Potential into Reality

Year 9 Knowledge Organisers

SPRING TERM 2024

Ofsted Good Provider

Name:

Tutor Group: 9

Homework Principles 2023-2024

Our Homework Principles are based on current, influential research:

At John Willmott School we set homework which supports students' understanding of their carefully sequenced curriculum as well as developing their committed and self-disciplined approach to their own academic studies. We know that homework has an impact by enabling pupils to undertake independent learning to practice and consolidate skills, learn key vocabulary, prepare for lessons, or revise for exams.

The Education Endowment Fund suggests that setting homework at Secondary School can accelerate learning by up to 5 months, however it is the quality of tasks set rather than quantity which enhances progress, which is why we are clear in our principles when planning homework against our curriculum implementation.

ACCESSIBLE

- A new Knowledge Organiser will be issued to all students at the start of each term. This will form the basis for most homework so that students have the resources at hand
- Homework tasks should be short and focused ensuring accessibility for all students
- Students will be set homework weekly for most subjects with adequate time for completion
- Students will be taught independent learning strategies as well as explicit teaching of our virtues and school routines to build learning habits

PRECISE

- Tasks have a defined and exact outcome
- Students will be directed to practise or retrieval or embedding the curriculum
- The way this will be assessed is communicated to students, as well as when this will happen
- Homework is designed to link to classroom learning, with clear signposting to prior, current or future knowledge
- Teachers are asked to plan homework tasks for the term in line with long term plans and summative assessments- this will be shared with students and parents

INFORMATIVE

- Teachers use homework as part of their formative assessment to adapt teaching to better respond to student need in terms of what students know and what they don't know yet
- Teachers will gather data through a variety of quality first teaching routine techniques which may include: Do Now Activities, Exit Tickets, Deliberate Practice; Questioning, Mini Whiteboards
- Student engagement is monitored as well as progress and attainment

ACCESSIBLE PRECISE INFORMATIVE

Year 9
Knowledge Organisers
Contents

Year 9 Subjects

Art & Design: Architecture

Year 9

1. Analysing the work of an artist

In art we explore the work of other artists and use them to inspire us.
Things we need to consider when looking at the work of an artist:

- The style of their work
- The ideas explored in their work
- How the artist uses media and techniques in their work
- The composition; is it busy, heavy, empty, imposing etc
- What element do you enjoy that you can use as inspiration for your own work?

2. What is proportion and composition in art?

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.

https://www.bbc.co.uk/bitesize/guides/zxpnb82/revision/1

Composition is the arrangement of elements within a work of art.

https://www.tate.org.uk/art/art-terms/c/composition

3. WOW words

- Composition
- Exploration
- Experimentation
- Decorative
- Imposing
- Brutalist
- Thumbnail
- Layering
- Tonal contrast
- Texture
- Shape
- Form
- Design

4. Media

In art media is a word that describes the material you use to create your work.

e.G pen, pencil, crayon, oil pastels, soft pastels, watercolour paint, acrylic paint.

Did you know you can use household items to create art work from?

e.g coffee, beetroot vinegar, spices

5. Iconic buildings

There are many iconic buildings in the world. Here are some examples:
The Bullring
The Empire State Building
The Tower of London
The Guggenheim in Bilbao
Taj Mahal
Colloseum
Burj Khalifa
La Sagrada Familia
Sydney Opera House

6. The artist Ian Murphy

Ian Murphy

The Fine Artist Ian Murphy is a contemporary artist who is best know for his powerful, tonal drawings and atmospheric, mixed media oil paintings of architectural places.
His work is textural in its visual quality and often focuses on the smaller architectural details of a building (the archways, doorways, details in the brickwork etc)

KNOW IT

- Architecture is a word that describes the practice of designing and constructing buildings.
- Tone is the lightness or darkness of a colour. This can be used to show shadows and highlights.
- Shape is the area an object takes up.
- Form is a three dimensional object.
- Two point perspective drawing is a type of linear perspective. Linear perspective is a method using lines to create the illusion of space on a 2D surface.
- The Ziggurats built stepped pyramid structures that had between 2 and 7 levels.
- Denys Lasdun designed and created a Brutalist style of Architecture.
- Frank Gehry and Zaha Hadid created modernist styles of architecture. The materials often featured in their designs were concrete and metal such as titanium or steel.

THINK IT

- Can you explain the differences between shape and form?
- Can you name how to shade from dark to light to create tonal contrast and make a drawing three dimensional?
- Two point perspective is a method that is used to create the illusion of space in a drawing and to create depth.
- What type of materials are used in Brutalist architecture? Write 5 words that describe modernist architecture and explain each word.
- Name 5 examples of Brutalist architecture and explain why they are part of this architectural movement.
- What media does the artist Ian Murphy use in his work? How does he use tone in his work to create atmosphere?
- What does Ian Murphy explore within his work?

GRASP IT

- Collect a photograph of a close up detail of a building and create an observational drawing in pencil, showing detail and tonal shading
- Draw an iconic architectural landmark from your local area (e.g Selfridges in Birmingham). Practice drawing outlines first and then add detail and tone to create a 3D drawing – complete this in pen.
- Using 2 point perspective design and create your own cityscape. Use pencil or pen and add marks to show tone.
- Research the work of Ian Murphy and find 5 key facts about him. The complete a written analysis using the sentence starters on your knowledge organiser.
- Design your own building considering form and function and concept and purpose and use an architect or architectural style to inspire you. (Consider what we have looked at in lesson – Brutalist, modernist etc)
- Research a new style of architecture and present your findings in a creative manner.

Art & Design

Architecture

Drama: Warden X

Year 9

1. Role on the Wall

A role on the wall uses the outline of a person to fill in two really important details.

On the outside, the visible/audible elements of a character (Posture, Gesture, Movement, Voice, Facial Expression, Costume, Props)

On the inside, the character traits that effect how a character looks and behaves. (Example = Angry (inside) = Fists clenched (outside)

2. Hot Seating

Hot seating is where we interview an actor in character. They are asked questions and then make up answers based on how they believe the character would answer.

You can try this at home, you can make up some questions that you think your character would have answers to and see how they would react.

3. Magic If / Given Circumstances

This two improvisation techniques involve giving a character a new scene (given circumstances) or changing key details of an existing one (Magic If) to test out how a character would react.

The answers don't have to be perfect, but can generate thoughts and discussions and most importantly... A more realistic character!

4. Diary Entries

We can get our actors to create diary entries at key moments in their performances. What might they think of other characters? What might they think before a big incident and how might that change after a development in the story?

Just encouraging your actors to think about is can help a huge amount.

5. Thought Tracking

Encouraging actors to say their characters' thoughts and feelings out loud during rehearsal can help the actors develop more realistic characterisation and can also help other actors do the same.

6. Character Profile

Age:
Gender:
Likes:
Dislikes:
Hopes:
Fears:
ANYTHING ELSE (lots of possibilities):

These answers might change but can really help an actor focus on the development of a realistic character.

