THE ROYAL SUTTON SCHOOL

The Royal Sutton School

Year 9 Knowledge Organiser

SUMMER TERM

‘Potential into Reality’

Arthur Terry Learning Partnership

TRSS
Year 9
Knowledge Organisers
Contents

Year 9 Subjects

Art & Design: Architecture

Art media

Media in art terms, primarily refers to the painting and drawing materials used to make a work of art, these may include:

Pencil and graphite
Collage
Pen
Fine Liner
Charcoal
Watercolour paints
Acrylic paints
Soft pastels
Oil pastels

Mixed media in art is when you combine any number of media together for creative effect

Mark making

Mark making describes the different lines, dots, marks, patterns, and textures we create in an artwork. It can be loose and gestural or controlled and neat.

https://www.tate.org.uk/art/student-resource/exam-help/markmaking#:~:text=Mark%20making%20describes%20the%20different,gestural%20or%20controlled%20and%20neat.

WOW WORDS

- Composition
- Design
- Planning
- Layering
- Aesthetics
- Architectural movement
- Purpose
- Context
-

Artist: Ian Murphy

https://www.ianmurphyart.com/

Ian Murphy is a UK based Fine artist of over 30 years, known for his passion for journeys, inspiring his artworks. The rugged and eroded landscape, both natural and the constructed, feature strongly in his visual stimulus, as he seeks to investigate the environments that fracture and decay allowing him to achieve the strongest aesthetic in his mixed media canvases.

Birmingham

Architectural movements

Movements

Brutalism
Deconstructivism
Modernism

Architects
Denys Lasdun
Frank Gehry
Zaha Hadid

Can you research other Architects and develop an understanding of the styles and designs that they create?

Composition is the arrangement of elements within a work of art.
Layering in art is where you arrange different elements within your composition on top or underneath when you are drawing or creating an artwork. Layering can also refer to the use of a range of different media; working them on top of each other.

Scale in art refers to the overall physical size of an artwork or objects in the artwork.
An artist may create an artwork that is much larger than it would be in real life in order to create a visual impact.
When artists create work on a miniature scale, impact is often created through the level of detail and skill involved.

Proportion describes the relationship between the dimensions of different elements and an overall composition. Scale refers to an artwork's size and how parts of a composition relate to each other.

How do you refine your composition?
What is the foreground?
What is the mid ground?
What is the background?
What does overlap mean?
What does underlap mean?

How can you use scale in your work to create visual impact?

If visual impact What does visual impact mean?

The principles of design help you to **carefully plan and organize the elements of art so that you will hold interest and command attention**. This is sometimes referred to as visual impact. In any work of art there is a thought process for the arrangement and use of the elements of design.

- Create a layered drawing of buildings in Birmingham; arranging them within the composition. Use overlapping and underlapping techniques to create your work. Complete this in a media of your choice.
- Using tin foil, wrap, scrunch and mould the foil into the shape of a famous building creating a three dimensional form.
- Using your imagination create a building design for a specific location. Imagine you are the architect and you have to design a building for a specific space or reason e.g. creating a design for a school in Digbeth in Birmingham city centre. What would you design look like? How would the space be used? What would the scale of the building be like? What materials would you use? Would another architect inspire you?
- Create a layered drawing of modernist architecture using a media/medias of your choice of. Consider the paper you are working on – could you use newspaper, card from a box, an envelope etc?

ARCHITECTURE

Drama: Script performance skills

1: Rehearsing

This term we will be rehearsing a short scripted scene, then performing it in front of our peers. When watching a performance, it is very important that we follow some key rules:

1. We are silent, still and respectful
2. We are supportive and friendly
3. We do not discuss or comment on the performances without being asked

4. Performance and Evaluation

Discussing performances & Evaluation

We follow a really important structure when analysing a performance.

What went well, give an example, explain what impact it had.

Even better if, give an example, explain what impact it had.

2. Rehearsal Time

Rehearsal time: You will be given rehearsal time to learn, develop and ready your performance for an audience. During rehearsal you will need to:

- Stay with and helped my group
- Work well with my group
- Stay on task and followed instructions
- Use simple rehearsal techniques with my group
- Select appropriate rehearsal technique
- Use rehearsal techniques to develop others
- Use feedback from my teacher to improve
- Use feedback from others in my group to improve
- Learn from successes & challenges of other groups
- Demonstrate how to effectively use rehearsals

3. Rehearsal Strategies

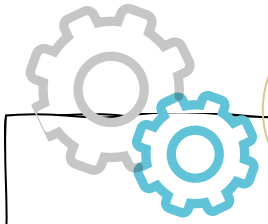
Rehearsal strategies
There are many rehearsal strategies you can use to improve your drama performance. It depends on what performance element you feel needs the most focus.

- Still images, sculpting and mime can help Posture, gesture & facial expression
- Thought tracks, diary entries and role on the wall can help understanding of character
- Role swap, action narration or ranking can help an actor choose specific performance elements.

5. Challenging practical assessment

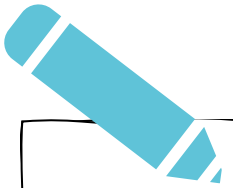
- Used effective posture to show a character
- Used effective gestures to show actions
- Used facial expression to show emotions
- Used effective movement showing character
- Used effective voice on stage (Volume, pitch, pace, pause, tone)
- Created a realistic or detailed character
- Create detailed relationships & scenes on stage
- Used my stage space effectively
- Can have an impact on the audience
- Show understanding of how to improve

- We start and finish each performance with a Still Image
- We stay in character throughout a performance, acting and reacting in character
- Posture shows our characters status and power
- Gesture shows our character's actions
- Facial expression can show emotion
- Movement and voice can show status, power, situation, relationship and emotions.
- Naturalism is where a performance, character and relationships look to be as close to reality as possible on stage



Key questions to ask yourself when preparing a performance:

- Where is my audience?
- Will they be able to see the key moments?
- What impact do we want to have on our audience?
- How will I change my posture to create my character?
- How will I change my gestures to show what I am doing?
- What type of facial expressions and voice might my character use?
- How might my character move?
- What is my characters objective? What do they want to achieve in this scene?
- What relationships should be shown on stage? Are there particular characters who I would have strong feelings about?
- What key moment in the performance could I look to make an impact on the audience?



You will need to rehearse to get this performance ready. This can take a number of different forms.

- You could run the lines together, in person or over the phone
- You could block the scene, working out who moves where, when and how
- You could mime the scene, focusing on your physical performance elements
- You can run the scene's moments of transition, focusing on creating slick, silent movements between them
- You can speed run through, making a game of getting as much correct as you can
- You can replace the language with nonsense words, which helps you focus on the tone, pitch, pace, rhythm and pace of the speech used
- You can swap roles with a partner, watching how they would perform differently and steal their good bits!

Scripted performance

English: Journeys Poetry

1. Language for Comparison

When poems have similarities
Similarly, ...
Both poems convey / address...
Both poets explore / present...
This idea is also explored in...
In a similar way, ...
Likewise, ...
When poems have differences
Although...
Whereas...
Whilst...
In contrast, ...
Conversely, ...
On the other hand, ...
On the contrary, ...
Unlike...

2. Language Techniques

Metaphor – comparing one thing to another.
Simile – comparing two things with 'like' or 'as'.
Personification – giving human qualities to the nonhuman.
Imagery – language that makes us imagine a sight (visual), sound (aural), touch (tactile), smell or taste.
Tone – the mood or feeling created in a poem.
Pathetic Fallacy – giving emotion to weather in order to create a mood within a text.
Irony – language that says one thing but implies the opposite eg. sarcasm.
Colloquial Language – informal language, usually creates a conversational tone or authentic voice.
Onomatopoeia – language that sounds like its meaning.
Alliteration – words that are close together start with the same letter or sound.
Sibilance – the repetition of s or sh sounds.
Assonance – the repetition of similar vowel sounds.
Consonance – repetition of consonant sounds.
Plosives – short burst of sound: t, k, p, d, g, or b sound.
Oxymoron – a phrase that contradicts itself.
Repetition – repeated words or phrases.

3. Structure Techniques

Stanza – a group of lines in a poem.
Enjambment – a sentence or phrase that runs onto the next line.
Caesura – using punctuation to create pauses or stops.
Contrast – opposite concepts/feelings in a poem.
Juxtaposition – contrasting things placed side by side.
Anaphora – when the first word/phrase of a line is the same across different lines.
Epiphora – when the final word of a stanza is the same across different stanzas.
Volta – a turning point in a poem.

4. Form Techniques

Speaker – narrator, or person in the poem.
Free verse – poetry that doesn't rhyme.
Blank verse – poem in iambic pentameter, but with no rhyme.
Sonnet – poem of 14 lines with clear rhyme scheme.
Rhyming couplet – a pair of rhyming lines next to each other.
Meter – arrangement of stressed/unstressed syllables.

5. Key Words

immigrant	perspective	stanza	metaphorical
migration	interpretation	slang	literal
Guyana	Medieval	grime	tenor
imagery	Chaucer	prologue	vehicle
hyperbole	pilgrimage	banishment	ground
physical	Canterbury	epic poetry	syntax
spiritual	Southwark	invocation of the Muse	rebel
figurative	General Prologue	epithets	taboo
comparative statements	Standard English	Moral	punk
refrain	astrology	extended metaphor	paternal

1. Explain the difference between literal and metaphorical.
2. Give a definition of the tenor, vehicle and ground. Include an example.
3. What is the key message in each poem?
4. Who is the narrator of each poem?
5. What is the tone of each poem?
6. Can you summarise each poem in 20 words?
7. Can you list the most important points in the narration of each poem?
8. Which 5 words would you use to describe the meaning of each poem?
9. What are the main themes in each poem?
10. What is an epic poem?

1. Why is the context of a text important?
2. How do the main themes link to each text?
3. Is the author challenging, endorsing, or simply reflecting the dominant ideas and assumptions of the time and place in which they are writing?
4. Read the opening of a novel about the migrant experience in England. For example: Small Island, The Lonely Londoners, Brick Lane. How do their experiences compare to Grace Nichols's?
5. Find other poems about travel by rail. For example, Philip Larkin's 'The Whitsun Weddings', Wilfred Owen's 'The Send-off' or 'Adlestrop' by Edward Thomas. How do they compare to 'The Night Mail'?

1. What is the impact of the opening of the text?
2. What is the impact of figurative language use within each text?
3. Why are the key themes important for the reader/audience to understand?
4. Research spiritual folk songs and why they were used by American black slaves.
5. Research how astrology was used in Medieval England.
6. Read other poems about paths that diverge, such as Emily Dickinson's 'Our journey had advanced' or Rudyard Kipling's 'The way through the woods' and complete a Venn diagram showing the similarities and differences between them.

Journeys Poetry

English: Romeo & Juliet

1. Character List

Romeo (Montague): falls in love with Juliet
Juliet (Capulet): falls in love with Romeo
Lord Montague: Romeo's father
Lady Montague: Romeo's mother
Benvolio: Romeo's cousin and friend
Mercutio: Romeo's best friend
Friar Lawrence: Advisor to Romeo
Abram: Montague servant
Lord Capulet: Juliet's father
Lady Capulet: Juliet's mother
Tybalt: Juliet's cousin – hates Montagues
Paris: becomes engaged to Juliet
The Nurse: Raised Juliet and advises her
The Prince: Rules the country
Sampson & Gregory: Capulet servants

2. Key Words

Characterisation
Prologue
Epilogue
Act
Scene
Stage direction
Theme
Genre
Tragedy
Protagonist
Antagonist
Anti-hero
Perspective
Blank verse
Iambic Pentameter
Prose
Soliloquy

3. Plot Summary

Act 1: Capulets and Montagues fight in the Verona streets. The Prince threatens them to keep peace. Lord and Lady Capulet persuade Juliet to become acquainted with Paris. The Montague boys crash the Capulet's ball where Romeo and Juliet meet and fall in love. They find out that they should be enemies due to their families' hatred for one another. Tybalt vows to get revenge on Romeo after seeing him at the Capulet's ball without an invitation.
Act 2: Romeo and Juliet plan to marry. Friar Lawrence is dubious at first, but later agrees to marry them as their love may end the feud. Romeo passes marriage plans to Juliet via the Nurse, who warns him to take good care of Juliet. Friar Lawrence performs the wedding ceremony.
Act 3: Tybalt tries to get revenge on Romeo but he refuses to fight his new cousin. Mercutio fights Tybalt instead and is killed by Tybalt. Mercutio curses the two families. Romeo kills Tybalt in revenge. The Prince arrives and banishes Romeo from Verona to Mantua. Juliet feels conflicted as her husband killed her cousin but she spends the night with Romeo. Lord and Lady Capulet threaten to disown Juliet after she tells them she will not marry Paris.
Act 4: A desperate Juliet goes to visit Friar Lawrence telling him she would rather die than marry Paris. Friar Lawrence gives Juliet a sleeping potion that will make her appear dead on the morning of her marriage to Paris. Meanwhile letters will be sent to Mantua informing Romeo of the plan. The night before the wedding to Paris, Juliet airs her fears regarding the plan. The Capulets and the Nurse find Juliet 'dead' in the morning.
Act 5: Balthasar informs Romeo that Juliet is dead. Devastated, he purchases a powerful poison. Romeo knows nothing of the plan because Friar Lawrence's letters do not get to him in time. Romeo leaves Mantua and goes to Juliet's tomb. He sees Paris; they fight and Romeo kills Paris. Romeo cannot believe Juliet is dead – she looks so beautiful. He drinks the poison and dies. Juliet wakes up from the potion and kills herself with Romeo's dagger. Lord Montague and Lord Capulet agree to stop the fighting having lost their only children.

