Le weekend dernier	*Last weekend*
		Je suis allé/e	*I went*
J'ai fait une balade	*I went for a walk*	J'ai choisi	*I chose*
J'ai fait une promenade	*I went for a walk*	Le weekend prochain	*Next weekend*
J'ai attendu une demi-heure	*I waited half an hour*	Je vais visiter	*I am going to visit*
J'ai dépensé trop d'argent	*I spent too much money*	On va prendre	*We are going to take*
J'ai découvert un café	*I discovered a café*		

Menu Planning

Customers have different needs for food and service dependent their needs.

Nutrition through life differs mainly due to the need for energy and protein for growth and development. Younger people are growing, so need more energy. Older adults only need to maintain their bodies, so less energy is needed

Special dietary needs to consider are: vegetarian, vegan, religious diets, allergies, coeliacs disease, food intolerances

Organoleptic means the qualities of food that people experience with their senses. There are 5 senses: sight, smell, taste, sound, and touch. All these senses should be considered to make food as appetising as possible.

Some different types of service styles are: plate service, counter service, table service, silver service

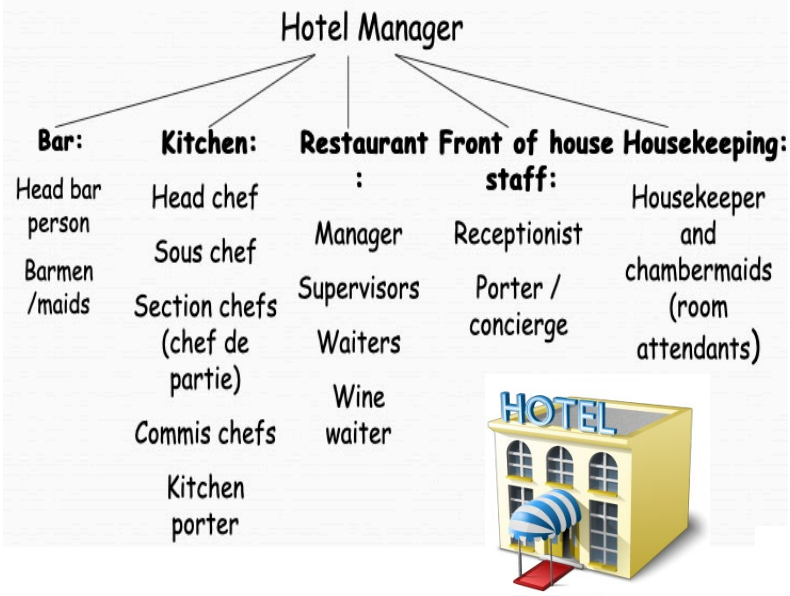
Work flow in a kitchen should follow a logical process so that clean stages in food production, never come in contact with dirty stages. Organising the kitchen into separate areas for separate jobs is the heart of hygienic kitchen design. The layout will depend upon the size of the kitchen as well as on the type of meals it prepares.

There are two areas in the hospitality industry, front of house and back of house. Front of house refers to any staff the customer may see, e.g. a receptionist. Back of house refers to staff the customer may not see, e.g. a chef. Here is an example of job hierarchy in a hotel.

Every member of front of house and back of house staff have their own responsibilities. They work as a team to ensure smooth running of the kitchen and restaurant.

Kitchen operations and menu planning

Receiving	Storing	Preparation	Holding	Serving	Cleaning
Goods are received from deliveries. Goods need to be checked before storing.	Goods are stored in the appropriate areas, these include fridges, freezers, and dry good stores.	Preparation areas need to include suitable space and equipment to ensure hygienic preparation of fish, meats, and vegetables.	Food is plated up in the area. Food needs to be kept hot in this area before it is served.	Dishes should be easily accessible for serving staff.	Sufficient space is required to enable fast and efficient cleaning of dishes and equipment. Easily accessible waste disposal is also important in this area.



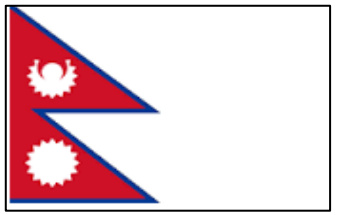
1. Key Vocabulary

Development	what happens to a country as it grows wealthier
Highlands	mountainous areas of a country
HDI	Human Development Index - a ranking of how wealthy and developed a nation is
Lowlands	non-mountainous areas of a country
Landlocked	when a country has no access to the sea
Longitude	measured by imaginary lines around the Earth vertically (up and down) and meet at the North and South Poles
Latitude	measured by imaginary lines around the Earth horizontally (sideways)
HIC	High Income Country (rich nations)
NEE	Newly Emerging Economy (nations growing wealthier)
LIC	Low Income Country (nations struggling with poverty)

2. Nations

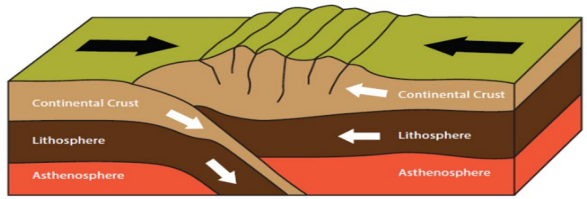
Bangladesh is a low income country (**LIC**) with a population of 165 million. 139th out of 188 countries on the Human Development Index.

Nepal is a low income country with a population of 29 million (**LIC**). 144th out of 188 countries on the Human Development Index.



India is an newly emerging economy country (**NEE**) with a population of 1,380 million (1.38 billion). 131st out of 188 countries on the Human Development Index.

3. Plate Boundaries



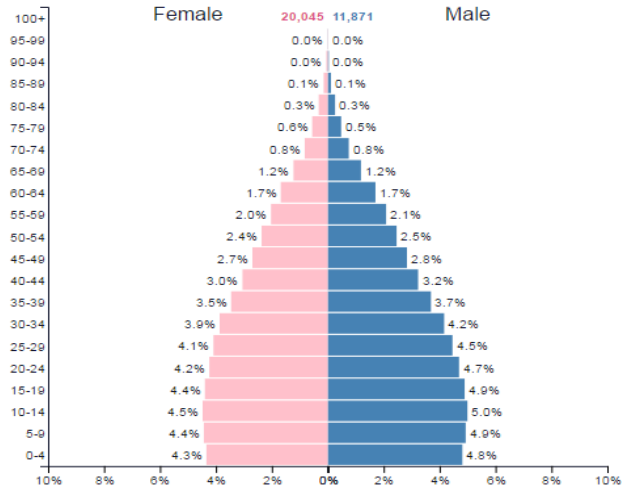
This is called a **collision** plate boundary.