KNOW IT

- A character is created in Drama to represent a person
- Characteristics are elements (bits) of that character that can be shown
- A "Naturalistic" character is a character that is realistic and acts how a person might
- In order to create a naturalistic character, it needs details and information
- A famous director called Konstantin Stanislavski was a major force behind the need for actors to create as realistic characters as possible
- Rehearsal strategies are heavily employed by directors when focusing on realism and naturalism
- Rehearsal strategies used; Role on the Wall, Diary entries, Character profiles, Hot Seating, Improvisation, Magic If, Given circumstances and Thought tracking

THINK IT

- Do I know what naturalism and realism are?
- Do I know which director wanted his actors to be as naturalistic and real as possible?
- Can I name rehearsal strategies that help develop characters?
- Can I use these rehearsal strategies to create a realistic character?

GRASP IT

This year we have looked at characters in a naturalistic play, and now are looking at developing our own naturalistic characters.

The more rehearsal strategies you can complete, the more realistic and developed your character can become, making your final performance much higher quality.

Spend some time:

1) Writing a character profile
2) Completing a Role on the wall
3) Sketching out how your character might dress
4) Writing and answering some Hot Seating questions
5) Writing some diary entries for key moments in your characters life
6) Write out a scene where your character interacts with others

Practicing your monologue, in front of a camera or mirror!

Drama

Warden X

English: Small Island

Year 9

1. Character List

Hortense – grows up in Jamaica with Michael's family. Moves to England with hopes of becoming a teacher.
Michael – grows up alongside Hortense. A charming and charismatic man.
Gilbert – Jamaican who joins the RAF in WW2. Marries Hortense.
Queenie – grows up in England. She is fair, open-minded and has a very big and kind heart.
Bernard – grows up in England. Extremely reserved. Marries Queenie.
Arthur – Bernard's father. Suffers from shell-shock.
Mrs Ryder – is the teacher at the local school in Jamaica. Has an affair with Michael.
Mr Philip – Michael's father. A very religious man.
Miss Jewel – Hortense's grandmother, who works as a servant in Michael's house.
Aunt Dorothy – Queenie's aunt who owns a shop in London.
Elwood – Gilbert's brother.
Mrs Todd – lives in Queenie's building. Has racist views.

2. Key Words

adversity – an extremely difficult situation
adverse – extremely difficult
ambition – something you want to achieve in life
colony – country that is ruled by a foreign nation
colonisation – the act of taking over a country to become a colony
dignified – worthy of honour and respect
discriminate – to treat someone or a group of people unfairly because of their sex, race, religion or disability
euphemism – polite phrase that hides an unpleasant meaning.
stigma – a set of negative and often unfair beliefs that a society or group of people have about something
characterisation – the creation or construction of a fictional character
context – what was happening in real life at the time a text was written
monologue – a long speech by one actor
tableau – actors freeze in the middle of the action

3. Plot Summary

The play opens in Jamaica - 1939. Hortense prepares for the arrival of a hurricane and tells her story. The hurricane hits. Michael appears but rushes to passionately kiss Mrs Ryder, ignoring Hortense.
We then move to England – 1941. Queenie rents out rooms to soldiers. An instant attraction forms between Queenie and Michael. Back in Jamaica, Hortense lends Gilbert money for the passage to England, if he marries her and sends for her once he has a place to live in England.
The play ends in London- 1948. Gilbert and Hortense are discriminated against by many people. Queenie gives birth to Michael's baby and gives it to Hortense and Gilbert. They promise love the child.
Hortense is a Jamaican woman. As a child she is given away by her mother in the hope that she has a better life. She is clever and proud. At the beginning of the play, Hortense has strong views about morality and the world. Hortense marries Gilbert not so that she can go to England and become a teacher in a country where she will be respected - 'no-one will feel sorry for I'. Hortense struggles to adjust to England as her dreams of being a teacher are rejected. Hortense's feelings for Gilbert transform into love and pride when he addresses Bernard after his racist outburst.
Gilbert is a Jamaican man. He wants to become a lawyer in England. He is intelligent, charming and kind. Like Michael, he joins the RAF during WW2. Gilbert is a positive character but struggles for acceptance in England. At the end of the play, Gilbert becomes mature and responsible by adopting baby Michael as his own with Hortense. He also realises that Hortense is worth 'more than the price of a ticket' to England.
Queenie is a British woman. At the start of the play, Queenie dreams of romance and having her own family. Queenie marries Bernard, but she is unhappy in her marriage. She says 'It's not what I imagined for myself'. Queenie is overwhelmed by the stigma of raising a black child. At the end of the play, she gives baby Michael away saying, 'You know what? I don't think *I've* got the guts for it'.
Bernard is an English man. Bernard is quiet, nervous and old-fashioned. His ambition is to impress Queenie. Bernard is hostile to anyone who's not of his own race or class. Bernard typifies the racist attitudes that were prevalent in post-war Britain. His unwillingness to change his attitude makes him an unsympathetic character.

4. Social & Historical Context

- Small Island is a novel written by Andrea Levy.
- In 2019, it was adapted into a play by Helen Edmundson.
- The story is based on the real experiences of Andrea Levy's parents who came to England on the **Empire Windrush** in 1948.
- After WW2, England needed help to rebuild society.
- 1000 people emigrated from the Caribbean to England on the Empire Windrush.

5. Themes

Racism
Etiquette
Redemption
Belonging
Gender
Ambition

KNOW IT

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.What does PETAL stand for?
5.How are the characters related to each other?
6.Can you summarise the plot in 50 words?
7.Can you list the 10 most important plot points?
8.Can you put the main plot points into chronological order?
9.Which 5 words best describe the female protagonists?
10.Which 5 words would you use to describe other key characters?
11.What are the main themes in the text?
12.What are the social and historical links to the text?
13.What is unusual about the ending of the play?

THINK IT

1.How do you use the PETAL paragraph structure to write a character analysis?
2.Why is the context of a play/novel important?
3.How do the main themes link to the protagonists?
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?

GRASP IT

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.Why might a modern-day audience or contemporary reader criticise the author's intended message?

English

Small Island

Food: Nutrition

Year 9

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
5-63C	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. 4 Cs

Food hygiene is necessary in order to make food which is safe to eat. This involves more than just being clean. A simple way to remember all the important areas where safety could be an issue are the **4Cs**:

- Cooking
- Cleaning
- Chilling
- Cross-contamination

What does bacteria need to grow?

Food, PH, Temperature, Time, Oxygen, Moisture

- Bacteria grow best in the danger zone which is between 5◦C and 63◦C
- Below 5◦C they are dormant, this means that grow very slowly or not at all
- Above 63◦C they are mainly destroyed by the heat.

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.

Most **UK-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.

KNOW IT

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?

THINK IT

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.

GRASP IT

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.