4. Social & Historical Context

- In the 16th Century, men were much more dominant (Patriarchal society). Women were treated as second-class citizens.
- 'Romeo and Juliet' is ultimately a tragic love story. People in the 16th Century believed in love at first sight. Couples could be married within a matter of days after meeting.
- There are many religious references in the play. Shakespeare may have followed the Catholic religion at a time when the feud between Catholics and Protestants was rife.
- Another belief in the 16th Century was that people's lives were mapped out by fate; they could not alter their destinies.
- Elizabeth I was a great supporter of Shakespeare; she is mostly responsible for his success. Romeo and Juliet was written with the queen in mind because she never married.

5. Themes

Gender, Love, Religion, Fate, Conflict, Family

1. Give a definition of each key word.
2. List all the characters in the text.
3. List all the figurative language techniques that you can recall.
4. How are the characters related to each other?
5. Can you summarise the plot in 50 words?
6. Can you list the 10 most important plot points?
7. Can you put the main plot points into chronological order?
8. Which 5 words best describe the relationship between Romeo and Juliet, Juliet and her father – Lord Capulet?
9. Which 5 words would you use to describe other key characters?
10. What are the main themes in the text?
11. What are the social and historical links to the text?

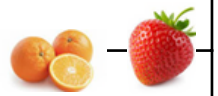
1. Why is the context of a play/novel important?
2. How do the main themes link to Romeo?
3. How do the main themes link to Juliet?
4. How do the main themes link to other characters in the text?
5. Is the author challenging, endorsing, or simply reflecting the dominant ideas and assumptions of the time and place in which they are writing?
6. In the prologue Romeo and Juliet are referred to as 'star crossed lovers' who are fated to die. Imagine that you are responsible for writing horoscopes for *The Verona Chronicle* newspaper on the day of the Capulet Ball for either Romeo or Juliet. Write their horoscope.

1. What is the impact of the opening of the text?
2. What is the impact of figurative language use within the text?
3. Why are the key themes important for the reader/audience to understand?
4. How does the concept of fate link to the text?
5. Why might a modern-day audience or contemporary reader criticise the author's intended message?
6. Why does Romeo need to avenge Mercutio's death? Research the honour code during the Renaissance.
7. Elizabeth I was the 'Virgin Queen'. Conduct research on her role as a woman and a queen – why did she decide to not marry? How did she change attitudes to women during and after her reign?

Romeo & Juliet

Food: Nutrition

1. Macronutrients and Micronutrients

Nutrient	Job/Function in the body	Sources	Image
Fats (Macro)	To protect your internal organs. To provide insulation of internal organs.	Cheese, Sausages	
Protein (Macro)	To assist growth and repair of cells. Helps hormone production.	Chicken, Fish, Beans	
Carbohydrates (Macro)	The bodies main source of energy. Helps control blood sugars.	Pasta, Rice, Potatoes	
Vitamins (Micro)	Vitamin C – To help keep skin healthy. To help support Immune system.	Oranges, Strawberries	
Vitamins (Micro)	Vitamin A – To help with eye health. To help cell production.	Carrots, Broccoli	
Minerals (Micro)	Iron – To make red blood cells. Provides energy.	Red Meat, Spinach	
Minerals (Micro)	Sodium – To balance water in body . Relaxes muscles.	Crisps, bacon	

2. Key Temperatures

Temperature	Description	Image
5-63°C	The danger zone, where bacteria grow most readily.	
37°C	Body temperature, the perfect conditions for bacteria to grow.	
0 – 5°C	The temperature that a Fridge should be.	
-18°C	The temperature of a Freezer.	
75°C	when cooking food, the thickest part should be a minimum of this temperature.	

3. The Hospitatlity and Catering Industry

Hospitality is a worldwide industry which has become one of the biggest employers in the world, requiring a wide range of skills. The hospitality industry is divided into 2 sectors:
The commercial sector (profit e.g. hotels, cafes)
The catering services sector (non-profit e.g. prisons, schools). Hospitality includes: Travel, Tourism, Health, Education and Leisure facilities.

Star rating is a method of grading accommodation to help customers make a choice that best suits their needs and budget. Star rating is grading the following areas:
Hospitality, Service, Bedrooms, Bathrooms, Cleanliness, Dining, room/restaurant, Public areas – reception/sitting areas/washrooms and the Exterior of a facility.

5. Nutrients

5. Nutrient	Food Examples	Main Function in Body
Macronutrients - We need these in large amounts.		
Starchy Carbohydrates	Cereals, bread, rice, potatoes, pasta etc.	Give us slow release energy. (wholegrain versions are higher in fibre).
Protein	Meat, fish, eggs, nuts, seeds, pulses, lentils.	Growth, repair and maintenance of muscles. Needed for healthy red blood cells.
Fat	Butter, lard, margarine, sunflower oil, olive oil etc.	Protects our vital organs (heart, lungs etc) and keeps us warm.
Micronutrients - We need these in small amounts.		
Vitamins	Fruits and vegetables.	Help our immune system fight off illnesses and help us release energy from other foods. Keeps us healthy
Minerals		
Other Essential Nutrients		
Dietary Fibre (NSP)	Wholegrain cereals, fruit/vegetables, nuts/seeds etc	Helps our digestive system remove waste and avoid constipation.
Water	Keeps us hydrated, controls body temperature, helps digestion, gets rid of waste.	

4. Food Miles - The distance food travels from Farm To Fork

Locally Sourced Foods – A way of reducing food miles is to buy locally sourced foods, these are also seasonal and can sometimes be organic too.

Local and Seasonal Foods

Seasonal Foods – Foods that are harvested and eaten in the season they are naturally ready to eat.

grown fruit and vegetables are not available all year round.

6. Other Factors Affecting Food Choice

Many people follow '**special diets**'. They must choose or avoid foods carefully for a range of different reasons.
Cost: Some families must budget due to low incomes.
Age Groups: Different age groups have different nutritional needs.
Health Reasons: E.g. obesity, type 2 diabetes, anaemia, osteoporosis.
Vegetarian/Vegan: Don't eat meat/Don't eat or use ANY animal products.
Religion: E.g. Hindu, Muslim, Kosher, Buddhist, Rastafarian etc.
Intolerances: E.g. intolerance to wheat/gluten, dairy/lactose etc.
Allergies: E.g. nuts, shellfish, fish, eggs, wheat, dairy etc.

1. Define what macronutrients and micronutrients are?
2. Describe how mold effects food.
3. What is contamination?
4. Where would you store low risk foods?
5. What temperature should a fridge be set to?
6. What factors affect food choices?
7. What does food miles mean and how is it effecting our environment?
8. What is the hospitatlity and catering industry?
9. What is a non-profit factility?
10. What is a profit(commercial) factility?

1. Explain the function of macronutrients and micronutrients.
2. Explain how bacteria grow and multiply in food.
3. Discuss why you would use different coloured chopping boards when preparing meals.
4. Discuss why it is important to store raw meat in the fridge, wrapped/ sealed and on the bottom shelf.
5. Identify what a high risk food is and give examples
6. Explain the different reasons why many people follow a special diet?
7. Identify ways that food waste can be reduced.
8. Explain the different job roles in the industry.

1. Discuss the importance of Macronutrients and Micronutrients?
2. Discuss what consumers should look for when purchasing food from a shop or market stall to ensure that it is safe.
3. Consider what would happen if a piece of raw chicken was left on a kitchen worktop for 4 hours.
4. Compare the use of 'best before' and 'used by Bacterial Contamination dates' on food packaging.
5. Justify the importance of stock rotation when storing food at home.
6. Draw a mind map of all the reasons that people follow a special diet, highlight key words.
7. Consider how you could reduce food waste at home, look what's in the cupboards, freezer and fridge. Think what your recipe you could adapt to reduce waste going into the landfill.
8. Explain the different personal attributes you would need to work in different job roles in hospitatlity and catering.

Nutrition

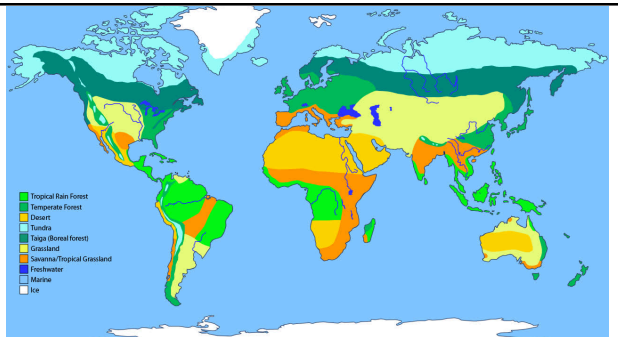
Geography: Ecosystems

1. Ecosystems

An ecosystem is a system in which organisms interact with each other and with their environment.

Abiotic – These are non-living, such as air, water, heat and rock.
Biotic – These are living, such as plants, insects, and animals.
Flora – Plant life occurring in a particular region or time.
Fauna – Animal life of a particular region

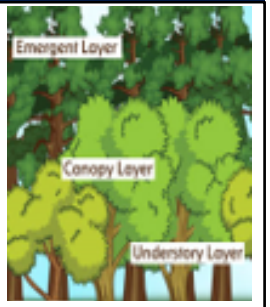
2. Biomes of the world



A biome is a **large geographical area of distinctive plant and animal groups**, which are adapted to that environment.

3. Rainforests

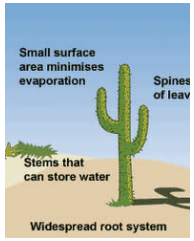
- Emergent layer
- Canopy layer
- Under canopy
- Shrub layer
- Forest floor



A rainforest works through **interdependence**. This is where the plants and animals **depend on each other** for survival. If one component changes, there can be **serious knock-up effects** for the entire ecosystem.

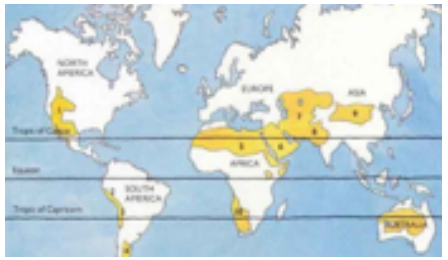
4. Hot deserts adaptations

- **Large roots** to absorb water soon after rainfall.
- **Needles** instead of leaves to reduce surface area and therefore **transpiration**.



5. Location of hot deserts

Most of the world's hot deserts are found in the **subtropics** between **20 degrees and 30 degrees north & south** of the Equator. The **Tropics of Cancer and Capricorn** run through most of the world's major deserts.



6. Climate of hot deserts

- **Very little rainfall** with less than **250 mm per year.**
- It might only **rain once every two to three years.**
- Temperate are **hot in the day** (45 °C) but are **cold at night** due to little cloud cover (5 °C).
- In winter, deserts can sometimes receive occasional frost and snow.

1. What is a biome ?
2. In which continent is the largest hot desert in the world located ?
3. Give examples of the abiotic parts of an ecosystem.
4. Name four biomes located around the world.
5. Describe the climate of a hot desert.
6. Describe the process of transpiration.
7. How are desert plants adapted to reduce transpiration ?
8. Why is transpiration not a concern in tropical rainforests ?
9. Why time of day does it rain in the rainforest ?

