Year 9

Knowledge Organisers

NAME:_____

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

What is a knowledge organiser?

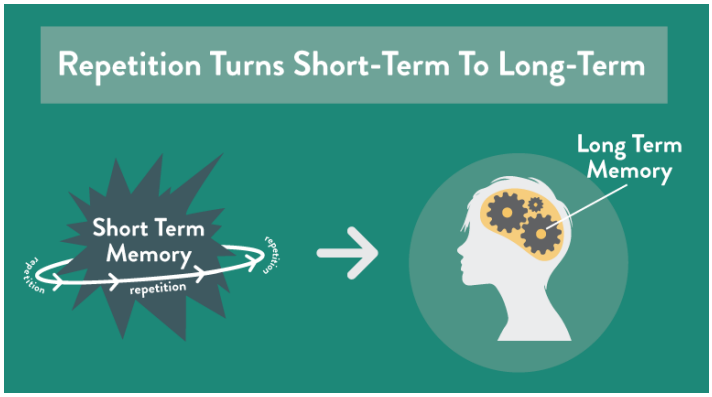
A knowledge organiser sets out the most important facts that your teachers believe you need to know about their subject. We want you to use it to memorise information that will support you with what you are learning in class.

Why do you need knowledge organisers?

- To make your homework more meaningful and to link directly to what you learn in lessons. They are to be used in conjunction with the curriculum maps which can be found on Firefly and the school website.
- To help make sense of what you learn in lessons, allowing you to complete tasks that are more challenging.
- To help develop the techniques you need to memorise information, ready for future years.
- To give you the opportunity to feel more expert of specialist in a subject, and learn more for yourself.

How does your memory work?

You store information in both your long term and short-term memory. Our short term memory is our 'working memory' – we use it for day to day thinking and problem solving and only store memories in here for a short amount of time. Our long-term memory contain information that we know really well, and our short-term memory 'calls it up' when new feel we need to use it. If we do not memorise information, our short-term memory soon forgets it. In addition, if we try to remember too much information in too short a period we overload our short-term memory – this can affect our ability to think clearly and leads us to make mistakes.



To store information in your long-term memory you need to practice:

- **Repetition** – keep coming back to the same information repeatedly.
- **Spacing** – Mixing up the topic you study to test your memory.
- **Testing** – Find ways to check what you remember, and to work out your weak areas.

Instructions for using your knowledge organisers

You can use your Knowledge Organisers in a number of different ways but you should not just copy from them. Below are some possible tasks or strategies you could complete as independent learning.

- Make flash cards (https://quizlet.com/en-gb)
- Cover up one section of the KO and try to write out as much as you can form memory. Correct this work.
- Draw a mind map.
- Write your own challenging questions and then leave it overnight to answer them the next day.
- Put the key words into new sentences.
- Give yourself spelling and keyword definition tests
- Draw diagrams or processes / flow charts / images and label them with extra information.
- Do further research on the topic / create fact files.
- Make up mnemonics

ART

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

YEAR 9 ART

Terms 1: Surrealism Project

The Big Picture

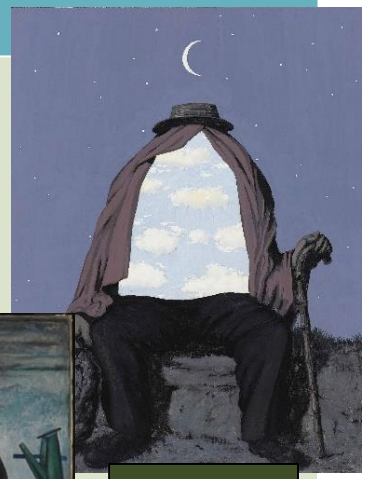
Project Brief: To produce a piece of artwork that is inspired by the Surrealist art movement. You will have the opportunity to explore digital editing and manipulation of photographs using Affinity.

Artist Connections

You will investigate and connect your practical work with the work of key "Surrealist" artists.

Salvador Dali

Max Ernst



Rene Magritte

Terms 2-3: Self-Portraiture Project

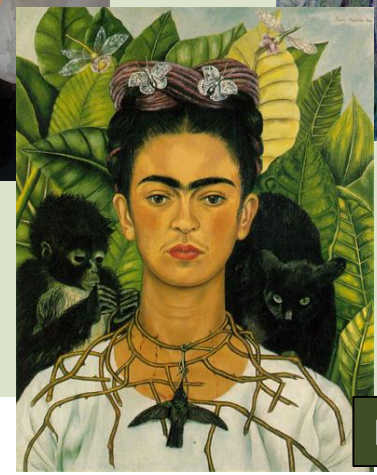
The Big Picture

Project brief: To respond to the work of an artist and produce a 2D self-portrait that conveys your own personal identity.

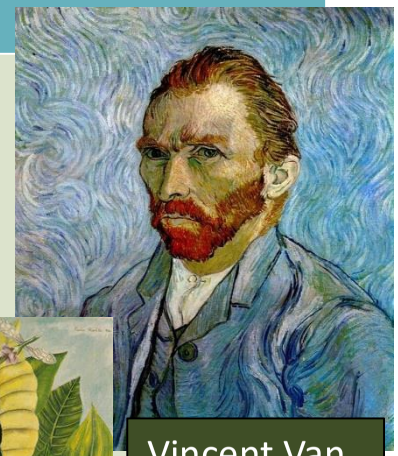
Artist Connections

Your work will make connections with an artist. You will have choice in which artist inspires your work and the type of media you use to produce this work.

Tai Shan Schierenberg



Frida Kahlo



Vincent Van Gogh

Facts about Surrealism:

- Surrealism was a cultural movement which developed in Europe in the aftermath of World War I. In 1924, the writer Andre Breton explained Surrealism in his Surrealist Manifesto, and a few years later artists began to paint in the style he described.

- The word Surreal means beyond real. Surrealism was inspired by a psychoanalyst called Sigmund Freud who studied the unconscious mind. Surrealist artists believed that the way to find truth in the world was through the subconscious (hidden) mind and dreams, rather than through logical thought. They created art that had lots of hidden images and ideas. These artists did not wish their work to make simple, logical sense.

- Surrealist artworks feature the element of surprise and unexpected juxtapositions. Many Surrealist paintings look like scenes from a dream (or nightmare). Many Surrealist paintings include objects or creatures in unnatural environments, some group together unrelated objects and others twist realistic images by using strange colours.

Key Artists

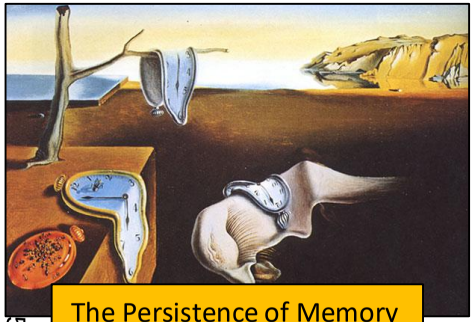
Salvador Dali – An eccentric Spanish Surrealist artist.. 'The Persistence of Memory' is Dali's most famous painting of melting clocks.

Rene Magritte – French Surrealist artist. Magritte is well-known for including men in bowler hats in his paintings, a recurring theme.

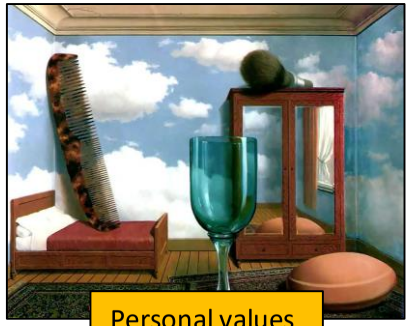
Max Ernst - German surrealist painter, sculptor, graphic artist and poet. Ernst was a primary pioneer of the Dada and Surrealist movement.

Surrealism Keywords

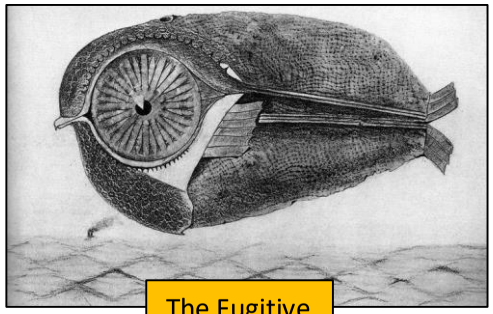
Surreal	Beyond real, bizarre, dream-like.
Metamorphosis	Morphing one object into another or changing its shape.
Juxtaposition	Two things positioned close together with contrasting effect.
Silhouette	The shape and outline of something visible against a contrasting background.
Change of Scale	Objects that are too small or too large for their surroundings.
Motif	A dominant or recurring idea in an artistic work.
Transparency	Making objects see through.
Dislocation	Placing a familiar object in an unfamiliar setting.
Levitation	Floating objects that don't normally float.
Subconscious	The part of our minds that we are not aware of. Where our memories are stored and dreams are created.
Automation	Automatic drawing or writing. Drawing without knowing what it's going to be, like doodling.



The Persistence of Memory
Salvador Dali



Personal values
Rene Magritte

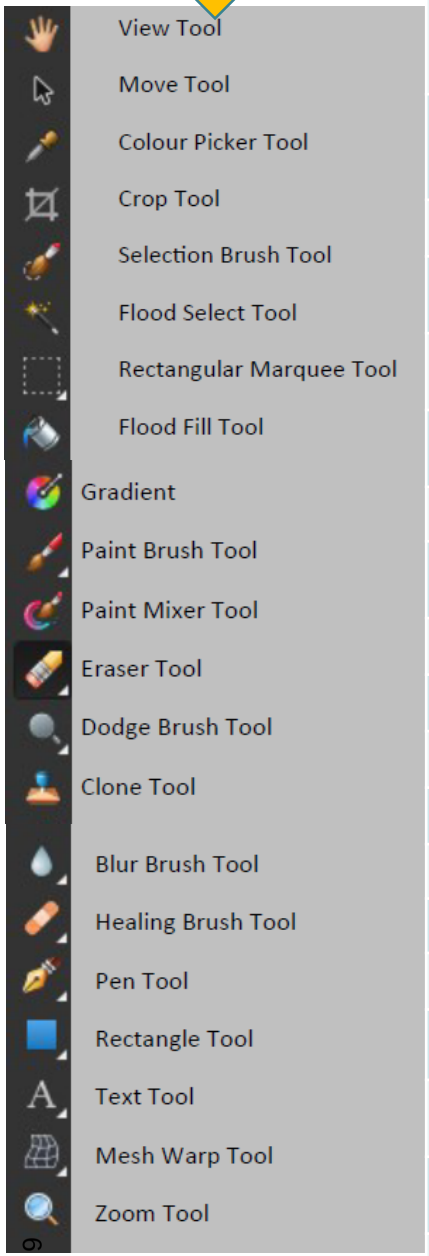


The Fugitive
Max Ernst

Surrealism Knowledge Organiser

Affinity Photo Editing Knowledge Organiser

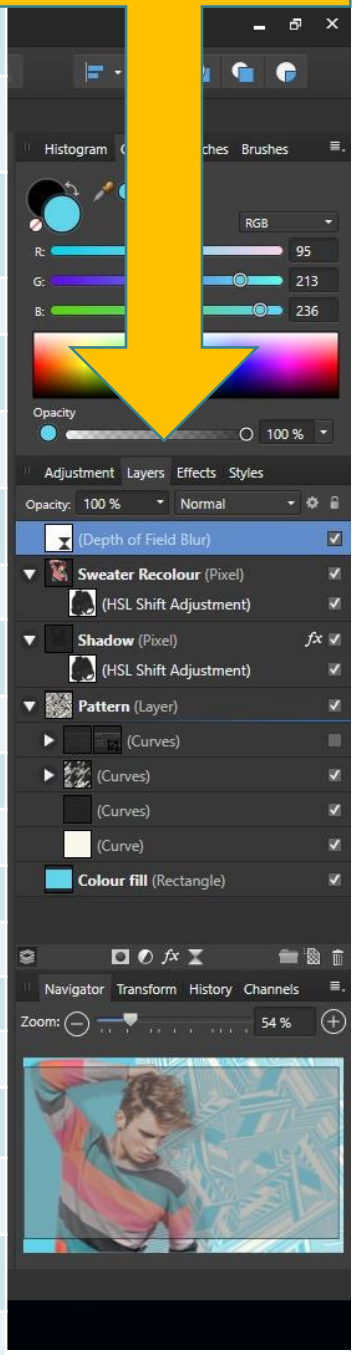
1. Art Affinity Editing Tools



Affinity Keywords

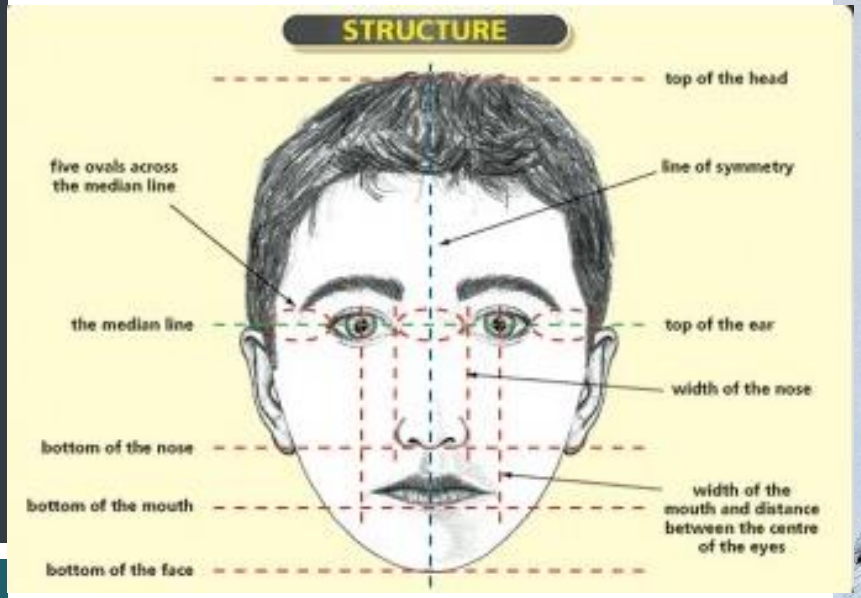
Filters	Editing technique which can be used to increase brightness and contrast as well as to add a wide variety of textures, tones and special effects to a picture.
Layers	Layers contain the images, text, or objects that make up a layered file. They let you move, edit, and work with content on one layer without affecting content on other layers. Layers are arranged in a stack in the layers palette.
Gradient	A gradual change from one colour or tone into another. Two common types of gradients are the linear gradient where each colour sits on opposite sides of the frame, and a radial gradient where one colour sits in the middle and another at the edge.
Opacity	The degree of transparency an element has. The lower the opacity, the more transparent an element is.
Contrast	The degree of tonal difference between two elements. Some other common types of contrast are dark vs. light, thick vs. thin, rough vs. smooth.
Saturation	The degree of intensity and vividness of a colour. For example, a low-saturation colour may appear paler, and faded, whereas a more heavily saturated colour may appear more vibrant and colourful.
Resolution	The amount of detail an image has. Generally speaking, the higher your resolution, the better your images appear, and the more detail is rendered. Whereas lower resolution images or graphic tend to appear blurry or pixelated.
Composition	The arrangement of the parts within a piece of work or the layout.
Rule of Thirds	A theory that if you divide your image with two vertical and two horizontal lines, the areas where your lines intersect will become focal points of the composition.
Depth of Field	A term that refers to the amount of area that is focussed and sharp within a photograph.
Cropping	The removal of unwanted outer areas from a photographic image.
Cloning	The act of copying part of an image from one area to another in a digital edit.
Manipulation	Transforming or altering a photograph using various methods and techniques to achieve desired results.
Burn	A tool used to darken areas of a photograph.
Dodge	A tool used to lighten areas of a photograph.
Vignette	An effect which creates a centred photo shape that shades off gradually into the background.
Serif	A typeface such as Times New Roman with small decorative strokes (called 'serifs') found at the end of horizontal and vertical lines. Serif typefaces tend to look professional, authoritative, and traditional in appearance.
Sans Serif	A typeface without the small decorative serif strokes. Sans serifs tend to look more modern, stylish, and cleaner than their serif counterparts.
Export	When an edit is completed, it needs to be exported which will then allow you to save an edit as a normal Jpeg image.
Jpeg	Standard image format that photographs are typically shot in for school projects.

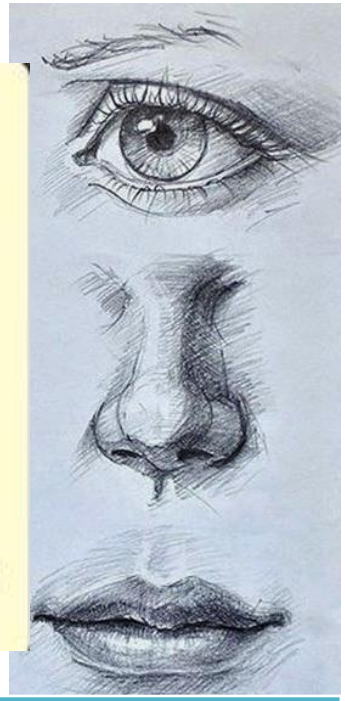
Affinity Layers Palette



The rules for accurate facial proportions:-

1. Start with an upside down egg-shape to represent a head shape. The rounder top end is the very top of the head not the hair line and the pointier bottom represents the chin.
2. Use a ruler to measure half way down the egg and draw a light guideline. This is the line that the middle of the eyes should sit on. Typically a head is 5 eye widths wide.
3. Draw another guideline half way from the eye line to the bottom of the chin; this is where the bottom of the nose should sit. The bottom of the nose is typically the same measurement as an eye width. You will also find that usually ears measure from the eye line to the nose line.
4. Draw another guideline from the nose line to the bottom of the chin; this is where the bottom of the bottom lip should sit.
5. By making sure all of the above guidelines are measured and applied correctly, the accuracy and precision of the face is greatly enhanced.





Top tips for better facial features:-

1. Start by drawing simplified shapes lightly. E.g. If you look closely at an eye it is an almond shape or the lips can be simplified down to sausage and ring shapes.
2. Then add on construction lines to build up the structure of the facial features.
3. Observation is the overall key to success so make sure you keep looking in the mirror if it is a self-portrait to ensure that the facial features are as close to realistic as possible.
4. Add tonal detail using a range of tones to make the face look more realistic and give a good sense of form. Look carefully at where the areas of light and shadow are hitting the face and make sure that this is reflected in your drawing.

Reasons to create self-portraits, the 5 A's:-

- **A**nalysis: A self-portrait is an exploration of your face, body and personality.
- **A**uthorship: A self-portrait is a historical record of the person that made it, left behind for posterity.
- **A**utobiography: A self-portrait can be a visual journal documenting something that is happening or has happened in your life.
- **A**dvertising: A self-portrait is a demonstration of style and skill to show to prospective clients.
- **A**vailability: A self-portrait can be a way to experiment with pose and technique using a readily available model.

Self-Portraiture Keywords

Self-portrait	A representation of an artist that is drawn, painted, photographed, or sculpted by that artist.
Facial Proportions	The position of different facial features in relation to the entire face.
Line of Symmetry	A line down the centre of the head.
Median Line	The line half way from the top of the head to the bottom of the chin. It's also the guideline for where eyes should be placed.
Composition	The arrangement of the parts within a piece of work or the layout.
Mixed-media	Work that combines various visual art media—for example, one that combines paint, ink and collage.
Tone	The degree of lightness or darkness of an area. Tone varies from the bright white of a light source through shades of grey to the deepest black shadows.
Realistic	When something looks true to the real life version of it.
Abstract	Not representing reality, but exploring shape, colour and textures.
Expressive	Conveying thought or feeling in the work.

Drawing Self-Portraits Knowledge Organiser

COMPUTING

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST
A SCHOOL

Year 9 Computing

Digital Literacy

Be able to discuss & demonstrate ability to use school digital services, including Firefly, Office 365 and KHS Portal.