Food Nutrition

Geography: Waterworld

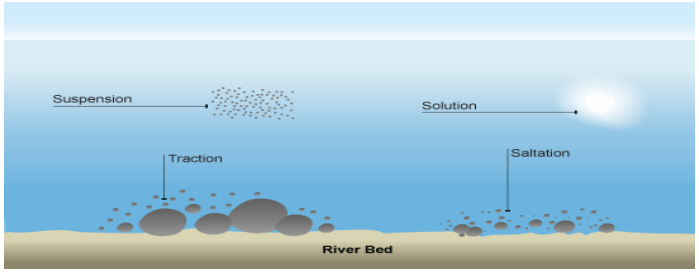
Year 9

1. Types of Erosion

Hydraulic action — as water rushes by, it forces air into cracks in the rock, which continue to widen and break
Abrasion — sand and rock are thrown against the riverbed and banks, wearing them away like sandpaper
Attrition — pieces of rock are thrown against each other, causing sharp edges to break off and eventually becoming smaller and rounder
Corrosion — weak acids in the water break down the rock in the riverbed and banks

2. Types of Transportation

Traction — large stones are rolled along the riverbed-
Saltation — smaller stones bounce along the riverbed
Suspension — small particles of rock, dirt, and plants float in the water of a river, making it look cloudy
Solution — particles of rock and chemicals are dissolved and carried along in the water unseen

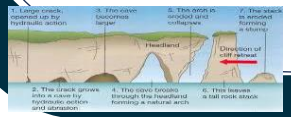


3. Factors affecting flooding

Natural
Heavy rain — when it rains very heavily the water doesn't have time to soak into the soil, so it runs over the ground, causing flooding.
Steep slopes — water flows faster down steep slopes, meaning it doesn't have time to soak into the soil Impermeable.
Human
Deforestation — leaves can catch rainwater (called interception) and tree roots soak a lot of water from soil.

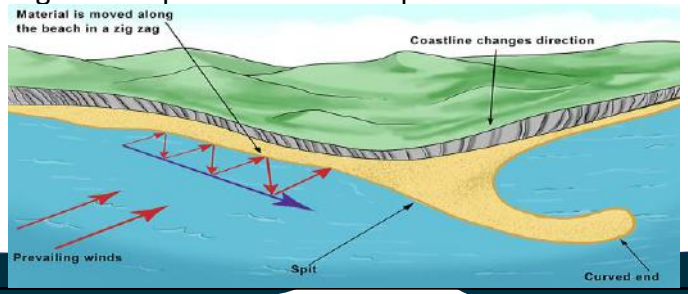
4. Features of coastal erosion

Caves, arches, and stacks
Erosion often widens existing cracks in rock faces. When this happens enough, a cave forms. Erosion will continue to wear away the rock until the cave becomes eroded all the way through, forming an arch. The arch will continue to erode until the rock becomes too weak and collapses, leaving a stack.



5. Coastal transportation and deposition

Coastal landforms
Transportation - Longshore drift is the transportation of material along the shore by waves coming into the beach at an angle.
Deposition - Spits are formed when longshore drift begins to deposit material out past a headland.



6.Cosstal Management

Soft engineering - Does not involve building artificial structures but takes a more sustainable and natural approach to managing the coast.
Hard Engineering – Involves building structures to slow the erosion of the coastline.

KNOW IT

1.What is the difference between erosion and deposition?
2.Name the four types of erosion and four types of transportation
3.What is weathering? What happens in biological weathering ?
4.Name three types of mass movement
5.How do waves form and what effects their size?
6.Draw an annotated diagram explaining how stacks form
7.What is the difference between constructive & destructive waves?
8. What are headlands and bays ? how these are formed ?
8. Name four hard strategies to protect coastlines from erosion
9. Draw a sand spit and label the processes and features.
10. What are hard management strategies and how do they protect the coastline from erosion?

THINK IT

Explain how geology can play an important role in the formation of a waterfall.

What are the human and natural causes of flooding ?

Explain how river flooding can be prevented

Use the photograph to explain how the coastal defence strategies help to reduce erosion at the coastline.

GRASP IT

Write a story describing a river's journey from source to mouth.

Create a fact file on river & coastal landforms

Create a leaflet to show the erosional and deposition features of coastal areas.

Research the possible physical, environmental and social impacts of climate change on the UK's coastlines.

Geography

Waterworld

History: The Cold War

Year 9

1. The Berlin Wall

The Berlin Wall

Causes: After Germany split into West and East Germany in 1949, 2.6 million East Germans left to go to West Germany. In Berlin alone, 1.6 million people fled to the west. To stop this, on August 13, 1961, the Communist government of East Germany built a wall separating East and West Berlin. The wall was built to keep the country's people in. But the Soviets and East German government said it was to keep capitalism out.

Impact: People still tried to escape even though the Berlin Wall was there. They used many methods to get around the guards and barbed wire on the Berlin Wall.

2. Causes of the Cold War

The USA was capitalist; the USSR was communist. These conflicting beliefs underpinned the entire Cold War as each power believed the other was trying to spread its ideology (ideas) around the world.

These two countries were in direct competition with each other. The USA wanted to live in a capitalist world whilst the USSR wanted to live in a communist world. President Truman introduced the Truman Doctrine, a commitment to protecting 'free peoples' from outside aggression. This was backed up by the Marshall Plan, which provided money to European countries to support recovery after WWII. Both actions were seen by the Soviet Union as a direct attack on communism as the USA were trying to spread their capitalist ideas.

The Soviet Union (USSR) wanted protection on its borders to avoid attack like in WWII. It expanded its influence (and communism) across Eastern Europe to create a buffer zone of friendly states. The Americans viewed this as aggressive expansion.

3. The Berlin Blockade

Events: On June 24, 1948, the Soviet authorities announced that the Autobahn, the highway connecting western Germany to Berlin, would be closed indefinitely "for repairs." Then, they halted all road traffic from west to east, and barred all barge and rail traffic from entering West Berlin. Thus began the blockade of Berlin.

Causes: The Soviets blockaded West Berlin, a manoeuvre that they hoped would force the western powers (USA and UK) out of Berlin.

Allied reaction: The Allies would supply their sectors of Berlin from the air. Allied cargo planes would use open air corridors over the Soviet occupation zone to deliver food, fuel and other goods to the people who lived in the western part of the city. For more than a year, hundreds of American, British and French cargo planes ferried provisions from Western Europe to West Berlin. At the beginning of the operation, the planes delivered about 5,000 tons of supplies to West Berlin every day; by the end, those loads had increased to about 8,000 tons of supplies per day. The Allies carried about 2.3 million tons of cargo in all over the course of the airlift.

Impact: Life in West Berlin during the blockade was not easy. Fuel and electricity were rationed, and the black market was the only place to obtain many goods. Eventually the Soviet Union gave up and Berlin remained in US and UK hands.

4. WOW Words

Arms race – the rapid increase in the quantity and quality or military power

Blockade – the means of blocking a place to prevent goods or people from entering or leaving

Buffer zone – a neutral area serving to separate hostile forces or nations

Capitalism – an economic and political system where trade and industry are controlled privately rather than by the government.

Cold War – a period of political tension between the Soviet Union and the USA

r or party running the country with no opposition to their rule.

5. Spread of Cold War

The Cold War spread to other countries too. In China there was a communist revolution where Mao Zedong overthrew the government and violently seized control. In Vietnam Ho Chi Ming led a violent revolution against the French who were their colonial masters. He achieved victory and made the Northern half of Vietnam into a communist country. The USA were keen to stop communist expansion and so supported South Vietnam in a war against the North. The more the South Vietnamese struggled the more involved the Americans got. Eventually in 1973 they had to withdraw their troops after achieving very little aside from a 10 year stalemate. This cost hundreds of thousands of lives on both sides.

KNOW IT

1 What are the differences between capitalism and communism?
2 What political system did the USA have?
3What political system did the USSR (Soviet Union) have?
4 What did the Marshall Plan provide?
5 Why did the Soviet Union see the USA's actions as a threat?
6 How did America see the Soviet Union's buffer zone?
7 What development made the Cold War really dangerous?
8 Why did the Soviets blockade Berlin?
9 How did the allies get supplies into Berlin?