1. Explain how rainforests are specially adapted to thrive in tropical conditions.

2. Explain how plants are adapted to survive in hot deserts.

3. Explain why hot deserts are located along the Tropics of Cancer and Capricorn.
4. Compare the flora and fauna of hot deserts to those of a tropical rainforest

1. Complete a leaflet to show the following for either a tropical rainforest or a hot desert.

- The location of your biome
- The flora and fauna
- The types of animals and insects
- The challenges (problems) for people living there
- The opportunities (good things) for people living there
- The threats to your chosen biome

Ecosystems

History: Ancient Medicine

1. Ancient Egyptian Medicine

In Ancient Egypt many doctors were specially trained and were a mixture of doctor and priest, they were called **swnw.** Many doctors wrote their ideas a treatments down using **papyrus and hieroglyphics**, ensuring their knowledge was passed on.
A new theory was developed about the cause of disease. Egyptians believed that the body had **channels** and when they became **blocked** the person would become ill.

2. Hippocrates

Hippocratic Oath: This was a pledge that Doctors made in order to make people have faith in them, they promised to do the best for their patients and not just for money.

Observation: Hippocrates showed that it was very important to observe and record carefully the symptoms and development of diseases.

3. The Ancient Romans

The Romans were the first civilization to introduce a **public health system.** They had to do this because Rome had grown in size and it was impossible to find a natural source of fresh water in the city.
Aqueducts were built to transport fresh water into the city.
A network of **sewers** was built to take sewerage and waste out of the city to the river Tiber. There were also **public lavatories**.
Public baths were places where people could go to bathe, meet and discuss business.

4. Key Words

The Four Humours Theory: Belief that if one of the humours becomes imbalanced, the body becomes ill.
Miasma: The belief that bad smells from the air are the cause of disease.
Aqueducts: Man-made system which transports fresh water into cities.
Public Baths: Large baths usually one for women and one for men where the public could clean themselves.

5. Galen

Galen believed in the **Four Humours theory**. He encouraged doctors to record, observe and write case notes on patients to decide how to treat them. Galen believed in a theory of using '**opposites**' to balance out the humours. He did study at the medical school of Alexandria where limited **human dissection** was allowed but Galen had to dissect apes and other animals. He made the mistake of assuming their anatomy was the same as humans. He **made mistakes** based upon his dissection of animals.

6. Causes of Disease

People did not know that bacteria caused disease so used many other things as an explanation:

- **God/Gods**
- **4 Humours**
- **Miasma**

1. What were doctors called in Ancient Egyptian times?
2. What did Ancient Egyptians use to note down their new ideas?
3. What was the new theory developed in Ancient Egyptian times?
4. What was the Hippocratic Oath?
5. Why did the Roman have to introduce a public health system?
6. What was an aqueduct used for in Ancient Roman times?
7. What were the two theories that Galen believed in?
8. What caused Galen to make mistakes about the human body?

Hippocrates was the most significant individual in Ancient times. Do you agree?
Use the table to show BOTH sides of the argument:

AGREE	DISAGREE

Create a newspaper article explaining why the Roman Public Health System was such a good idea. Include the following:

- Aqueducts
- Sewars
- Public toilets
- Public Baths

Ancient Medicine

Information Technology: Algorithms

1

Input(")	Inputs a value into the computer
x=input ("))	Inputs a value and stores it into the variable x
x=int(input("))	Inputs a value into x, but converts it into a string first
print(str(x))	Prints the variable x but converts it to a string first
if name= "Fred"	Decides whether the variable 'name' has a value which is equal to 'Fred'
else	The other option in the conditions for an if statement are not met (e.g. name='Bob' when it should be Fred
elif name=="Tim"	elif (short for else if) id for when the first condition is not met, but you want to specify another option

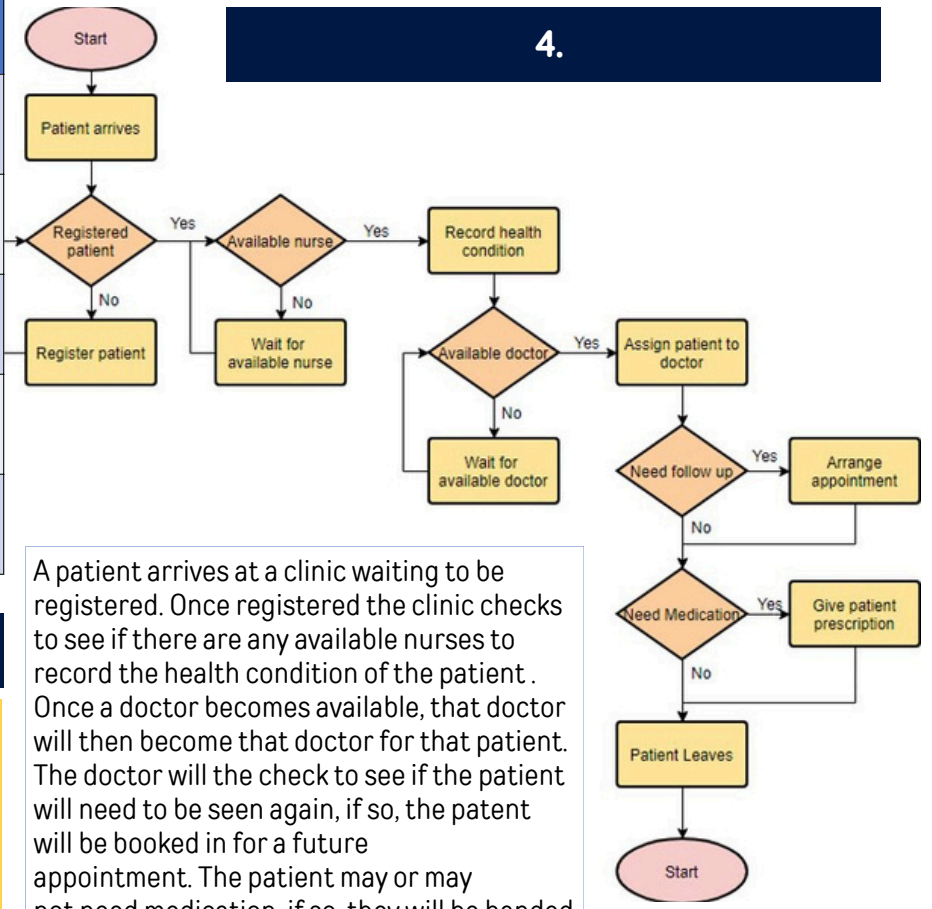
2.

==	Equal to
!=	Not equal to
>	Greater than
<	Less than
>=	Greater than or equal to
<=	Less than or equal to

3.

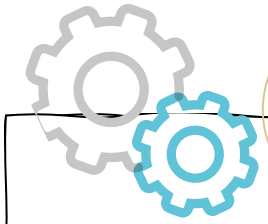
+	Addition
-	Subtraction
/	Division
*	Multiplication
#	Add comments to your code, they will not be part of the program run

4.

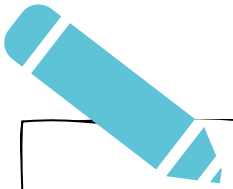


A patient arrives at a clinic waiting to be registered. Once registered the clinic checks to see if there are any available nurses to record the health condition of the patient . Once a doctor becomes available, that doctor will then become that doctor for that patient. The doctor will the check to see if the patient will need to be seen again, if so, the patent will be booked in for a future appointment. The patient may or may not need medication, if so, they will be handed a prescription. The patient finally leaves the clinic.

Know the function of each shape within an algorithm.
Know how the shapes are used to form sequences and loops
Know how to use abstraction to solve complex flowcharts
Know how to assign variables to strings
Know how to use the input function while assigning variables to strings.
Know how to use a simple selection statement
Know how to combine variables with selection statements
Know how to use one relational operator such as less than or more than
Combine two relational operators by using the OR function.
Apply the correct Python syntax to all functions



When analysing a simple problem decide what shapes are appropriate
Prioritise the sequencing before deciding how to construct the algorithm
Think about how to abstract the given problem before using the shapes.
Concatenate multiple variables within the same string
Use one relational operator within different problems
Use multiple relational operators within the same problem
Recognise the syntax for selection statements
Write different multiple or closed ended questions to create selection statements



Construct simple processing and diamond shapes to create loops
Create algorithms for simple problems focusing on sequences
Experiment with different relational operators
Use a given problem or scenario to identify where selection is used
Use a given problem or scenario to identify where loops are used
Combine sequences and loops to create algorithms from a given problem
Combine multiple boolean operators with relational operators
Apply different multiple or closed ended questions to create selection statements

Algorithms

Mathematics

YEAR 9 – REASONING WITH GEOMETRY...

Enlargement & Similarity

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Recognise enlargement and similarity
- Enlarge a shape by a positive SF
- Enlarge a shape from a point
- Enlarge a shape by a fractional SF
- Work out missing sides and angles in a pair of similar shapes

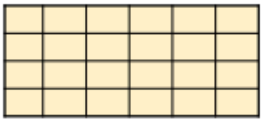
Keywords

Similar Shapes: shapes of different sizes that have corresponding sides in equal proportion and identical corresponding angles
Scale Factor: the multiple describing how much a shape has been enlarged
Enlarge: to change the size of a shape (enlargement is not always making a shape bigger)
Corresponding: objects (or sides) that appear in the same place in two similar situations
Image: the picture or visual representation of the shape

Recognise enlargement & similarity

Shapes are similar if all pairs of corresponding sides are in the same ratio

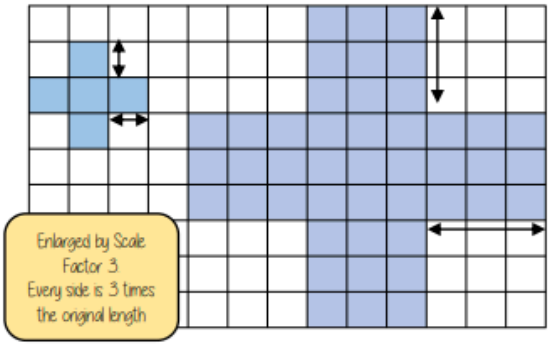
These shapes are similar because all sides are increased by the same ratio



Enlargements are similar shapes with a ratio other than 1

Enlarge by a positive scale factor

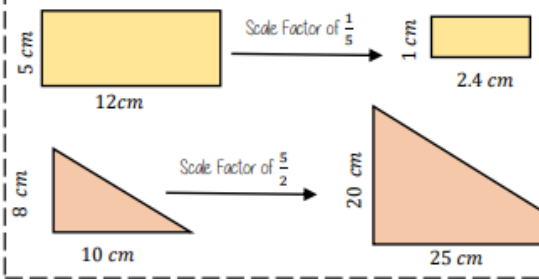
With a scale factor larger than 1 it makes the shape **bigger**



Enlarged by Scale Factor 3
Every side is 3 times the original length

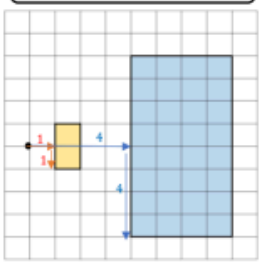
Positive fractional scale factor

With a scale factor between 0 and 1 it makes the shape **smaller**



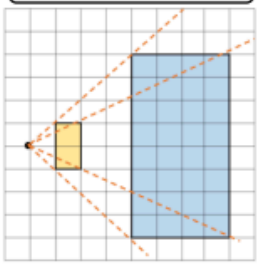
Enlarge a shape from a point

Scaled distances method



Scale the distance between the point of enlargement and each corresponding vertices

Rays method

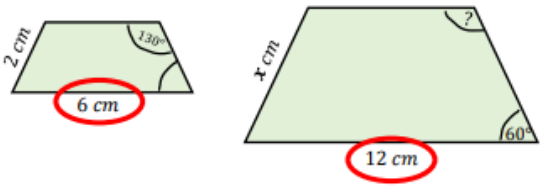


Multiply the distance from the centre of corresponding vertices by the scale factor along the ray

Calculations in similar shapes

Don't forget that properties of shapes don't change with enlargements or in similar shapes

The two trapezium are similar find the missing side and angle



Corresponding sides identify the scale factor $\frac{12}{6} = 2$ Scale Factor = **2**

Calculate the missing side Length (corresponding side) x scale factor

$2cm \times 2$
$x = 4cm$

Enlargement does not change angle size

Calculate the missing angle Corresponding angles remain the same
$130°$

YEAR 9 – REASONING WITH GEOMETRY...