Cloud computing is storing and using services online, rather than storing them locally on a device such as a hard drive . Cloud computing is becoming more popular as web browsers become more powerful and network coverage is more widely available. Know the advantages and disadvantages

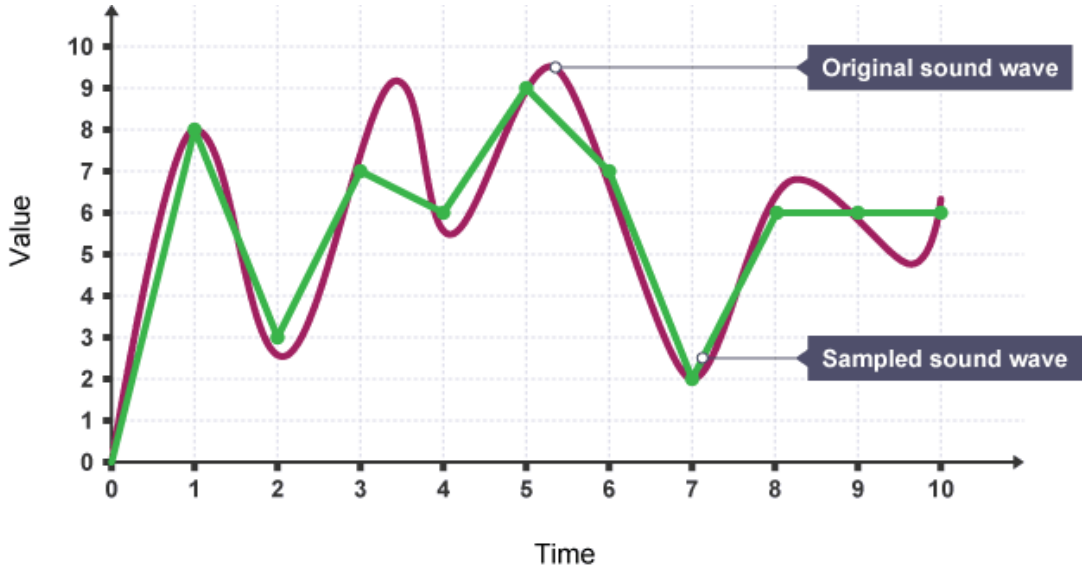
Data & Data Representation

Representing sound

Sound needs to be converted into **binary** for computers to be able to process it. To do this, sound is captured - usually by a microphone - and then converted into a **digital** signal.

An **analogue** to digital converter will sample a sound wave at regular time intervals.

The samples can then be converted to binary. They will be recorded to the nearest whole number.



Key words: Binary, Digital, Analogue, Sampled Sound Wave

Remember: Computers communicate in binary. So sound needs to be translated (converted) into binary for the computer to understand!

Year 9 Computing

Algorithms & Programming

Term	Definition
Algorithm	A step by step set of instructions for solving a problem
Decomposition	Breaking a problem down into manageable chunks (each chunk can then be solved by creating an algorithm
Generalisation	Spotting patterns and similarities in algorithms and code
Abstraction	The process of filtering out irrelevant data

Data type	Definition
String	Used for a combination of any characters that appear on a keyboard, such as letters, numbers and symbols.
Integer	Used for whole numbers
Float	Used for decimal numbers

Syntax Errors

A syntax error occurs when the code given does not follow the syntax rules of the programming language.

```
1   print("Hello World!)
```

Runtime Errors

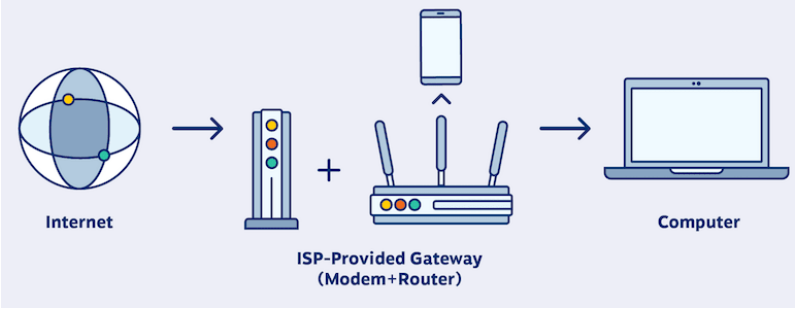
A **runtime error** is an error that takes place during the running of a program.

```
radius = input ("Enter the radius of the circle")
area=3.142*radius*radius
print ("Area of the circle is ", area)
```

Web Development

HTML and CSS are text based programming languages which used to create websites.

```
1 <!DOCTYPE html>
2 <html>
3     <head>
4         <title>Example<title>
5         <link rel="stylesheet" 
6     </head>
7     <body>
8         <h1>
```



Term	Definition
WWW	The World Wide Web is a huge collection of websites
Internet	The internet is the network of computers that enables us to access the WWW
Web Browser	Software that allows you to view webpages – e.g. chrome, explorer, safari

WYSIWYG is an acronym for "What you see is what you get!" and is the term used to describe software such as "Rocketcake" & Wix to create a website using drag and drop techniques.

DANCE

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

SWANSONG

OBJECTIVE 1: MOTIF ACCURACY

To accurately replicate and apply the Swansong taught motifs into your work.

OBJECTIVE 2: CHOREOGRAPHIC INTENT

To present a thought provoking message inspired by Swansong using a prop, found sound, accompaniment, costume and clear characterisation.

WHAT SKILLS WILL I BE DEVELOPING IN DANCE?

PHYSICAL

- **Mobility**

The range of movement in a joint; the ability to move fluently from action to action.

- **Alignment**

Correct placement of body parts in relation to each other.

TECHNICAL

- **S A D R**

Space, action, dynamics, relationships. Where, what, how, who? Accuracy of the taught phrases.

- **Rhythmic content**

Repeated patterns of sound or movement.

EXPRESSIVE

- **Communication of intent**

The aim of the dance; what the choreographer aims to communicate.

- **Projection/Facial Expressions**

The energy the dancer uses to connect with and draw in the audience. Use of the face to show mood, feeling or character.

MENTAL SKILLS

- **Rehearsal discipline**

Skills required for refining performance such as commitment, systematic repetition, teamwork, responsibility and effective use of time.

- **Concentration**

The quality of being certain of your capability in dance.

UNDERSTANDING CHOREOGRAPHY

- **Subject Matter**

Theme, narrative and dance idea associated with a specific piece of choreography

- **Understanding mood and atmosphere**

Conveying the theme, sustaining the mood and using the music to evoke this.

- **Constituent features**

Bringing movement, accompaniment, costume, lighting and props together.

THINGS TO DO AT HOME:

- **Watch a live dance performance/DVD or stream a professional dance work to appreciate the expressive skills of the performers. How good were they at expressing and why?**
- **Record your group piece. Reflect on your ability to sustain your character and use of props throughout the entire dance.**

Key Facts: Swansong

Choreographer	Christopher Bruce
Composer	Phillip Chambon
Lighting Design	David Mohr
Set Design	Christopher Bruce
Premier date	November 1987
Company	Rambert Dance Company
Costume Design	Christopher Bruce
Dance styles	Ballet, contemporary, jazz, tap and ballroom

Design

1	Staging: Proscenium
2	Black, bare, undecorated stage except for one wooden chair. Minimalistic.
3	The chair symbolizes a weapon, shield, safe haven, support, prison bars, shackles and a Burdon.
4	Lighting: Overhead lighting is used to highlight the interrogation and a diagonal shaft of light is used within the piece to represent a window/freedom. Footlights create shadows. Dark, dim lighting is used to create a prison atmosphere.
5	Props: Wooden chair, canes, cigarette and red nose.
6	Costume: Everyday clothing is used for the prisoner (jeans and t-shirt) and uniforms are used for the guards. All wear black jazz shoes.
7	Interrogators always exit stage right (suggesting a door?)
8	Choreographic style: Episodic and dramatic

Accompaniment

1	Composed in collaboration with the choreographer.
2	Electro acoustic and digitally sampled sounds are combined with popular dance rhythms.
3	Natural sounds of the dancer can be heard (breath, percussion on the floor and body)
4	Unaccompanied interludes (silence) are used and enable us to hear the tapping of the feet.
5	Vocal and reed pipes are used.
6	Everyday object were used to create the sound (pots and pans)

Themes and Stimuli

1	The novel ‘A Man’ by Oriana Fallaci
2	The work of Amnesty International
3	The experience of Chilean poet Victor Jara
4	Saying goodbye to something (career as a dancer)
5	Human rights
6	Prisoner of conscience
7	Torture and interrogation of a prisoner

SET PHRASE

OBJECTIVE 1: MOTIF ACCURACY

To accurately replicate the set phrase Breathe both physically, technically and safely.

OBJECTIVE 2: ARTISTIC INTENT

To demonstrate the set phrase expressively and artistically.

WHAT SKILLS WILL I BE DEVELOPING IN DANCE?

PHYSICAL

- **Skills**

Posture, alignment, balance, co-ordination, control, flexibility, mobility, strength, stamina, extension, isolation.

TECHNICAL

- **Skills**

Moving in a stylistically accurate way, being accurate in rhythmic, dynamic, action, relationship, timing and spatial content.

EXPRESSIVE

- **Skills**

Projection, focus, spatial awareness, facial expression, phrasing.

MENTAL SKILLS

- **During Performance**

Movement memory, commitment, concentration, confidence.

- **Process**

Systematic repetition, mental rehearsal, rehearsal discipline, planning or rehearsal, response to feedback, capacity to improve.

UNDERSTANDING SAFE PRACTICE

- **Warm Up**

Reasons to warm up and stages of warm up.

- **Safe Execution**

Specific to the set phrase and the contemporary genre.

- **Cooling Down**

Reasons to cool down and stages of cool down.

THINGS TO DO AT HOME:

- **Extension Task – Self Teach – Shift.**
- **Record your solo piece. Reflect on your ability in comparison to Breathe in terms of accuracy, style and performance qualities.**

GROUP CHOREOGRAPHY

OBJECTIVE 1: MOTIF ACCURACY

To select and use S A D R to realise choreographic intent.

OBJECTIVE 2: CHOREOGRAPHIC INTENT

To present a thought provoking piece of dance using a GCSE stimuli.

WHAT SKILLS WILL I BE DEVELOPING IN DANCE?

MOTIF DEV

- **16 Manipulations**

Simple *– Repetition, Tempo, force, staging, incorporate, size.*
Challenging *– Rhythm, Instrumentation, embellishment, ornamentation, planes, levels, fragmentation, quality.*
Difficult *– Retrograde, inversion, background, combination.*

STRUCTURE

- **Types**

Binary, ternary, rondo, narrative, episodic, theme & variation, logical sequence, transitions.

DEVICES

- **Types**

Repetition, contrast, highlights, climax, manipulation of number, contact, unison, canon, mirroring, symmetry, asymmetry, chance dance, juxtaposition, complementary actions, action-reaction, climax.

AURAL SETTING

- **Types**

Song, instrumental, orchestral, spoken word, silence, natural sound, found sound, body percussion.

- **Effects on Choreographic Intention**

Mood and atmosphere, contrast and variety, structure, relationship to theme/idea, musicality.

UNDERSTANDING MENTAL SKILLS AS A GROUP

➢ **Mental skills - During Performance**

Movement memory, commitment, concentration, confidence.

➢ **Mental skills - Process**

Systematic repletion, mental rehearsal, rehearsal discipline, planning of rehearsal, response to feedback, capacity to improve.

THINGS TO DO AT HOME:

➢ **Watch Shadows by Christopher Bruce. How effective is the piece and why? Refer to Motif development, structure, devices and aural setting in your answer.**

➢ **Record your group piece. Reflect on your ability to sustain your mental skills during the performance and process.**

DRAMA

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

YR9 DRAMA KNOWLEDGE ORGANISER

KEYWORDS

1. **Still image** (Creating an image to represent a frozen moment to sum up what's happening in a scene)
2. **Transition** (the movement from 1 scene to the next)
3. **Split Scene** (the stage is split in 2 to show 2 scenes happening simultaneously, they take it in turns to act or be in a still image)
4. **Cross Cutting** (as part of a split scene, using dialogue that leads into each other to cut to the other scene)
5. **Montage** (a series of short scenes or images put to music to show a passage of time)
6. **Teacher In Role** (your teacher takes on a role in the Drama)
7. **Naturalism** (a performance that attempts to replicate events and characters as in real life)
8. **Realism** (a choice to give the audience a performance with an accurate description of the real world)
9. **Confidence** (to have self-belief that you can perform and to do so with energy and commitment)
10. **Hot seat** (an off text exercise to develop a character, whereby the actor is asked questions to answer in role)
11. **Role on the Wall** (see Image 1)
12. **Re-enactment** (to re-create a real life event)
13. **Improvisation** (to make up Drama as you go. Performing without rehearsal)
14. **Flashback** (a scene which shows events of the past)
15. **Off-Text** (Improvising scenes away from the written text to flesh out scenes, characters and events)
16. **Evaluation** (to reflect upon the work created in terms of WWW and EBI to inform future practise)
17. **Rehearse** (to practice Drama work ready for performance)
18. **Semiotics** (umbrella term for anything on stage which is symbolic or that gives meaning to an audience without speaking)
19. **Atmosphere** (the mood of a scene as it is understood by the audience)
20. **Tension** (moments in the Drama where the audience feels a heightened sense of anticipation)
21. **Narrative** (the story or journey that the characters experience over the course of a play/performance
22. **Characterisation** (the art of creating a character image 2 as a method)
23. **Accepting** (see image 3 – To take the Drama seriously and to respond in an appropriate manner)

A.C.T.I.N.G

ACTUALITY – The use of Real-Life Inspired events as a stimuli and starting point for the production of Drama. This includes an apocalypse inspired event, exploring themes based around a young offenders instituted and Murder Mystery.

CHARACTER – To be able to create characters from scratch as well as develop existing characters. This may include being giving minimal details about a character and then fleshing out that role and putting your own stamp on that character. Students should be able to represent their characters both physically and vocally. And can both improvise as that character as well as rehearse and perfect the role for an end production.

TECHNIQUES – The ability to use stylised Drama techniques in their work to create Drama that has a non-naturalistic style. Techniques could include (among many others) slow motion, flashback, montage, split scene, still images, physical theatre, use of music and exposition

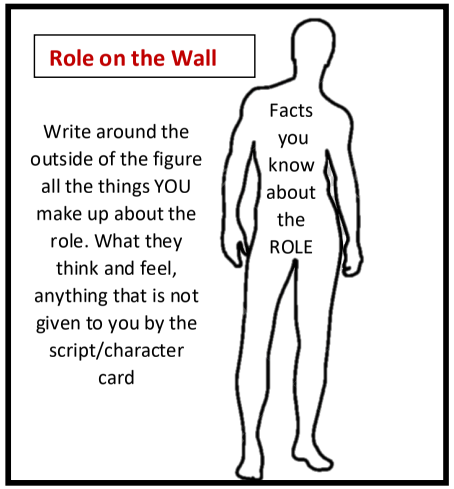
IMPROVISATION – To create Drama on the spot and to use improvisation as a starting point for more fleshed out Drama.

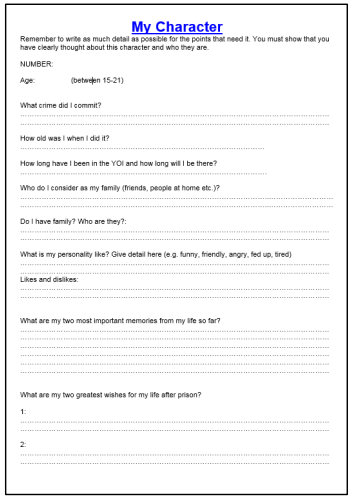
NATURALISM – To Create Drama and Characters that are believable and rooted in reality. Naturalism holds a mirror up to the world and produces something that reflects it in a way that is suitable for the stage.

GROUP WORK– Students will continue to work in small and large groups, both inside and outside their friendship cliques. It is crucial that students can interact and respond to each other in appropriate ways

Schemes of work

Autumn: **Intro to Year 9, Gangs SOW** & **Warden X**
Spring: Devising Project (Monologue/Duologue) and **Written Assessment**
Summer: The Vault (group devising) and **Film Trailer** – make and create a trailer





My Character

Remember to write as much detail as possible for the points that need it. You must show that you have clearly thought about this character and who they are.

NUMBER:

Age: (between 15-21)

What crime did I commit?

How old was I when I did it?

How long have I been in the YOI and how long will I be there?

Who do I consider as my family (friends, people at home etc.)?

Do I have family? Who are they?:

What is my personality like? Give detail here (e.g. funny, friendly, angry, fed up, tired)

Likes and dislikes:

What are my two most important memories from my life so far?

What are my two greatest wishes for my life after prison?

1:

2:

Reasons why we ACCEPT ideas in groups and practical work in Drama:

- It Keeps the Drama flowing
- Makes the Drama longer
- Stops it getting boring
- Makes the Drama look professional
- Makes it more realistic
- It's easier and more enjoyable for the actors

ENGLISH

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

STRATEGIC READING

PREDICT: What might happen next?

QUESTION: Do you have any questions you would like to ask about the text you read? Does it bring up any questions you might have about the issue/character/event?

CLARIFY Is there anything you might need to clarify about the text? Are there any areas of uncertainty that you have about what you just read? Perhaps there is a word you would like to know the meaning of?

SUMMARISE: Can you summarise what has happened in the text, or perhaps the greater meaning/message of the text? Could you summarise the effect that the text is trying to achieve/its tone?

ACTIVATE PRIOR KNOWLEDGE: What does the text remind you of? Have you learnt any of its content before?

THE NOVEL KNOWLEDGE ORGANISER			
DEFINE	RETRIEVE	SUMMARISE	INFER
Give/explain the meaning of words in context.	Retrieve and record information/identify key details from fiction and non-fiction.	Summarise main ideas from more than one paragraph.	Make inferences from the text/explain and justify inferences with evidence from the text.
• Find and copy one word meaning… • In the paragraph, which word most closely matches the meaning of the word… • What does the word…suggest about…? • What does the word…tell you about…? • What does the word…mean in this sentence?	• Write down one/two/three things that you are told about the… • What was revealed at the end of the poem/story? • Give one/two reasons why… • In what year did…? • What does the … do to frighten the…? • What does the poet ask? • How do you know that? • How does the character show…?	• What is the main message of the poem/story? • Which statement is the best summary for page…..? • Number the following sentences in the order in which they happened in the poem/story. • Look at the first 2 paragraphs. Which sentence below best describes the…? • Summarise the first paragraph using ….words.	• What evidence is there of….? • Explain what the description suggests about…? • Why did….feel….? • In which ways might this character appeal to many readers? • Use evidence from the text to support your answers. • What kind of person do you think… was? Why? • Explain how …felt about… • What was unusual for….on page….?
PREDICT	RELATE	EXPLORE	COMPARE
Predict what might happen from details stated and implied.	Identify/explain how information/narrative content is related and contributes to meaning.	Identify/explain how meaning is enhanced through choice of words and phrases.	Make comparisons within the text.
• Do you think that…will change his/her/their behaviour in the future…. • Explain why, using evidence from the text. • Based on what you have read, what does the last paragraph suggest might happen next/to the….? • What do you think….would say to …about? • Who do you think will…? • How do you think this character will…?	• Match parts of the story to the correct quotation (considering setting, past events, action, lesson, suspense, character, etc.). • Find and copy a group of words where….mood changes. • What impact does…change in mood/feeling have on the text as a whole? • Find a group of words which explain….opinion of…	• Why did the author use this word? • Why does the writer compare…to…? • What language features did the author use to describe…? • How does…help you to understand…? • How do the words…create a feeling of…? • What do phrases like… tell us? • What does this description tell us about…?	• How does…feel about…compared to at the beginning of the text? • According to the text, give one way that….are similar/different to… • How does the mood/relationships/opinions of the characters change throughout the text?

TOPIC:

Brief Synopsis- what is the unit about?

Students will develop an understanding of 19th Century England and key contextual developments of the era. They will also become familiar with the language of 19th Century non-fiction texts and the demands of this writing.

Students to begin developing the skills necessary for AQA English Language Paper 2. There is a focus on Q1, 2 & 3 which will be assessed near the beginning of the unit. Section B, Q.5, is assessed at the end of this unit of work.

Key Vocabulary & Spellings

Implicit	Simile
Explicit	Rule of three
Inference	Rhetorical question
Summary	Direct address
Writers' perspectives and attitudes	Hyperbole
Rhetorical techniques	Bias
Alliteration	Opinions
Emotive language	Facts and statistics
Adjective, adverb, noun, verb	Repetition
Metaphor	

Big Questions

(does not need to be one per lesson)

1. Can I identify the purposes and audiences of non-fiction texts?
2. Can I identify explicit and implicit information?
3. Can I summarise information and draw inferences?
4. Why were gender roles and social class important in the 19th Century?
5. Can I analyse how writers use language?
6. Can I compare writers' ideas and perspectives?
7. Can I identify and use rhetorical devices?
8. Can I write to argue a point of view
9. Can I plan and write a speech/essay/letter/article/leaflet?

Cross-Curricular Links/Key Contextual Details

Historical context covered:
Medicine
The Great Exhibition
Science and evolution
Law and Order
War
Poverty/Child Labour
Education

Analytical Verbs/Sentence Stems

(these are used to help students with analysis and discussing texts and ideas)

Q2:
The writer suggests...
The writer implies...
The reader can infer that....
This word/phrase suggests...
Furthermore, the connotations of this word...
In Source A the writer...whereas in Source B...

Comparative connectives: on the other hand, in contrast, similarly, likewise, whereas, conversely, however, in spite of this.

Connectives to further ideas: furthermore, moreover, in addition, additionally

Q3:

In this extract the writer expresses....