THINK IT

Make a series of cartoons to show the main events during the Cold War

Create newspaper headlines and articles for each main event. Make sure to research some extra details to include. Explain to the reader why each event was significant and what the consequences could have been if events had turned out differently.

GRASP IT

The Cold War was mainly fought because of the different ideas (ideologies) of the USA and USSR. Do you agree?

Write a response to the question above – remember to show both sides of the argument.

History

The Cold War

Information Technology: Algorithms

Year 9

1

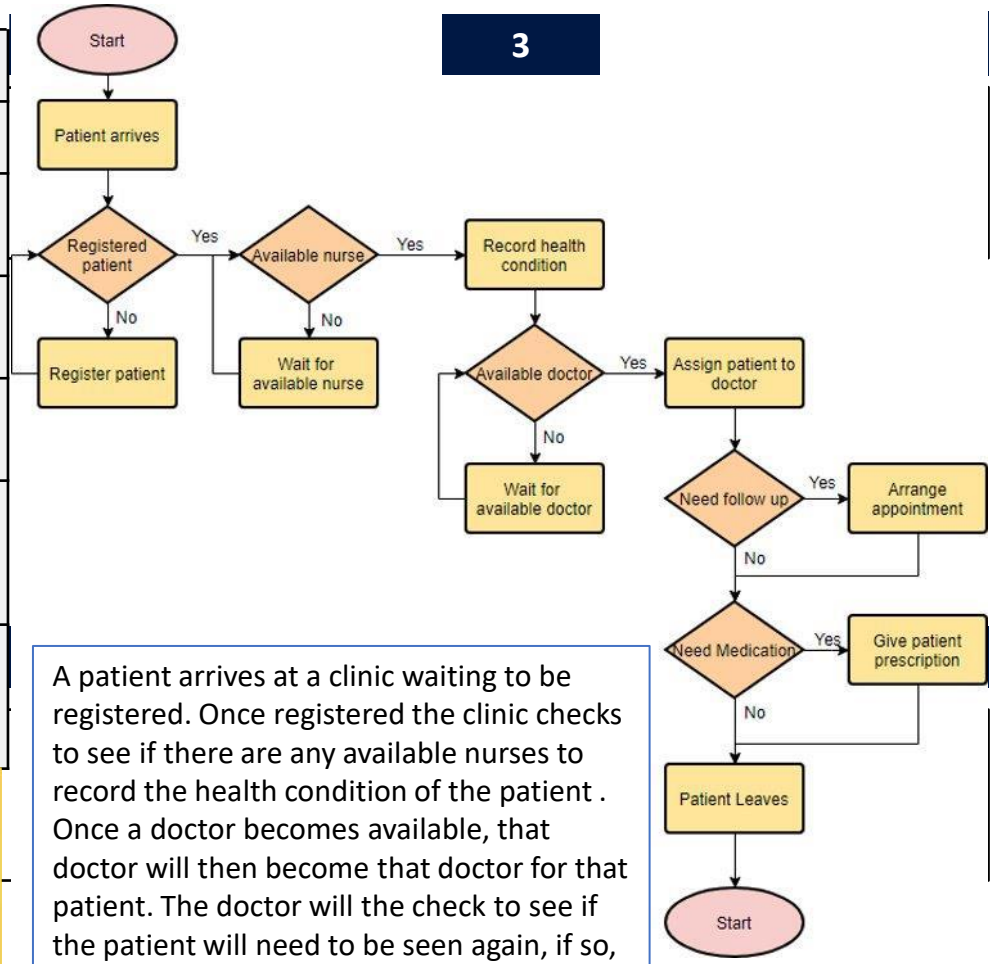
Input(‘’)	Inputs a value into the computer
x=input(‘’))	Inputs a value and stores it into the variable x
x=int(input(‘’))	Inputs a value into x, but converts it into a string first
print(str(x))	Prints the variable x but converts it to a string first
if name=“Fred”	Decides whether the variable ’name’ 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

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

3



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 IT

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

THINK IT

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

GRASP IT

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

Information Technology

Algorithms

Modern Foreign Languages: La Technologie

Year 9

1. Improve your writing

You can spice up your sentences by ***referring to other people's use of technology*** *(this is called « conjugating a verb »):*
-ER verbs in the present tense: ***e, es, e, ons, ez, ent***
Je surfe – I surf
*Tu surf**es** – you surf*
*il / elle surf**e** – he / she surfs*
*Nous surf**ons** – we surf*
*vous surf**ez** – you surf (plural)*
*ils / elles surf**ent** – they surf*

2. Key verbs in present tense

Je vais (I go)
Je partage (I share)
Je publie (I publish)
Je télécharge (I download)
Je surfe sur (I surf)
J'envoie (I send)
J'utilise (I use)
J'achète (I buy)
Je cherche (I look for)
J'écoute (I listen)
Je discute avec (I talk to)
Je contacte (I contact)
Je regarde (I watch)

Sur TikTok (on TikTok)
Sur Internet (on the internet)
De la musique (some music)
Des chansons (some songs)
Des photos (some photos)
Des vidéos (some videos)
Des vêtements (some clothes)
Du maquillage (some make up)
Des séries (some series)
Des emails (some emails)
ma famille (my family)

3. Star words

C'est cool – it's cool
C'est gratuit – it's free
C'est captivant – it's captivating
C'est facile à utiliser – It's easy to use
C'est cher – it's expensive
C'est affreux – it's awful

Past tense = c'était
C'était épouvantable - it was terrible

Future tense – ce sera
Ce sera affreux – it will be awful

4. Time phrases in 3 tenses

Quelquefois	Sometimes
Tous les jours	Everyday
Souvent	Often
Le vendredi	On Fridays
Après le collège	After school
Hier	Yesterday
Vendredi dernier	Last Friday
La semaine dernière	Last week
Demain	Tomorrow
Vendredi prochain	Next Friday
La semaine prochaine	Next week

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 partagé – I played
Tu as partagé – you played (singular)
Il / elle a partagé – he / she played
Nous avons partagé – we played
Vous avez partagé – you played (plural)
Ils / elles ont partagé – they played

e.g. j'ai partagé des photos – I shared some photos

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 écouter – I'm going to listen
Il / elle va jouer – he / she is going to play
Nous allons jouer – we are going to play
Ils / elles vont jouer – they are going to play

e.g. je vais envoyer des photos – I am going to send some photos

KNOW IT

1.Translate: Quelquefois je joue au foot.
2.Translate: Le weekend je fais des magasins avec mon amie.
3.Translate: Après le collège je vais en ligne avec mes amis.
4.What tense do these time phrases indicate? Hier/ le weekend dernier/ vendredi dernier
5. Translate: Hier j'ai joué de la batterie avec mon petit copain.
6. Hier j'ai joué foot avec mon ami. What is missing in this sentence?
7. Translate: Je joue au foot.
8. Translate: Je traîne an ville.
9. Translate: Tous les jours je fais de la natation.
10. Translate: Le soir je vais sur Snapchat.

THINK IT

1.Rewrite sentence 1 and change the 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 etnse.
9. Transform sentence 9 to past tense and change time phrase.
10. Transform sentence 10 to past tense and change time phrase.

GRASP IT

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.

Modern Foreign Languages

La Technologie

Music: Programme Music

Year 9

1, CONTEXT

Programme Music is music that tells or story or conjures up an image or mood.