4. Key Vocabulary

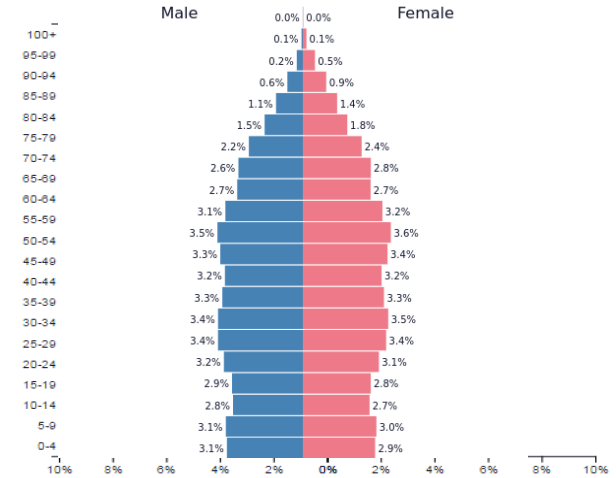
Push factors	reasons that people want leave the countryside
Pull factors	reasons that people are drawn (pulled) to cities
Urban	having to do with large towns and cities
Rural	having to do with the countryside and farming
Agriculture	practice of farming, including cultivation of the soil for the growing of crops and the raising of animals
Mumbai	The second-most populous city in India after Delhi and the seventh-most populous city in the world with a population of roughly 20 million.
Overpopulation	too many people caused by a high birth rate leading to a lack of space, food and employment
Mechanisation	farming machines that lead to fewer jobs as less people needed to work the land
Soil exhaustion	when farming happens too often and minerals get depleted causing the harvest to be less

5. Population pyramids

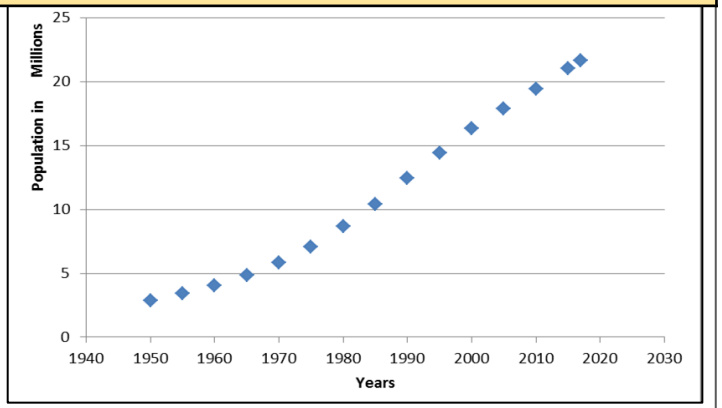
India 2017 — Population 1,380,000,000



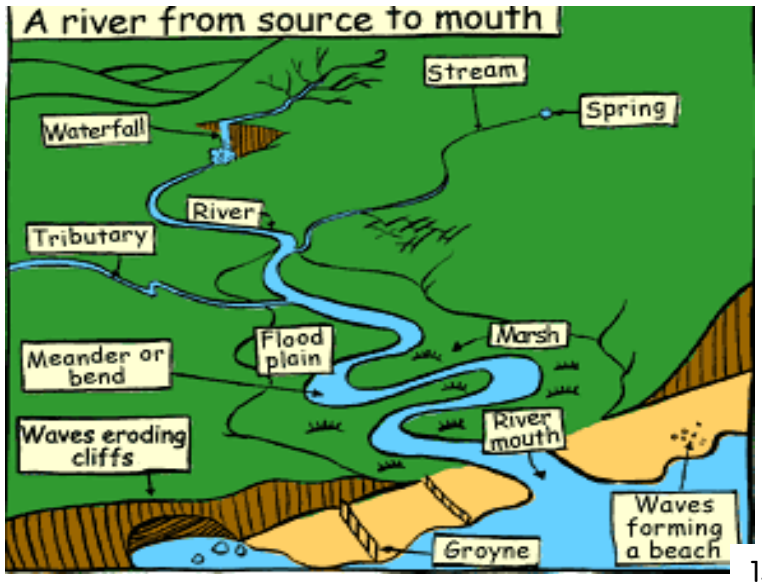
UK 2017 — Population 66,272,463



6. Urban population growth



7. Course of a river

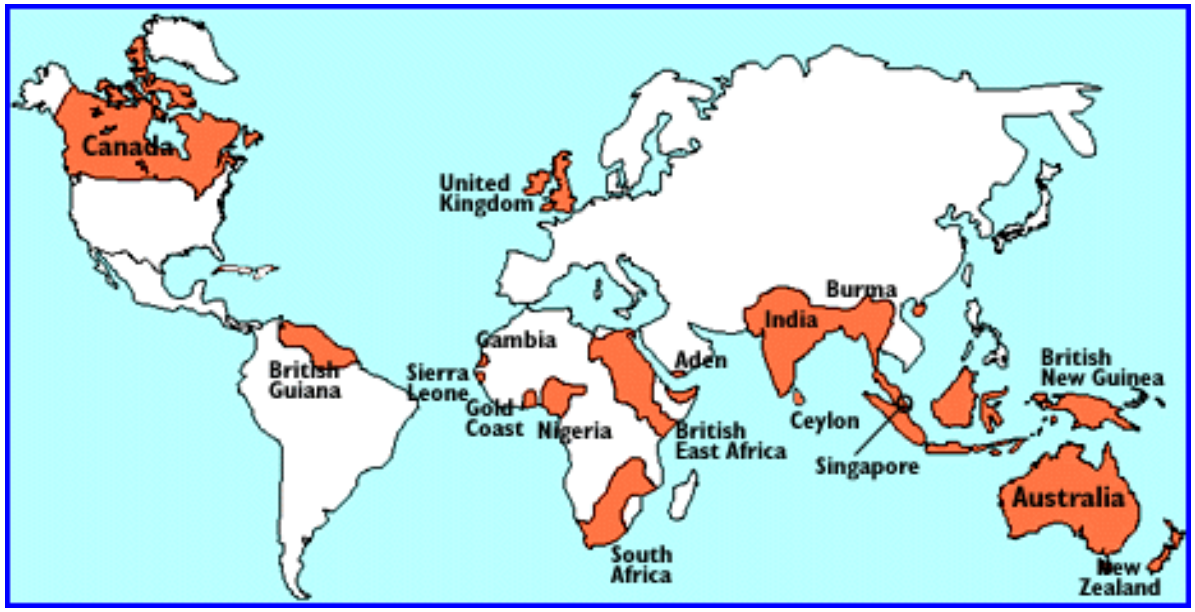


The Bourne Academy

Knowledge Organiser: Year 8 Spring Term: History: The British Empire

A. Summary	
1.	By 1901, Britain ruled the largest empire the world had ever known. This included over 450 million and covered ¼ (25%) of the surface of the world.