This is suggested/implied/highlighted/reinforced by the words/phrase...

The use of the adjective/verb/other technique creates...

The writer's use of imagery suggests/conveys...

In particular, the image reinforced in the words '...'

Furthermore, the words/phrase have connotations of....which...

Analytical verbs:

Emphasises, highlights, reinforces, indicates, conveys, connotes, heightens, implies, illustrates, depicts.

EP

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Unit 1 – Prejudice

In this unit, pupils look at different type of prejudice and look at historically how society has changed in attitudes. The students particularly focus on the American Civil Rights Movement and the work of Martin Luther King and Malcolm X. Students consider how to effectively tackle prejudice and how these strategies maybe used to tackle prejudice situations today.

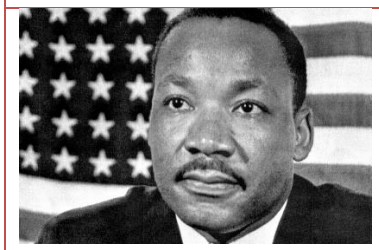
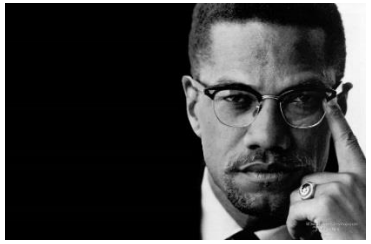
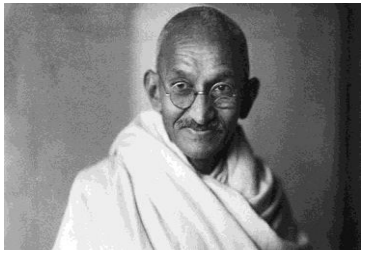
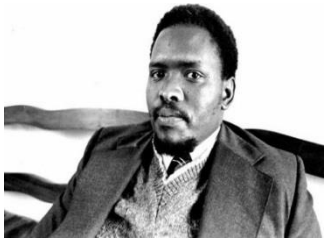
Key terms	
Prejudice	An unfavourable opinion or feeling formed beforehand or without knowledge, thought, or reason
Discrimination	The unjust or prejudicial treatment of different categories of people
Racism	Prejudice directed against someone of a different race based on the belief that one's own race is superior
Sexism	Prejudice, stereotyping, or discrimination on the basis of sex
Ageism	Prejudice or discrimination on the grounds of a person's age
Homophobia	Dislike of or prejudice against homosexual people
Ethnicity	The state of belonging to a social group that has a common national or cultural tradition
Race	A **race** is a grouping of humans based on shared physical or social qualities into categories generally viewed as distinct by society
Civil Rights Movement	The **civil rights movement** was a struggle for social justice that took place mainly during the 1950s and 1960s for black people to gain equal **rights** under the law in the United States.
Boycott	To refuse to buy a product or take part in an activity as a way of expressing strong disapproval
Peaceful Protest	The practice of achieving goals such as social change through symbolic protests, civil disobedience, or political non-cooperation, while being nonviolent.

Assessment

Should we follow the example of martin Luther King or Malcolm X when trying to tackle prejudice and discrimination?

Assessment criteria:

- Can clearly demonstrate knowledge of both leaders' responses to prejudice and discrimination.
- Can confidently discuss how prejudice and discrimination can be tackled today.
- Can use key terms and examples with clarity
- Can communicate clearly their own view on the response of MLK and Malcolm X.

Martin Luther King American Baptist Minister and leader of the Civil Rights Movement in America	Malcolm X Muslim leader and activist in the Civil Rights Movement in America	Mahatma Ghandi Indian activist – became leader of the Indian Independence Movement	Steve Beko South African anti-apartheid activist
			

Rosa Parks – Montgomery Bus Boycott

Should we follow the example of Martin Luther King or Malcolm X when trying to tackle prejudice and discrimination?

Martin Luther King	Malcolm X
Promoted Peaceful Protest	Promoted active and forceful protest
Christian Principles	Muslim Principles
Key Speech – I Have a Dream	Key Speech – The Ballot or the Bullet
Use of empowering but peaceful language	Use of powerful and aggressive language
Maintained the same principles throughout his life	Changed his view point following his Hajj pilgrimage to Mecca
Had a loving and caring upbringing	Had a very difficult childhood, father died, mother mental health difficulties
Did not commit crime	Spent time in prison
Promoted integration and equality	Believe in segregation and development of the 'black state'

Evaluating the effectiveness of peaceful protest

#metoo	Black lives matter	Hong Kong protests	Extinction rebellion
			

Unit 2 – Evil and suffering

Within this unit pupils will look at the different views on the causes of evil and suffering in the world. They will look at Buddhist, Christian and atheist responses to the question of evil and suffering, including views on different types of suffering, their causes and whether God is to blame.

Assessment- This assessment includes an extended piece of homework. There are three stages to the assessment. Stage 1- research Pupils look at examples of creative work on suffering as research for their own. Stage 2- they then create their own piece which could be art, ICT, poetry or sculpture. Stage 3- pupils then complete a written piece in which they evaluate their work and and discuss the problem of evil and a belief in God.

Key terms	
Inconsistent triad	The idea that God cannot be all loving and all powerful and evil and suffering exist.
Free will	The idea that we are free to make our own moral decisions.
Miracles	An event which defies the laws of nature.
Enlightenment	What Buddhists want to achieve, a state of being free from suffering and the cycle of life, birth, death and rebirth.
Buddha	The spiritual leader of Buddhism.
Buddhism	The religion which follows the Buddha's teachings.
Atheist	People who have no religious beliefs.
Agnostic	A person who is unsure if they believe in a god or not.
Theist	Someone who has a belief in a god/religion.
Religion	A belief system in which followers follow religious traditions/teachings and rules.
Heaven	A place of happiness and peace after death which some religious believers believe in e.g. Christians.
Hell	A place of suffering and punishment after death which some religious believers believe in e.g. Christians.
4 Noble truths	A Buddhist teaching on the causes and end of suffering.
8 fold path	A Buddhist teaching on how to live a good life and achieve enlightenment.
Samsara	The Buddhist name for the cycle of birth, life, death, rebirth, which they believe we are all stuck in.

Key terms	
Reincarnation	The Buddhist idea which states that we have another life after each life we live. We may come back in another form.
Karma	The Buddhist idea that our actions come back to us, what goes around comes around.
Design argument	The Christian idea that the world is too complex to have just come into existence it must have been designed, the designer is God.
First cause argument	The Christian idea that everything has a cause, but this cannot go back infinitely, the first cause of the universe is God.
Evolution	Charles Darwin's theory that we evolved, adapted, to suit our environment
Big bang	The scientific explanation for the creation of the universe.
Natural evil	Events which occur naturally and cause suffering, natural disasters.
Moral evil	Suffering and evil caused by human actions and choices.
Suffering	The state of undergoing pain, distress, or hardship.
Omnipotent	God is all powerful
Omniscient	God is all knowing
Omnibenevolent	God is all loving
The fall	The Christian idea that Adam and Eve bought evil and suffering into the world by eating the forbidden fruit in the garden of Eden.

Christianity

Original sin- the idea that the world was made perfect and as Adam and Eve ate from the tree of knowledge we allowed evil and suffering in.

Life is a test- Taking from the example of Job in the Old Testament, life is a test to see how you keep your faith in God. Those who do will be rewarded in heaven.

Free will- God has given us free will and the consequence of this is that moral evil is commuted by people which god cannot stop.

Islam

Life is a test- In this life we will face obstacles/ suffering. As long as you keep faith in God you will be rewarded in heaven.

Shaytan- the devil, is believed to tempt people into committing moral evil and therefore part of the reason why suffering occurs.

Free will- the belief that most suffering occurs because people make wrong decisions and if they followed the teachings in the Qur'an this would be lessened.

Buddhism

Suffering is part of life- Buddhist accept that suffering is part of life as is mentioned in the 4 Noble truths. The aim is to reach enlightenment to get out of the cycle of suffering.

Samudaya- The three ultimate causes of suffering in Buddhism are greed, ignorance and hatred. The aim of Buddhism is to not give into this.

Eight fold path- this is the way of living to attain enlightenment, which impacts on all aspects of a Buddhists life.

Epicurus- The Inconsistent Triad

The Greek philosopher Epicurus (342-271 BCE) claimed that the existence of God proved there is no God.

He claimed that if God cannot stop evil then he is not all-powerful (omnipotent).

He then argued that if God can prevent evil but does not, then God is not good.

He linked these two points together, claiming that if God is all-powerful and good, then evil would not exist.

Finally, human experience is that evil does exist. Therefore Epicurus concluded that God must not exist.

The design argument

St Thomas Aquinas (1225 – 1274) argued that the apparent order and complexity in the world is proof of a designer and that this designer is God.

William Paley (1743 – 1805) argued that the complexity of the world suggests there is a purpose to it. This suggests there must be a designer, which he said is God.

Paley used a watch to illustrate his point. If he came across a mechanical watch on the ground, he would assume that its many complex parts fitted together for a purpose and that it had not come into existence by chance. There must be a watchmaker.

The cosmological argument

St Thomas Aquinas (1225 – 1274) developed the most popular argument as a 'way' (not proof) of showing that there must be a God.

Aquinas argued that everything in the cosmos has a cause. If you track things back through a series of causes, there must have been a 'first cause'. He said that this 'first cause' is God, whom he described as a 'necessary being', eternal and transcendent, existing outside of our space and time but able to act within it, needing no explanation and having no cause.

Scientific discoveries, eg the Big Bang theory, can be seen to support the first cause argument. If God caused the 'Big Bang', then God is the 'first cause' that brought the cosmos (universe) into existence.

Unit 3 – Crime & deviance

In this unit, pupils study the causes of crime, the relationship between poverty and crime, links between age, gender and crime, debates about nature vs. nurture, capital punishment and the future of law enforcement.

Key terms	
Crime	An act that goes against the law of society.
Laws	The written rules of society.
Norms	The unwritten rules of society. Normal behaviours we expect to see.
Deviance	An act that breaks social norms. Deviance is not always criminal, e.g. talking loudly in a library
Poverty	Lacking the money and resources to live a sustainable life. Poverty can be 'relative' or 'absolute'.
Socialisation	The way we learn the norms of society – how we are brought up and influenced by other parts of society.
Opportunities	Some people are more/less likely to commit crime due to the opportunities / lack of opportunities they have
Working class	Someone who works (e.g. factory worker, mechanic, shop worker), but who will not have a lot of money
Middle class	Someone who works (e.g. doctor, lawyer, business owner) and has enough money to be comfortable
White collar crime	Crimes committed by those in position of power, at work. Usually committed by the middle-classes
Capital punishment	Also known as the death penalty. Last used in Britain in 1964 and abolished completely in 1998.
Cesare Lombroso	A socio-biologist who believed that in the link between nature and crime. Believed that people who looked a certain way were more likely to be criminals.
Youth Subcultures	Groups of young people with their own norms and values. These will differ to those of wider society.
Social control	The way the people are encouraged, or forced to obey the laws and conform to the norms of society

Assessment

If there was no poverty, there would be no crime. Do you agree?

Assessment criteria:

- Can evaluate a variety of causes of crime
- Can use key terminology
- Can share an opinion and support with reasons
- Can use relevant, current examples to support

‘If there were no poverty, there would be no crime.’ Do you agree?

AGREE

Poverty crimes

Some factors can explain why people in poverty commit crime:

Financial reasons: Many crimes of poverty are driven by a lack of money. Crimes of desperation, such as shoplifting food because you are hungry would be a good example. Furthermore, desperation may cause some people to ‘retreat’ into drug abuse.

Lack of opportunities: People in poverty are unlikely to have a good job that pays well, so may be tempted into crime to get the things they want/need, but can’t afford.

Socialisation: Some people say that some people living in poverty are born into it and live in a ‘culture of poverty’, where they are brought up to see crime as a norm (normal part of life). For example, a child may see their parent shoplifting and copy this behaviour themselves.

Differential enforcement of the law: Some people say the police focus more attention on working class crimes, and crimes of poverty because they are easier to detect and criminals easier to convict than those of middle-class crimes.

DISAGREE

Middle class crime

Upper-class: Land owners, big business owners

Middle-class: Property owners, well paid jobs

Working-class: Employed, earn enough to ‘get by’

Underclass: Unemployed, survive on benefits

Just because someone isn’t in poverty, doesn’t mean they don’t commit crime. In fact, some people say that worse crimes are committed by richer people because they have more opportunities to through the jobs they have.

Occupational crime: Crimes committed at work. Because richer people tend to have better jobs, some say this gives them more opportunity to commit occupational crimes.

White collar crimes are specifically crimes committed by middle-class people who use their good jobs to commit crime, e.g. fraud, embezzlement, money laundering. These crimes are often for financial gain for the individual. A good example is the MPs expenses scandal, where politicians abused the trust in them to claim expenses for things they shouldn’t have been allowed to.

Corporate crimes are crimes committed by businesses, for the benefit of the business. For example, a company may dump toxic waste in a river, rather than paying to dispose of it properly. This increases the businesses’ profits.

DISAGREE

Crime and age

Despite making up 10% of the population, under 18s commit nearly 25% of all crimes. There are 3 main reasons why young people commit crime:

Peer pressure and subcultures: Young people come under more pressure than any other group in society to ‘fit in’. Our friends can often encourage this behaviour in a negative way and can explain why many young people join gangs or subcultures. Subcultures take Peer Pressure further in order for members to gain status within the group. In some subcultures status can be gained through crime e.g. gang violence, drug misuse etc.

Boredom: Many young people suggest the reason they get involved in crime is because they are bored. Criminals say committing crime can be exciting and generate adrenalin in the body, which becomes addictive and leads to more and more crime occurring. Some young people say ‘there’s nothing to do round here’ and this leads to risk-tasking behaviour as teenagers look for new ways to relieve their boredom, e.g. vandalism or anti-social behaviour.

Lack of effective social control: Many people say young people commit crimes because there is not enough of a deterrent for them not to. Social control is the way that society and parts of society (the police, family, school etc) do things to make sure people obey the laws and conform to norms and values.

This argument suggests younger people have more opportunities to commit crime because there are fewer reasons to stop them, e.g. no job to lose.

DISAGREE

Crime and gender

Men commit more crime than women – statistically, men commit 84% of crime, whereas women only commit 16%. There are 3 main reasons for this:

Differential gender socialisation: Girls and boys are socialised (brought up) differently, with norms (normal behaviours) for boys to be aggressive and risk-taking and girls to be caring. One way this is done is through the toys given to boys, e.g. toy soldiers, and toy guns, whereas girls are given things like kitchen sets and dolls to prepare them for a life of caring and looking after others. Being socialised like this makes boys more likely to show these behaviours and get in trouble with the law for them (e.g. fighting, or carrying weapons).

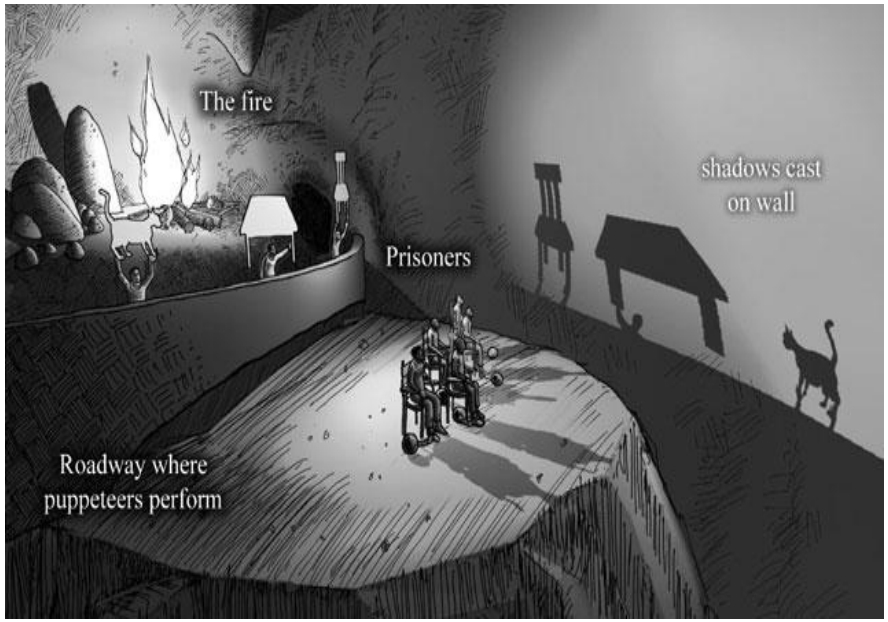
Differential social control: Social control is the way we our behaviour is controlled by those around us (family, school, peers etc.). It is often said that girls have more social control on them than boys. For example, boys might be allowed out later, giving them more opportunities to commit crime. This might allow them to get involved in gangs and anti-social behaviour.

Peer pressure and subcultures: Boys are more likely to be exposed to negative peer pressure (from friends) than girls – often because of the fact there is less social control on them and an expectation to act ‘masculine’. This is the idea that boys and men should act in a certain way, e.g. not backing down from a fight or a dare. Gangs and subcultures are also related to this. Often there are deviant norms and can revolve around drug use, violence and other illegal activities.

Unit 4 – What is reality?

Within this unit pupils will explore the philosophical concept of how we know what exists or not. This will be through looking at philosophical views of Plato and Descartes and using films such as The Matrix or Inception to explore these ideas.

Key terms	
Sense data	The knowledge we use to understand the world around us- the data we get from our five senses.
Relative	Considered in relation or in proportion to something else.
Absolute	Not changing, true, right or the same in all situations.
Truth	A fact or belief that is accepted as true.
Descartes	French philosopher and mathematician alive from 1596-1650.
Plato	A disciple of Socrates and philosopher, from Ancient Athens, alive from c.429–c.347 BC.
Illusions	A deceptive appearance or impression.
Reality	The state of things as they actually exist, as opposed to an idealistic or notional idea of them.
Hallucinations	An experience involving the apparent perception of something not present.
Artificial intelligence (AI)	The theory and development of computer systems able to perform tasks normally requiring human intelligence.
Consciousness	A person's awareness or perception of something.



The 'Allegory Of The Cave' is a theory put forward by Plato, concerning human perception. Plato claimed that knowledge gained through the senses is no more than opinion and that, in order to have real knowledge, we must gain it through philosophical reasoning. Every day, these people in the caves watched shadows projected on a blank wall. For them, these shadows are real and they shape their entire reality.

Now imagine that one of the prisoner's leaves the cave and walks outside into the sunshine. For the first time in his life, he is exposed to sunshine and light. He can now finally see the "true" forms, shapes and reality of the shadows he thought were real.

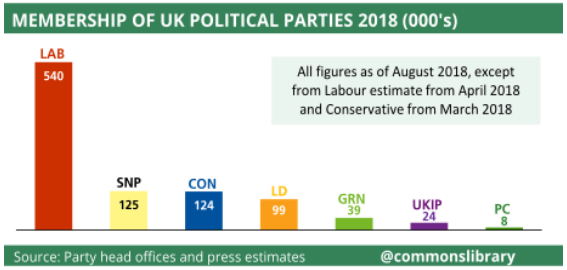
In this Allegory, Socrates asks, what would he think of his companions back in the cave? He'd probably feel sorry for them and their limited reality. Now, if he returned back to the cave and told them about what he saw, they'd probably laugh at him and think he was crazy.

Plato's Allegory of the Cave explores the tension between the imagined reality that we think is "real" (shadows) versus the reality that is the "truth" (outside the cave).

Unit 5 – Politics

Within this unit pupils will learn some of the basics of politics in the UK. They will understand what democracy is, types of voting and how political parties work.

Key terms	
Democracy	A system of government by the whole population or all the eligible members of a state, typically through elected representatives.
Dictatorship	Where one person is in control and does not allow elections- they dictate to the rest of the country.
First past the post	When someone wins an election by getting the most amount of seats (MPs), this is the system used in the UK.
Proportional representation	An electoral system in which parties gain seats in proportion to the number of votes cast for them.
Manifesto	An electoral system in which parties gain seats in proportion to the number of votes cast for them.
Policies	A set of ideas or a plan of what to do in particular situations that has been agreed to officially by a government or a political party.
Campaign	A planned group of political activities aimed at highlighting an issue or explaining what a part stands for.
Voting	When you wish to express your view on politics by filling out a ballot which is then counted.
Ballot	A system of voting secretly and in writing on a particular issue or political party.
MP	Member of Parliament
Houses of Parliament	The building which have the house of commons and house of lords, where parliament does it work.
House of Lords	Where the Lords sit to debate issues and pass laws.
Constituency	An area whose voters elect a representative (MP) to Parliament
Elections	An election is a process in which people vote to choose a person or group of people to hold an official position.
Prime Minister	The leader of the government.
Conservative	The major centre-right party who advocates property ownership and free enterprise.
Labour	The Labour Party is a centre-left political party, the party's platform emphasises greater state intervention, social justice and strengthening workers' rights.
Liberal Democrats	A centralist political party that believes in more power for local government, more personal freedom, and a gradual development towards a fairer sharing of wealth and power within society
Right wing	A right-wing person or group has conservative or capitalist views.
Left wing	Left-wing people have political ideas that are based on socialism.
Voter apathy	The fact people do not want to vote because they either feel there is no point, do not know who to vote for or do not care.