Solving ratio & proportion problems

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Solve problems with direct proportion
- Use conversion graphs
- Solve problems with inverse proportion
- Solve ratio problems
- Solve 'best buy' problems

Keywords

Proportion: a comparison between two numbers
Ratio: a ratio shows the relative size of two variables
Direct proportion: as one variable is multiplied by a scale factor the other variable is multiplied by the same scale factor.
Inverse proportion: as one variable is multiplied by a scale factor the other is divided by the same scale factor.

Direct Proportion

As one variable changes the other changes at the same rate

R

4 cans of pop = £2.40

4 cans of pop = £2.40
2 cans of pop = £1.20
x 0.5 / x 60

This multiplier is the same in the same way that this would be for ratio

This is a multiplicative change

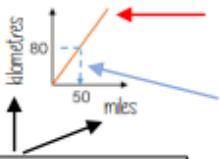
4 cans of pop = £2.40
12 cans of pop = £7.20
x 3 / x 3

Sometimes this is easiest if you work out how much one unit is worth first
e.g. **1 can of pop = £0.60**

Conversion Graphs

Compare two variables

R



This is always a straight line because as one variable increases so does the other at the same rate

Labelling of both axes is vital

To make conversions between units you need to find the point to compare – then find the associated point by using your graph
Using a ruler helps for accuracy
Showing your conversion lines help as a "check" for solutions

Inverse Proportion

As one variable is multiplied by a scale factor the other is divided by the same scale factor

Examples of inversely proportional relationships

Time taken to fill a pool and the number of taps running

Time taken to paint a room and the number of workers

T is inversely proportional to G. When T=2 then G=20

÷ 2 / × 4

T	1	2	8
G	40	20	5

× 2 / ÷ 4

Best Buys

Have a directly proportional relationship

To calculate best buys you need to be able to compare the cost of one unit or units of equal amounts

	Shop A	Shop B
	4 cans for £1.20	3 cans for 93p
	£1.20 ÷ 4	£0.93 ÷ 3
Cost per item	1 can is £0.30 Or 30p	1 can is £0.31 Or 31p

Shop A is the best value as it is 1p cheaper per can of pop

	Shop A	
	4 cans for £1.20	3 cans for 93p
	4 ÷ £1.20	3 ÷ £0.93
Cost per pound	£1 buys 3.333 cans of pop	£1 buys 3.23 cans of pop

Shop A is still shown as being the best value but pay attention to the unit you are calculating, per item or per pound

Best value is the most product for the lowest price per unit

Sharing a whole into a given ratio

R

James and Lucy share £350 in the ratio 3:4
Work out how much each person earns

Model the Question

James : Lucy
3 : 4

Find the value of one part

Whole: £350
7 parts to share between
(3 James, 4 Lucy)

£350 ÷ 7 = £50

□ = one part
= £50

Put back into the question

James : Lucy
(x 50) 3 : 4 (x 50)
£150 : £200

James = 3 x £50 = £150
Lucy = 4 x £50 = £200

Finding a value given 1:n (or n:1)

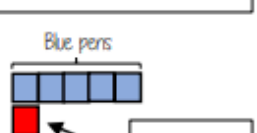
R

Inside a box are blue and red pens in the ratio 5:1
If there are 10 red pens how many blue pens are there?

Model the Question

Blue : Red
5 : 1

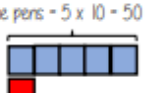
□ = one part
= 10 pens



Put back into the question

Blue : Red
(x 10) 5 : 1 (x 10)
50 : 10

Blue pens = 5 x 10 = 50 pens
Red pens = 1 x 10 = 10 pens



There are 50 Blue Pens

YEAR 9 – REASONING WITH GEOMETRY...

Rates

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Solve speed, distance, time questions
- Use distance time graphs
- Solve density, mass, volume problems
- Solve flow problems
- Use flow graphs
- Interpret rates of change and their units

Keywords

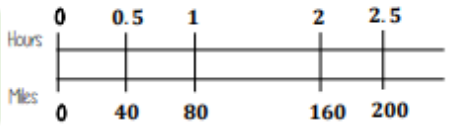
Convert: change
Mass: a measure of how much matter is in an object. Commonly measured by weight
Origin: the coordinate (0, 0)
Volume: the amount of 3D space a shape takes up
Substitute: putting numbers where letters are – replacing numbers into a formula

Speed, Distance, Time

"per" for every
e.g. 80 miles per hour (mph)
Travel 80 miles every hour

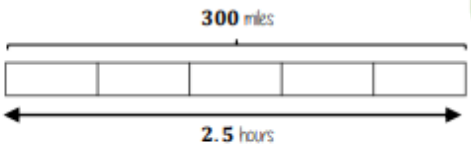
$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

You can use a double number line to help you calculate distance



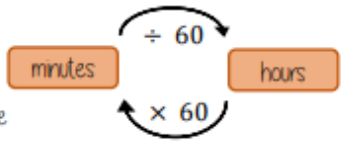
e.g. A boat travels at a constant speed for 2.5 hours
It travels 300 miles

Bar models can help to calculate mph



Each part is half an hour
Each part is 60 miles

Speed, Distance, Time



Before calculations – make sure you are working in the same units as the speed

Learn or learn how to rearrange the formular for speed, distance and time

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$\text{distance} = \text{speed} \times \text{time}$$

Substitute in the variables given

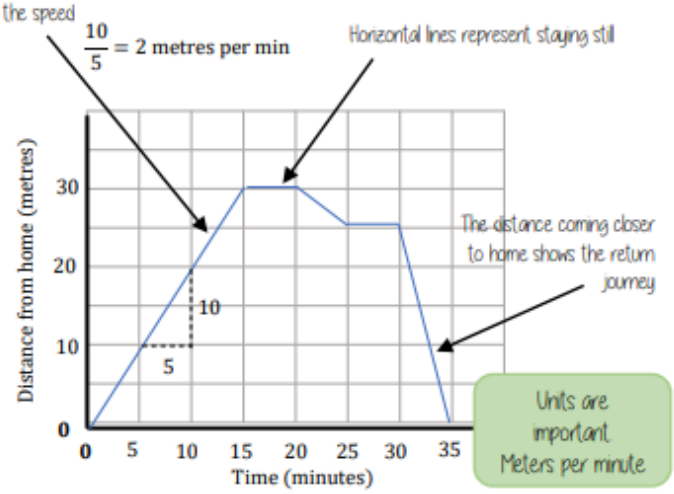
Distance – Time graphs

Gradient = speed

The steeper a gradient the faster the speed

$\frac{10}{5} = 2$ metres per min

Horizontal lines represent staying still



The distance coming closer to home shows the return journey

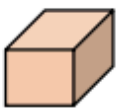
Units are important
Meters per minute

Density, Mass, Volume

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

$$\text{volume} = \frac{\text{mass}}{\text{density}}$$

$$\text{mass} = \text{volume} \times \text{density}$$



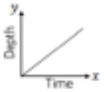
volume of prism = Area of cross section × Depth

R

Flow problems & graphs

This will fill at a constant rate, then as the space decreases it will speed up and the neck of the bottle fill at a faster constant speed

The cylinder will fill at a constant speed



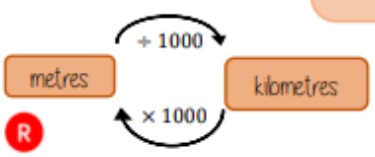
Units are important
Ensure any volume calculations are the same unit as the rate of flow

Rates of change & units

Common rates of change relationships

Revisit your conversions between units of length and capacity

Speed: miles **per** hour
Exchange rates: euros **per** pounds
Density: mass **per** volume



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YEAR 9 — REPRESENTATIONS...

Probability

@whisto_maths

What do I need to be able to do?

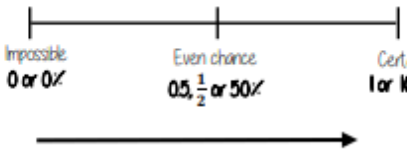
By the end of this unit you should be able to:

- Find single event probability
- Find relative frequency
- Find expected outcomes
- Find independent events
- Use diagrams to work out probabilities

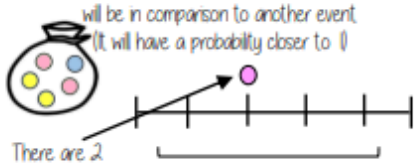
Keywords

Probability: the chance that something will happen
Relative Frequency: how often something happens divided by the outcomes
Independent: an event that is not effected by any other events
Chance: the likelihood of a particular outcome
Event: the outcome of a probability — a set of possible outcomes
Biased: a built in error that makes all values wrong by a certain amount

The probability scale



The more likely an event the further up the probability it will be in comparison to another event
(It will have a probability closer to 1)



There are 2 pink and 2 yellow balls, so they have the same probability

There are 5 possible outcomes
So 5 intervals on this scale, each interval value is $\frac{1}{5}$

Single event probability

Probability is always a value between 0 and 1

The probability of getting a blue ball is $\frac{1}{5}$
∴The probability of **NOT** getting a blue ball is $\frac{4}{5}$

The sum of the probabilities is **1**

The table shows the probability of selecting a type of chocolate

Dark	Milk	White
0.15	0.35	

P(White chocolate) = 1 – 0.15 – 0.35
= 0.5

Relative Frequency

$$\frac{\text{Frequency of event}}{\text{Total number of outcomes}}$$

Remember to calculate or identify the overall number of outcomes!

Colour	Frequency	Relative Frequency
Green	6	0.3
Yellow	12	0.6
Blue	2	0.1
	20	

Relative frequency can be used to find expected outcomes

e.g. Use the relative probability to find the expected outcome for green if there are 100 selections

Relative frequency x Number of times
$0.3 \times 100 = 30$

Expected outcomes

Expected outcomes are estimations. It is a long term average rather than a prediction

Dark	Milk	White
0.15	0.35	0.5

The sum of the probabilities is **1**

On experiment is carried out **400** times
Show that dark chocolate is expected to be selected **60** times

$0.15 \times 400 = 60$

Independent events

The rolling of one dice has no impact on the rolling of the other. The individual probabilities should be calculated separately

Probability of event 1 × Probability of event 2

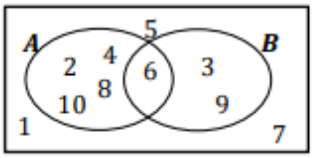
$P(5) = \frac{1}{6}$ $P(R) = \frac{1}{4}$

Find the probability of getting a 5 and a red

$P(5 \text{ and } R) = \frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$

Using diagrams

Recap Venn diagrams, Sample space diagrams and Two-way tables



	Car	Bus	Walk	Total
Boys	15	24	14	53
Girls	6	20	21	47
Total	21	44	35	100

The possible outcomes from rolling a dice

The possible outcomes from tossing a coin

	1	2	3	4	5	6
H	1,H	2,H	3,H	4,H	5,H	6,H
T	1,T	2,T	3,T	4,T	5,T	6,T

YEAR 9 – REPRESENTATIONS...

Algebraic Representation

@whisto_maths

What do I need to be able to do?