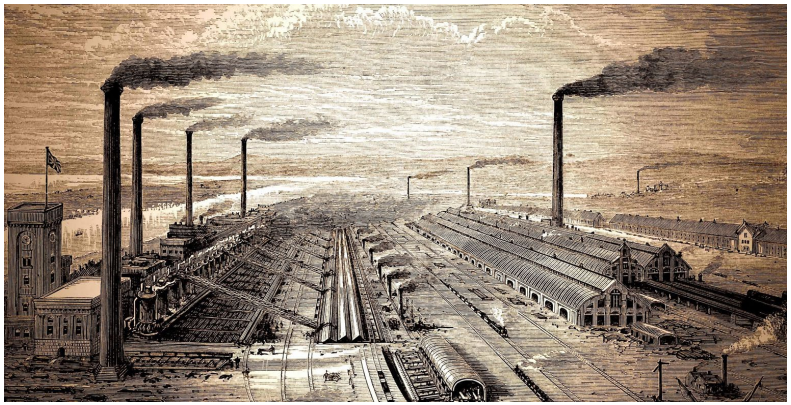
B. Key Words	
2. Empire	A group of countries, people or land ruled by one single country referred to as the "mother" country.
3. Colony	A country that is part of an empire.
4."Jewel in the crown"	A nickname for India. The largest and wealthiest part of Britain's Empire.
5. Commonwealth	A group of countries that were once part of Britain's Empire
6. Imperialism	The act of building an empire.
7. Nationalism	Wanting your country to be the best or to be free from someone's empire
8. Britannia	A female figure used to symbolise the British Empire
9. East India Company	British trading company that gradually took control of India
10. Famine	A shortage of food caused by pests or drought
11. The Raj	From the Hindi word for reign, the period of British rule in India after 1857 until 1947.
12. Mahatma Gandhi	A leader of the Indian independence movement.

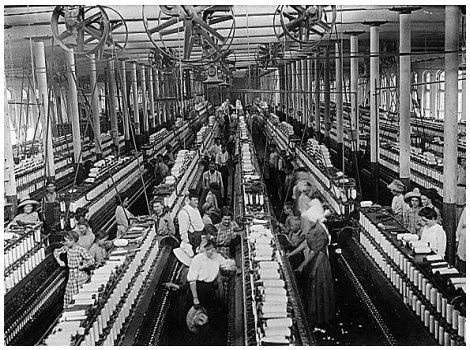


C. Key Places	
13. Australia	Used as a location for criminals. Criminals would be shipped to Australia, where they would be used as a workforce
14. Caribbean	Sugar, cocoa and coffee were all grown as raw materials and taken to Britain to be processed and sold.
15. Africa	Britain used the people as slaves and made a lot of money selling them at auctions until 1807. The Gold Coast was important because it held lots of gold, ivory and silver, which were traded for money.
16. India	Provided spices, jewels and silks that were traded for money across the Empire. The Koh-i-Noor jewel – one of the biggest diamonds ever found- belonged to an Indian prince and is now amongst the crown jewels.

D. Key words	
1. Industrial Revolution	A time of great change in Britain between 1750 to 1900 where machines and factories changed the way people worked and travelled.
2. Invention	Something new which is created, can be an object or an idea
3. Economy	The system of how money is used within a particular country
4. Agriculture	The process of producing food, and fibres by farming of certain plants or raising animals
5. Poverty	The lack of basic human needs such as clean water, nutrition, healthcare, education and shelter
6. Sanitation	Sanitation is the system that disposes of human waste
7. Industry	The process of making products by using machines and factories
8. Mass production	The production of many products in one go e.g., textiles

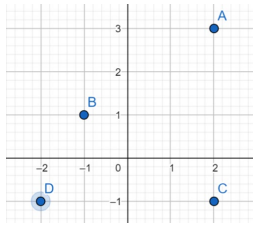
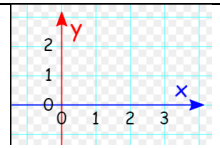
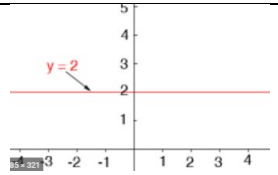
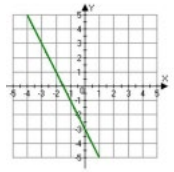
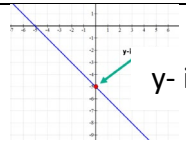
E. Factory Working Conditions	
9. Long working hours	Normal shifts were usually 12-14 hours a day, with extra time required during busy periods.
10. Low wages	A typical wage for male workers was about 15 shillings (75p) a week, but women and children were paid much less, with children three shillings (15p).
11.Cruel discipline	There was frequent "strapping" (hitting with a leather strap). Other punishments included nailing children's ears to the table and dowsing them in water to keep them awake.
12. Poor health	The air was full of dust, which led to chest and lung diseases and loud noise made by machines damaged workers' hearing.





F. From 1750, Britain went through a process of change in several key areas:	
13. Agriculture	New tools, fertilizers and harvesting techniques were introduced, resulting in increased productivity and agricultural prosperity.
14. Industry	Factories sprung up all over the country creating more efficient ways to produce goods such as wool, cotton and coal.
15. Transport and communications	Thomas Telford built roads and canals in the 1700s and George Stephenson and Isambard Kingdom Brunel oversaw the 'Railway Mania' of the 1800s.
16. Technology	Society and industry. Changes to sanitation and medical treatment such as the work of John Snow and Edward Jenner improved people's quality of life.

G. Living Conditions	
17. Overcrowding	Due to large numbers of people moving to the cities, there were not enough houses for all these people to live in.
18. Disease	Typhus, typhoid, tuberculosis and cholera all existed in the cities of England. Overcrowding, low standard housing and poor-quality water supplies all caused disease.
19. Waste Disposal	Gutters were filled with litter. Human waste was discharged directly into the sewers, which flowed straight into rivers.
20. Poor Quality Housing	Tenement houses were built very close together so there was little light or fresh air inside them.

Keyword	Definition	Example
Coordinates	Coordinates are numbers giving the position of a point on a graph where they meet on the x and y axis.	 Point A is at (2,3)
x - axis	This is the horizontal axis or the line y =0 Blue line	
y - axis	The vertical axis or the line x= 0 Red line	
Linear Graph	A graph of a linear function, where all plotted points lie on a straight line	
$y = mx + c$	The general equation of a straight-line graph where m is the gradient and c is the y intercept.	
Gradient (m)	The **gradient** of a line is a measure of how steep the line is.	$Gradient = \frac{Change\ in\ y}{Change\ in\ x}$
y intercept (c)	The point at which line crosses the y-axis.	 y- intercept
Hegarty Clips	206,207,208,209,210	

Worked Examples

1) Complete the graph for $y = 2x$, for values of x from -2 to 2.

a) Complete the table of values.