Programme Music was written before TV and films so composers had to 'paint a picture' for the audience through their music without any images or words to help.

Famous examples include:

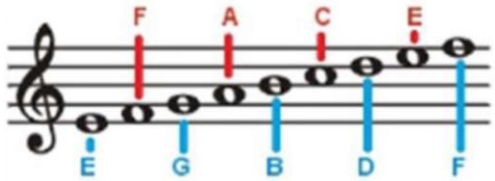
- Carnival of the Animals by Saint-Saens
- Danse Macabre by Saint Saens
- The Hebrides Overture by Mendelssohn
- Pictures at an Exhibition by Mussorgsky

2. DR SMITH KEYWORDS TO ANALYSE MUSIC

DYNAMICS	Volume (how loud or soft)
RHYTHM	Different length notes in a pattern
STRUCTURE	How the music is organised
MELODY	Different pitches in a pattern (high/low)
METRE	How many beats in the bar
INSTRUMENTS	Strings, woodwind, brass, percussion
TEMPO	Speed (how fast or slow)
TEXTURE	How much sound/many layers we hear (thick/thin)
TONALITY	The key, major or minor
HARMONY	Chords (2 or more notes at the same time)
TIMBRE/ SONORITY	Tone quality of the instrument e.g. mellow or shrill
ARTICULATION	How notes are played (smooth/legato or detached/staccato)

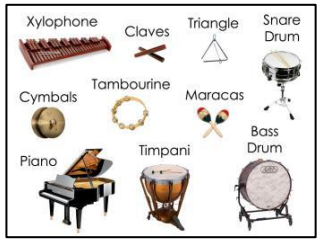
3. NOTE VALUES AND PITCHES FOR COMPOSITION

Note Symbol	Rest Symbol	Note Value	Note Name
♪	𝄾	1/2	Quaver
♩	𝄽	1	Crotchet
𝅗𝅥	𝄼	2	Minim
𝅝	𝄻	4	Semibreve



Every Green Bus Drives Fast

4. INSTRUMENTAL FAMILIES



5. COMPOSERS

Saint Saens, Mendelssohn, Mussorgsky

KNOW IT

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

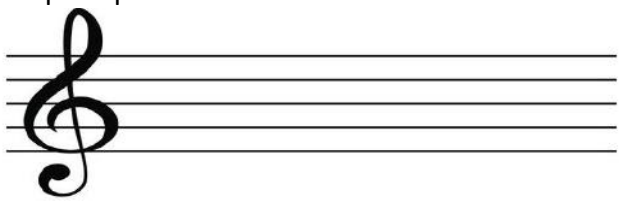
THINK IT

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

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

Note Symbol	Rest Symbol	Note Value	Note Name

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



GRASP IT

1. Write out the DR SMITH grid with definitions and use this to answer the following in full sentences:

2. Listen to The Hebrides Overture by Mendelssohn

   How does Mendelssohn depict the sea surrounding the cave? (6)

3. Listen to Bydlo from Pictures at an Exhibition by Mussorgsky arranged by Ravel

   How does Mussorgsky capture the image of a heavy cart being pulled by oxen? (6)

Think about tempo, pitch, rhythm, dynamics, tonality, texture, instruments or anything else that is relevant.

Music

Programme Music

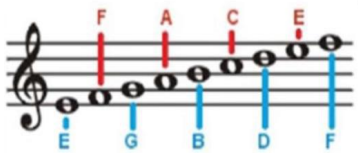
Music: Theory

Year 9

1. NOTE VALUES

Note Symbol	Rest Symbol	Note Value	Note Name
𝅘𝅥𝅮	𝄾	1/2	Quaver
𝅘𝅥	𝄿	1	Crotchet
𝅗𝅥	𝄼	2	Minim
𝅝	𝄻	4	Semibreve

2. PITCHES

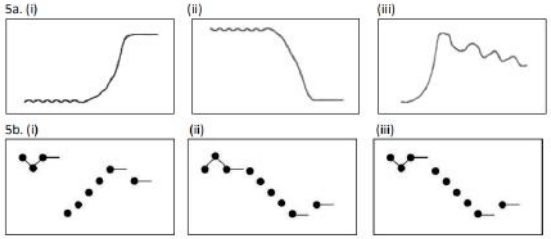


Every Green Bus Drives Fast

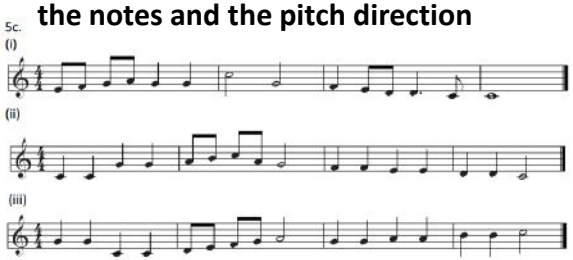
3. NOTATION SYMBOLS

Notation Symbol	Definition
𝄞	Treble clef
	Bar line

4. NOTATION EXAMPLES



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

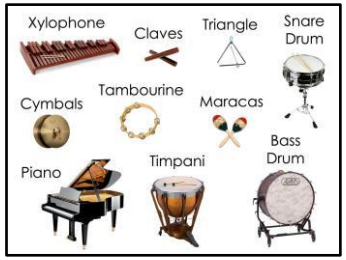


Staff notation shows precise note lengths and pitches on a stave

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
ARTICULATION	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



KNOW IT

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?

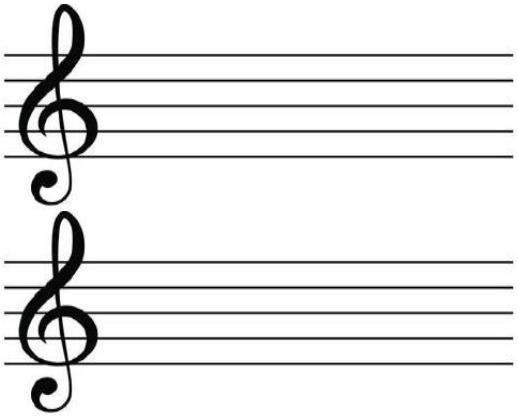
THINK IT

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.



GRASP IT

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

Music Theory

Physical Education: Volleyball

Year 9

1. Rules

- To start a point, the server can serve from anywhere behind the end line, hitting into the opposing team's side of the court.
- Each team is allowed a maximum of three touches on their side of the court before sending the ball back over the net after the serve.
- A player is not allowed to touch the ball twice in a row. However, they could hit the ball on the first and third contact.
- The serving team scores a point when the opponents fail to return the ball over the net, hit the ball out of bounds or commit an infraction.
- Whichever team wins the point then goes on to serve.
- Every time a team wins the serve from the other team, the players rotate their position on court one place clockwise so that everyone gets a turn to serve

2. Attacking & Defensive Positions

3. DIG SHOT

The dig shot requires players to get low and to stop the ball touching the ground. When completed successfully the shot provides accurate and consistent passing, which is essential to create a multiple attack.

4. Set

The set shot is a delicate attacking shot that is an important part of the pass-set-spike sequence required for a successful attack.

5. Block

The block is not technically a maintaining possession shot, but a well-timed and effective block diffuses an offensive attack.