Should 16 year olds be allowed to vote? Yes

- You can join the army at 16 why not vote.
- You can make informed choices.
- It will mean young people will get involved politics.
- They should have a say in the decisions made on their future.

No

- They are too immature
- They do not understand what they are voting for.
- They can be easily persuaded.
- They are not adults.

First Past the Post

www.simplepolitics.co.uk

"First Past the Post" is the electoral system used to elect the UK Parliament.

The UK is split into 650 constituencies - in each one voters put a cross in the box next to their preferred candidate

The candidate with the most votes becomes the MP for that constituency.

The party with the overall majority of seats becomes the party of government.

First Past the Post is supposed to give clear majorities, although this has recently been challenged by the 2010 General Election - where no party had an overall majority.

This is the constituency map from the 2015 General Election. The Conservative party had a 12 seat majority over Labour, but other parties - such as the SNP, Liberal Democrats, Plaid Cymru, Green and UKIP - also won seats.

The three main parts of Parliament

House of Commons

All of the MPs elected by UK citizens in the general election. Each represents their own constituency.

House of Lords

All of the Peers. They are unelected. They are nominated experts in their fields. The Prime Minister has a large say in who becomes a Peer.

The Monarch

The King or Queen at the time. They have less power now but still have the final sign-off on laws and on Peerages.

What do MPs do?

MPs split their time between working in Parliament and working in the constituency. In Parliament, MPs spend their time fighting for the interests of their constituents, attending debates, scrutinising and voting on legislation, and attending meetings. They consider and vote on legislation and use their position to ask government ministers questions about current issues.

In the constituency, MPs hold advice surgeries for their constituents to come and talk to them about local issues and problems, attend meetings and community events, as well as visiting local organisations and businesses.

Members of Parliament are able to help with all matters for which Parliament or central government are responsible and are able to take up issues with other government departments on your behalf

Alternatively, if a constituent is happy for the issue to be made public, an MP can ask an oral or written question, secure a debate or petition Parliament.

Green Party

Conservatives

UKIP

Labour

LIBERAL DEMOCRATS

French

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Year 9 French

Overview and key verbs*: *https://kesgrave.fireflycloud.net/mfl/french/key-stage-3/year-9

Vocabulary for all topics*: *https://www.linguascope.com ***Username*: *kesgrave*** ***Password*: *mflkhs2021***

Autumn Term

Content in chronological order	Vocabulary / Grammar
-Revision from Year 7-8: → Articles, genders, adjectives, agreements → Present tense (regular & irregular verbs) -Teenage life – social media: -Revision 3 tenses (present,past,near future) -Using direct object pronouns -Social media, opinions, going out -Describing a date and a music event → Listening, Reading and Writing test	-Everything must agree in a sentence: noun-verb / article-noun (gender) – adjective -Je passe des heures… = I spend hours… -On partage des photos = We share photos -Je suis sorti(e) avec … = I went out with -On a bavardé = We chatted -J'ai bien rigolé = I had a real laugh -C'est = It is / C'était = It was / -Ça va être = It is going to be

Spring Term

Content in chronological order	Vocabulary / Grammar
-Healthy living: → Body parts, sports, healthy eating, how to be fit (using "il faut" – you must) → Using the future tense → Speaking assessment -Future aspirations: -Languages, jobs, past and future activities -Using the imperfect tense	-Future tense: keep the -r of the infinitive and add -ai, -as, -a, -ons, -ez, -ont More on how to form the future tense: https://www.bbc.com/bitesize/guides/zxfnsbk/revision/1 -Imperfect tense: take off the verb ending and add – ais, -ais, ait, ions, iez, aient More on how to form the imperfect tense: https://www.bbc.com/bitesize/guides/zxnhpv4/revision/1

Summer term

Content in chronological order	Vocabulary / Grammar
-Holiday: -Asking questions & using reflexive verbs -Imagining adventure holiday (conditional) -Describing what happened -Talking about what to take on holiday -Sarah's key: → Learning about France during WW2	-Conditional tense: combination of the future and imperfect tenses. More on how to form the conditional tense: https://www.bbc.com/bitesize/guides/zpbv34j/revision/1 -Je voudrais = I would like / Ce serait… = It would be… -Je me fais bronzer=I sunbathe/Je m'amuse=I have fun -Ce n'est pas mon truc = It's not my kind of thing

Grammar Vocabulary Cultural

GEOGRAPHY

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST
A SCHOOL

8. Geography

Kesgrave Geography Knowledge Organiser: Year 9 South America

The Andes

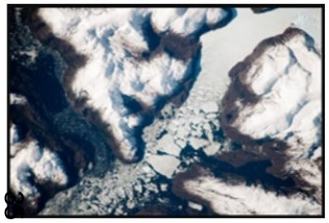
Location—The Andes are located in South America and run south of the Equator down the West coast of the continent - adjacent to the Pacific Ocean. It runs through 7 countries including Chile, Peru and Argentina.

Impacts of shrinking Glaciers	
Herding animals have nothing the drink so grazing animals is decline	95 million people are without water
Cannot generate hydro electricity	Conflict if people misuse water
Effects Amazon River Basin - some rivers could dry up in the dry season.	People move out of the area for a better life

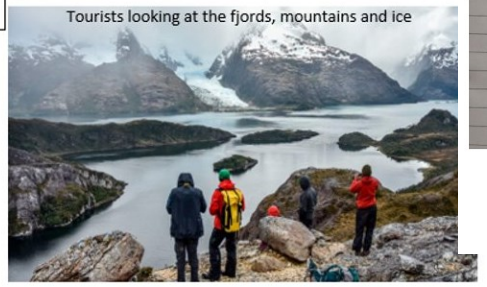
Tierra del Fuego (Land of Fire)

This is an island in the south of Patagonia (the name given to the far south of the continent). Ownership is shared between Chile and Argentina. It is becoming popular with tourists who visit for the spectacular scenery and wildlife. Your task is to produce a leaflet explaining how ice has created this dramatic landscape.

An aerial image of glaciers and fjords



Tourists looking at the fjords, mountains and ice

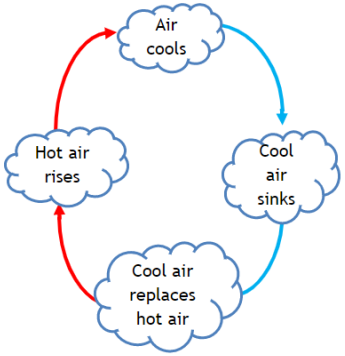


Weather

The weather is controlled by the movement of air.

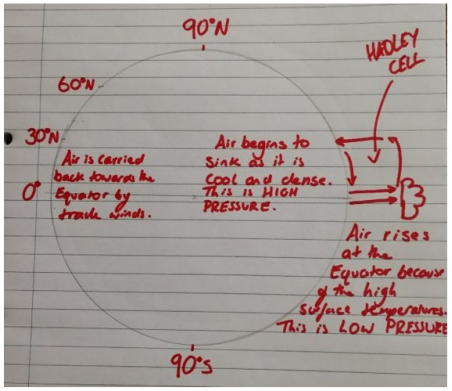
If air is warm, it expands and rises. This means it is less dense (lighter). We get clouds and rain.

If air is cold, it sinks because it is denser (heavier). We get good weather, no clouds or rain.



- **El Niño** occurs when warm water builds up along the equator in the eastern Pacific.
- **La Niña** is the build up of cool waters in the equatorial eastern Pacific. La Niña's impacts are opposite those of El Niño.

The Hadley Cell

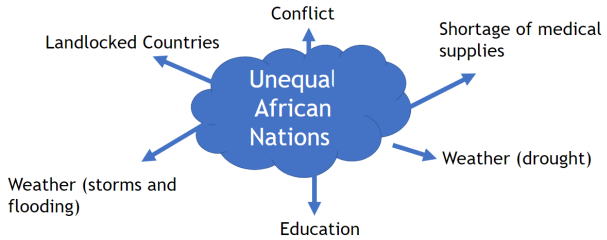


There are trade winds that carry the sinking air back towards the equator. This gives you your first completed cell; the Hadley cell.

Number	Country	Capital City
1	Brazil	Brasilia
2	French Guiana	Cayenne
3	Suriname	Paramaribo
4	Guyana	Georgetown
5	Venezuela	Caracas
6	Colombia	Bogota
7	Ecuador	Quito
8	Peru	Lima
9	Bolivia	La Paz
10	Paraguay	Asuncion
11	Chile	Santiago
12	Argentina	Buenos Aires
13	Uruguay	Montevideo

Kesgrave Geography Knowledge Organiser: Year 9 **Africa**

Unequal Africa



- **Malaria -** a disease caused by a parasite. The malaria parasite is spread from person to person by mosquitoes.
- **Diarrhoea**—Diarrhoeal disease is the second leading cause of death in children under five years old.

Why is Healthcare good in the UK?	Why is the Healthcare bad in Africa?
Vaccinations, especially for children, prevent people from catching like threatening diseases.	Doctors and healthcare are vary spread out and take a long time to get to - so people can't access treatment particularly in rural areas.
Lots of countries like the UK have good healthcare - and it's provided for free.	People don't have good incomes and therefore cannot afford medicines and treatment.
Healthcare is modern and clean and funded by governments through taxes.	

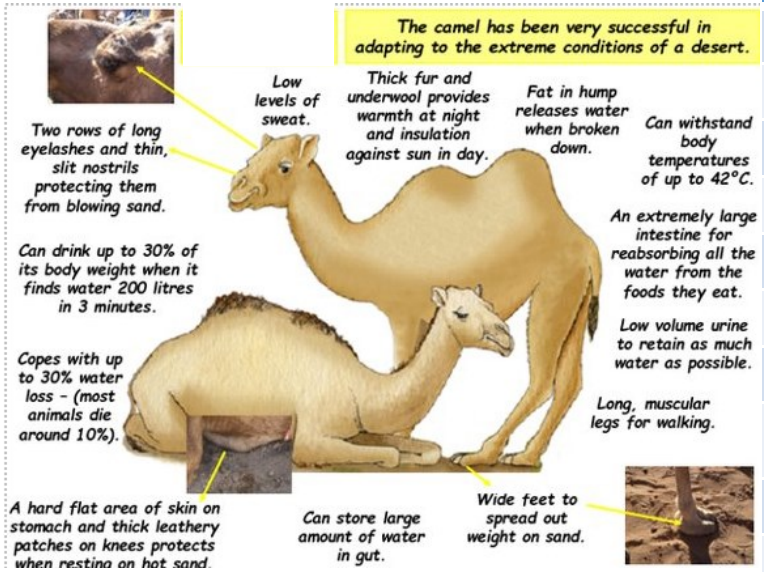
Measuring Development
GNI—Gross national Income
Life Expectancy—the average age a person will live until.
Infant mortality—the number of child who die before the age of 2.
Literacy Rates—% of people who can read and write within a population

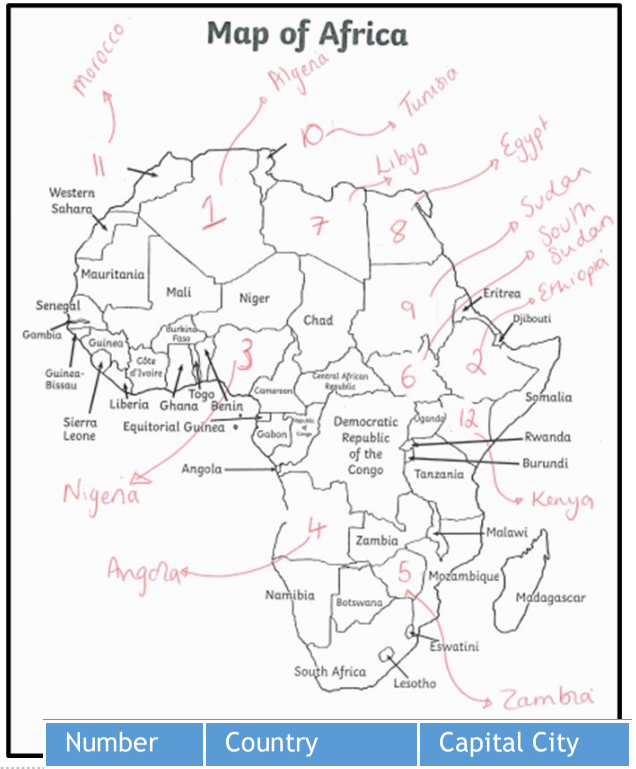
The Sahara

Facts

- The Sahara Desert is huge. It covers 9 million square kilometres, almost all of the Northern African continent.
- This is equivalent to about 40 times the size of the UK.The Sahara covers (at least in part) 10 different countries stretching across Northern Africa.

Adaptation - a form, behaviour or structure modified to fit a changed environment.





Number	Country	Capital City
1	Algeria	Algiers
2	Ethiopia	Addis Ababa
3	Nigeria	Abuja
4	Angola	Luanda
5	Zambia	Lusaka
6	South Sudan	Juba
7	Libya	Tripoli
8	Egypt	Cairo
9	Sudan	Khartoum
10	Tunisia	Tunis
11	Morocco	Rabat
12	Kenya	Nairobi

GERMAN

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Year 9 German

Overview and key verbs*: *https://kesgrave.fireflycloud.net/mfl/german/key-stage-3/year-9

Vocabulary for all topics*: *https://www.linguascope.com* *Username*: *kesgrave* *Password*: *mflkhs2021

Autumn Term

Content in chronological order	Vocabulary / Grammar
- Revision and extension from Year 8: - Pronunciation - Revision of verb types and present tense - Role models - Opinions and justification using higher level adjectives - Perfect tense revision and progression - Future tense - Tackling longer reading tasks - Listening, reading, writing, transcribing/translation assessments - Music - Opinions and justification using higher level adjectives - Using seit (since) with the present tense - Making comparisons - Separable verbs in the perfect tense - Speaking skills - Speaking, listening and reading assessments	- Perfect tense is made up of an auxiliary verb (form of haben or sein plus a past participle at the end of the sentence, e.g: **ich habe Pizza gegessen** → I ate pizza, **ich bin nach Deutschland gefahren** → I travelled to Germany. - Future tense is made up of an auxiliary verb (form of werden) plus an infinitive at the end of the sentence, e.g: **ich werde Pizza essen** → I will eat pizza, **ich werde nach Deutschland fahren** → I will travel to Germany. - Forms of werden: ich werde; du wirst, er/sie/es wird, wir werden, ihr werdet, sie/Sie werden - Adverbs gern (like/willingly)/nicht gern (do not like/not willingly)/ lieber (prefer/preferably) am liebsten (like best of all). - seit in German is used with the present tense: ich spiele seit zwei Jahren Fußball (literally translated I play since two years football) - Comparatives are formed by adding –er to the end of the adjective. If the adjective is only one syllable long, an umlaut is often added when forming the comparative: **interessant** → **interessanter**, **lang** → **länger** - Separable verbs in the perfect tense have the ge-part sandwiched in the middle: ausgehen → aus**ge**gangen

Spring Term

Content in chronological order	Vocabulary / Grammar
My ambitions - Ambitions - Jobs - Future plans - Working in a ski resort - Understanding voicemail messages - Conditional tense - Using um…zu… (in order to)	- Conditional tense is made up of a conditional auxiliary verb (form of werden) plus an infinitive at the end of the sentence, e.g: **ich würde Pizza essen** → I would eat pizza, **ich würde nach Deutschland fahren** → I would travel to Germany. - Conditional forms of werden: ich würde; du würdest, er/sie/es würdet, wir würden, ihr würdet, sie/Sie würden

- Listening and Reading assessment <u>My childhood</u> - Childhood - Childhood activities - Comparing schools - Fairy tales - Writing (3 tenses) / Listening, Reading and Translation assessment	- um…zu… means in order to. The infinitive verb goes after zu, e.g: **um Fußball zu spielen** → in order to play football, **um Brot zu kaufen** → in order to buy bread

Summer term

Content in chronological order	Vocabulary / Grammar
<u>Rights and responsibilities</u> - Age limits - What is important to us - Comparing life now and in the past - Raising money for good causes - Small changes, big difference - What is important for happiness Writing (3 tenses) / Listening, Reading and Translation assessment Then either transition to GCSE work or holiday speaking and cultural awareness work	Word order: • verb as second idea reminder: Ich **spiele** am Wochenende Fußball / Am Wochenende **spiele** ich Fußball. • weil – verb kicking after subordinating conjunctions Revision and use of the three main tenses: present, perfect and future. Using a variety of modal verbs KS3 Vocabulary and grammar revision for transition to GCSE.

Grammar Vocabulary Cultural

HISTORY

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Year 9 History Knowledge Organiser – The Twentieth Century World

1. Key dates	
1901	Death of Queen Victoria
1913	Death at the Derby of Emily Wilding Davison
1914-18	The First World War
1916	The Battle of the Somme
1918	Women of property over the age of 30 get the vote
1919	The Treaty of Versailles
1929	The Wall Street Crash which leads to the Great Depression
1933	Hitler comes to power
1939-45	The Second World War (including the Holocaust)
August 1945	Dropping of atomic bomb on Hiroshima
1945-91	The Cold War
1948	Berlin blockade and airlift
1949	East and West Germany founded
1961	The Berlin Wall goes up
1962	The Cuban Missile Crisis

2. Key people/groups	
Douglas Haig	Field Marshall of the British forces
Emmeline Pankhurst	Leader of the Suffragettes, a militant group who campaigned for the enfranchisement of women
Millicent Fawcett	Leader of the Suffragists, a peaceful group who campaigned for the enfranchisement of women
Emily Wilding Davison	Suffragette who died under the King's horse at the Derby
David Lloyd George, George Clemenceau, Woodrow Wilson	Leaders who formed and signed the Treaty of Versailles
Adolf Hitler	Leader of Germany from 1933-45
Winston Churchill	Leader of Britain during Second World War
Joseph Stalin	Leader of the USSR
Harry Truman	American President when the decision was reached to drop the atomic bomb

Emmeline Pankhurst

Winston Churchill

Adolf Hitler

3. Key terms/concepts	
Franchise	The right to vote
Democracy	Government by the people or their chosen representatives
Conflict	War
Capitalism	An economic and political system based on individuals and private ownership
Communism	An economic and political system
Treaty	A formal agreement, often concerning peace
Dictator	A ruler who is unrestricted by laws
Cold War	A war with no direct fighting, often a war of ideologies
Economic depression	Widespread unemployment, an economic slump
Appeasement	Giving in to the demands of a hostile country in a bid to keep the peace
Armistice	An agreement to end hostilities

MATHS

Foundation

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Year 9 Mathematics
Autumn Term A – Foundation Topic List

Basic Calculation Skills

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Basic Calculations				18-23			
Multiply and Divide by powers of 10				15, 16			
Calculations with negative numbers				40-43			
BIDMAS				24			
Inverse Operations							
Multiply and Divide with Decimals				48-50			

Algebraic Expressions

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Understand the concepts and vocabulary of algebra							
Can define terms, expression, equation, formulae and identity				154, 155			
Collecting Like Terms				156, 157			
Laws of Indices				158, 173, 174			
Expanding Single Brackets				160, 161			
Substitution				780-784			
Factorising linear and two term quadratics/cubics				168, 169			
EX: Factorising simple quadratics with 3 terms				223, 224			

Whole Number Theory

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Type of Numbers Recap				25, 28			
Factors and Multiples				27, 33			
HCF and LCM				31, 34			
Prime Factorisation				29, 30			
HCF and LCM using Prime Factorisation				32, 35, 36			

Year 9 Mathematics
Autumn Term B – Foundation Topic List

Sequences

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Finding the nth term				197, 198			
Types of Sequences				261 - 264			

Approximation and Estimation

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Rounding to unit, 10../decimal place/significant figure				17, 56, 130			
Appropriate degree of accuracy				132			
Estimating Calculations				131			
Error Intervals				774-777			

Further Algebraic Expressions

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Expanding two binomials				162, 163, 166,			
Factorise quadratics when a=1				223-228			
Difference of two squares				165			

Properties of Shapes and Solids

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Name 2D Shapes				822, 823			
Names of polygons up to 10 sides							
Reflective and Rotational Symmetry				827, 828			
Proof of angles in a triangle				485, 486			
Properties of Triangles							
Labelling angles and Parallel Lines				456			
Properties of Quadrilaterals				824-826			
Identify 3D shapes				829, 830			
Faces, Edges and Vertices				831			