When x = (-2), $y = 2 \times -2$

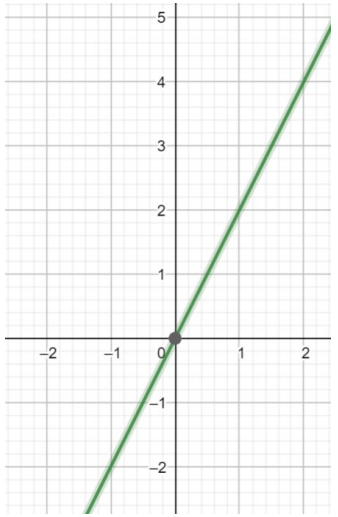
When x = (-1), $y = 2 \times -1$

Repeat for the remaining values

b)

x	-2	-1	0	1	2
y	-4	-2	0	2	4

c) Complete the graph for $y = 2x$. By plotting the coordinates from the table above



(-2, -4)

(-1, -2)

(0, 0)

(1 , 2)

(2 , 4)

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term: Mathematics: 2a Unit 6 Ratio, proportion and units

1. Keywords

Keyword	Definition	Example
Ratio	A way in which quantities can be **divided** or **shared**.	**Share** £60 between 3 people in a ratio of 3:1:6
Simplest form	Ratios can be **simplified** by finding **common factors.**	6:8 (÷2) → 3:4 (÷2)
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) → 4:6 (÷2) → 2:4 (÷2)
Direct proportion	ratios are in direct proportion when they **increase or decrease in the same ratio.**	Edie drinks 15 litres of water in 5 days. At this rate, how much water would she drink in 3 days?
Conversion	To change a value or expression from one form to another.	Metric length conversions 10mm = 1cm 100cm = 1m 1000m = 1km

Water	15L	3L	9L
Days	5	1	3

Hegarty Clips 691,692,693

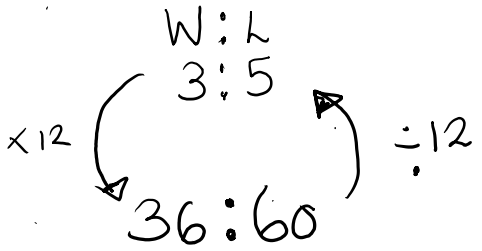
2. Worked Examples

1. The ratio width : Length of a rectangle is 3:5

When the length is 60cm, what is the width of the rectangle?

length

width



Answer is 36cm

2. Pink paint is made with red paint and white paint in the ratio 4:3. Fill in the table. Each line makes the **same** colour of pink.

Red	White	Total
8 Litres	20 Litres	28 Litres

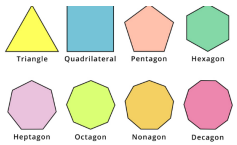
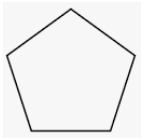
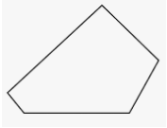
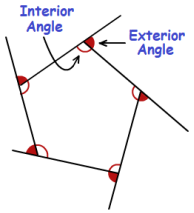
3. Convert 7m into cm

7 x 100 = 700cm

4. Convert 260 cm into m

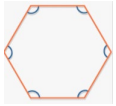
260 ÷ 100 = 2.6m

1. Keywords

Keyword	Definition	Example
Polygon	a flat or plane, two-dimensional closed shape with straight sides.	
Regular Polygon	Have equal side lengths and equal angles.	
Irregular Polygon	Side lengths and angles are different.	
Interior angle	An angle formed inside a polygon where two sides meet.	
Exterior angle	The angle formed outside the polygon. The sum of the interior and exterior angle is 180°.	See above
Formula for interior angles	Sum of interior angles in a polygon.	$(n-2)\times 180$ $\boldsymbol{n = number\ of\ sides}$
Formula for exterior angles	Sum of exterior angles of a regular polygon is 360°.	$\frac{360}{n} = x^{\circ}$ $\boldsymbol{n = number\ of\ sides}$
Hegarty Clips	560,561,562,563,564,565	

2. Worked Examples

1. What is the sum of the interior angles in a hexagon?



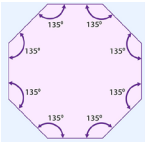
$$(n-2)\times 180$$

A hexagon has 6 sides

$$(6-2)\times 180$$
$$(4)\times 180 = 720^{\circ}$$

2. What is the interior angle of a regular octagon?

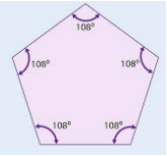
$$(n-2)\times 180$$



An octagon has 8 sides

$$(8-2)\times 180$$
$$(6)\times 180 = 1080^{\circ}$$
$$1080 \div 8 = 135^{\circ}$$

3. Calculate the exterior angle of a regular pentagon.

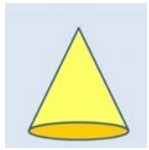
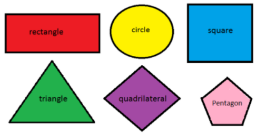
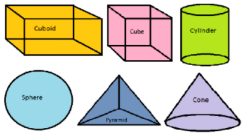
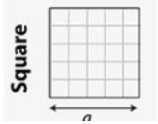
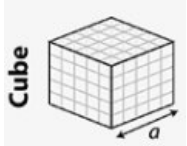
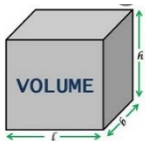


$$\frac{360}{n} = x^{\circ}$$

A Pentagon has 5 sides

$$\frac{360}{5} = 72^{\circ}$$

Keywords

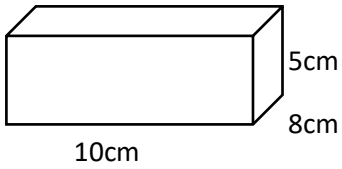
Keyword	Definition	Example
Face	Any of the individual flat surfaces of a solid object.	 This cone has 2 faces 1 edge 1 vertex
Edge	A line segment on the boundary joining one vertex (corner point) to another.	
vertex	A point where two or more line segments meet. A corner.	
2D shapes	2D shapes have only 2 dimensions and are flat.	
3D Shapes	3D shapes are solid shapes or objects that have three dimensions (which are length, width, and height). 3D shapes are **faces, edges, and vertices.**	
Area	The measure of how many squares fit into a 2D shape.	 Units^2
Surface Area	The measure of the area of all outward facing sides of a 3D shape.	 Units^2
Volume	The measure of how many cubes will fit in a 3D shape. Used for 3D shapes.	 Units^3
Hegarty Clips	554,556,557,568,570,572,584,585,586	

2. Worked examples

The diagram shows a cuboid of dimensions 10cm × 8cm × 5cm.