By the end of this unit you should be able to:

- Draw quadratic graphs
- Interpret quadratic graphs
- Interpret other graphs including reciprocals
- Represent inequalities

Keywords

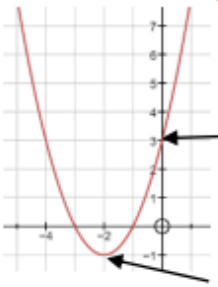
Quadratic: a curved graph with the highest power being 2. Square power.
Inequality: makes a non equal comparison between two numbers
Reciprocal: a reciprocal is 1 divided by the number
Cubic: a curved graph with the highest power being 3. Cubic power.
Origin: the coordinate (0, 0)
Parabola: a 'u' shaped curve that has mirror symmetry

Quadratic Graphs

$$y = x^2 + 4x + 3$$

If x^2 is the highest power in your equation then you have a quadratic graph

It will have a parabola shape



Intersection with the y axis

Substitute the x values into the equation of your line to find the y coordinates

x	-4	-3	-2	-1	0	1
y	3	0	-1	0	3	8

Coordinate pairs for plotting $(-3, 0)$

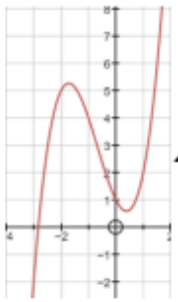
Plot all of the coordinate pairs and join the points with a curve (freehand)

Quadratic graphs are always symmetrical with the turning point in the middle

Interpret other graphs

Cubic Graphs

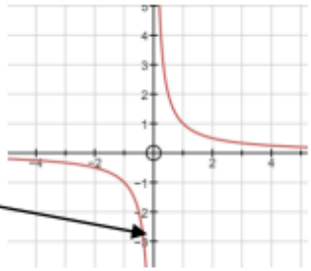
$$y = x^3 + 2x^2 - 2x + 1$$



If x^3 is the highest power in your equation then you have a cubic graph

Reciprocal Graphs

$$y = \frac{1}{x}$$



Reciprocal graphs never touch the y axis
This is because x cannot be 0
This is an asymptote

Exponential Graphs

$$y = 2^x$$

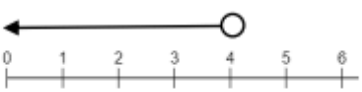
Exponential graphs have a power of x

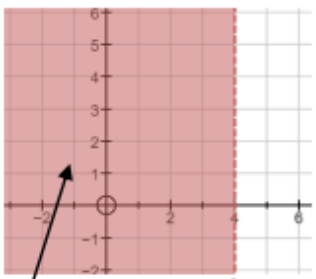
Represent Inequalities

Multiple methods of representing inequalities

$$x < 4$$

All values are less than 4





The shaded area indicates all possible values of x

The dotted line shows that the inequality does not include these points

The solid line shows that the inequality includes all the points on this line

$$y \geq 2x + 1$$

The shaded area indicates all possible solutions to this inequality

Modern Languages: Les Fêtes

1. 'Some'

In French 'some' is known as the partitive article
It changes according to the noun gender
Du = masculine singular
De la = feminine singular
De l' = with vowel
Des = plural
Examples:
Je prends **du** chocolat – I'm having some chocolate
Je mange **de la** viande – I eat some meat
Je bois **de l'**eau – I drink water
Je mange **des** fraises – I eat strawberries

2. Key verbs in present tense

je fête [I celebrate]	**mon anniversaire**)my birthday)
Je reçois [I receive]	**beaucoup de cadeaux** (lots of presents)
j'écoute [I listen to]	**de la musique** [some music]
je porte [I wear]	**mes vêtements favoris** [my favourite clothes]
je regarde [I watch]	**des feux artifices** [fireworks]
je sors [I go out)	**avec mes amis** [with my friends]
je fais [I do}	**des magasins** [shopping]
Je vais [I go]	**au cinéma/aux magasins** [to the cinema/ to the shops]
Je mange [I eat)	**du fromage/ de la viande** [some cheese/ some meat
Je bois [I drink)	**Du vin** [some wine]

3. Festivals

Noël	Christmas (25th Dec)
Le nouvel an	New Year (1st Jan)
Le chandeleur	Pancake Day (2nd Feb)
Pâques	Easter
La fête nationale	Bastille Day (14th July)
La rentrée scolaire	Back to School (Start Sept)
La Saint-Sylvestre	New Years Eve (31st Dec)
Mon anniversaire est le ...	My birthday is on the ...
J'ai reçu	I received
Je vais recevoir	I am going to receive
Pour fêter	To celebrate
Mon prochaine anniversaire	My next birthday
Je vais avoir une fête	I am going to have a party

4. Star Words

à côté de	next to
au moins	at least
chez moi	my house
dehors	outside
devant	in front of
ici	here
là / y	there
malgré	in spite of
partout	everywhere
souvent	often
quelquefois	sometimes

5. Past tense

To make a sentence in the past in French, you need the auxiliary "avoir" and the verb in the past participle form (**é** at the end).
J'ai mangé – I ate
Il / elle a mangé – he / she ate
Nous avons mangé – we ate
Ils / elles ont mangé – they ate

'er' verbs = stem + I e.g. j'ai fini le gâteau
're' verbs = stem + u e.g. j'ai attendu l'autobus

6. Near future tense

To make a sentence in the near future in French, you need the verb "to go" – "aller" in the present tense, followed by an infinitive.
Je vais jouer – I'm going to play
Tu vas jouer – you are going to play (singular)
Il / elle va jouer – he / she is going to play
Nous allons jouer – we are going to play
Vous allez jouer – you are going to play (plural)
Ils / elles vont jouer – they are going to play
e.g. je vais traîner en ville avec mes amis – I am going to hang out in town with my friends

1.Translate: Quelquefois je mange du chocolat
2.Translate: Le weekend je fête mon anniversaire avec mon amie.
3.Translate: Le weekend je regarde le carnaval.
4.What tense do these time phrases indicate? Hier/ le weekend dernier/ vendredi dernier
5. Translate: Hier j'ai vu les feux artifices.
6. Hier j'ai reçu beaucoup cadeaux. What is missing in this sentence?
7. Translate: Je fais des magasins.
8. Translate: Je mange du gâteau.
9. Translate: Tous les jours je bois de l'eau.
10. Translate: Le soir je vais au cinéma.

1.Rewrite sentence 1, change time phrase.
2. Rewrite sentence 2 and change 'who with'
3. Adapt sentence 3 and change the activity (verb phrase)
4. Write a sentence using one of the time phrase in 4 using 'je'
5. Rewrite sentence 5 to change 'who with' to a family member.
6. Upgrade sentence 6 to include an opinion.
7. Transform sentence 7 to past tense.
8. Transform sentence 8 to past tense.
9. Transform sentence 9 to past tense and change time phrase.
10. Transform sentence 10 to past tense and change time phrase.

1. Include an opinion in sentence 1.
2. Include 'it's my thing' to extend the sentence.
3. Include an opinion in sentence 3.
4. Attempt sentence 4 using a different person of the verb.
5. Include an opinion in sentence 5.
6. Upgrade sentence 6 to include an opinion and a connective.
7. Transform sentence 7 to near future tense.
8. Transform sentence 8 to near future tense.
9. Transform sentence 9 to near future tense and change time phrase.
10. Transform sentence 10 to near future tense and change time phrase.

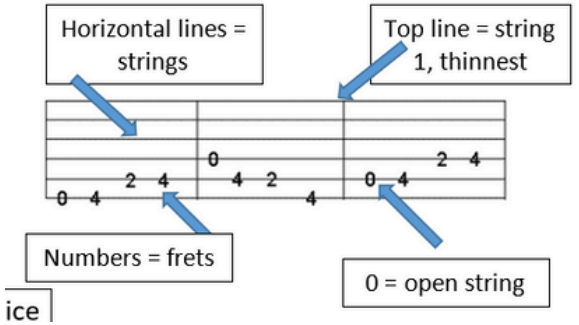
Les Fêtes

Music: Guitar

1. Guitar Keywords

HEAD
TUNING PEGS
NECK
FINGERBOARD
FRET
BODY
SOUNDHOLE
STRING

2. TAB Notation



ice

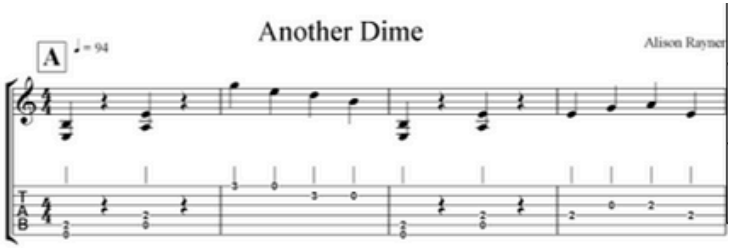
3. Elements of Music

KEYWORDS	DEFINITIONS
PITCH	How high or low the note is
TEMPO	Speed
DYNAMICS	Volume
RHYTHM	Different length notes in a pattern
MELODY	Different pitches in a pattern
INSTRUMENTS	Brass, woodwind, strings, percussion

4. How to carry the guitar

- Carry the guitar by the neck and vertically/pointing down.
- To play, hold it sideways with the head pointing to the left.
- Support the neck with your left hand and play the strings with your right hand.

5. TAB and Traditional notation example



6. How to play the guitar

- If it's not an open fret, place your finger just before the metal line of the fret.
- Push down firmly on the string.
- Play the string/s firmly with your right thumb/finger.
- Play the string/s over the soundhole for a fuller sound.

What does TAB mean?

What do the **numbers** man on TAB?

What do the **lines** mean in TAB?

What is the correct way to **hold** your guitar?

Does it matter if you are left or right handed?

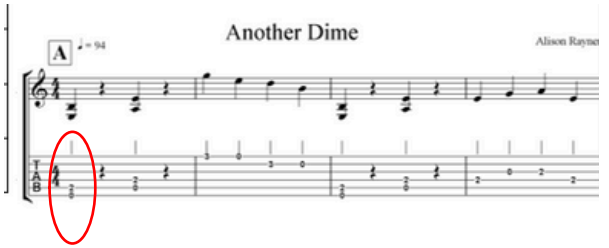
- Can you accurately identify and explain the role of the following on a guitar:

- HEAD
- TUNING PEGS
- NECK
- FINGERBOARD
- FRET
- BODY
- SOUNDHOLE
- STRING

Below is an example of guitar TAB. Can you identify the following:

- What strings (there are more than one) would you need to play the first notes?

- What **frets** would you need to play these first notes?



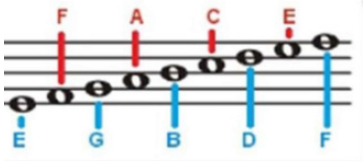
Guitar

Music: Theory

1. NOTE VALUES

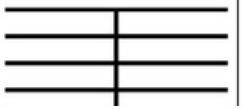
Note Symbol	Rest Symbol	Note Value	Note Name
		1/2	Quaver
		1	Crotchet
		2	Minim
		4	Semibreve

2. PITCHES

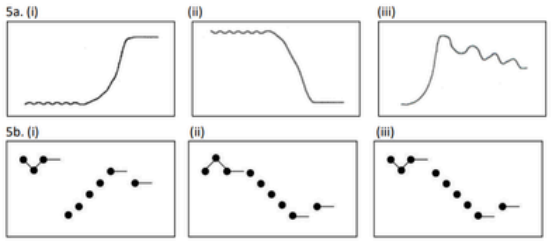


very Green Bus Drives Fast

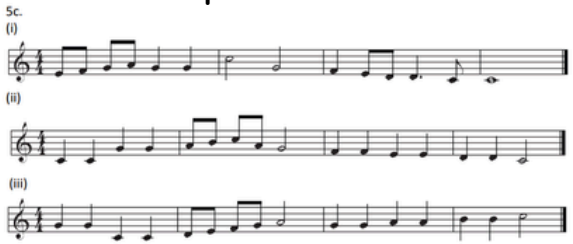
3. NOTATION SYMBOLS

Notation Symbol	Definition
	Treble clef
	Bar line

4. NOTATION EXAMPLES



Graphic scores show the length of the notes and the pitch direction



Staff notation shows precise note lengths and pitches on a stave

5. KEYWORDS

PITCH	How high or low the note is
TEMPO	Speed (how fast or slow)
DYNAMICS	Volume (how loud or soft)
RHYTHM	Different length notes in a pattern
MELODY	Different pitches in a pattern
TEXTURE	How much sound/many layers we hear (thick or thin)
TIMBRE/ SONORITY	Tone quality of the instrument e.g. mellow or shrill
ARTICULATIO N	How notes are played (smooth or detached)
DURATION	How long or short the note or music is
SILENCE	No sound at all

6. INSTRUMENTAL FAMILIES

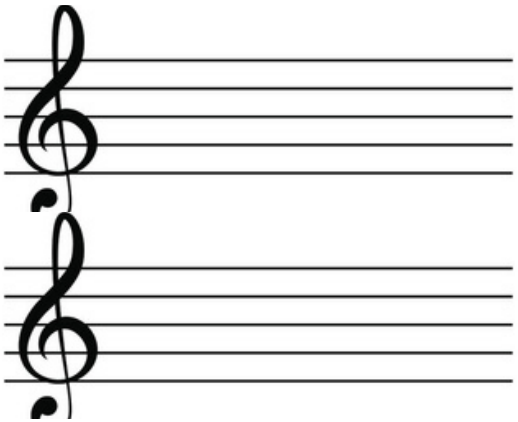
1. Define pitch.
2. Define tempo.
3. Define dynamics.
4. What is the note value of a crochet?
5. What is the note value of a quaver?
6. What is the note value of a minim?
7. State the four instrumental families.
8. What is a rhythm?
9. What is a melody?
10. Can you explain the term texture?
11. Can you explain the term timbre?
12. What is articulation?
13. What is a duration?