KNOW IT

Technical
1. Where do I serve from?
2.How many time can I hit the ball as a team?
3. How can I score a point?
4.What methods can I use to score a point?
5. How many players are on a side?
6. Where are the attacking and defensive players to stand?
7. What are the teaching points of a dig?
8. What are the teaching points of a set?
9. What are the teaching points of a block?

THINK IT

Technical
1. What types of serve are there?
2. Describe the main shots a player can do?
3. Why is attacking space important?
4. Where should you aim when at the net?
5. Give an example of a defensive player.
6. What is the role of the libero?

GRASP IT

Technical
1. Why is it important to use the correct serve?
2. How can the set be used to receive the ball in a game situation?
3. What are your three main shots when you receive the ball?
4. Explain how to score a game as an official.
5. Who serves the ball & how do you know whose turn it is?
6. How many players are on court at once?
7. How many players make up a full Volleyball squad?

Physical Education

Volleyball

Physical Education: Rugby

Year 9

1. Key Rules

Objective of rugby
The object of the game is score more points than your opponents in the 80 minute time frame allotted for each rugby match.
Rucking
After a tackle, the players can form a ruck to gain possession of the ball. This is where the tackled player presents after a tackle, while the players from both teams contests the ball on their feet.
Offside
Attacking players must be behind the ball to stay remain onside in rugby.
The Tackle
A tackle cannot be made above shoulder height or by tripping a player with your feet. Once a tackle is made the player must let go of the ball.

2 Evasive Running With The Ball

The ball carrier should:
•carry the ball in both hands
•run into space whenever possible, evading contact
•when faced with opposition, try to dodge round them by moving them one way (known as fixing a defender) then changing direction (with a side step or swerve) and/or pace
•move into the space they have created
•accelerate forwards out of the space

3. Key Words

Knock on - *noun*
an act of knocking on, for which a penalty or scrum is awarded to the opposition.
Offside - *noun*
An act of gaining an advantage from being too far forward.
Line-out - *noun*
a formation of parallel lines of opposing forwards at right angles to the touchline when the ball is thrown in.
A try-*noun*
an act of touching the ball down behind the opposing goal line, scoring points and entitling the scoring side to a kick at goal.
Lateral - *noun*
a pass thrown either sideways or back.

4.Scrummaging

The scrum (scrummaging)
The scrum is used to restart play after a number of rule breaks, including; knock ons, accidental offside or the ball being passed forwards.
Linking skills 2v2 practice
•Keep the spine straight
•Elbows in
•Hips inline with shoulders.

6. The Lineout

The lineout is a means of restarting the game after the ball, or a player carrying the ball, crosses the touchline. The opponents of the team who last held or touched the ball, prior to it going out of play, throw the ball into the lineout. To win possession, any player in the lineout can jump for the ball, supported in the jump by two team-mates.
Key points for players
General points
•All players should ideally be able to be jumpers and supporters
•Players can change roles (jumper/supporters) and position during the lineout
•The performance of the thrower is key to a successful lineout
•Players must communicate to ensure a safe and effective lineout

KNOW IT

1.What is the object of the game of rugby?
2.When does a knock on occur?
3. When does a lineout occur?
4.What is the objective of a ruck?
5.How can a try be scored by a player?
6.Draw a rugby pitch with the markings.
7.What are the rules with passing the ball?
8.Can you name all the different passing techniques?
9.Why is a lateral/basic pass important?
10.What are the teaching points of a basic/lateral pass?

THINK IT

1.What drill can improve your passing?
2.What are the rules with tackling?
3.What are the teaching points of the tackle?
4.What are the progressions to improve tackling technique?
5.What the key points to consider when tackling front on?
6.When does a ruck occur?
7.What are the key points when rucking?
8.When does a scrum occur?
9.What are the key points during a scrum?
10.What skills can be linked in rugby?

GRASP IT

1.Can I explain a range of skills and techniques in competitive situations effectively eg, switch and miss passes, tackling, rucking, mauling
2.Can I explain a range of strategies and tactics in performances to exploit and negate spaces in defense in a game situation
3.Can I explain the benefits of a warm up for rugby including a skill specific drill
4.Can I highlight the key teaching points for a range of skills eg passing, tackling, rucking, mauling
5.Can I explain a range of rules and regulations in game situations including adaptations for lineouts, scrums

Physical Education

Rugby

Religious Education: Religion and Life

Year 9

1. Creation

Christian's beliefs about creation come from the book of Genesis, and the stories of the seven days of creation and Adam and Eve. Not all Christians believe the stories word for word, but most Christians think that the stories contain the important truth, that everything that exists was made by God. Christians believe that people are God's greatest creation but that doesn't mean that they can overuse or harm the rest of the planet.

2. Afterlife

Religious people have faith that there is life after death, whereas an Atheist accepts the belief that there is only one life, and we are living it.

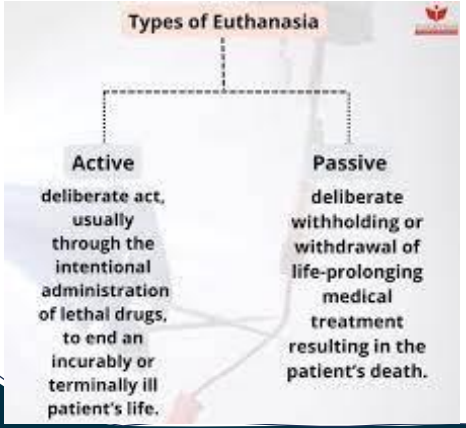
Atheists believe that there is absolutely no possibility of any life beyond death for humans. Some Atheists claim that humanity (humans) have invented the belief in life after death to ease the fear of death and the unknown.

3. Abortion

- An abortion is a medical procedure that ends a pregnancy.
- In Britian, you can legally have an abortion up to 23 weeks and 6 days into the pregnancy.
- Abortion became legal in all of Great Britain (excluding Northern Ireland) in 1968.
- Prolife is the belief that all life is sacred, and abortion is wrong.
- Pro-choice means that you believe people should have the ability to choose abortion as an option for an unplanned pregnancy.

4. Euthanasia

Euthanasia is the act of deliberately ending a person's life to relieve suffering



5. Animal Rights

"The one who eats everything (including meat) must not treat with contempt the one who does not, and the one who does not eat everything must not judge the one who does, for God has accepted them"
(Romans 14:3)

"It is God who provides livestock for you, some for riding and some for food"
(Qur'an 40:79)

6. WOW WORDS

Genesis: The first book of the Bible.
Steward: Someone who manages the world on behalf of God
Atheist: A person who disbelieves or lacks belief in the existence of God or Gods.
Abortion: The medical procedure that ends a pregnancy.
Euthanasia: The act of deliberately ending a person's life to relieve suffering

KNOW IT

1. Where do Christian's beliefs about creation come from ?
2. What duties were Christians given during creation?
3. What is an Atheist ? What do they believe?
4. What is an abortion ?
5. What are animal rights ?
6. What does the term 'steward' mean in a religious dimension ?
7. What does the term 'pro-life' mean?
8. What does the term 'pro-choice' mean?

THINK IT

"We do not own the world and it's riches. Show a loving consideration for all creatures and seek to maintain the beauty and variety of the world."

Using the knowledge provided on the previous page, do you think a Christian would agree with this Statement, if so, why?

GRASP IT

1. How far do you agree that Christians believe that God created the world in 7 days ?
2. Is there ever a reason for euthanasia ? Explain your answer using examples.
3. Explain why abortion is a controversial issue. Use the terms 'pro-choice' and 'pro-life'.