Work out the volume and the total surface area of the cuboid.

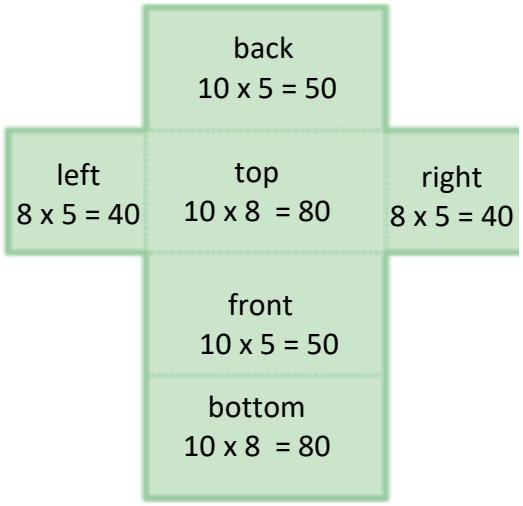
State the units with your answer.



The **volume** of a cuboid is

Length x width x height

$10 \times 8 \times 5 = 400\text{cm}^3$



To work out the **surface area** of a cuboid you must calculate the area of each of the faces.

You can do this by drawing a net of the cuboid to create a 2D shape.

The total surface area will be

$(50 \times 2) + (80 \times 2) + (40 \times 2)$

$= 340\text{cm}^2$

The Bourne Academy

Knowledge Organiser:Year 8 Spring Term: Music: Chord Songs: Exploring Popular Music & Song Structure

1. Keywords

Introduction	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.
Verse	Songs normally have several verses. Verses introduce the song's theme and have the same melody but different lyrics for each verse which helps develop the song's narrative and story.
Bridge/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.
Chorus	Occurs several times within a song and contains the most memorable hook/RIFF. The chorus relays the message of the song and is repeated with the same melody and lyrics each time it is heard.
Middle 8	A section (often 8 bars in length) that provides contrasting musical material often featuring an instrumental
Lyrics	The words of the song.
Hook/riff	A 'musical hook' is usually the 'catchy bit' of the song that you will remember. It is often short and is repeated in different places throughout the song.
Texture	The layers that make up a song e.g., Melody, hooks/riffs, chords, bass line, drums.
Chords	3 notes played at the same time e.g. C major (C – E – G)
Melody	The main tune of the song often sung by the Lead singer.
Structure	The different sections or parts of a piece of music and how they are ordered, the overall shape of the music.

2.Typical Song Structure

Introduction

↓

Verse 1

↓

Bridge/Pre-Chorus

↓

Chorus

↓

Verse 2

↓

Bridge/Pre-Chorus

↓

Chorus

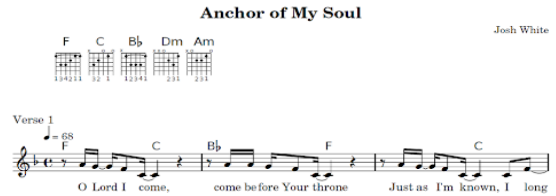
↓

Middle 8

↓

Chorus

3. Lead Sheet

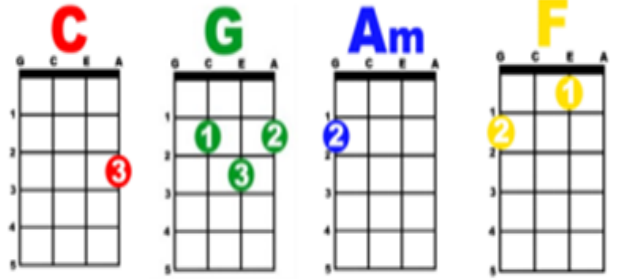


A **LEAD SHEET** is a form of musical **NOTATION** that contains only the essential elements of a popular song such as the **MELODY, LYRICS, RIFFS, CHORDS** (often as guitar chord symbols) and **BASS LINE.**

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. Ukulele Chords



The Bourne Academy

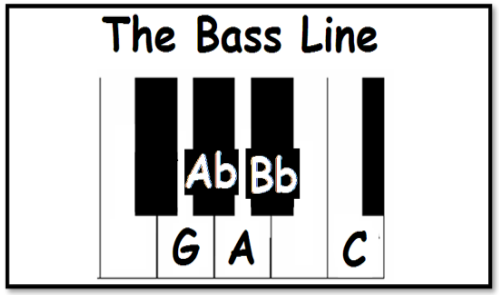
Knowledge Organiser:Year 8 Spring Term Music: The Blues: Exploring improvisation & The Blues scale.

1. Keywords

Riff	Short, repeated musical pattern.
Improvisation	Music created 'on the spot' (previously unprepared performance)
Chord/triad	3 notes played at the same time (root, third and fifth)
Twelve Bar blues	A specific sequence of chords (1, 4 and 5). For example C – F – G
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.
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.
Scale	A series of notes which can be used when improvising.
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.
Melody	The main "tune" of a song or piece of music, played higher in pitch that the BASS LINE and it may also contain RIFFS.
Blues notes	Additional or extra sharpened or flattened notes in a melody.

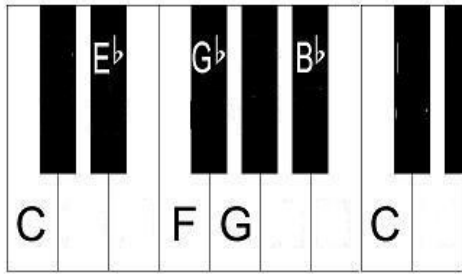
2. Blues Bass Line

Played on a lower pitch in the left hand



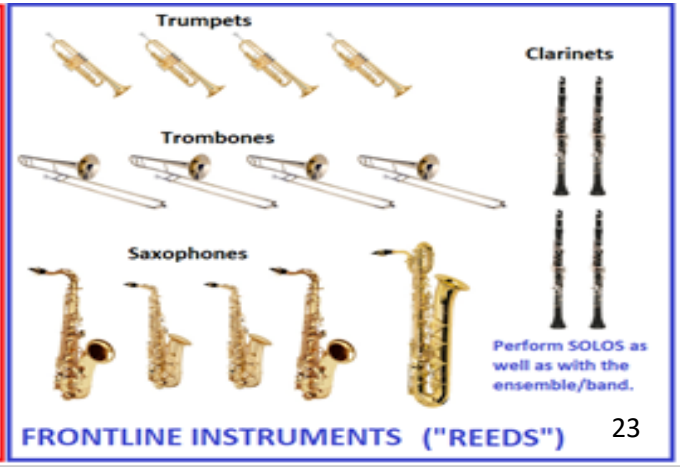
3. Blues Scale

Use any of these notes when improvising.