1. Can you explain the difference between a graphic score and staff notation?

2. Can you identify an instrument from each instrumental family and describe its timbre?

WOODWIND
BRASS
STRINGS
PERCUSSION

2. On the stave, draw and label the line and space pitches.



1. Complete the table below with the note values and note names.

Note Symbol	Rest Symbol	Note Value	Note Name
			
			
			
			

2. Listen to a piece of music of your choice and describe the pitch, tempo and dynamics. What instruments can you identify and can you describe their timbres?

Music Theory

PE: Rounders

Key Rules

•A rounders game consists of 2 innings; whilst one team bats, the other one bowls.
•A team consists of a maximum of 15 players and a minimum of 6 players
•Players must run on a good ball

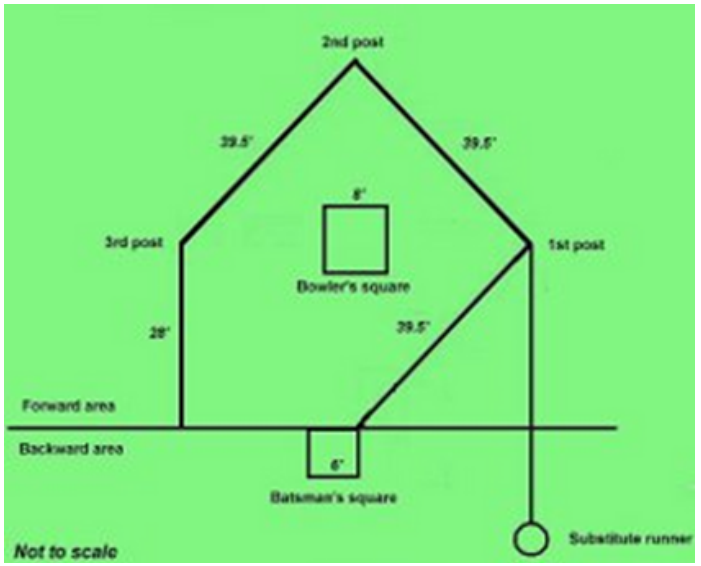
When running
•Batters must always keep in contact with the post, either with their hand of bat.
•Two batters cannot be at the same post
•You cannot run back to a post once you have committed to run to the next post
•If you hit the ball backwards, the batter must stay at 1st post until it reaches the outward area.

No balls
•It is a no ball when:
•The ball is above the head/below the knee
•The ball bounces
•The ball is wide
•The bowlers foot is outside of the square when they release the ball
•The bowler does not use an underarm action
•You can not be caught out on a no ball

Key terms

Underarm Overarm Batting
Bowling Agility Reaction Time
Long barrier

Rounders Pitch



Scoring System

Hitting a good ball:
Run to 2nd or 3rd base = 1/2 rounder
Run to 4th base = 1 rounder

Missing a good ball:
Run to 4th base = 1/2 rounder

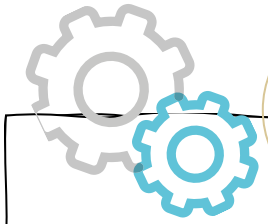
Running on a no ball
Run to 2nd or 3rd base = 1/2 rounder
Run to 4th base = 1 rounder

Key Skills

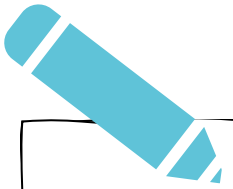
Underarm bowling – Hold ball in dominant hand. Step forward with non throwing foot. Release ball between knee and shoulder
Batting – Stand sideways on with bat up. Swing through with hips and follow through with bat.
Catching – Get in position under the ball. Cup hands. Bring ball into body.
Throwing – high elbow, aim with none throwing arm. Follow through in direction of where you want the ball to go.
Fielding – Using different techniques to get the ball back to the bowler or to a post

ROUNDERS ENGLAND

- 1.Identify the stages of a warm up before playing a game of Rounders
- 2.How many people on a Rounders team?
- 3.How many points do you score if you hit the ball and get to second post?
- 4.How many innings are there in a game of Rounders?
- 5.Identify 2 fielding techniques which can be used in rounders
- 6.Identify the most important components of fitness you need in a rounders game.



- 1.Describe one stage of a warm up
- 2.Describe 2 roles on a rounders team
- 3.Describe how scoring works if you miss the ball as a batter
- 4.Describe what happens if you drop the bat when you are running in rounders
- 5.Describe one fielding technique and when you would use it
- 6.Describe one component of fitness and how it is needed in rounder



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- 6.Describe one component of fitness and how it is needed in rounder

Rounders

PE: Cricket

Key Rules

- The winning team in cricket is the side that scores the most runs.
- A cricket team consists of 11 players and they take it in turns to bat and bowl.
- The bowler must bowl the ball overarm at the stumps.
- A wide ball will be called if the batsman, playing a normal stroke, is unable to reach the ball.
- A no ball will be called if the heel of the bowler's front foot lands in front of the popping crease or a full toss is bowled – waist height for a seam bowler and shoulder height for a spin bowler.
- A batter is declared out if the bowler knocks off the bails of the stumps with a delivery.
- A batter is declared out if a fielder or wicketkeeper catches the ball directly off the bat and before it hits the ground.
- A batter is declared out if the umpire believes that the bowler's ball would have hit the stumps if the batter had not obstructed the ball with their pads. This is known as leg before wicket (LBW).
- A batter is declared run-out when they are going for a run but do not make the batting crease before fielding team knocks off the cricket stumps.
- A batter is declared out if the wicketkeeper stumps them.

Fielding Positions

Key Equipment

Key Terms

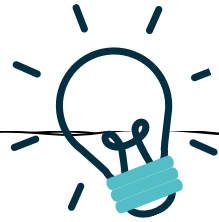
Batting	Forward Defence
Bowling	Wide Ball
Fielding	Long Barrier
Coordination	Speed

Youtube Links

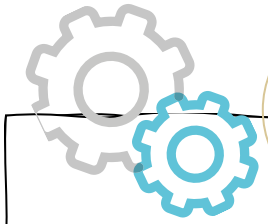
Batting:
https://www.youtube.com/watch?v=CdlYCoqUVEQ
Bowling:
https://www.youtube.com/watch?v=VHTzqkFuljs
Rules:
https://www.youtube.com/watch?v=AqtpNkMvj5Y
Fielding:
https://www.youtube.com/watch?v=xRf3_UFtAaE

Local Clubs:

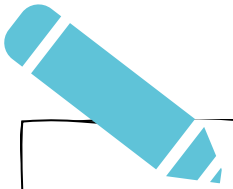
Walmley Cricket Club, Sutton Coldfield Cricket Club, Aston Unity Cricket Club



1. Identify 2 types of batting shot
2. Identify 2 types of bowling
3. Identify 2 fielding techniques
4. Give 2 rules in cricket
5. Give 3 fielding positions
6. What are the 3 calls when batting in cricket?
7. What is the name of the line which runs round the outside of a cricket pitch?
8. State 3 pieces of equipment you need in cricket
9. State 3 important components of fitness for cricket
10. State 3 stages of a warm up



1. Can you pick a shot and describe where you would be aiming to hit the ball?
2. Can you describe the difference between the two main types of bowling in cricket?
3. Can you perform the hand signals for the following calls: Wide ball, No ball, 4 runs and 6 runs?
4. Can you describe one thing you might do to put more pressure on the batter as the fielding side?
5. Can you describe 3 rules in cricket?
6. When may you use the call 'waiting' in cricket?
7. Can you describe how you score a boundary when batting in cricket?
8. Can you pick 2 pieces of batting equipment and explain the role of them?
9. Can you define the most important components of fitness needed for cricket?
10. Can you describe 3 stages of a warm up?



1. Can you explain the difference between an attacking shot and a defensive shot in cricket?
2. Can you explain 2 teaching points when bowling in cricket?
3. Can you explain 2 teaching points for a fielding technique?
4. Can you explain when you may use 2 different types of fielding techniques in a game?
5. Can you explain why it is important not to give away extras in cricket?
6. Can you discuss why you use 'yes' and not 'go' when calling for a run in cricket?
7. Can you explain the role of the wicket keeper?
8. Can you explain the difference between the different lines on the wicket?
9. Can you pick 3 important components of fitness and explain why they are important in cricket?
10. Can you design a warm up relevant for a cricket match?

Cricket

PE: Softball

Key Rules

Softball is played by two teams of 9 players each who try to score more runs than their opponent by rounding the bases and crossing home plate as many times as possible.
A softball field consists of a pitching rubber, 4 bases (3 bases plus home plate), an infield, and an outfield
There is a batter's box on both sides of home plate.
The batter may choose which side of the plate to hit from, but both of their feet must be inside the box.
The team that scores the most runs is the winner. A run is scored when a base runner rounds all of the bases by stepping on each one in order from 1st, 2nd, 3rd, and crosses home plate.

Key Equipment .

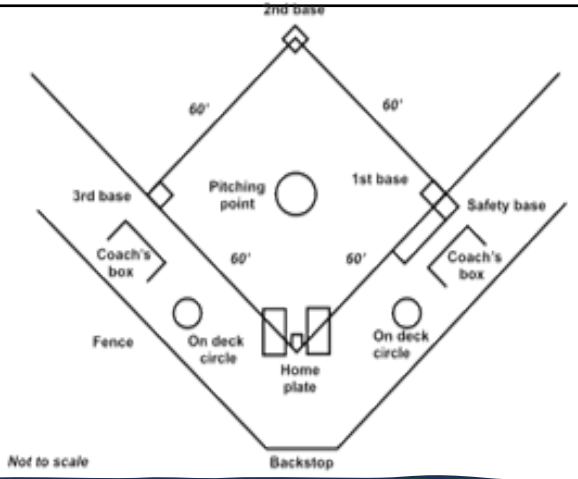
Positions

- ·Pitcher – on the pitching rubber Catcher – behind home plate
- ·1st Baseman
- ·2nd Baseman
- ·3rd Baseman
- ·Shortstop – between 2nd and 3rd base
- ·Leftfielder – outfield between 2nd and 3rd base
- ·Centerfielder – outfield behind 2nd base
- ·Right fielder – outfield between 1st and 2nd base

Key Words

Ball – as called by the umpire, a pitch that does not enter the strike zone in flight and is not struck at by the batter
Pitcher – the player who throws the ball to the batter
Strike – as called by the umpire, a pitch that enters the strike zone in flight and is not struck at by the batter; a pitch that a batter swings at and misses; a foul ball

Pitch



Youtube Links

Batting:
www.youtube.com/watch?v=jyK9ukm-23E
Bowling:
www.youtube.com/watch?v=RIpCI6FZmjI

Rules:
www.youtube.com/watch?v=YLU6W6AYQto

Long barrier when fielding:
www.youtube.com/watch?v=1hxVw1YCJn0

1.Identify the stages of a warm up before playing a game of softball

2.How many people on a softball team?

3.How many points do you score if you hit the ball and get to second base?

4.How many innings are there in a game of softball?

5.Identify 2 fielding techniques which can be used in softball

6.Identify the most important components of fitness you need in a softball game.

1.Describe one stage of a warm up

2.Describe 2 roles on a softball team

3.Describe how scoring works if you miss the ball as a batter

4.Describe what happens if you drop the bat when you are running in softball

5.Describe one fielding technique and when you would use it

6.Describe one component of fitness and how it is needed in softball

1.Describe one stage of a warm up

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Softball

RE: New Religious Movements

1 Religion vs. Cult

Religion : the belief in and worship of a superhuman power or powers, especially a God or gods.

Cult: a small religious group that is not part of a larger and more accepted religion and that has beliefs regarded by many people as extreme or dangerous.

The word 'Cult' is **problematic**. Many religions and cults share similar ideas and qualities, yet some groups are considered positive for society and others **dangerous**.