Year 9 Mathematics
Spring Term A – Foundation Topic List

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Properties of Shapes and Solids							
Name 2D Shapes				822, 823			
Names of polygons up to 10 sides							
Reflective and Rotational Symmetry				827, 828			
Proof of angles in a triangle				485, 486			
Properties of Triangles							
Labelling angles and Parallel Lines				456			
Properties of Quadrilaterals				824-826			
Identify 3D shapes				829, 830			
Faces, Edges and Vertices				831			
Fractions							
Equivalent Fractions				59			
Simplifying Fractions				61			
Ordering Fractions				60			
Converting Mixed and Improper Fractions				63, 64			
Four operations with fractions				55-70			
Four Operations with Mixed Numbers							
Fraction of an amount				77			
Basic Probability and Experiments							
Theoretical Probability				351,352			
Probability of an event not happening				353			
Mutually exclusive events				354			
Two Way Tables including calculating probabilities				358, 359, 362			
Frequency Trees				368, 369			
Experimental Probability				356			
Relative Frequency				357			
Angles							
Label angles and sides				456			
Angles on straight line				477,478			
Angles in 90°				815			
Angles around a point				479-481,812-814			
Angles in a Triangle				485-487			
Angles in a Quadrilateral				560			

Year 9 Mathematics
Spring Term B – Foundation Topic List

Angles

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Angles on Parallel Lines				481 - 483			

Solving Equations

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Solving One, Two and Three Step Equations				178 - 183			
Solving with Unknowns on Both Sides				184 - 186			
Forming and Solving Equations				188			
Solving Quadratic Equations where a = 1				230 - 232			
Solving Linear Simultaneous Equations by Elimination				190 - 193			

Fractions, Decimals and Percentages

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Converting between FDP				82, 83, 55			
Ordering Fractions, Decimals and Percentages				46, 60			
Percentage of Amounts				84-87			
Percentage increase and decrease				88, 90			
Percentage Multipliers				89			
Repeat Percentage Change				91, 92			

Year 9 Mathematics
Summer Term A – Foundation Topic List

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Fractions, Decimals and Percentages							
Converting between FDP				82, 83, 55			
Ordering Fractions, Decimals and Percentages				46, 60			
Percentage of Amounts				84-87			
Percentage increase and decrease				88, 90			
Percentage Multipliers				89			
Repeat Percentage Change				91, 92			
Units of Measure							
Converting between metric units				691-696			
Converting between metric units of area				700-704			
Conversion Graphs				712,713			
Speed, Distance and Time				716-724			
Density, Mass and Volume				725-732			
Force, Pressure and Area				734-737			
Other Compound Units				738			
Maps and Scale Drawings				865-867			
Bearings				492-496			
Decimals							
FDP Conversions				73,74,52,55			
Operations with Decimals				47,48,50			
3D Shapes							
Identify 3D Shapes				829,830			
Faces, Edges and Vertices				831			
Isometric Drawing				832			
Plans and Elevations				836-844			

Year 9 Mathematics
Summer Term B – Foundation Topic List

Standard Form							
Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Converting a number in and out of Standard Form				122, 123, 124			
Multiplying and Dividing Numbers in Standard Form				125, 126			
Adding and Subtracting Numbers in Standard Form				127, 128			

Collecting and Displaying Data							
Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Sampling Terminology				394			
Sampling Techniques – Random, Selective and Stratified				396-398			
Understand and Describe Bias				394			
Types of Data				392, 393			
Bar Charts – composite and multiple bar charts				425			
Drawing and Interpreting pie charts				427-429			

MATHS

Higher

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Year 9 Higher Mathematics Autumn Term A – Topic List

Basic Calculation Skills

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Basic Calculations				18-23			
Multiply and Divide by powers of 10				15, 16			
Calculations with negative numbers				40-43			
BIDMAS				24			
Inverse Operations							
Multiply and Divide with Decimals				48-50			

Algebraic Expressions

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Understand the concepts and vocabulary of algebra							
Can define terms, expression, equation, formulae and identity				154, 155			
Collecting Like Terms				156, 157			
Laws of Indices				158, 173, 174			
Expanding Single Brackets				160, 161			
Substitution				780-784			
Factorising linear and two term quadratics/cubics				168, 169			

Whole Number Theory

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Type of Numbers Recap				25, 28			
Factors and Multiples				27, 33			
HCF and LCM				31, 34			
Prime Factorisation				29, 30			
HCF and LCM using Prime Factorisation				32, 35, 36			

Sequences

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Sequences and Patterns							
Finding the nth term				197, 198			
Types of Sequences				261 - 264			
Nth term of quadratic sequences (Higher only)				248, 250			

Year 9 Mathematics
Autumn Term B – Higher Topic List

Approximation and Estimation

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Rounding to unit, 10, 100../decimal places/significant figures				17, 56, 130			
Appropriate degree of accuracy				132			
Estimating Calculations				131			
Error Intervals				774-777			
Upper and Lower Bounds				137-139			

Further Algebraic Expressions

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Expanding two binomials				162, 163, 166,			
Factorise quadratics when a=1 and a>1				223-228			
Difference of two squares				165			

Properties of Shapes and Solids

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Name 2D Shapes				822, 823			
Names of polygons up to 10 sides							
Reflective and Rotational Symmetry				827, 828			
Proof of angles in a triangle				485, 486			
Properties of Triangles							
Labelling angles and Parallel Lines				456			
Properties of Quadrilaterals				824-826			
Identify 3D shapes				829, 830			
Faces, Edges and Vertices				831			

Year 9 Mathematics
Spring Term A – Higher Topic List

Fractions

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Equivalent Fractions				59			
Simplifying Fractions				61			
Ordering Fractions				60			
Converting Mixed and Improper Fractions				63, 64			
Four operations with fractions				65-70			
Four Operations with Mixed Numbers							

Basic Probability and Experiments

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Theoretical Probability				351, 352			
Probability of an event not happening				353			
Mutually exclusive events				354			
Two Way Tables including calculating probabilities				358, 359, 362			
Frequency Trees				368, 369			
Experimental Probability				356			
Relative Frequency				357			

Solving Equations

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Solving One, Two and Three Step Equations				178 - 183			
Solving with Unknowns on Both Sides				184 - 186			
Solving Quadratic Equations where a > 1				230 - 234			
Solving using Quadratic Formula				241, 242			
Solving Quadratics when rearrangement is needed							
Completing the Square				238, 239			
Solving Linear Simultaneous Equations by Elimination				190 - 193			

Year 9 Mathematics
Spring Term B – Higher Topic List

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Solving Equations							
Solving Linear Simultaneous Equations by Elimination				190-193			
Solving Quadratic and Linear simultaneous equations by substitution				194, 195,217-220			
Simplifying Algebraic Fractions				229			
Solving Algebraic Fractions				187			
Calculations with Ratios							
Introducing Ratios				329			
Sharing in a Given Ratio				332-334			
Comparing Ratios				335-338			
Percentages							
Converting between FDP				82, 83, 55			
Ordering Fractions, Decimals and Percentages				46, 60			
Percentage of Amounts				84-87			
Percentage increase and decrease				88. 90			
Percentage Multipliers				89			
Repeat Percentage Change				91, 92			
Angles							
Label angles and sides				456			
Angles on straight line				477, 478			
Angles in 90°				815			
Angles around a point				479, 480, 481, 812-814			
Angles in a Triangle				485-487			
Angles in a Quadrilateral				560			
Angles in Polygons				561 - 565			
Angles on Parallel Lines				481 - 483			

Year 9 Mathematics
Summer Term A – Higher Topic List

Units and Measurements

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Converting between metric units				691-696			
Converting between metric units of area				700-704			
Conversion Graphs				712, 713			
Speed, Distance and Time				716-724			
Density, Mass and Volume				725-732			
Force, Pressure and Area				734-737			
Other Compound Units				738			
Maps and Scale Drawings				865-867			
Bearings				492-496			

Plane Isometric Transformations

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Vertical, Horizontal and basic Diagonal Lines				205			
Reflections				639, 640, 641			
Vectors				637			
Translations wit Vector				638			
Rotations				648, 649			
Fully describe transformations				656, 657			
EX: Enlargements				642-647			
EX: Similar Shapes				608-614			

Year 9 Mathematics
Summer Term B – Higher Topic List

3D Shapes

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Identify 3D Shapes				829,830			
Identify faces, edges and vertices				831			
Draw 3D objects on isometric paper				832			
Plans and elevations				836-844			

Standard Form

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Converting a number in and out of Standard Form				122, 123, 124			
Multiplying and Dividing Numbers in Standard Form				125, 126			
Adding and Subtracting Numbers in Standard Form				127, 128			

Collecting and Displaying Data

Objectives	Initial RAG			Hegarty Task Number	Assessment RAG		
	R	A	G		R	A	G
Sampling Terminology				394			
Sampling Techniques – Random, Selective and Stratified				396-398			
Understand and Describe Bias				394			
Types of Data				392, 393			
Bar Charts – composite and multiple bar charts				425			
Drawing and Interpreting pie charts				427-429			
Line Graphs for time series data				450-452			

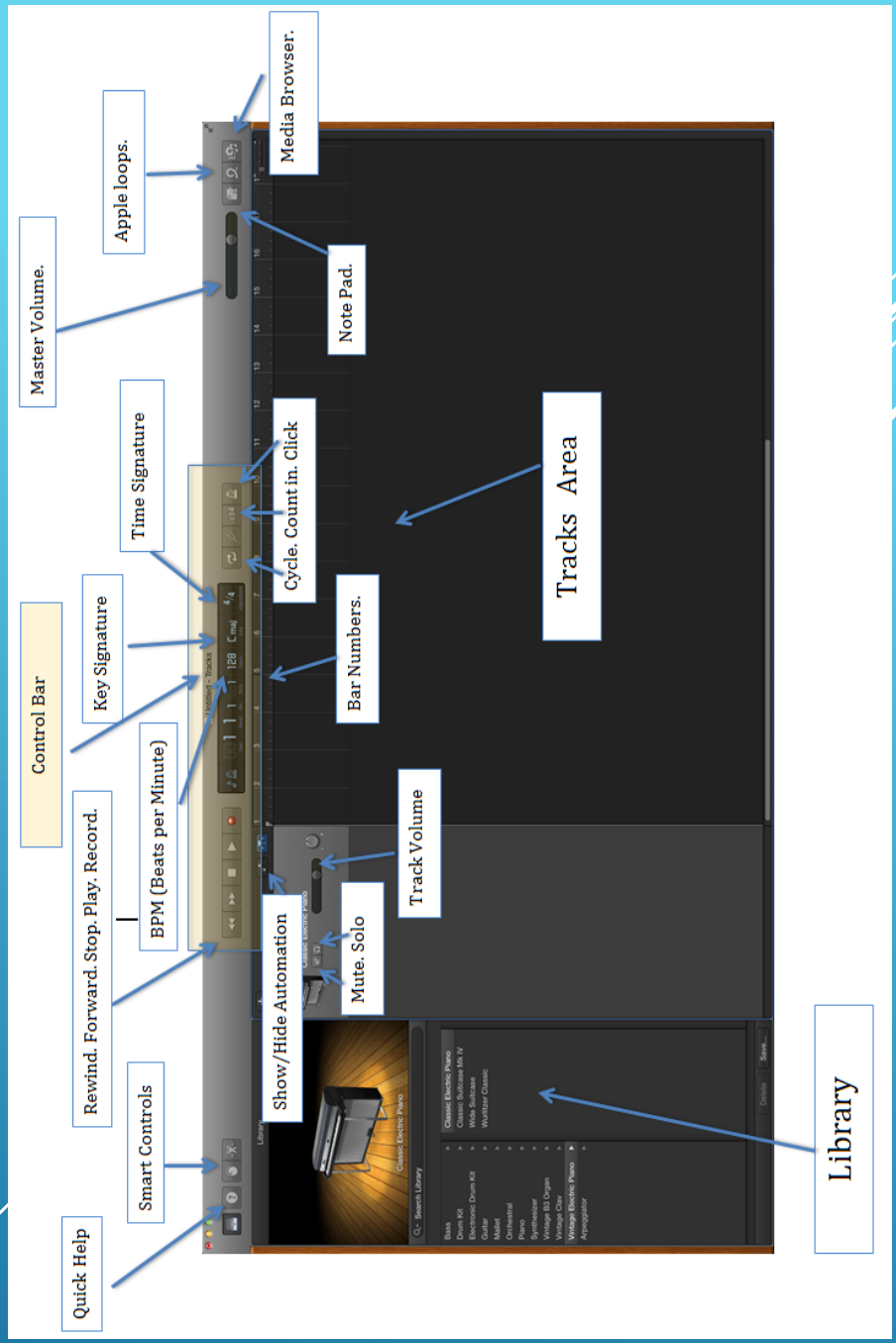
MUSIC

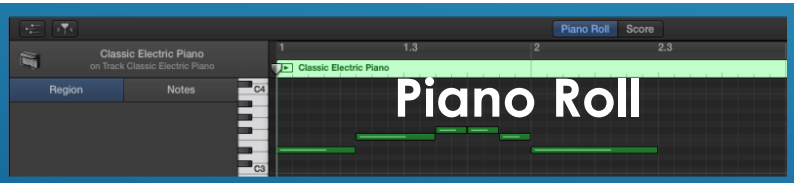
Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

Garage Band Terminology

Sequencer	A device that allows you to record, edit and play back your music.
BPM	Abbreviation for beats per minute, the measure of the tempo of a song.
Software Instrument	A software instrument can be a synthesized version of a real instrument.
Loop	Loops are pre-recorded musical phrases or riffs that you can use to easily to your song.
Sample	In music, sampling is the act of taking a portion, or sample, of one sound recording and reusing it as an instrument or a sound recording in a different song or piece.
Automation	Automation is the process of changing parameters over time. These parameters can be volume or Pan levels of your mix.
Pan/ Panning	Pan Short for panorama. The position of a sound in the stereo field between the left and right speakers.
Track	A track is a layer of sound in your music. A GarageBand project can include Audio tracks, Software instrument tracks or Drummer tracks.
Export	Export means to send the music out into different formats. You can export a video file (MP4) to a MP3.
Piano Roll	A way to input music into GarageBand. The piano roll is a grid that uses green boxes which represent different note values. Horizontal lines show the duration of the note, while vertical lines indicate the pitch.





PE

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

YEAR 9 KNOWLEDGE ORGANISER

Theory	
Pulse taking Training threshold/zone Borg scale	Carotid and Radial artery Max HR = 220 – age Aerobic zone = 60% - 80% of max HR Anaerobic zone = 80% - 90% of max HR Perceived Rate of Exertion (PRE) – How hard do you feel you are working?
Lactic acid Recovery rate	A toxin which makes your muscles ache and tire. It is produced when you work at high intensities and when your HR is in the Anaerobic zone. The time it takes for your HR to return to rest after exercise, measured in Minutes.
Progressive overload Frequency – How often? Intensity – How hard? Time – How long? Type – Which version?	"Gradually increasing the amount of exercise/work to gain fitness without the risk of injury." Achieved by applying F.I.T.T. Exercising more regularly, twice a week to 3 time a week. Exercise that is harder, faster, heavier. Exercising for longer. Exercise in a different or alternative way/method.
Visual guidance Verbal guidance Manual guidance Mechanical guidance	Learning from demonstrations, videos, pictures. Learning from spoken instructions. Where a coach supports or moves you in the correct way. Eg gymnastics The correct movement is supported or controlled by equipment. Eg float or trampolining rig.

Sports included in Year 7 PE

Football, Dance, Rugby, Netball, Volleyball, Athletics, Trampolining, Multi-gym, Basketball

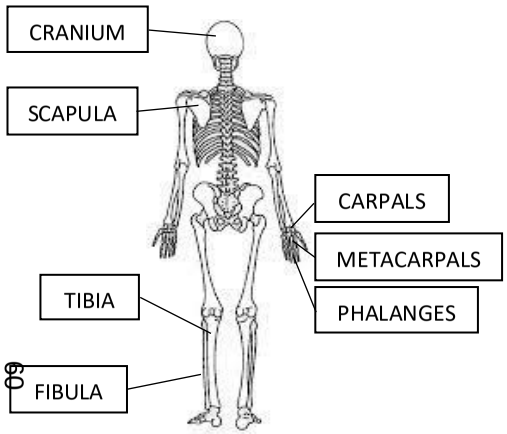
Key Terms and Rules

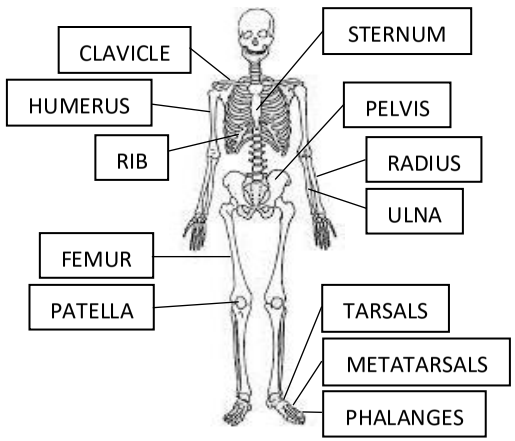
Can you explain the following:

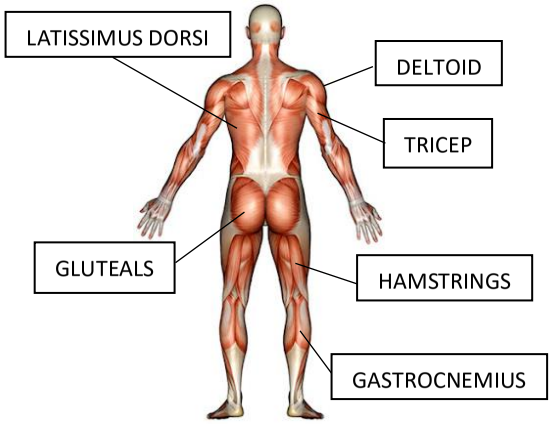
Twist, Rotation, Extension, Tension, Reps, Sets, Posture, Stance, V-drag, Spin, Flick, Trajectory, Angle, Formation, Deception, Anticipation, Lay-up, Man to man, Zone, Flick, Drop, Clear, Smash, Set

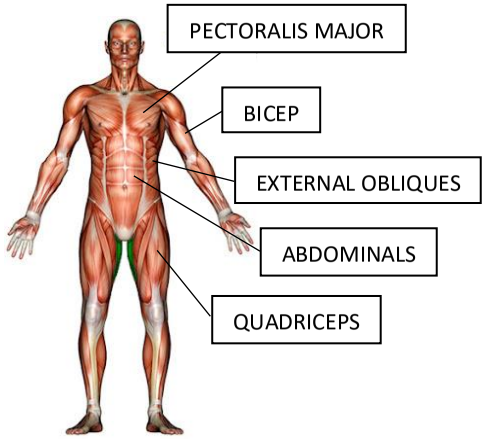
Extension – can you apply the theory to this year's sports?

What additional rules and key terms in those sports do you know?