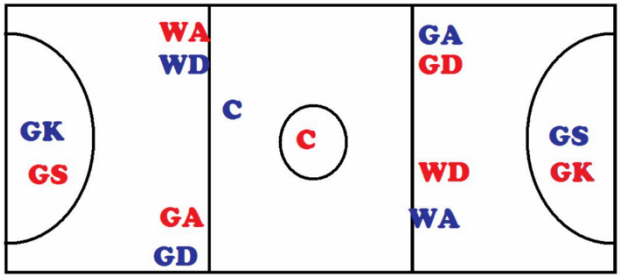


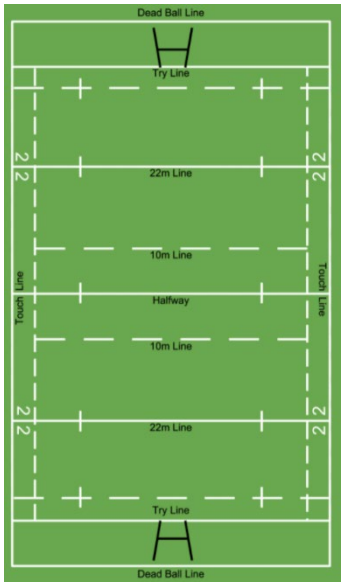
Twelve Bar Blues Chord Sequence

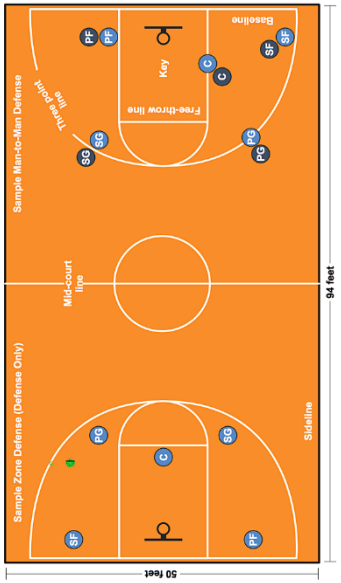
CHORD I	CHORD I	CHORD I	CHORD I
CHORD IV	CHORD IV	CHORD I	CHORD I
CHORD V	CHORD IV	CHORD I	CHORD I

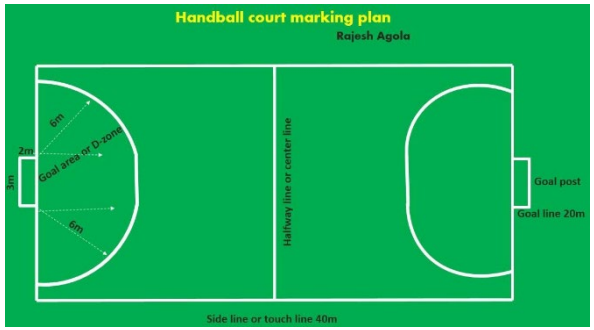


Invasion Games	
1. Term	**Definition**
Skills	Passing, shooting, Kicking, throwing, movement, striking
Attacking	Making an attempt to score or gain an advantage
Defending	Resisting an attack
Footwork	The way one moves their feet or is allowed to move their feet
Marking	A defensive strategy where a team pairs their defenders with the opposing attack
Dodging	A sudden deceptive move away from your opponent
Scoring	A measure of performance against your opponent
Officiating	A system of managing a sport, implementing the rules and discipline
Formations	The positioning of players on the pitch
Tactics	Planned strategies used within a match to gain advantage
Teamwork	The effective combined action of a group
Sportsmanship	Fair and generous behaviour
Feedback	Information a performer receives about a skill or performance
Outwitting Opponent	To outsmart an opponent









2. Components of fitness	Definitions
Aerobic Endurance Test- Cooper 12-minute run	Is the ability of the Cardiorespiratory system to work efficiently, supplying nutrients and oxygen to the working muscles during sustained activity
Muscular Endurance Test- One-minute sit-ups	Is a measure of how long a performer's muscles can powerfully contract repeatedly before they get tired?
Flexibility Test- Sit and Reach	Is the ability to move your joints through their full range of motion smoothly
Speed Test- 30-minute sprint test	Is distance divided by time
Strength Test- Hand grip dynamometer	Is the amount of force muscles can generate to overcome resistance
Power Test- Sergeant jump test	Is the ability to combine strength and Speed
Body Composition	Measure of fat, muscle, bone, and water
Max Heart Rate (HR)	Calculation: 220 – age =
3. FITT Principles of Training	**Definitions**
Frequency	The number of times you train
Intensity	This is how hard you train
Type	This is the method of training used
Time	This is how long you train for

4. Macronutrients	Definitions
Carbohydrates	The body's main source of energy (Source-bread/rice/sugar)
Protein	Provide the building blocks, essential for muscle growth and repair (Source-Meat/fish/beans)
Fats	Energy source for low to moderate intensity activities (Source-Butter, cheese, fish, nuts)
5. Micronutrients	**Definitions**
Vitamin A	Important for eye health (Source-fish)
Vitamin B1	Essential for energy production (Source- rice, beef, Beans)
Vitamin C	Maintains a healthy immune system (source- Fruit and veg)
Vitamin D	Crucial for healthy bones and teeth (Source- eggs, oily fish)
Potassium	Important for keeping fluids in body (Source- bananas)
Iron	Enable red blood cells to carry oxygen (Source-spinach, beef)
Calcium	Crucial for strong, healthy bones. (Source- cheese, milk)
6. Balanced Diet	**Definitions**
Calories	RDAs: Recommended daily allowance of calories (Kcal) Males 2500 Kcals, women 2000 Kcals
Hydration	RDAs: Recommended daily intake (RDI) 2 litres of fluids a day
7. Psychology in Sport	**Definitions**
Motivation	The drive for a person to be successful
Anxiety	An undesirable emotion
Self-confidence	The belief that a desired behaviour can be performed

A) Key Words

Morality – Principles & standards determining right or wrong actions
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.
Relative Morality: When a person holds a moral principle but is prepared to adapt or adjust it in certain situations.

Forgiveness – To grant a pardon for a wrongdoing; to give up resentment and the desire to seek revenge against a wrongdoer

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

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

Good – considered morally right, beneficial or to our advantage

Evil – considered extremely immoral, wicked or wrong

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

B) How do we make moral decisions?

Conscience

The Law

Past Experience

Religious Leaders

Religious Teachings

Situation Ethics

Utilitarianism

C) 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 brought them all up that way.'

D) Mahatma Ghandi: Hindu leader of the Independence Movement in British-run India, 1869–1948 *'The weak can never forgive. Forgiveness is the a tribute of the stong.'*

E) Religious Attitudes towards forgiveness

Christians

- Forgiveness is a prominent theme within Christianity and 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

F) 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 are in need of 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.