Religious Education

Religion and Life

Science: Energy Changes

Year 9

1.

Chemical and Physical changes:

In a physical change, the change is reversible. Changes of state are **physical changes** such as **evaporating** when a liquid turns into a gas or **condensing** when a gas turns back into a liquid.

In a **chemical reaction** atoms rearrange to make new substances. The reaction is **irreversible. C**ooking an egg is an example of a chemical reaction because once you have cooked an egg, you can't get it back to its original state.

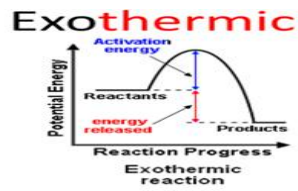
2.

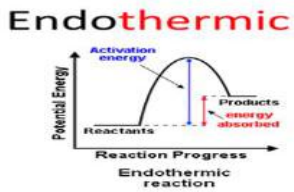
Exothermic:

In an exothermic reaction energy is released into its surroundings. The reactants have more energy than the products. E.g. Combustion.

Endothermic

In an endothermic reaction the energy is absorbed from the surrounding. The products have more energy than reactants. E.g. Thermal decomposition.





3.

Keywords:

Product- the substance that is made during a chemical reaction.

Reactant- The substances that react together to form a product during a reaction.

Endothermic reaction- Releases energy to its surroundings. The temperature goes up.

Exothermic reaction – Absorbs energy from its surroundings. The temperature goes down.

Activation energy – needed to start a reaction.

Catalyst – speeds up a reaction by finding an alternative pathway.

Neutralisation – a chemical reaction between an acid and an alkali.

Combustion – the scientific name for burning.

Thermal decomposition – When a substance can be broken down using heat.

Insulate – keep the heat in.

4.

Factors and rates of reaction:

Surface Area – depends on the size of the solid pieces, but generally the larger the surface area, the faster the reaction

Concentration – The more concentrated the reaction, the faster the reaction

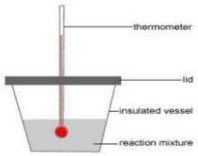
Temperature – The higher the temperature, the faster the reaction

Catalysts – speed up a reaction and go faster than reactions without a catalyst.

5.

Neutralisation:

One way to test the energy changes in a reaction is to test the effect of acid concentration on the temperature change during a **neutralisation** reaction. If the solution of acid is concentrated, it means there are more particles that can react. In theory a higher concentration should have a higher temperature change or should reach a certain temperature much quicker. To prevent energy loss, we can use a polystyrene cup in a glass beaker to insulate the mixture and add a lid to reduce energy being lost by evaporation.



KNOW IT

1. Give four examples of physical changes. 2. Give four examples of chemical changes.
3. Identify what is meant by the term physical change.
4. Identify what is meant by the term chemical change.
5. What do you call a reaction that transfers energy to its surroundings?
6. What do you call a reaction that takes in energy from its surroundings?
7. Give two examples of an exothermic reaction
8. Give two examples of an endothermic reaction.
9. List the four factors that affect the rate of reaction.
10. Name the reaction when an acid and an alkali react.

THINK IT

1. Describe the different ways to identify that a chemical reaction has taken place.
2. Describe the temperature change during an exothermic reaction.
3. Describe the temperature change during an endothermic reaction.
4. Describe what happens to the bonds in an exothermic reaction.
5. Describe what happens to the bonds in an endothermic reaction.
6. Lable the activation energy on an energy level diagram for an exothermic reaction.
7. Lable the activation energy on and energy level diagram for an endothermic reaction.
8. Draw on your energy level diagram to show how a catalyst has been used.
9. Why do we use a polystyrene cup during the reaction the neutralisation reaction of sodium hydroxide and hydrochloric acid.

GRASP IT

E1. Explain why endothermic reactions take in energy and reduce the temperature of the surroundings.
2. Explain why exothermic reactions give out energy and increase the temperature of the surroundings.
3. Draw an energy level diagram for an exothermic reaction between nitric acid and sodium hydroxide.
4. Draw an energy level diagram for an endothermic reaction when ammonium nitrate dissolves in water.
6. Explain why a catalyst is used during a reaction.
Explain the term activation energy.
8. Explain collision theory and link it to the four factors that affect the rate of a reaction.

Science

Energy Changes

Science: Biology Health and Disease

Year 9

1. Health

Two types of health: mental and physical.
Physical health is the health of your **body**, for example skin, bones, weight.

Mental health is the health of the **brain**, good mental health is positive feelings and ability to perform tasks and poor mental health could be anxiety and depression.

Mental health is affected by: genetics (family history), diet, exercise, sleep, stress and your experiences.

Poor mental health can cause: **anxiety, agoraphobia, self-harm, anorexia, bulimia, body dysmorphia and depression.**

Support mental health by: **exercising regularly, having a good diet, speaking to your doctor, talking, not judging and listening.**

2.

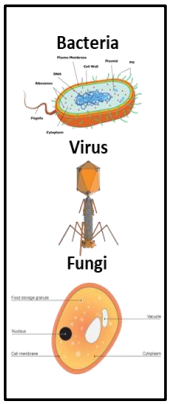
Pathogens can cause a disease that can be spread, this is called a **communicable disease.** Here are some examples of pathogens:

Bacteria enter the body and swim with their **flagellum** (like a tail), grip onto cells using pili (look like hairs), they then **reproduce** and **produce toxins** which damage the body and make you ill. They take nutrients that our body and good bacteria need. E.g. Cholera, salmonella, E.Coli.

Viruses are genetic material surrounded by protein, they land on cells and '**hijack**' them and make them produce more viruses. E.g. Influenza, HIV, pneumonia, hepatitis

Fungi digest other organisms using powerful enzymes and use them as food, storing the digested nutrients in food storage granules. E.g. Athlete's foot, ringworm

These **pathogens** can be spread by direct contact, insects and animals, air, water and bodily fluids.
We can **reduce** the **spread** of communicable diseases by washing hands, cooking food properly, isolating infected individuals.



3. WOW Words

Communicable – Diseases that can be spread.
Non-communicable – Diseases that cannot be spread.
Pathogen – a microbe that causes disease.
White blood cells – cells of the immune system that destroy pathogens.
Antigens – markers on the surface of cells that white blood cells can recognise.
Immunity – the ability of the body to resist an infectious disease.
Vaccination – an injection containing small amounts of dead or inactive pathogens.
Chromosome – where genes are found in the nucleus of the cell.

4.

We can grow **bacteria** using **agar jelly** that has all the **nutrients** bacteria need to thrive. This allows us to test the **effects** of different **substances** on **bacterial growth**.
It can be done using the following method:
1. Prepare agar plate
2. Sterilise inoculating loop and nutrient broth with a blue flame on the Bunsen burner.
3. Transfer bacteria from the nutrient broth onto the agar jelly and spread evenly across the agar.
4. Put lid onto agar jelly and seal with Sellotape.
5. Turn petri dish upside down and store at 25°C.

5.