2. Heaven's Gate

- Heaven's Gate is a cult/religious group that was founded in the United States, on a belief in unidentified flying objects (UFO's).
- The group was founded by Marshall H. Applewhite and Bonnie Nettles and was known for having very extreme ways of living.
- However, It became notoriously known following the suicide of 39 of its members in San Diego, California, in March 1997.

3. Scientology

- Scientology is a movement based on the written words by **L. Ron Hubbard.**
- In some countries, there are **Churches of Scientology**. Some people are suspicious of the Church. They feel that it is a cult, and a business to make money.
- Scientology teaches that people are **eternal** spirits who have forgotten their true nature. Scientologists say that, through a system called **auditing**, they help people remember their true nature by re-experiencing painful events in their past and understanding them better.

4. The Rastafarian Religion

When the movement became popular in Jamaica, a culture began to develop within the movement. For example;

- Hair was to be worn in dreadlocks.
- Clothing should be in the colours red, green, gold and black (symbolising blood, vegetation, royalty and the black community)

5. Humanism

Humanism is firstly, not a religion. Humanism is all about not having a religion. This doesn't mean humanists are against people having religions, but just that humanists do not have a religion themselves. They don't believe in God, or don't think there is a God (but can't be sure) meaning they are atheists or agnostics. Millions of people in Britain are humanists. They don't believe in God, they believe science and proof is more important than belief and faith and they try to live morally good lives.

6. WOW WORDS

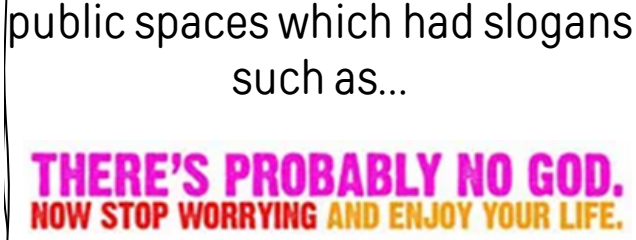
- **Indoctrination** – the process of teaching a person or group to accept a set of beliefs without question (aka Brainwash).
- **Auditing** – a kind of counselling taken by those hoping to achieve the state of clear and progress through Scientology.
- **Jah** – The Rastafarian term for God.
- **Agnostic** – a person who believes that nothing is known or can be known of the existence or nature of God.

- What is the key difference between and religion and a cult?
- Why is the word 'cult' problematic?
- What did the people of 'Heaven's Gate' believe in?
- Who founded Scientology?
- What is 'Auditing' when referring to scientology?
- What is a feature of the Jamaican culture surrounding the Rastafari?
- What is the Rastafarian word for 'God'?
- What do Humanists value in life?
- What is an Agnostic?

Create a two-sided table, for religion and Cults, and then add each point below to its relevant category

Will not punish you if you leave the religion.	May ask for a small money contribution occasionally.
Will take all your wages and give them to the leader.	Brainwashes you.
Only allows you to spend time with family if they support your religious views.	Only lets you be friends with people who the leader approves of.
Allows you to be friends with who you like.	Lets you have children with your partner.
May control what TV you watch or books you read.	May decide whether you have children or not and who with.
May not let you go to school or university.	May make you have older sexual partners.
Is a part of your life rather than being the whole of your life.	Is the whole of your life rather than being part of your life.

Since 2009, various humanist and atheist groups released ad campaigns on buses and other public spaces which had slogans such as...



"Humanist groups should not advertise their beliefs – this is preaching, which is what religions do."

Do you agree with this statement? Why or why not?

New Religious Movements

Science: Biology – Ecology

1. Key Terms

Habitat: The place where an organism lives

Population: All the organisms of one species living in a habitat

Community: The populations of different species living in a habitat

Abiotic factors: Non-living factors of the environment e.g.. temperature
Biotic factors: Living factors of the environment

Ecosystem: The interaction of a community of living organisms (biotic) with non-living (abiotic) parts of their environment

2. Food Chains

Producer – Start of a food chain. Produces glucose through photosynthesis.

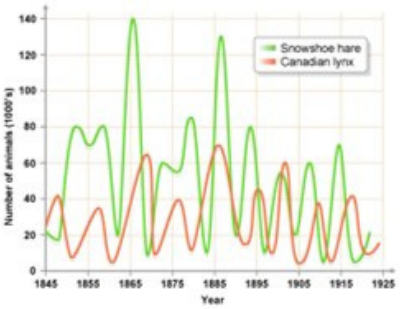
Primary Consumer – Eats a producer. Prey of secondary consumer.

Secondary Consumer – Eats a primary consumer. Predator of primary consumer.

Tertiary Consumer – Predates on secondary consumer.

3. Predator-Prey Relationships

The population of the prey increases. More food is available for the predators, so their population increases. There are more predators so the population of the prey decreases. There is less prey to feed on so the population of predators decreases. The cycle restarts from the beginning



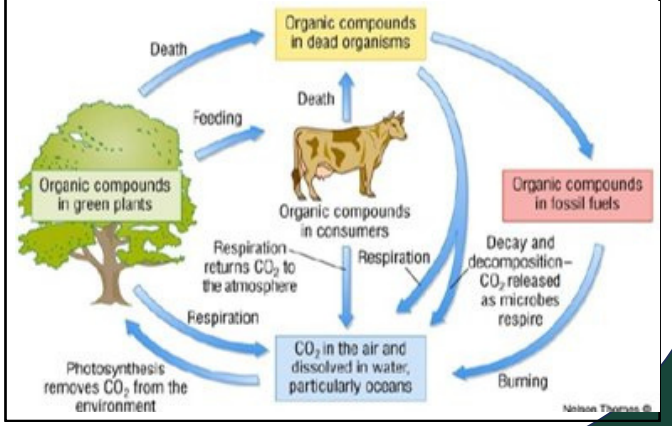
4. Biotic & Abiotic Factors

Biotic Factors	Abiotic Factors
Availability of food	Light intensity
New predators	Temperature
New pathogens	Moisture levels
Competition	Oxygen levels
	Wind intensity and direction
	Carbon dioxide levels for plants
	Soil pH and mineral content

5. Adaptations

Structural Adaptations	Part of the body that helps the organism survive.e.g.. polar bears have a thick layer of fat for insulation.
Functional Adaptations	How the body operates that helps the organism survive. E.g. camels do not sweat.
Behavioural Adaptations	A behaviour that helps the organism survive. e.g. desert rats stay in their burrows during the hottest parts of the day.

6. The Carbon Cycle



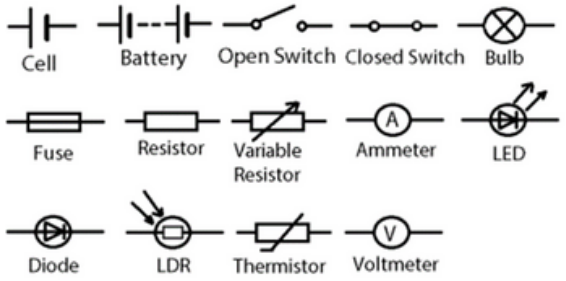
1. What is the difference between an abiotic and biotic factor?
2. What are the 3 different types of adaptation?
3. Write down the different names for consumers that can be found in a food chain
4. What is the purpose of a quadrat?
5. What processes are involved in the water cycle?
6. What processes are involved in the carbon cycle?
7. What is decay?
8. What is biodiversity?
9. What is meant by the term global warming and what factors lead to it?
10. What is deforestation and why do we do it?

1. Write down 3 abiotic factors and 3 biotic factors
2. What is the difference between the 3 different types of adaptation?
3. What do food chains always start with and where do they get their energy
4. Describe the method for using a quadrat
6. Describe the processes involved in the water cycle
6. Describe the processes involved in the carbon cycle
7. Describe the factors that affect the rate of decay
8. Why is high diversity important?
9. Explain how global warming happens
10. How does deforestation contribute to global warming?

1 What abiotic and biotic factors affect plant growth?
2. Explain how polar bears are adapted to their environment
3. Draw a food chain for organisms you would find in a woodland or forest
4. Explain how you would calculate the number of daisies in a field using a quadrat
6. Explain how the water cycle ensures water is constantly recycled on Earth
6. Explain how the carbon cycle ensures carbon is constantly recycled on Earth
7. Outline the method used for investigating the rate of decay (lipase, milk, phenolphthalein)
8. How does an increasing population affect biodiversity?
9. Explain the consequences of global warming
10. Describe how we can maintain ecosystems and biodiversity

Science: Electricity

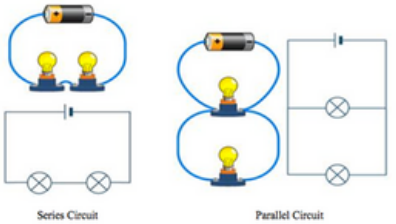
1. Circuit Symbols



Scientists use circuit symbols so that other scientists can understand their diagrams and recreate their circuits.

2. Series and Parallel Circuits

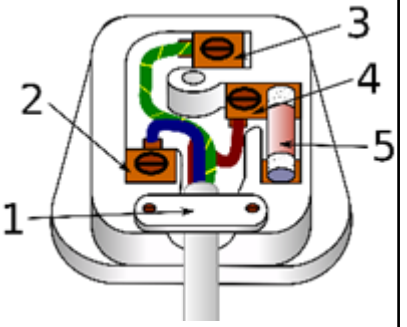
In a series circuit the current is the same everywhere in the circuit but in parallel circuits the current splits between the branches



In a series circuit the potential difference around each bulb adds up to the p.d. from the cell/battery. In a parallel circuit the p.d. along each branch is equal to the p.d. from the cell or battery. This is why bulbs look brighter when you connect them in parallel rather than series.

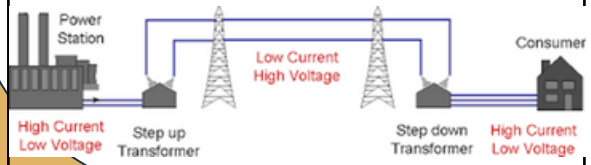
3. Mains Electricity

- This diagram shows a plug.
- 1. Is a plate that holds the wire in place
- 2. Neutral wire
- 3. Earth wire
- 4. Live wire
- 5. Fuse



the National Grid

Electricity gets to our homes via the national grid. Power cables carry the electricity at a very high voltage so that a low current can be used and less energy is lost as heat. Transformers step up the voltage from the power station and then step it down near our homes.



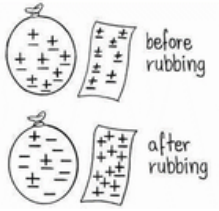
5. Static Electricity

Static electricity is a build-up of charge. It occurs when electrons move from one material to another, usually from rubbing materials together

If an object gains electrons it becomes negatively charged. If an object loses electrons it becomes positively charged.

If we rub a balloon on our jumper it will charge the balloon enough for it to stick to the wall.

Static can be dangerous if enough builds up. Lightning is caused by a build-up of static in the sky.



6. Wow words

Series circuit – a circuit where all of the components are connected in a single loop
Parallel circuit – a circuit where the components are connected using multiple loops or "branches"
Current – the flow of charge in an electric circuit
Resistance – a measure of how easily current can flow
Mains electricity – the electricity that is supplied to our homes. It has a p.d. of 230V and a frequency of 50Hz
National grid – a network of power cables, pylons and transformers that allow electricity to travel from the power station to homes and businesses
Power – the amount of energy used per second, measured in Watts
Static – A build-up of charge, usually caused by friction.

- Describe how the currents in a series circuit and a parallel circuit differ.
- Draw a fully labelled series circuit that contains a switch, a battery and two lamps.
- What is an ohmic conductor?
- Calculate the current in a circuit if a charge of 4 C flows in 20 seconds.
- What does a.c stand for? Give an example of where a.c is used.
- What does d.c stand for? Give an example of where d.c is used.
- What is the frequency and potential difference of mains electricity in the U.K?
- State the equation that links power, potential difference and current. Include equation symbols and units
- State the equation that links power, current and resistance. Include equation symbols and units
- Describe fully how electricity is transmitted from power stations to our homes.