The Bourne Academy

Knowledge Organiser: Year 8 Spring Term: Religious Studies

A) Key Words

Good – considered morally right, beneficial
Free Will – Ability to make choices voluntarily and independently. Nothing predetermined
Justice – Fairness, equal provision and opportunity
Punishment – Penalty for a crime or wrongdoing
Crime- An unlawful act breaking government laws which is punishable by the state, e.g. theft, speeding, assault
Suffering - Pain or distress caused by injury, illness, loss, Emotional / psychological, physical, or spiritual

B) Aims of Punishment

Protection – protecting society

Vindication – upholding the law / punishment justified

Deterrence – discouraging other

Reform – making someone change

Reparation – repairing damage

Retribution – punishment inflicted as vengeance

C) Christian Attitudes towards the Death Penalty

Liberal 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.

Christians believe that God commanded 'Thou shalt not kill' (Exodus 20:13), Christians should follow the teachings of Jesus to be compassionate and forgiving. Jesus was forgiving to the adulterous woman (John 8) and pleaded with God for 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 argue that capital punishment upholds the commandment 'Thou shalt not kill' by showing the seriousness of the crime of murder.

D) For

- Life terms in prison are very expensive
- Some people – such as the criminally insane – cannot be reformed.
- It is the only way that victims can experience closure.
- There has to be an ultimate punishment for the very worst crimes..
- Execution is the only way to truly protect society from very dangerous murderers and terrorists

E) Against

- The death penalty is just state-sanctioned murder
- There is evidence that 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.

F) 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

Some Muslims agree that this 'just cause', for which the death penalty is permitted, is the crimes of murder

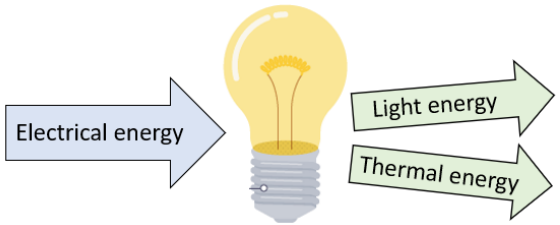
There is a growing number of Muslims who disagree with the death penalty and call for it to be abolished

1) Key Word	Definition
Dissipate	Spreads out wastefully into the surroundings
Energy Transfer	Changes from one form of energy to another form of energy.
Force	A push, a pull or a twist that acts on an object.
Joule (J)	Joules are the units of energy.
Power (P)	The rate of work done (how much work is done in a particular time), or the amount of energy transferred every second.
Watt (W)	Watts are the unit of Power. A kW is 1000 W
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.

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**.

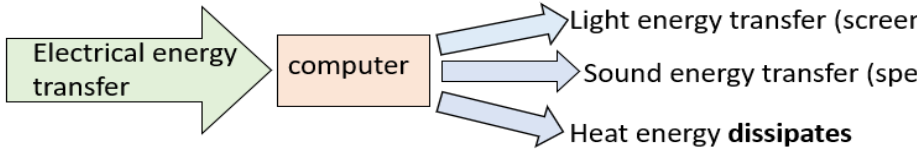


The heat energy **dissipates** into the surroundings. It is not useful energy.

3) Energy Store	Description
Gravitational Potential (GPE)	Anything that can be lifted by against a gravitational field
Chemical	Energy that can be released by a chemical reaction.
Kinetic Energy	Anything that moves has a kinetic energy store.
Elastic Potential	Anything that is stretched, or compressed.
Thermal Energy	Everything has thermal energy. Hotter objects have more thermal energy.
Magnetic	Magnets that attract or repel each other.
Electrostatic	Electric charges that attract or repel each other.

4) Energy Transfer	Description
Mechanically	When a force makes something move.
Heating	Hotter objects transfer energy to cooler objects
Electrically	When electric charges move around a circuit.
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)

$$E = F \times d$$

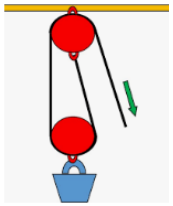
Work done = Force x distance

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!

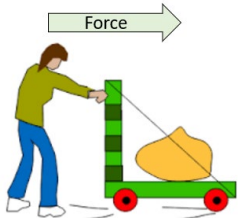
6) Machines and Work done (energy transferred)

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.



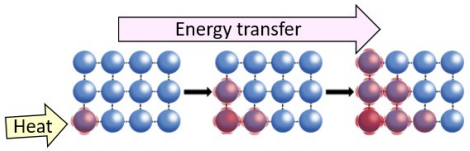
7) Heating and Cooling

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:

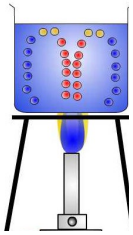
Conduction

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



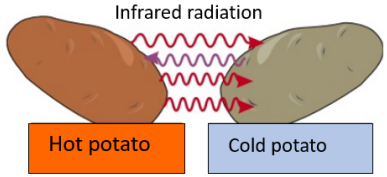
Convection

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
Finite resource	A resource that will run out.
Fossil fuel	A fuel formed from the remains of living organisms, for example coal and gas.
Geothermal	Heat energy from under the ground
Hydroelectric	Electricity generated by the movement of water
Kilowatt hour (kWh)	Unit used by energy suppliers. The energy used by a 1kW appliance for 1 hour.
Kilowatt hour (kWh)	Unit used by energy suppliers. The energy used by a 1kW appliance for 1 hour.
Non-renewable	A resource that cannot be replaced when it is used up.
Power (W)	How quickly energy is transferred by a device
Renewable	An energy source that will not run out – it can be replaced.
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) Energy Use in the Home

In science, we use the unit joule (J) for energy but energy suppliers use a different unit to calculate the energy costs in our home. They use the **kilowatt hour (kWh).**

Cost = power (kW) x time (hours) x price (per kWh)

Example

A 3kW water heater is used for 1 hour. 1kWh costs 16p. Calculate the cost of using the water heater.