PSHEE

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

PSHEE Knowledge Organiser – Year 9

AUTUMN A	**FRIENDSHIPS, ANTI-BULLYING, MENTAL HEALTH & EMOTIONAL WELLBEING**	**TOPICS COVERED:** Making and maintaining friendships, self-esteem, challenging stigma, recognising unhealthy coping behaviours e.g. self-harm and eating disorders, how to get support and how to support a friend.	**KEY TERMS:** Positive emotional wellbeing, adulthood, mental health, investment, self-manager, growth mindset, fixed mindset, personality traits, resilience, stress, self-harm, anorexia, bulimia, obesity, stigma, portrayed, influence	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor www.youngminds.org.uk www.nspcc.org.uk http://www.4yp.org.uk/contact/ https://www.beateatingdisorders.org.uk/

AUTUMN B	**CAREERS, ASPIRATIONS & MONEY**	**TOPICS COVERED:** Exploring different careers, developing employability skills, preparing CVs.	**KEY TERMS:** Aspirations, essential skills, desirable skills, qualified, applications, curriculum vitae (CV)	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor Careers Advisor in school https://www.youthemployment.org.uk/employment-help-young-people/ https://www.princes-trust.org.uk/

SPRING A	**SEXUAL HEALTH, HEALTHY & UNHEALTHY RELATIONSHIPS**	**TOPICS COVERED:** Types and purposes of contraception, negotiating contraceptive use, STIs, choices following an unplanned pregnancy, how to access sexual health services,	**KEY TERMS:** Relationships, pressure, consent, sexually transmitted infections (STIs), GeniitoUrinary Medicine (GUM), contraception, protection, hormonal / barrier / combination / natural methods, responsibility, lubricant	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor www.childline.org.uk www.askbrook.org.uk www.icash.nhs.uk www.amiclear.com

SPRING B	**PHYSICAL HEALTH, PERSONAL SAFETY & RISK MANAGEMENT**	**TOPICS COVERED:** Puberty, drug education (including alcohol), managing risks to health, developing independence	**KEY TERMS:** County lines, disenchantment, trap house, gangs, grooming, trapping, cuckooing, trap line, going country, alcohol, consumption, units, legislation, schizophrenia,	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor www.hope.org.uk www.nspcc.org.uk https://www.thinkuknow.co.uk/14_plus/ https://www.talktofrank.com/

SUMMER A	**DIVERSITY, PREJUDICE & MEDIA INFLUENCE**	**TOPICS COVERED:** Challenging prejudice and discrimination homophobia, biphobia and transphobia, tackling extremism.	**KEY TERMS:** Homophobia, biphobia, transphobia, prejudice, discrimination, assumption, sexual orientation, empower, religious prejudice, ignorance, slavery, trafficking, aid.	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor https://www.stonewall.org.uk/ https://www.stopthetraffik.org/ http://www.4yp.org.uk/contact/

SUMMER B	**COMMUNITY, SOCIAL, MORAL, SPIRITUAL, CULTURAL, FUNDAMENTAL BRITISH VALUES**	**TOPICS COVERED:** Being valuable citizens, preventing stereotyping, discrimination, prejudice, British values, respect..	**KEY TERMS:** Citizen, respect, rights, responsibilities, contribution, society	**SIGNPOSTING;** Head of Year, Student Support Officer, Form Tutor http://www.doingsmsc.org.uk/british-values/

SCIENCE

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

COMBINED/TRIPLE BIOLOGY CRITERIA SHEET: B1 CELL BIOLOGY

Cell basics (eukaryotes and prokaryotes, animal and plant cells)
Plant and animal cells (eukaryotic cells) have a cell membrane, cytoplasm and genetic material enclosed in a nucleus.
Bacterial cells (prokaryotic cells) are much smaller in comparison. They have cytoplasm and a cell membrane surrounded by a cell wall. The genetic material is not enclosed in a nucleus. It is a single DNA loop and there may be one or more small rings of DNA called plasmids.
Students should be able to demonstrate an understanding of the scale and size of cells and be able to make order of magnitude calculations, including the use of standard form.
Students should be able to explain how the main sub-cellular structures, including the nucleus, cell membranes, mitochondria, chloroplasts in plant cells and plasmids in bacterial cells are related to their functions.
Most animal cells have the following parts:
• a nucleus
• cytoplasm
• a cell membrane
• mitochondria
• ribosomes.
In addition to the parts found in animal cells, plant cells often have:
• chloroplasts
• a permanent vacuole filled with cell sap.
Plant and algal cells also have a cell wall made of cellulose, which strengthens the cell.

Microscopy
Required practical activity 1: use a light microscope to observe, draw and label a selection of plant and animal cells. A magnification scale must be included.
Students should be able to use estimations and explain when they should be used to judge the relative size or area of sub-cellular structures.
Students should be able to:
• *understand how microscopy techniques have developed over time*
• *explain how electron microscopy has increased understanding of sub-cellular structures.*
Limited to the differences in magnification and resolution.
An electron microscope has much higher magnification and resolving power than a light microscope. This means that it can be used to study cells in much finer detail. This has enabled biologists to see and understand many more sub-cellular structures.
Students should be able to carry out calculations involving magnification, real size and image size using the formula:

$$\text{magnification} = \frac{\text{size of image}}{\text{size of real object}}$$

Students should be able to express answers in standard form if appropriate.

Specialised cells (including cell differentiation)
Students should be able to, when provided with appropriate information, explain how the structure of different types of cell relate to their function in a tissue, an organ or organ system, or the whole organism.
Cells may be specialised to carry out a particular function:
• sperm cells, nerve cells and muscle cells in animals
• root hair cells, xylem and phloem cells in plants.

Students should be able to explain the importance of cell differentiation.
As an organism develops, cells differentiate to form different types of cells.
• Most types of animal cell differentiate at an early stage.
• Many types of plant cells retain the ability to differentiate throughout life.
In mature animals, cell division is mainly restricted to repair and replacement. As a cell differentiates it acquires different sub-cellular structures to enable it to carry out a certain function. It has become a specialised cell.

Stem cells
A stem cell is an undifferentiated cell of an organism which is capable of giving rise to many more cells of the same type, and from which certain other cells can arise from differentiation.
Students should be able to describe the function of stem cells in embryos, in adult animals and in the meristems in plants.
Stem cells from human embryos can be cloned and made to differentiate into most different types of human cells.
Stem cells from adult bone marrow can form many types of cells including blood cells.
Meristem tissue in plants can differentiate into any type of plant cell, throughout the life of the plant.
Knowledge and understanding of stem cell techniques are not required.
Treatment with stem cells may be able to help conditions such as diabetes and paralysis.
In therapeutic cloning an embryo is produced with the same genes as the patient. Stem cells from the embryo are not rejected by the patient's body so they may be used for medical treatment.
The use of stem cells has potential risks such as transfer of viral infection, and some people have ethical or religious objections.
Stem cells from meristems in plants can be used to produce clones of plants quickly and economically.
• Rare species can be cloned to protect from extinction.
• Crop plants with special features such as disease resistance can be cloned to produce large numbers of identical plants for farmers.

Diffusion (and factors affecting diffusion)
Substances may move into and out of cells across the cell membranes via diffusion.
Diffusion is the spreading out of the particles of any substance in solution, or particles of a gas, resulting in a net movement from an area of higher concentration to an area of lower concentration.
Some of the substances transported in and out of cells by diffusion are oxygen and carbon dioxide in gas exchange, and of the waste product urea from cells into the blood plasma for excretion in the kidney.
Students should be able to explain how different factors affect the rate of diffusion.
Factors which affect the rate of diffusion are:
• the difference in concentrations (concentration gradient)
• the temperature
• the surface area of the membrane.

SA:Vol and exchange surfaces
A single-celled organism has a relatively large surface area to volume ratio. This allows sufficient transport of molecules into and out of the cell to meet the needs of the organism.
Students should be able to calculate and compare surface area to volume ratios.
Students should be able to explain the need for exchange surfaces and a transport system in multicellular organisms in terms of surface area to volume ratio.
Students should be able to explain how the small intestine and lungs in mammals, gills in fish, and the roots and leaves in plants, are adapted for exchanging materials.

In multicellular organisms, surfaces and organ systems are specialised for exchanging materials. This is to allow sufficient molecules to be transported into and out of cells for the organism's needs. The effectiveness of an exchange surface is increased by: • having a large surface area • a membrane that is thin, to provide a short diffusion path • (in animals) having an efficient blood supply • (in animals, for gaseous exchange) being ventilated.
Osmosis Required practical activity 3: investigate the effect of a range of concentrations of salt or sugar solutions on the mass of plant tissue. Water may move across cell membranes via osmosis. Osmosis is the diffusion of water from a dilute solution to a concentrated solution through a partially permeable membrane. *Students should be able to:* • *use simple compound measures of rate of water uptake* • *use percentages* • *calculate percentage gain and loss of mass of plant tissue.* *Students should be able to plot, draw and interpret appropriate graphs.*
Active Transport Active transport moves substances from a more dilute solution to a more concentrated solution (against a concentration gradient). This requires energy from respiration. Active transport allows mineral ions to be absorbed into plant root hairs from very dilute solutions in the soil. Plants require ions for healthy growth. It also allows sugar molecules to be absorbed from lower concentrations in the gut into the blood which has a higher sugar concentration. Sugar molecules are used for cell respiration. *Students should be able to:* • *describe how substances are transported into and out of cells by diffusion, osmosis and active transport* • *explain the differences between the three processes.*

COMBINED/TRIPLE BIOLOGY CRITERIA: B2 ORGANISATION

Principles of organisation and of cell division (last two statements moved from Spec Unit B1)
Cells are the basic building blocks of all living organisms.
A tissue is a group of cells with a similar structure and function.
Organs are aggregations of tissues performing specific functions.
Organs are organised into organ systems, which work together to form organisms.
The nucleus of a cell contains chromosomes made of DNA molecules. Each chromosome carries a large number of genes.
In body cells the chromosomes are normally found in pairs.

Mitosis and the cell cycle (moved from Spec Unit B1)
Cells divide in a series of stages called the cell cycle. Students should be able to describe the stages of the cell cycle, including mitosis.
During the cell cycle the genetic material is doubled and then divided into two identical cells.
Before a cell can divide it needs to grow and increase the number of sub-cellular structures such as ribosomes and mitochondria. The DNA replicates to form two copies of each chromosome.
In mitosis one set of chromosomes is pulled to each end of the cell and the nucleus divides.
Finally the cytoplasm and cell membranes divide to form two identical cells.
Students need to understand the three overall stages of the cell cycle but do not need to know the different phases of the mitosis stage.
Cell division by mitosis is important in the growth and development of multicellular organisms.
Students should be able to recognise and describe situations in given contexts where mitosis is occurring.

Cancer (when cell organisation goes wrong)
Students should be able to describe cancer as the result of changes in cells that lead to uncontrolled growth and division.
Benign tumours are growths of abnormal cells which are contained in one area, usually within a membrane. They do not invade other parts of the body.
Malignant tumour cells are cancers. They invade neighbouring tissues and spread to different parts of the body in the blood where they form secondary tumours.
Scientists have identified lifestyle risk factors for various types of cancer. There are also genetic risk factors for some cancers.

Enzymes
Students should be able to relate knowledge of enzymes to metabolism
Students should be able to describe the nature of enzyme molecules and relate their activity to temperature and pH changes.
Students should be able to carry out rate calculations for chemical reactions.
Enzymes catalyse specific reactions in living organisms due to the shape of their active site.
Students should be able to use the 'lock and key theory' as a simplified model to explain enzyme action.

Digestive system and digestive enzymes
The digestive system is an example of an organ system in which several organs work together to digest and absorb food.
Students should be able to recall the sites of production and the action of amylase, proteases and lipases.
Students should be able to understand simple word equations but no chemical symbol equations are required.
Digestive enzymes convert food into small soluble molecules that can be absorbed into the bloodstream.
Carbohydrases break down carbohydrates to simple sugars. Amylase is a carbohydrase which breaks down starch.
Proteases break down proteins to amino acids.
Lipases break down lipids (fats) to glycerol and fatty acids.
The products of digestion are used to build new carbohydrates, lipids and proteins. Some glucose is used in respiration.

Bile is made in the liver and stored in the gall bladder. It is alkaline to neutralise hydrochloric acid from the stomach. It also emulsifies fat to form small droplets which increases the surface area. The alkaline conditions and large surface area increase the rate of fat breakdown by lipase.
Digestive enzyme investigation (amylase/pH) Required practical 5: investigate the effect of pH on the rate of reaction of amylase enzyme. *Students should use a continuous sampling technique to determine the time taken to completely digest a starch solution at a range of pH values.* Iodine reagent is to be used to test for starch every 30 seconds. Temperature must be controlled by use of a water bath or electric heater.
Food tests Required practical 4: use qualitative reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict's test for sugars; iodine test for starch; and Biuret reagent for protein.
The heart and lungs *Students should know the structure and functioning of the human heart and lungs, including how lungs are adapted for gaseous exchange.* The heart is an organ that pumps blood around the body in a double circulatory system. The right ventricle pumps blood to the lungs where gas exchange takes place. The left ventricle pumps blood around the rest of the body. Knowledge of the blood vessels associated with the heart is limited to the aorta, vena cava, pulmonary artery, pulmonary vein and coronary arteries. Knowledge of the names of the heart valves is not required. Knowledge of the lungs is restricted to the trachea, bronchi, alveoli and the capillary network surrounding the alveoli. The natural resting heart rate is controlled by a group of cells located in the right atrium that act as a pacemaker. Artificial pacemakers are electrical devices used to correct irregularities in the heart rate.
Blood and blood vessels The body contains three different types of blood vessel: • arteries • veins • capillaries. *Students should be able to explain how the structure of these vessels relates to their functions.* *Students should be able to use simple compound measures such as rate and carry out rate calculations for blood flow.* Blood is a tissue consisting of plasma, in which the red blood cells, white blood cells and platelets are suspended. *Students should know the functions of each of these blood components.* *Students should be able to recognise different types of blood cells in a photograph or diagram, and explain how they are adapted to their functions.*
Heart disease *Students should be able to evaluate the advantages and disadvantages of treating cardiovascular diseases by drugs, mechanical devices or transplant.* In coronary heart disease layers of fatty material build up inside the coronary arteries, narrowing them. This reduces the flow of blood through the coronary arteries, resulting in a lack of oxygen for the heart muscle. Stents are used to keep the coronary arteries open. Statins are widely used to reduce blood cholesterol levels which slows down the rate of fatty material deposit. In some people heart valves may become faulty, preventing the valve from opening fully, or the heart valve might develop a leak. Students should understand the consequences of faulty valves. Faulty heart valves can be replaced using biological or mechanical valves. In the case of heart failure a donor heart, or heart and lungs can be transplanted. Artificial hearts are occasionally used to keep patients alive whilst waiting for a heart transplant, or to allow the heart to rest as an aid to recovery.

AQA CHEMISTRY UNIT 2 structure bonding and properties of matter

CRITERIA SHEET

Lesson	Criteria
1 **All** **higher**	Students should know that: • The three states of matter are solid, liquid and gas. • Melting and freezing take place at the melting point, boiling and condensing take place at the boiling point. • The three states of matter can be represented by a simple model. In this model, particles are represented by small solid spheres. Particle theory can help to explain melting, boiling, freezing and condensing. • The amount of energy needed to change state from solid to liquid and from liquid to gas depends on the strength of the forces between the particles of the substance. The nature of the particles involved depends on the type of bonding and the structure of the substance. • The stronger the forces between the particles the higher the melting point and boiling point of the substance. • In chemical equations, the three states of matter are shown as (s), (l) and (g), with (aq) for aqueous solutions. Students should be able to: • predict the states of substances at different temperatures given appropriate data • explain the different temperatures at which changes of state occur in terms of energy transfers and types of bonding • recognise that atoms themselves do not have the bulk properties of materials • include appropriate state symbols in chemical equations for the reactions in this specification. **HIGHER ONLY** • explain the limitations of the particle theory in relation to changes of state when particles are represented by solid inelastic spheres which have no forces between them. • Know the limitations of the simple model above include that in the model there are no forces, that all particles are represented as spheres and that the spheres are solid.
2 **ALL**	When atoms share pairs of electrons, they form covalent bonds. These bonds between atoms are strong. Covalently bonded substances may consist of small molecules. Students should be able to: • draw dot and cross diagrams for the molecules of hydrogen, chlorine, oxygen, nitrogen, hydrogen chloride, water, ammonia and methane • represent the covalent bonds in small molecules, in the repeating units of polymers and in part of giant covalent structures, using a line to represent a single bond • describe the limitations of using dot and cross, ball and stick, two and three-dimensional diagrams to represent molecules or giant structures

	• deduce the molecular formula of a substance from a given model or diagram in these forms showing the atoms and bonds in the molecule •recognise common substances that consist of small molecules from their chemical formula. Students should know that: •Some covalently bonded substances have very large molecules, such as polymers. •Some covalently bonded substances have giant covalent structures, such as diamond and silicon dioxide. •Metals consist of giant structures of atoms arranged in a regular pattern. •The electrons in the outer shell of metal atoms are delocalised and so are free to move through the whole structure. The sharing of delocalised electrons gives rise to strong metallic bonds.
3 **All**	Students should know that: • Metals have giant structures of atoms with strong metallic bonding. This means that most metals have high melting and boiling points. • In pure metals, atoms are arranged in layers which allows metals to be bent and shaped. • Pure metals are too soft for many uses and so are mixed with other metals to make alloys which are harder. Students should be able to : • explain why alloys are harder than pure metals in terms of distortion of the layers of atoms in the structure of a pure metal • Metals are good conductors of electricity because the delocalised electrons in the metal carry electrical charge through the metal. • Metals are good conductors of thermal energy because energy is transferred by the delocalised electrons.
4 **All**	Students should know that: • Substances that consist of giant covalent structures are solids with very high melting points. All of the atoms in these structures are linked to other atoms by strong covalent bonds. These bonds must be overcome to melt or boil these substances. • Diamond and graphite (forms of carbon) and silicon dioxide (silica) are examples of giant covalent structures. • Polymers have very large molecules. The atoms in the polymer molecules are linked to other atoms by strong covalent bonds. The intermolecular forces between polymer molecules are relatively strong and so these substances are solids at room temperature Students should be able to: • recognise giant covalent structures from diagrams showing their bonding and structure. • recognise polymers from diagrams showing their bonding and structure.
5 **All**	When a metal atom reacts with a non-metal atom electrons in the outer shell of the metal atom are transferred. Metal atoms lose electrons to become positively charged

	ions. Non-metal atoms gain electrons to become negatively charged ions. The ions produced by metals in Groups 1 and 2 and by non-metals in Groups 6 and 7 have the electronic structure of a noble gas (Group 0). The electron transfer during the formation of an ionic compound can be represented by a dot and cross diagram. An ionic compound is a giant structure of ions. Ionic compounds are held together by strong electrostatic forces of attraction between oppositely charged ions. These forces act in all directions in the lattice and this is called ionic bonding. Students should know that: • The charge on the ions produced by metals in Groups 1 and 2 and by non-metals in Groups 6 and 7 relates to the group number of the element in the periodic table. Students should be able to : • draw dot and cross diagrams for ionic compounds formed by metals in Groups 1 and 2 with non-metals in Groups 6 and 7. • work out the charge on the ions of metals and non-metals from the group number of the element, limited to the metals in Groups 1 and 2, and non-metals in Groups 6 and 7 • deduce that a compound is ionic from a diagram of its structure in one of the specified forms • describe the limitations of using dot and cross, ball and stick, two and three-dimensional diagrams to represent a giant ionic structure • work out the empirical formula of an ionic compound from a given model or diagram that shows the ions in the structure. • Students should be familiar with the structure of sodium chloride but do not need to know the structures of other ionic compounds
6 **All**	Students should know that: • Ionic compounds have regular structures (giant ionic lattices) in which there are strong electrostatic forces of attraction in all directions between oppositely charged ions. • These compounds have high melting points and high boiling points because of the large amounts of energy needed to break the many strong bonds. • When melted or dissolved in water, ionic compounds conduct electricity because the ions are free to move and so charge can flow. • Knowledge of the structures of specific ionic compounds other than sodium chloride is not expected • Substances that consist of small molecules are usually gases or liquids that have relatively low melting points and boiling points. These substances have only weak forces between the molecules (intermolecular forces). It is these intermolecular forces that are overcome, not the covalent bonds, when the substance melts or boils. • The intermolecular forces increase with the size of the molecules, so larger molecules have higher melting and boiling points. These substances do not conduct electricity because the molecules do not have an overall electric charge. Students should be able: • to use the idea that intermolecular forces are weak compared with covalent bonds to explain the bulk properties of molecular substances

7+8 All	Students should know that: • In diamond, each carbon atom forms four covalent bonds with other carbon atoms in a giant covalent structure, so diamond is very hard, has a very high melting point and does not conduct electricity. • In graphite, each carbon atom forms three covalent bonds with three other carbon atoms, forming layers of hexagonal rings which have no covalent bonds between the layers. In graphite, one electron from each carbon atom is delocalised. • graphite is similar to metals in that it has delocalised electrons. • Graphene is a single layer of graphite and has properties that make it useful in electronics and composites. • Fullerenes are molecules of carbon atoms with hollow shapes. The structure of fullerenes is based on hexagonal rings of carbon atoms but they may also contain rings with five or seven carbon atoms. The first fullerene to be discovered was Buckminsterfullerene (C60) which has a spherical shape. Carbon nanotubes are cylindrical fullerenes with very high length to diameter ratios. Their properties make them useful for nanotechnology, electronics and materials Students should be able to: • explain the properties of diamond in terms of its structure and bonding. • explain the properties of graphite in terms of its structure and bonding • recognise graphene and fullerenes from diagrams and descriptions of their bonding and structure • give examples of the uses of fullerenes, including carbon nanotubes • explain the properties of graphene in terms of its structure and bonding.
9 CHEM 0nly	Students should know that: • Nanoscience refers to structures that are 1–100 nm in size, of the order of a few hundred atoms. • Nanoparticles, are smaller than fine particles (PM2.5), which have diameters between 100 and 2500 nm (1 x 10-7 m and 2.5 x 10-6 m). • Coarse particles (PM10) have diameters between 1 x 10-5 m and 2.5 x 10-6 m. • Coarse particles are often referred to as dust. • As the side of cube decreases by a factor of 10 the surface area to volume ratio increases by a factor of 10. • Nanoparticles may have properties different from those for the same materials in bulk because of their high surface area to volume ratio. It may also mean that smaller quantities are needed to be effective than for materials with normal particle sizes. • Nanoparticles have many applications in medicine, in electronics, in cosmetics and sun creams, as deodorants, and as catalysts. • New applications for nanoparticulate materials are an important area of research. Students should consider:

	• advantages and disadvantages of the applications of these nanoparticulate materials, but do not need to know specific examples or properties other than those specified. Students should be able to: • compare 'nano' dimensions to typical dimensions of atoms and molecules. • given appropriate information, evaluate the use of nanoparticles for a specified purpose explain that there are possible risks associated with the use of nanoparticles
10	Students should know that: There are three types of strong chemical bonds: ionic, covalent and metallic. • For ionic bonding the particles are oppositely charged ions. • For covalent bonding the particles are atoms which share pairs of electrons. • For metallic bonding the particles are atoms which share delocalised electrons. Ionic bonding occurs in compounds formed from metals combined with non-metals. • Covalent bonding occurs in most non-metallic elements and in compounds of non-metals. • Metallic bonding occurs in metallic elements and alloys. Students should be able to: • explain chemical bonding in terms of electrostatic forces and the transfer or sharing of electrons. • Use two-dimensional (2D) diagrams and 3D models to: represent atoms, molecules and ionic structures represent giant covalent structures calculate empirical formulae of ionic structures.
	SKILLS DEVELOPMENT
All	Visualise and represent 2D and 3D forms including two dimensional representations of 3D objects
All	Recognise substances as small molecules , polymers or giant molecules from diagrams showing their bonding
All	Recognise substances as giant structures from diagrams showing their bonding
All	Recognise substances as metallic giant substances showing their bonding
Chemistry only	Make order of magnitude calculations Calculate areas of triangles and rectangles, surface areas and volumes of cubes Recognise and use expressions in standard form Use ratios fractions and percentages Make estimates of the results of simple calculations.