1. State the conditions required for the resistor to obey ohm's law
2. A teacher wants to demonstrate the properties of series and parallel circuits. The teacher sets up a circuit with three identical filament lamps connected in series with a battery and an open switch. Draw the circuit that the teacher would set up.
3. Explain why adding resistors in parallel decreases the total resistance
4. Give the name, colour and function of each wire in a 3 pin plug
5. A kettle has a power rating of 1.2 kW. The kettle uses mains electricity at 230 V. Work out the current flowing through the kettle
6. An electric motor is used to raise a lift. The electric motor is connected to mains electricity at 230 V and has a power rating of 5 kW. It takes the electric motor 35 seconds to raise the lift 20 meters. Work out the charge flow in the electric motor
7. An overhead powerline is used to transmit electricity from power stations to our homes. A powerline carries a current of 350 A and has a power loss of 4 MW. Work out the resistance of the powerline.
8. Explain why the current through the powerline is made as low as possible in The National Grid.
9. Describe how the current is reduced before transmitting the electricity through the powerlines.
10. A plastic rod has been given a positive charge by rubbing the plastic rod on a cloth. Explain how the plastic rod has been given a positive charge in terms of movement of particles

- Describe the difference between ohmic and non-ohmic conductors. Sketch current- potential difference graphs for ohmic and non-ohmic conductors.
- . A standard filament lamp has a power rating of 100 W. Determine how much money you would save each year on your electricity bill if all your light bulbs were changed from 100 W filament lamps to 12 W LEDs. What assumptions did you make?
- Explain how a thermistor can be used to turn on the heating in a house.
- In 2005, a law was passed stating that only qualified electricians could carry out electrical installations in the home. Discuss with your peers the advantages and disadvantages of this law
- Find out why voltmeters must be connected in parallel across a component, rather than in series with it.
- Power stations can be connected to homes using overhead or underground powerlines. Discuss the advantages and disadvantages of both types of powerline
- A balloon that is rubbed on your head can then be stuck to a wall. Find out why the balloon will never repel away from the wall.
- The unit of charge is the Coulomb (C). Find out about the person the unit was named after
- The live wire in a three core electrical cable is brown. The live wire used to be red. Find out why the colour of the live wire has changed.
- When insulating materials are rubbed a charge can build up. What determines whether the material builds up a positive or a negative charge?

Science: Sustainability

Using Resources

What do we use the earth's resources for?
- Warmth
- Shelter
- Food
- Transport

We recycle and reuse to:
Reduce...waste and environmental impacts
Reduce...use of limited resources
Reduce...use of energy resources

Alternative methods for Extracting Metals

These are used to extract metals from low grade ores

Phytomining
Plants are grown in soils rich in metals.
2. Plants take in copper.
3. BURN plants
4. Metal is then extracted from the ASH

Bioleaching
Bacteria feed on metal ore
'Leachate solution' contains copper compounds.
Copper is extracted from the solution using: displacement by scrap iron or electrolysis.

Treating Water

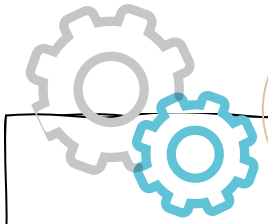
Potable water must have low levels of SALTS and MICROBES (it isn't PURE water)
Obtaining potable water in countries with plentiful fresh water e.g. the UK
- Find a suitable source of fresh water (e.g. lakes, reservoirs, rivers or groundwater aquifers).
- Filtration: Pass through filter beds to remove large particles (leaves, twigs etc).
- Sterilise to kill microbes (bacteria) e.g. by using chlorine, ozone or ultraviolet light.

Obtaining potable water in countries with limited fresh water In dry countries e.g. Spain there's not enough surface or ground water, so seawater must be treated by desalination.
Two processes can be used, distillation or reverse osmosis.
Both processes needs lots of energy so are very expensive.
Sewage treatment requires more processes than desalination but uses less energy so could be used as an alternative in areas with little fresh water.
Screening Removes rags, paper, plastics and grit that may block pipes.
Sedimentation. Allowed to stand in a sedimentation tank so that suspended particles settle out of the water an fall to the bottom of a sedimentation tank to form the sewage sludge. Lighter effluent floats on top.
Aerobic digestion of effluent. Effluent separated and air pumped through encouraging aerobic bacteria to break down any organic matter including other microbes.
Anaerobic digestion of sewage sludge Bacteria digest the sludge in the absence of oxygen. This breaks it down. Methane and carbon dioxide are produced by the bacteria. Sterilisation
If the river is a sensitive ecosystem, then the water is filtered one more time and sterilised by UV light or by chlorine.

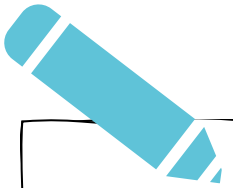
3.

- **Finite resource** A non-renewable resource used by humans that has a
- limited supply e.g. coal.
- **Renewable resources** A resource used by humans that can be replenished e.g. trees. If not managed correctly, the resource may decrease.
- **Potable water** Water that is safe to drink. Has low levels of dissolved salts and microbes.
- **Fresh water** Water that has low levels of dissolved salts. Rain water is an example of fresh water but sea water is not.
- **Pure water** Only contains water molecules, nothing else.
- **Desalination** A process that removes salt from sea water to create potable water. Expensive as it requires a lot of energy.
- **Sewage** Waste water produced by people. Contains potentially dangerous chemicals and large numbers of bacteria.
- **Reverse osmosis** Uses membranes to separate dissolved salts from salty water.
- **Natural resources** have formed without human imput, includes anything that comes from the earth, sea or air (e.g. cotton).
- **Synthetic resources** are man made.

1. What three areas do humans process finite resources from?
   What is meant by the term sustainable development?
   Why is potable water not described as pure water by scientists?
   What is used to sterilise water?
   How is most potable water in the UK produced?
   What type of ores can phytomining and bioleaching be used on?
   Why are phytomining and bioleaching used?
   What does finite and infinite resources mean?
   Name three things that reduce the use of limited resources.
   Name three materials produced from limited resources.



1. Give an example of sustainable development
2. Explain why water is sterilised?
3. Many councils give bins to promote recycling give 3 reasons that they do this
4, Describe the difference between reusing and recycling
5. What are the differences between thermosetting and thermosoftening polymers
6. How is potable water produced in the UK?
7. What areas of life cycle assessments can be easily quantified?
8. Summarise two methods of extracting metals (specifically copper) from low grade ores – bullet-point these two methods?
9. Describe how alloys are different to pure metals.
10. What are properties of alloys that makes them advantageous to use when compared to pure metals?



Describe the similarities and differences between the processing of sewage, agricultural and industrial waste water.
2. Complete a life cycle assessment comparing a paper bag to a plastic bag
3. What are the ethical and moral issues behind adding fluorine to drinking water?
4. Bioleaching uses bacteria to make leachate solutions that contain metal compounds, describe two ways the metals are extracted from these solutions
5. Glass bottles can be reused, whereas metal is recycled describe the similarities and differences in these two processes
6. What three areas do humans process finite resources from?
7. Describe the required practical to obtain pure water from salt water, include the state changes that occur.
8. Provide reasons for the differences in the properties of thermosetting and thermosoftening polymers AND relate this to their properties.
9. Iron can be used as a catalyst. How does a catalyst speed up the rate of a reaction.
10. Explain why bottled water is potable and why it is not pure.

Sustainability

Design & Technology: Electronics

1. Materials

All **materials** have **physical** and **working** properties. Physical properties are the traits a material has **before** it is **used**, **working properties** are how a material behaves when it is **manipulated**.
Timber comes from trees, which have to grow to full maturity before they can be cut down for wood. Timbers can be split into two categories: **softwoods** and **hardwoods**. **Manufactured boards** are usually made from timber waste and **adhesive**.
Metals are found **naturally** and are **mined** from the **earth**. They can be split into **ferrous**, **non-ferrous** or **alloys**.

4. ACCESS FMM

Aesthetics – the **appearance/look/feel**.
Cost- the **price** the product will be **made** and **sold** for to suit the needs of a **client**.
Client- who is the product designed for?
Environment- where the product will be **used**, Indoors/outdoors? **Sustainability**.
Size- What are the **dimensions**?
Safety- How has it been made **safe** to **use**?
Function – the intended **purpose** of the product, is it **multifunctional**?
Materials- What is it **made** out of? **Why**?
Manufacture- How was the product **made**?
CAD/CAM, by **hand, why**?

2. Timber

Hardwood: Oak: strong, heavy, durable, hard and tough. Finishes well. Has an attractive grain and is often used in flooring and high-quality furniture. Very expensive.

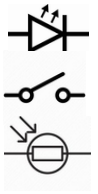
Softwood: Scots Pine: Light brown/yellow in colour. Straight-grained but knotty, fairly strong and easy to work with and paint, cheap. Used in general construction work and joinery.

Manufactured Board: Plywood
Reddish brown or white in colour.
Layered in odd numbered sheets.
Strong due to layers glued at 90° angles (cross-directional strength).
Susceptible to splintering Used in sheds and cladding, furniture, flooring, boats (marine ply). The Forest Stewardship Council **(FSC)** is an organization that promotes **responsible management** of the world's **forests**, for every tree cut down, one is planted.

FSC

3. WOW WORDS

Source/origin = where a material comes from.
Prototype = The first working model of a design used for testing, development and evaluation.
Breadboard = A prototyping base for electronics to check the circuit works before making the circuit permanent.
Malleable = Can be deformed, rolled or pressed into a sheet without breaking.
Ductile = Can be drawn into wires.
Conductor = allows heat and electricity to pass through it easily.
Hardwood = Timber from a deciduous tree. They are slower growing and more expensive.
Softwood = Timber from an evergreen or coniferous tree. Fast growing.
LED = Light emitting diode.
Switch
LDR = Light Dependent resistor.



5. Metal

Ferrous metals contain iron and are **magnetic**. They are prone to **rust** and therefore require a protective finish.
Non-ferrous metals do not contain iron and are not magnetic. They do not rust.

Copper – Non-ferrous metal
Bright, decorative colour when polished.
Corrosion resistant. Soft and easy to work with by hand (malleable and ductile). Excellent conductor of electricity.

6. Equipment

Soldering Iron – a hand tool which supplies heat to melt solder to join two workpieces.

Solder – a fusible metal alloy used to create a bond between metal workpieces.

ACCESS FM is used to help up to analyse products. (Aesthetics, cost, client, environment, size, safety, function, materials, manufacture).

How to describe a product:
What is it made from? Who is it for? When would it be used? Where is it used? How much does it cost? How has it been made?

Comprehensive – Critical analysis of a product:
Do I like it? If so, why/why not?
Does the theme/style suit the target market?
Is it the right size, shape, pattern, colour?
Is it strong and sturdy?
Is it safe to use?

Demonstrate how the product is used:
Explain why a product was developed.
Explain the purpose of different features of the product.
A Design Brief is a short statement of what is required in a design.
Modelling is a representation of a design made from disposable materials (cardboard/paper).
Analysis is reflecting on your designs/ product and assessing its strengths and weaknesses.
Annotation is labels that are attached to design work to explain your ideas further.
Ergonomics is how comfortable/ easy a design is to use and how well it meets the users needs.

How to interpret products that are new:
What is my reaction to this product?
Who might the user or owner be?
Why might they want to buy it?
Is it designed well, if so, why/why not?
Is it easy to use?
How well is it made?
Is it well finished(polished, sanded, varnished)?
Is the cost appropriate?
What happens at the end of its product life? (recycled, landfill, can it be repaired/ reused)

Analysis – breaking down into parts, forms:
What assumptions have been made about the people who might use the product?
Consider inclusive design, have all potential users been considered?
What make this product distinct from others of its type?

Consider the environmental impact of designers:
When designing and manufacturing a product, it is important to consider its life cycle.
Life cycle is the time from a products manufacture, to its recycling or disposal, at the end of its useful life. We need to consider the 6 R's: Reduce, reuse, recycle, refuse, repair and rethink.

Synthesis – combining elements into a pattern:
Would I want to own or use it?
What influenced the appearance and the way it works?
How might the design have been developed?
How would you test this to see..?
Could you redesign to improve a part of the design?
What innovation techniques could you use to improve it? Biomimicry?

Evaluation – according to criteria and state:
What is wrong with the product?
Why is this product more or less popular than other similar products?
What difficulties would manufactures have making this product?
Why have these materials been chosen?
Could you analyse the lifecycle of an existing product and advise opportunities where designers could make it more sustainable by using the 6 r's?
Could you communicate a design idea showing improvements using a technical drawing style?
Could you annotate your drawing to show key parts?

LED Lamp