Cost = 3 x 1 x 16

Cost = **48p**

11) Generating Electricity

Fossil fuels are a **non-renewable** energy source. They will eventually run out. It is important to find alternative, and renewable 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 its 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 Words	Definitions
Activation Energy	The minimum (smallest)amount of energy that colliding particles must have for them to react.
Catalyst	A substance that increases the rate of a reaction but is not itself used up.
Carbon particulates	This is another word for soot (the black stuff that forms on the bottom of barbeques or Bunsen burners).
Combustion	Another word for burning in oxygen.
Displacement	A more reactive metal will displace ('kick out') a less reactive metal in a reaction
Endothermic	Reactions that take in heat energy – the temperature will decrease.
Exothermic	Reactions that give out heat energy. The temperature will increase
Fuel	Contain hydrocarbons – compounds containing hydrogen and carbon atoms only.
Hydrocarbon	A molecule that is made of hydrogen and carbon only.
Oxidation	Reaction of other elements with oxygen
Reactivity series	List of metals in order of reactivity.
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 Terms	Definitions
Chlorophyll	Green pigment in chloroplasts of plant cells. It enables (allows) photosynthesis to take place.
Chloroplasts	Contain the green pigment (colour) chlorophyll, which absorbs the light energy plants need for photosynthesis.
Fertilisers	Chemicals that contain minerals that plants need to build new tissue (grow).
Lung	Soft organ that inflates to draw in oxygenated air and deflates to exhale (breathe out) air.
Mitochondria	Organelles in the cytoplasm of cells. Respiration takes place in the mitochondria.
Oxygen debt	The amount of extra oxygen required by the body for recovery after vigorous (hard) exercise.
Photosynthesis	Process carried out where plants make their own food. carbon dioxide + water → glucose + oxygen
Respiration	A chemical reaction in living things which oxygen is used to release the energy from food. glucose + oxygen → carbon dioxide + water (+energy)
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.

(A) ¿Qué hay en tu ciudad?	What is there in your town?	(B) En la cafetería	In the café
Hay… un castillo un centro comercial un estadio un mercado un museo un parque una piscina una plaza un polideportivo un restaurante una tienda una universidad	There is… a castle a shopping centre a stadium a market a museum a park a swimming pool a square a sports centre a restaurant a shop a university	¿Y de beber? Yo quiero… Bebidas un batido de chocolate/de fresa un café una Coca-Cola una Fanta limón un granizado de limón un té	And to drink? I want… Drinks a chocolate/strawberry milkshake a coffee a Coca-Cola a lemon Fanta an iced lemon drink a tea
(C) En…	**In…**	**(D) Raciones**	**Snacks**
mi barrio mi ciudad mi pueblo No hay museo. No hay nada. unos museos unas tiendas muchos museos muchas tiendas	my neighbourhood my town, my city my village, my town There isn't a museum. There's nothing. some museums some shops a lot of museums a lot of shops	calamares croquetas gambas jamón pan con tomate patatas bravas tortilla ¿Algo más? No, nada más. ¿Cuánto es, por favor? Son cinco euros setenta y cinco.	squid croquettes prawns ham tomato bread spicy potatoes Spanish omelette Anything else? No, nothing else. How much is it, please? That is €5,75

(E) ¿Qué hora es?	**What time is it?**	**(F) ¿Qué haces en la ciudad?**	***What do you do in town?***
Es la una. Son las dos. Es la una y cinco. Son las dos y diez. Son las tres y cuarto. Son las cuatro y veinte. Son las cinco y veinticinco. Son las seis y media. Son las siete menos veinticinco. Son las ocho menos veinte. Son las nueve menos cuarto. Son las diez menos diez. Son las once menos cinco. Son las doce ¿A qué hora? a la una a las dos	It's one o'clock. It's two o'clock. It's five past one. It's ten past two. It's quarter past three. It's twenty past four. It's twenty-five past five. It's half past six. It's twenty-five to seven. It's twenty to eight. It's quarter to nine. It's ten to ten. It's five to eleven. It's twelve o'clock. At what time? at one o'clock at two o'clock	Salgo con mis amigos. Voy… al cine al parque a la bolera a la cafetería a la playa de compras de paseo No hago nada. **(G) ¿Te gusta vivir en…?** Me gusta mucho vivir en… No me gusta nada vivir en… porque hay/es	I go out with my friends. I go… to the cinema to the park to the bowling alley to the café to the beach shopping for a walk I do nothing. **Do you like living in…?** Do you like living in…? I like living in… a lot. I don't like living in… at all. because there is/it is…
(H) ¿Qué vas a hacer?	**What are you going to do?**	**(I) ¿Cuándo?**	**When?**
Voy a salir con mis amigos. Vas a ver la televisión. Va a ir de paseo. Vamos a jugar al voleibol. Vais a chatear. Van a hacer los deberes.	I am going to go out with my friends. You are going to watch TV. He/She is going to go for a walk. *We are going to play volleyball* *You are going to chat.* *They are going to do their homework.*	este fin de semana el sábado por la mañana el domingo por la tarde primero luego finalmente a las tres de la tarde	this weekend on Saturday morning on Sunday afternoon/evening first then finally at three o'clock in the afternoon

A) 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 user measurements. Anthropometric Data comes in the form of charts and tables, sizes such as height, finger lengths and hand spans and average group sizes for people of different age ranges.

B) Marketing and Market Research Methods

Online Surveys- email and social media

Focus Groups- discuss needs and wants with potential primary users. Telephone survey- Cold call potential primary users

Product Analysis- Review current products on the market to see how competitors can be beaten.

C) Branding

A strong brand makes a product:

Easy to recognise

Easy to remember

Appealing to its target market

Sets itself apart from competitors

Explains what the product is clearly.

D) 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

E) Life-cycle assessment (LCA)

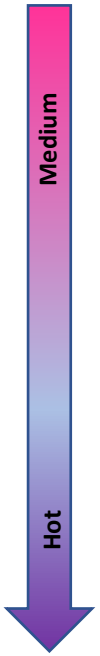
LCA evaluates the environmental impact of a product from 'cradle to grave' – from the extraction of raw materials required to manufacture the product to end of use and disposal.

In the case of a plastic bottle the raw material is oil.

F) Product Analysis

A product analysis looks at current products and assesses whether they are successful or require improving. A good Product Analysis informs designers how products can be developed.

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?

G) 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.

H) Electronic Components

Different components have different functions:

Input Components- sets an electrical circuit in action.

Process Components- work together to ensure current and signals are sent between input components and output components.

Output components- is what the circuit results in and ultimately does.

I) 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 and lightweight.

Ductile- Can be stretched.

Conductor- Conducts heat or electricity.

Insulator- Does not conduct heat or electricity.

Corrosion resistance- Resistance to rust and UV light

Malleable- Can be shaped, pressed and moulded.

J) A **risk assessment** helps you work safely in the workshop. There are 3 parts to a risk assessment:

Hazard identifies any potential hazards.

Risk describes how you could be injured.

Control measure describes what you can do to avoid being injured.

K) Forces

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

We need to understand how forces work to design structures.

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.

L) A **prototype** is an early sample, model, or release of a product built to test a concept or process or to act as a thing to be replicated or learned from. These can be 2D or 3D and use a range of materials from cardboard to styrofoam and foam board.

M) A **technical specification** is a set list of criteria and requirements that a material, design, product or service must achieve and satisfy.

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