C9 Criteria Sheet
Chemistry of the Atmosphere

The proportions of different gases in the atmosphere

For 200 million years, the proportions of different gases in the atmosphere have been much the same as they are today:

- about four-fifths (approximately 80%) nitrogen
- about one-fifth (approximately 20%) oxygen
- small proportions of various other gases, including carbon dioxide, water vapour and noble gases.

The Earth's early atmosphere

Theories about what was in the Earth's early atmosphere and how the atmosphere was formed have changed and developed over time. Evidence for the early atmosphere is limited because of the time scale of 4.6 billion years.

One theory suggests that during the first billion years of the Earth's existence there was intense volcanic activity that released gases that formed the early atmosphere and water vapour that condensed to form th oceans. At the start of this period the Earth's atmosphere may have been like the atmospheres of Mars and Venus today, consisting of mainly carbon dioxide with little or no oxygen gas.

Volcanoes also produced nitrogen which gradually built up in the atmosphere and there may have been small proportions of methane and ammonia.

When the oceans formed carbon dioxide dissolved in the water and carbonates were precipitated producing sediments, reducing the amount of carbon dioxide in the atmosphere. No knowledge of other theories is required.

Students should be able to, given appropriate information, interpret evidence and evaluate different theories about the Earth's early atmosphere.

How oxygen increased

Algae and plants produced the oxygen that is now in the atmosphere by photosynthesis, which can be represented by the equation:

$$6CO_2 + 6H_2O \longrightarrow C_6H_{12}O_6 + 6O_2$$

$$\text{carbon dioxide} + \text{water} \xrightarrow{\text{light}} \text{glucose} + \text{oxygen}$$

Algae first produced oxygen about 2.7 billion years ago and soon after this oxygen appeared in the atmosphere. Over the next billion years plants evolved and the percentage of oxygen gradually increased to a level that enabled animals to evolve.

How carbon dioxide decreased

Algae and plants decreased the percentage of carbon dioxide in the atmosphere by photosynthesis.

Carbon dioxide was also decreased by the formation of sedimentary rocks and fossil fuels that contain carbon.

Students should be able to:

- describe the main changes in the atmosphere over time and some of the likely causes of these changes
- describe and explain the formation of deposits of limestone, coal, crude oil and natural gas.

Greenhouse gases

Greenhouse gases in the atmosphere maintain temperatures on Earth high enough to support life. Water vapour, carbon dioxide and methane are greenhouse gases.

Students should be able to describe the greenhouse effect in terms of the interaction of short and long wavelength radiation with matter.

Human activities which contribute to an increase in greenhouse gases in the Atmosphere

Some human activities increase the amounts of greenhouse gases in the atmosphere. These include:
• carbon dioxide
• methane.

Students should be able to recall two human activities that increase the amounts of each of the greenhouse gases carbon dioxide and methane.
Based on peer-reviewed evidence, many scientists believe that human activities will cause the temperature of the Earth's atmosphere to increase at the surface and that this will result in global climate change.
However, it is difficult to model such complex systems as global climate change. This leads to simplified models, speculation and opinions presented in the media that may be based on only parts of the evidence and which may be biased.

Students should be able to:
• evaluate the quality of evidence in a report about global climate change given appropriate information
• describe uncertainties in the evidence base
• recognise the importance of peer review of results and of communicating results to a wide range of audiences.

Global climate change

An increase in average global temperature is a major cause of climate change.
There are several potential effects of global climate change.

Students should be able to:
• describe briefly four potential effects of global climate change
• discuss the scale, risk and environmental implications of global climate change.

The carbon footprint and its reduction

The carbon footprint is the total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product, service or event.
The carbon footprint can be reduced by reducing emissions of carbon dioxide and methane.

Students should be able to:
• describe actions to reduce emissions of carbon dioxide and methane
• give reasons why actions may be limited.

Atmospheric pollutants from fuels

The combustion of fuels is a major source of atmospheric pollutants.
Most fuels, including coal, contain carbon and/or hydrogen and may also contain some sulfur.
The gases released into the atmosphere when a fuel is burned may include carbon dioxide, water vapour, carbon monoxide, sulfur dioxide and oxides of nitrogen. Solid particles and unburned hydrocarbons may also be released that form particulates in the atmosphere.

Students should be able to:
• describe how carbon monoxide, soot (carbon particles), sulfur dioxide and oxides of nitrogen are produced by burning fuels predict the products of combustion of a fuel given appropriate information about the composition of the fuel and the conditions in which it is used.

Properties and effects of atmospheric pollutants

Carbon monoxide is a toxic gas. It is colourless and odourless and so is not easily detected.
Sulfur dioxide and oxides of nitrogen cause respiratory problems in humans and cause acid rain.
Particulates cause global dimming and health problems for humans Students should be able to describe and explain the problems caused by increased amounts of these pollutants in the air.

AQA Chemistry 1: Atomic Structure and the Periodic Table

CRITERIA SHEET

Lesson	Criteria
1 **All**	**4.1.1.1** All substances are made of atoms. An atom is the smallest part of an element that can exist. Atoms of each element are represented by a chemical symbol, eg O represents an atom of oxygen, Na represents an atom of sodium. There are about 100 different elements. Elements are shown in the periodic table. Compounds are formed from elements by chemical reactions. Chemical reactions always involve the formation of one or more new substances, and often involve a detectable energy change. Compounds contain two or more elements chemically combined in fixed proportions and can be represented by formulae using the symbols of the atoms from which they were formed. Compounds can only be separated into elements by chemical reactions. Chemical reactions can be represented by word equations or equations using symbols and formulae. Students will be supplied with a periodic table for the exam and should be able to: •• use the names and symbols of the first 20 elements in the periodic table, the elements in Groups 1 and 7, and other elements in this specification •• name compounds of these elements from given formulae or symbol equations •• write word equations for the reactions in this specification •• write formulae and balanced chemical equations for the reactions in this specification. (HT only) write balanced half equations and ionic equations where appropriate.
2 **All**	**4.1.1.2** A mixture consists of two or more elements or compounds not chemically combined together. The chemical properties of each substance in the mixture are unchanged. Mixtures can be separated by physical processes such as filtration, crystallisation, simple distillation, fractional distillation and chromatography. These physical processes do not involve chemical reactions and no new substances are made. Students should be able to: • describe, explain and give examples of the specified processes of separation • suggest suitable separation and purification techniques for mixtures when given appropriate information.
3 **All**	**4.1.1.3** New experimental evidence may lead to a scientific model being changed or replaced. Before the discovery of the electron, atoms were thought to be tiny spheres that could not be divided. The discovery of the electron led to the plum pudding model of the atom. The plum pudding model suggested that the atom is a ball of positive charge with negative electrons embedded in it.

	The results from the alpha particle scattering experiment led to the conclusion that the mass of an atom was concentrated at the centre (nucleus) and that the nucleus was charged. This nuclear model replaced the plum pudding model. Niels Bohr adapted the nuclear model by suggesting that electrons orbit the nucleus at specific distances. The theoretical calculations of Bohr agreed with experimental observations. Later experiments led to the idea that the positive charge of any nucleus could be subdivided into a whole number of smaller particles, each particle having the same amount of positive charge. The name proton was given to these particles. The experimental work of James Chadwick provided the evidence to show the existence of neutrons within the nucleus. This was about 20 years after the nucleus became an accepted scientific idea. Students should be able to describe: · why the new evidence from the scattering experiment led to a change in the atomic model · the difference between the plum pudding model of the atom and the nuclear model of the atom. Details of experimental work supporting the Bohr model are not required. Details of Chadwick's experimental work are not required. **4.1.1.4** The relative electrical charges of the particles in atoms. In an atom, the number of electrons is equal to the number of protons in the nucleus. Atoms have no overall electrical charge. The number of protons in an atom of an element is its atomic number. All atoms of a particular element have the same number of protons. Atoms of different elements have different numbers of protons. Students should be able to use the nuclear model to describe atoms.
4 **All**	**4.1.1.5** Atoms are very small, having a radius of about 0.1 nm (1×10^{-10} m). The radius of a nucleus is less than 1/10 000 of that of the atom (about 1×10^{-14}m). Almost all of the mass of an atom is in the nucleus. The relative masses of protons, neutrons and electrons The sum of the protons and neutrons in an atom is its mass number. Atoms of the same element can have different numbers of neutrons; these atoms are called isotopes of that element. Atoms can be represented by mass number, atomic number and symbol. Students should be able to calculate the numbers of protons, neutrons and electrons in an atom or ion, given its atomic number and mass number. Students should be able to relate size and scale of atoms to objects in the physical world. **4.1.1.6** The relative atomic mass of an element is an average value that takes account of the abundance of the isotopes of the element. Students should be able to calculate the relative atomic mass of an element given the percentage abundance of its isotopes.
5 **All**	**4.1.1.7** The electrons in an atom occupy the lowest available energy levels (innermost available shells). The electronic structure of an atom can be represented by numbers or by a diagram. For example, the electronic structure of sodium is 2,8,1 or dot and cross diagrams showing two electrons in the lowest energy level, eight in the second energy level and one in the third energy level. Students may answer questions in terms of either energy levels or shells.

6 **All**	**4.1.2.1** The elements in the periodic table are arranged in order of atomic (proton) number and so that elements with similar properties are in columns, known as groups. The table is called a periodic table because similar properties occur at regular intervals. Elements in the same group in the periodic table have the same number of electrons in their outer shell (outer electrons) and this gives them similar chemical properties. Students should be able to: •explain how the position of an element in the periodic table is related to the arrangement of electrons in its atoms and hence to its atomic number •predict possible reactions and probable reactivity of elements from their positions in the periodic table **4.1.2.2** Before the discovery of protons, neutrons and electrons, scientists attempted to classify the elements by arranging them in order of their atomic weights. The early periodic tables were incomplete and some elements were placed in inappropriate groups if the strict order of atomic weights was followed. Mendeleev overcame some of the problems by leaving gaps for elements that he thought had not been discovered and in some places changed the order based on atomic weights. Elements with properties predicted by Mendeleev were discovered and filled the gaps. Knowledge of isotopes made it possible to explain why the order based on atomic weights was not always correct. Students should be able to describe these steps in the development of the periodic table.
7 **All**	**4.1.2.3** Elements that react to form positive ions are metals. Elements that do not form positive ions are non-metals. The majority of elements are metals. Metals are found to the left and towards the bottom of the periodic table. Non-metals are found towards the right and top of the periodic table. Students should be able to: • explain the differences between metals and non-metals on the basis of their characteristic physical and chemical properties. This links to Group 0, Group 1, Group 7 and Bonding, structure and the properties of matter • explain how the atomic structure of metals and non-metals relates to their position in the periodic table • explain how the reactions of elements are related to the arrangement of electrons in their atoms and hence to their atomic number. **4.1.2.4** The elements in Group 0 of the periodic table are called the noble gases. They are unreactive and do not easily form molecules because their atoms have stable arrangements of electrons. The noble gases have eight electrons in their outer shell, except for helium, which has only two electrons. The boiling points of the noble gases increase with increasing relative atomic mass (going down the group). Students should be able to: • explain how properties of the elements in Group 0 depend on the outer shell of electrons of the atoms • predict properties from given trends down the group.

8 **All**	**4.1.2.5** The elements in Group 1 of the periodic table are known as the alkali metals and have characteristic properties because of the single electron in their outer shell. Students should be able to describe the reactions of the first three alkali metals with oxygen, chlorine and water. In Group 1, the reactivity of the elements increases going down the group. Students should be able to: •explain how properties of the elements in Group 1 depend on the outer shell of electrons of the atoms •predict properties from given trends down the group.
9 **All**	**4.1.2.6** The elements in Group 7 of the periodic table are known as the halogens and have similar reactions because they all have seven electrons in their outer shell. The halogens are non-metals and consist of molecules made of pairs of atoms. Students should be able to describe the nature of the compounds formed when chlorine, bromine and iodine react with metals and non-metals. In Group 7, the further down the group an element is the higher its relative molecular mass, melting point and boiling point. In Group 7, the reactivity of the elements decreases going down the group. A more reactive halogen can displace a less reactive halogen from an aqueous solution of its salt. Students should be able to: •explain how properties of the elements in Group 7 depend on the outer shell of electrons of the atoms •predict properties from given trends down the group.
10 **Chemistry (Triple)Only**	**4.1.3.1**The transition elements are metals with similar properties, which are different from those of the elements in Group 1. Students should be able to describe the difference compared with Group 1 in melting points, densities, strength, hardness and reactivity with oxygen, water and halogens. Students should be able to exemplify these general properties by reference to Cr, Mn, Fe, Co, Ni, Cu. **4.1.3.2** Many transition elements have ions with different charges, form coloured compounds and are useful as catalysts. Students should be able to exemplify these general properties by reference to compounds of Cr, Mn, Fe, Co, Ni, Cu.

AQA PHYSICS 1 ENERGY CRITERIA SHEET

All (Higher or Triple Physics only shown in bold)

'**Recall**' means you have to learn it. '**Apply**' means it will be on the equation sheet

Lesson 1

A system is an object or group of objects.

Describe, for common situations, the changes involved in the way energy is *stored* when a system changes. For example: an object projected upwards, an object accelerated by a constant force, a vehicle slowing down, an electric kettle boiling water

Lesson 2 & 3

Calculate the amount of energy stored by a moving object, a stretched spring and an object raised above ground level. The kinetic energy of a moving object can be calculated using the equation (**Recall and Apply)**:

$$K.E. = 0.5\ x\ mass\ x\ (speed)^2$$

$$[EK = \frac{1}{2}\ m\ v^2]$$

Kinetic energy, E_K, in joules, J Mass, m, in kilograms, kg Speed, v, in metres per second, m/s

The amount of elastic potential energy stored in a stretched spring can be calculated using the equation **(Apply)** :

$$Elastic\ potential\ energy =$$

$$0.5\ x\ spring\ constant\ x\ (extension)^2$$

$$[Ee = \frac{1}{2}\ k\ e^2]$$

(assuming the limit of proportionality has not been exceeded)

elastic potential energy, E_e, in joules, J, spring constant, k, in Newtons per metre, N/m, extension, e, in metres, m

The amount of gravitational potential energy gained by an object raised above the ground level can be calculated using the equation **(Recall and Apply)**:

$$g.p.e = mass\ x\ gravitational\ field\ strength\ x\ height$$

$$[Ep = m\ g\ h\ ]$$

gravitational potential energy, E_p, in joules, J, mass, m, in kilograms, kg, gravitational field strength, g, in Newtons per kilogram, N/kg, height, h, in metres, m

Lesson 4 & 5

A force does *work* on an object when the force causes a displacement of the object **(Recall and Apply)**: This is also covered in chapter 5, Forces.

$$Mechanical\ Work\ done\ = force\ x\ distance\ (along\ the\ line\ of\ action\ of\ the\ force)$$

$$[W\ =\ f\ x\ d]$$

work done, W, in joules, J, force, F, in Newtons, N distance, d, in metres, m

Power is defined as the rate at which energy is transferred or the rate at which work is done **(Recall and Apply)**.

$$Power\ = \frac{energy\ transferred}{Time}$$

$$[P\ =\ E\ /\ t]$$

$$Power\ = \frac{work\ done}{Time}$$

$$[P\ =\ W\ /\ t]$$

Power, P, in watts, W, Energy transferred, E, in joules, J, Time, t, in seconds, s, Work done, W, in joules, J. An energy transfer of one joule per second is equal to a power of 1 watt.

Covered more thoroughly in Unit 2:

Electrical Work is done when charge flows in a circuit.

The amount of energy transferred by electrical work can be calculated using the equation **(Recall and Apply)**:

$$Energy\ transferred\ =\ charge\ flow\ x\ potential\ difference$$

$$[E\ =\ Q\ x\ V]$$

energy transferred, E, in joules, J, charge flow, Q, in coulombs, C, potential difference, V, in volts, V

Lesson 6 & 7

Energy can be transferred usefully, stored or dissipated, but cannot be created or destroyed.

Describe examples where there are energy transfers in a closed system, that there is no net change to the total energy.

Whenever there are energy transfers in a system only part of the energy is usefully transferred. The rest of the energy is dissipated so that it is stored in less useful ways. This energy is often described as being wasted.

Unwanted energy transfers can be reduced in a number of ways, for example, through lubrication and the use of thermal insulation.

Describe how the rate of cooling of a building is affected by the thickness and thermal conductivity of its walls.

The higher the thermal conductivity of a material, the higher the rate of energy transfer by conduction across the material.

Students should investigate ways of reducing the unwanted energy transfers in a system.

Lesson 8

The energy efficiency for any energy transfer can be calculated using the equation **(Recall and Apply)**:

$$efficiency = \frac{useful\ output\ energy\ transfer}{total\ input\ energy\ transfer}$$

Efficiency may also be calculated using the equation **(Recall and Apply)**:

$$efficiency = \frac{useful\ power\ output}{total\ power\ input}$$

Students should be able to calculate efficiency values as a decimal or as a percentage.

HIGHER only: **Describe ways to increase the efficiency of the intended energy transfer**

Lesson 9 & 10

Describe the main energy resources available for use on Earth. These include:

- fossil fuels (coal, oil and gas)
- nuclear fuel
- bio-fuel
- wind
- hydro-electricity
- geothermal
- the tides
- the Sun
- water waves.

Distinguish between energy resources that are renewable and energy resources that are non-renewable.
Compare the ways that different energy resources are used. The uses to include transport, electricity generation and heating.
Describe the environmental impact arising from the use of different energy resources.
Explain patterns and trends in the use of energy resources
Students should be able to:
• consider the environmental issues that may arise from the use of different energy resources
• show that science has the ability to identify environmental issues arising from the use of energy resources but not always the power to deal with the issues because of political, social, ethical or economic considerations.

AQA PHYSICS 3 PARTICLE MODEL OF MATTER

CRITERIA SHEET

'Recall' means you have to learn it. 'Apply' means it will be on the equation sheet

Lesson	Criteria
1 **All**	The density of a material is defined by the equation: (to recall and apply) $density = \frac{mass}{volume}$ $\rho = \frac{m}{V}$ density, ρ, in kilograms per metre cubed, kg/m^3 mass, m, in kilograms, kg volume, V, in metres cubed, m^3 The particle model can be used to explain • the different states of matter • differences in density. Students should be able to recognise/draw simple diagrams to model the difference between solids, liquids and gases. Students should be able to explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules.
2 **All**	Students should be able to recognise/draw simple diagrams to model the difference between solids, liquids and gases. Students should be able to explain the differences in density between the different states of matter in terms of the arrangement of atoms or molecules. Changes of state Students should be able to describe how, when substances change state (melt, freeze, boil, evaporate, condense or sublimate), mass is conserved. Changes of state are physical changes which differ from chemical changes because the material recovers its original properties if the change is reversed.
3&4 **All**	If a change of state happens: The energy needed for a substance to change state is called latent heat. When a change of state occurs, the energy supplied changes the energy stored (internal energy) but not the temperature. The specific latent heat of a substance is the amount of energy required to change the state of one kilogram of the substance with no change in temperature. *energy for a change of state = mass × specific latent heat* (apply this equation) $E = m\,L$ energy, E, in joules, J mass, m, in kilograms, kg specific latent heat, L, in joules per kilogram, J/kg Specific latent heat of fusion – change of state from solid to liquid Specific latent heat of vaporisation – change of state from liquid to Vapour Students should be able to interpret heating and cooling graphs that include changes of state. Students should be able to distinguish between specific heat capacity and specific latent heat.

5&6 All	Energy is stored inside a system by the particles (atoms and molecules) that make up the system. This is called internal energy. Internal energy is the total kinetic energy and potential energy of all the particles (atoms and molecules) that make up a system. Heating changes the energy stored within the system by increasing the energy of the particles that make up the system. This either raises the temperature of the system or produces a change of state. If the temperature of the system increases, the increase in temperature depends on the mass of the substance heated, the type of material and the energy input to the system. The following equation applies: *change in thermal energy = mass × specific heat capacity × temperature change (apply this equation)* $\Delta E = m c \Delta \vartheta$ change in thermal energy, ΔE, in joules, J mass, m, in kilograms, kg specific heat capacity, c, in joules per kilogram per degree Celsius, J/kg °C temperature change, $\Delta\vartheta$, in degrees Celsius, °C. The specific heat capacity of a substance is the amount of energy required to raise the temperature of one kilogram of the substance by one degree Celsius.
8 All	The molecules of a gas are in constant random motion. The temperature of the gas is related to the average kinetic energy of the molecules. Changing the temperature of a gas, held at constant volume, changes the pressure exerted by the gas. Students should be able to: • explain how the motion of the molecules in a gas is related to both its temperature and its pressure • explain qualitatively the relation between the temperature of a gas and its pressure at constant volume.
9 Physics only	A gas can be compressed or expanded by pressure changes. The pressure produces a net force at right angles to the wall of the gas container (or any surface). Students should be able to use the particle model to explain how increasing the volume in which a gas is contained, at constant temperature, can lead to a decrease in pressure. For a fixed mass of gas held at a constant temperature: (apply this equation) *pressure × volume = constant* $p V = constant$ pressure, p, in pascals, Pa volume, V, in metres cubed, m^3 Students should be able to calculate the change in the pressure of a gas or the volume of a gas (a fixed mass held at constant temperature) when either the pressure or volume is increased or decreased.
10 Physics only + higher	Work is the transfer of energy by a force. Doing work on a gas increases the internal energy of the gas and can cause an increase in the temperature of the gas. Students should be able to explain how, in a given situation eg a bicycle pump, doing work on an enclosed gas leads to an increase in the temperature of the gas.

TECHNOLOGY

Be Positive. Be Respectful. Be Your Best

MORE THAN JUST A SCHOOL

D&T & Engineering Unit 1 – Practical Skills – Year 9

Key word	Definition
Ferrous	Metals that contain iron. These will therefore be magnetic and will rust on contact with moisture.
Non-Ferrous	Metals that do not contain iron and are therefore not magnetic and do not rust.
Alloy	A mixture of two or more different metals, usually in order to combine the properties of each metal used.
Ductile	Ductility is a materials ability to be stretched when cold.
Hardness	How easily a material can be damaged or deformed by pressure. Hard materials are difficult to dent, scratch and cut, but can be brittle and prone to shattering.
Toughness	Tough materials are difficult to break or snap and can therefore absorb shock and impacts well.
Hacksaw	A metal working tool for cutting relatively thin pieces of metal accurately by hand.
Flat File	A metal working tool used to shape metal by removing small amounts of material through abrasive action.
Hardening	A metalworking process used to increase the hardness of a metal by heating it up and then plunging it into cold water or oil.
Tempering	Tempering is a heat treatment technique applied to ferrous alloys, such as steel or cast iron, to achieve greater toughness by decreasing the hardness.
Surface Finishes	A means of altering the surface appearance of a material , either to make it more visually appealing, and/or to protect it from damage and oxidisation. E.g. paint, polish, plastic coating.
Stock Forms	The standard forms in which a material can be bought from a supplier e.g - wood is often sold in planks, metal is often sold in sheets or bars.

Tools you will use:

TOOLS OF THE TRADE: HACKSAW

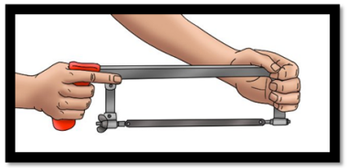
Anatomy

A hacksaw is a tool for cutting relatively thin metal, although skilled craftspeople can cut through much larger material accurately.

The teeth of the blade point forward therefore the push-stroke is the one that cuts through the material.

The blade can stretch and become loose, so the tension can be adjusted using the wingnut on the end of the saw.

Correct holding



The material being cut should be held securely in an engineering vice with the area to be cut as close to the vice as possible.

The "three finger, finger and thumb" rule is observed to ensure accurate cutting and the handle should be in your dominant hand.

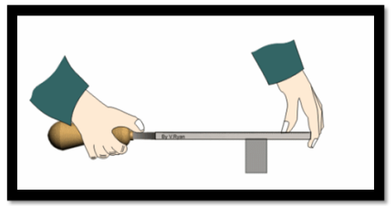
For longer/tougher cuts, your non-dominant hand can be placed on the other end of the saw to steady it and increase pressure on the work-piece slightly.

TOOLS OF THE TRADE: FLAT FILE

Anatomy

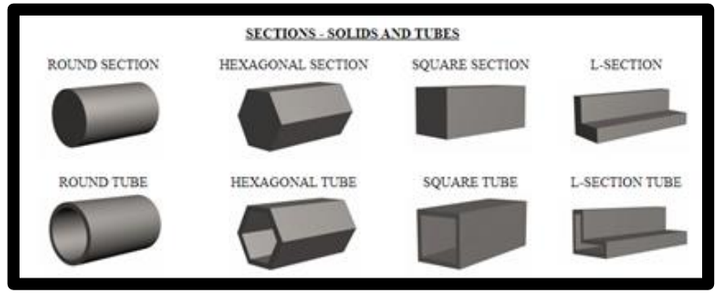
A file is a tool used to remove fine amounts of material from a work-piece. It is common in woodworking, metalworking, and other similar trade and hobby tasks.
Most are hand tools, made of a case hardened steel bar of rectangular, square, triangular, or round cross-section, with one or more surfaces cut with sharp, generally parallel teeth. A narrow, pointed tang is common at one end, to which a handle may be fitted.

Correct holding



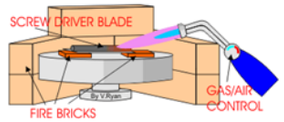
Hand files are normally held in both hands. The file is held flat against the surface it is to cut / smooth. The file is then pushed forward and it cuts on the forward stroke. It is then lifted away from the metal and returned to the starting point for the next push forward. This is called 'through filing'

Stock Forms:

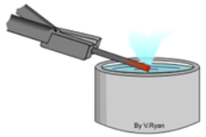


Hardening and tempering:

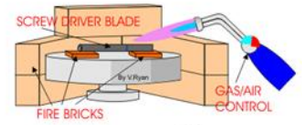
STAGE ONE:
The screw driver blade is heated, slowly at first, warming up the whole blade. Then the heat is concentrated on the area at the end of the blade. This gradually becomes 'red' hot.

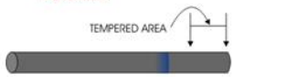


STAGE TWO:
The screw driver blade is removed quickly from the brazing heart, with blacksmiths tongs and plunged into clean, cold water. Steam boils off from the water as the steel cools rapidly. At this stage the blade is very hard but brittle and will break easily.



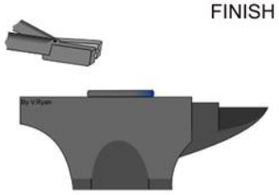
STAGE THREE:
The screw driver blade is cleaned with emery cloth and heated again on the brazing hearth. Heat is concentrated at the end of the steel blade. The steel must be watched very carefully as it changes colour quite quickly. A blue line of heat will appear near the end of the blade and it travels towards the tip as the temperature rises along the blade. When the line of blue reaches the tip the brazing torch is turned off. The blue indicates the correct temperature of 'tempering'.





FINISH

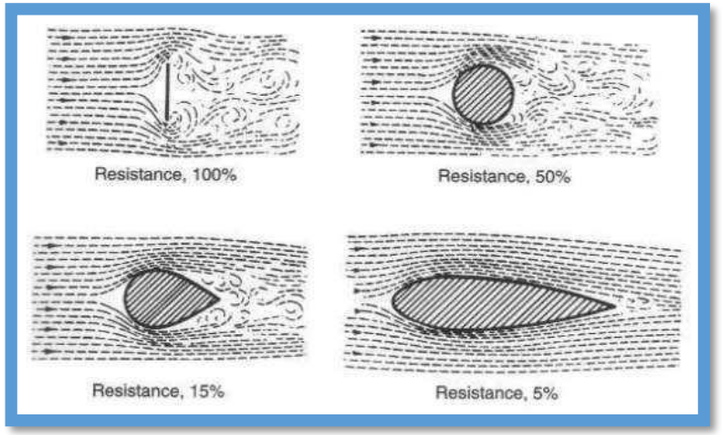
STAGE FOUR:
The screw driver blade is placed on a steel surface, such as an anvil face. This conducts the heat away and allows slow cooling of the screw driver blade. When cold, the blade should be tough and hard wearing and unlikely to break or snap. This is due to the tempering process.



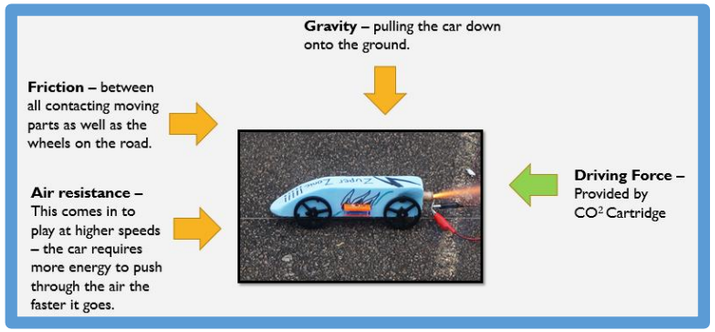
D&T & Engineering Unit 2 - STEM – Rocket Cars – Year 9

Key word	Definition
Aerodynamics	The study of the motion of air, particularly its interaction with a solid object, such as an airplane wing.
Downforce	Downforce is a downwards thrust created by the aerodynamic characteristics of a car.
Aerofoil	A structure with curved surfaces designed to give the most favourable ratio of lift to drag in flight, used as the basic form of the wings, fins, and tail planes of most aircraft.
Vacuum	A space from which all or most of the air has been removed
Former	a tool, mould, or other device used to form articles or shape materials.
Fluid Dynamics	The study of the flow of liquids or air – aerodynamics is part of fluid dynamics.
Pressure	Pressure exists on surfaces, in air and in liquids. On surfaces it is calculated by dividing force by area.
Template	Templates are used to make repetitive shapes.
Profile	A representation of something in outline
Propulsion	The action of driving or pushing forwards.
Gravity	The force that attracts an object towards the centre of the earth.
Friction	Friction is a force between two surfaces that are sliding. Friction always works in the direction opposite to the direction in which the object is moving, or trying to move. Friction always slows a moving object down.
Drag	Air resistance, also known as **drag**, is a force that is caused by air, the force acts in the opposite direction to an object moving through the air.

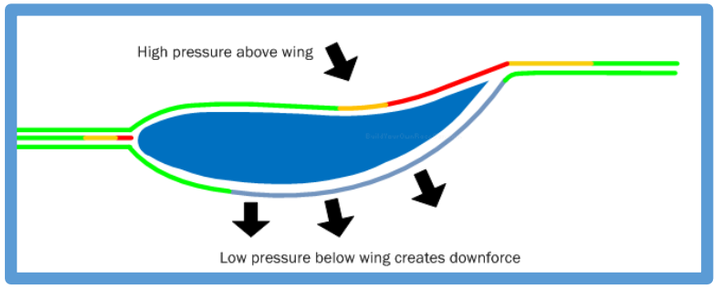
Air Resistance of simple shapes



Forces effecting a car in motion



Aerofoil to create downforce



D&T & Engineering Unit 3 - Systems & Control- Year 9

Key word	Definition
System	Something that has an input, process and output. Systems can be mechanical, electrical or use microprocessors. They help us control a product or environment.
Input	What is taken into the systems. It could be a movement, but could also be a signal from sensor (i.e. temperature)
Process	The thing that happens in the system, often mechanical, electrical or computer controlled
Output	What comes out of the system. Again, this could be a movement, or could be something electrical that lights up or makes a noise
Circuit	A loop of conductive material (i.e. copper) that carries electrons from a battery through useful components and back to the battery. It can be represented by a circuit diagram.
Components	Electrical items that carry out a useful function. An input component might be a Light Dependent Resistor (LDR), while an output component might be a Light Emitting Diode (LED)
Soldering	The process of using a hot soldering iron to heat a conductive metal material (solder) so that it flows over the component leg and copper track of a circuit board
Vacuum Forming	A plastic moulding process that heats thermo-plastic material so that it becomes flexible, then sucks out the air around a wooden mould, so that an interesting shape can be produced.

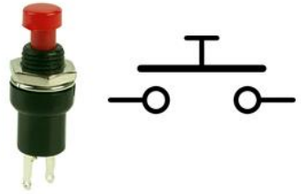
Our Light Sensor System...

Input 1 – *Light Dependant Resistor (LDR)* → **Process** – *Transistors & Capacitors* → **Output 1** – *LED*

Components you might find in a system...

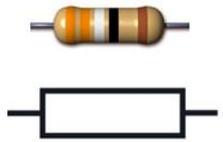
Input Components

Push to make switch



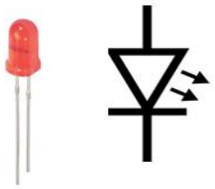
Process Components

Resistor (Reduces current)



Output Components

Light Emitting Diode (LED)



Ohm's Law...

$$I = \frac{V}{R}$$

I = Current in Amperes (A)
V = Voltage in Volts (V)
R = Resistance in Ohms (Ω)

Vacuum forming...

Food – Year 9

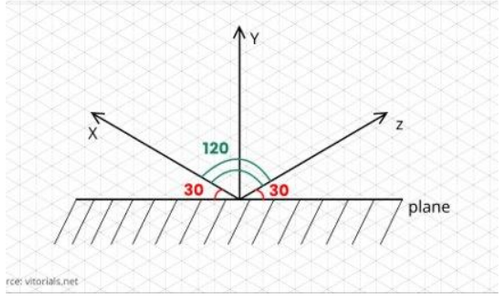
Key word	Definition
Bacteria	Microscopic living organisms, which are single celled.
High risk foods	Ready to eat moist foods, usually high in protein.
Contamination	Transferring an unwanted substance from one item to another, such as bacteria from raw to cooked meat.
Food poisoning	An illness caused by eating contaminated foods.
Gluten	A protein formed when water is added to flour and mixed.
Yeast	A fungus, biological raising agent and needs time, food, warmth and liquid to grow and ferment.
Fermentation	The process in which yeast produces the gas carbon dioxide.
Gelatinisation	When starch granules are mixed with a liquid and heated, they swell and break open, causing the liquid to thicken.
Reduction	Simmering a liquid over heat until it thickens.
Glazing	Used to improve the appearance of a product e.g. beaten egg, milk.
Coagulate	When protein sets.
Denature	Protein changes shape.
Baking Powder	A chemical raising agent used when making cakes.
Sieving	Putting flour through a sieve to trap air between the fine flour particles.
Folding	Using a spoon to fold a light ingredient into a heavier ingredient.

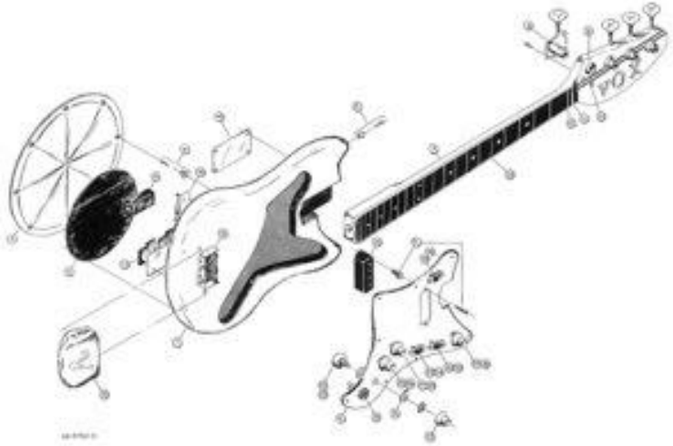
Key Temperatures	Function
100c	Boiling point of water
75C	Food should be cooked and reheated to this temperature
63C	Food should be kept hot at this temperature (or above)
5-63C	Danger zone - where most bacteria can multiply. Keep prepared food out of
5C	Keep cold food
0-5C	Fridge temperature
-18C	Freezer temperature

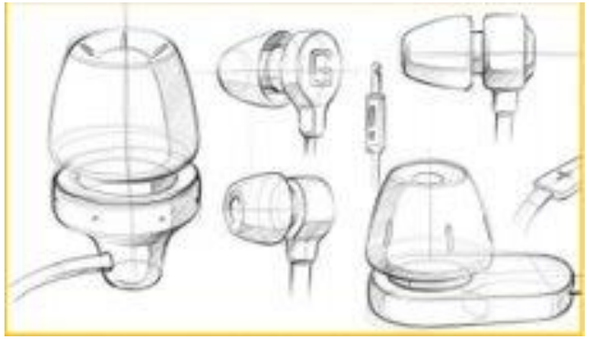
Cuisine	Ingredients	Dishes
Italian	Cured meat, olives, olive oil, mozzarella, parmesan, pasta, mascarpone, fresh berries	Gnocchi, Pizza, Risotto, lasagne, cannelloni, spaghetti Bolognese
Chinese	Noodles, rice, fish, seafood, pork, duck, chicken, water chestnuts, bamboo shoots, beansprouts, lychees	Szechuan pork or beef, Prawn toast, chop suey, spring rolls,
Indian	Basmati rice, atta (bread flour), goat, lamb, chicken, lentils, aubergines, cumin, turmeric, cardamom	Tandoori, naan bread and chapattis, biryanis, kormas, lentil dahl, bhaji, samosas

Graphics: Communicating ideas – Year 9

Key word	Definition
Specification	a **detailed description of the design** and materials used to make something.
Prototype	a **first version** of a product from which others are developed
Isometric drawings	a method of showing **projection or perspective** in which the three principal dimensions are represented by three axes
Orthographic projection	common method of **representing three-dimensional objects,** usually by three two-dimensional drawings
Parallel	side by side and having the **same distance continuously between them**
Sketching	make a **rough drawing** of
Aesthetics	a set of principles concerned with **visual appeal**
Design brief	is a document that **defines the core details of your upcoming design project.**
Perpendicular	at an **angle of 90°** to a given line or surface
Hypotenuse	a hypotenuse is the **longest side of a right-angled triangle**, the side opposite the right angle.
Exploded diagram	show how a product can be assembled and how the separate parts fit together, with dotted lines showing where the parts slide into place.
Acute angle	Acute angles **measure less than 90 degrees**







YR9 Textiles: I, Me, Mine. - Embroidered portrait

Technique	Definition
Running stitch	A basic stitch which moves in and out of the fabric.
Backstitch	A stitch sewn one stitch length backward on the front side and two stitch lengths forward on the reverse side to form a solid line of stitching on both sides.
Artist response	Using similar techniques and/or processes to create work in the style of an artist or designer.
Satin stitch	A long straight embroidery stitch, closely placed parallel to similar stitches, giving the appearance of satin.
Seed stitch	A short straight stitch used for background filling in embroidery.
Fern stitch	A surface embroidery stitch used to create an open, seaweed or fern-like stitch along a straight or curved line.
Applique	To attach fabric to a background piece of fabric.
Carbon paper	Thin paper coated with carbon or another pigmented substance, used for making copies of written or typed documents.

Keyword	Definition
Needle	a very fine slender piece of metal with a point at one end and a hole or eye for thread at the other, used in sewing.
Thread	a long, thin strand of cotton, nylon, or other fibres used in sewing or weaving.
Pattern	a repeated decorative design.
Line	a long, narrow mark or band.
Colour	the element in art of reflected light that is interpreted by the eye.
Transfer	move from one place to another.
Embroidery	the craft of decorating fabric or other materials using a needle to apply thread or yarn.

Equipment:

Scissors
Needle
Thread
Carbon paper

Materials:

Calico
Thread
Felt

DID YOU KNOW?
While embroidery is practiced across the world, its origin stems from China and the Near East. Early embroidery can actually be traced back to Cro-Magnon days or 30,000 B.C. Archeological finds from this time period reveals fossilized remains of heavily hand-stitched and decorated clothing.