Defence systems:
Skin acts as a barrier to pathogens
Hairs and mucus in the nose trap particles
The **trachea and bronchi** secrete **mucus** which trap pathogens and cilia which line the airways waft them toward the throat.
The stomach contains strong acid that kills pathogens.
The immune system:
White blood cells recognise a pathogen because they have **foreign antigens** (like markers on their surface).
White blood cells make **antibodies** that stick to the antigen on the pathogens making them slow and easier to destroy.
White blood cells **engulf** and **digest** pathogens, which is easier when they are slowed down by antibodies.
White blood cells can **remember** how to destroy a pathogen quickly – this is **immunity**.

6.

Non-communicable diseases are diseases that **cannot be spread**. They can be caused by **lifestyle factors** including: diet, exercise, pre-existing medical conditions, drug use.
Smoking can release chemicals into the body that increases the chance of cancers, lung diseases and heart disease.
Lack of exercise can lead to diabetes, coronary heart disease and high blood pressure.
A poor diet can cause damage to eyesight, tooth decay, gout and also some cancers.
Recreational drugs include alcohol, nicotine, cannabis, cocaine, LSD, ecstasy and can lead to addiction.
Cancers can be **treated** using **chemotherapy, surgery** (cutting out of tumours), **hormone therapy** to affect cancer growth, **radiotherapy** to damage the DNA of cancer cells.
Inherited diseases are diseases that are passed on through **genes** (parent to child). Genes are located on **chromosomes** and having a different number of chromosomes can cause disease (i.e. extra chromosome – Down's Syndrome, one less chromosome – Turner Syndrome.

KNOW IT

1. What is a pathogen?
2. Name three different types of pathogen.
3. Name four ways pathogens can be spread.
4. What is an antigen?
5. What do white blood cells produce to fight pathogens?
6. List 3 ways we can reduce the spread of pathogens.
7. What is meant by physical health?
8. What is meant by mental health?
9. Write 2 ways the body stops pathogens entering the body.
10. What body system is involved in fighting infection?

THINK IT

1. How do bacteria move and grip onto cells?
2. What do bacteria produce to make somebody sick?
3. What can white blood cells do to immediately fight pathogens?
4. What can pathogens get trapped in inside the trachea and bronchi?
5. Why do bacteria thrive on agar jelly?
6. What type of illnesses can poor mental health cause?
7. How can we support our mental health?
8. Give 2 examples of lifestyle factors that can cause non-communicable disease.
9. What is a disease that is passed on from parent to child called?
10. Which lifestyle factors can cause heart disease?

GRASP IT

1. What is the difference between the two types of health?
2. Why do we need to sterilise our equipment when culturing bacteria?
3. Why do we store the petri dish at 25 °C?
4. Describe how white blood cells fight infection.
5. How does the body stop pathogens from entering the body?
6. How do fungi cause disease?
7. Why is it important to stay active?
8. Which lifestyle factors can lead to addiction?
9. Explain what you can do to stop the spread of infection.
10. What can a government do to try and prevent spread of infection?

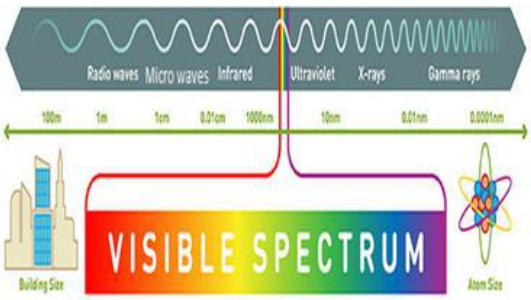
Science

Health and Disease

Science: Physics waves

Year 9

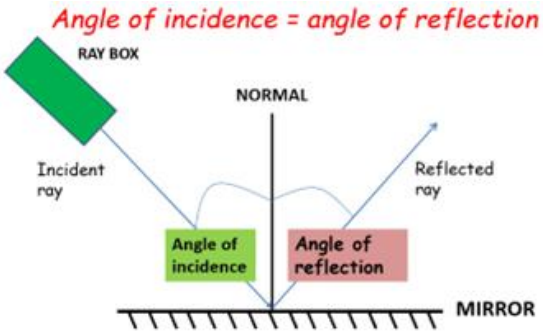
1. Electromagnetic Spectrum



Radio waves: TV and radio communication
Microwave: Satellite communication, cooking food
Infrared: Thermal imaging, cooking food
Visible light: Optical fibres
Ultraviolet: sterilise water supply, kills bacteria
X-rays: Medical imaging
Gamma: Kills cells (e.g. tumours
There is not enough data to prove that infrared, microwave and radio waves are harmful
Ultraviolet: Sunburn, **skin** cancer
X-rays: Too many increases risk of cancer
Gamma: Kills cells, cancerous)

2. Reflection

Light will reflect off a shiny surface at the same angle it hits the surface at.



3. Refraction

When light passes through a denser material, it slows down. When light passes through at any angle other than 90^0, the light will change

Light refracts through a prism, which separates it into it's 7 colours. Blue has a shorter wavelength that red light, so refracts more

4. Seasons

Seasons on Earth are caused by the tilt of the Earth.

5. Standard Form

Number	Standard form
15	1.5×10^1
150	1.5×10^2
1,500	1.5×10^3
15,000	1.5×10^4
150,000	1.5×10^5
1,500,000	1.5×10^6
15,000,000	1.5×10^7

KNOW IT

Identify the definition of electromagnetic
Identify a use for radio waves.
Identify a use for visible light.
Identify a use for x-rays.
Identify a danger of gamma rays.
Identify the law of reflection.
Light hits a mirror at an angle of 50^0. Suggest the angle that the light reflects off the mirror.
What 7 colours make up white light?
State the season we have when the northern hemisphere is facing towards the Sun.
Convert 123,800 into standard form, with 2 significant figures.

THINK IT

Identify the names of the waves in the electromagnetic spectrum, in order of largest to smallest.
Identify 2 uses for UV waves
Identify a danger of UV waves
Identify a danger of UV waves
Describe reflection.
Describe refraction.
Describe what happens to light when it leaves a prism.
Explain why the Earth's hemispheres will never have the same seasons.
Convert 4,378,000 into standard form with 2 significant figures.
Convert 0.028 into standard form, with 2 significant figures.

GRASP IT

Give the similarities and the differences between transverse and longitudinal waves.
What is speed of light?
Draw and label a transverse wave.
Explain why non-shiny surfaces cannot reflect light as effectively as mirrors.
Explain why going to UV sunbeds is a dangerous way to get a suntan.
Suggest why microwaves can be used for satellite communication.
Explain how refraction causes light to change direction.
Suggest why we have winter when the Earth is tilted away from the Sun.

Science

Physics Waves

Design & Technology: Electronics

Year 9

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

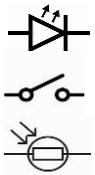
Hardwood: Oak: strong, heavy, durable, hard and tough. Finishes well. Has an attractive grain and is often used in flooring and high-quality furniture. Very expensive.

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.

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.

KNOW IT

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.

THINK IT

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.

GRASP IT

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?

Design & Technology

LED Lamp

Mathematics

Year 9

Hegarty Maths Home Support Guide

Homework Guidance

One task is set per class using www.hegartymaths.com

The homework task is always set at the start of the week and due in at the start of the following week.

Student expectations:

- Watch the video for the set task
- Make clear notes from the video
- Complete the task, aiming for 80% as a minimum
- If a student is struggling with the task, use the building blocks to aid prior learning
- When completing the quiz, use the video given for the task. Find the part of the video that answers a similar question and use this to help by following the methods used.

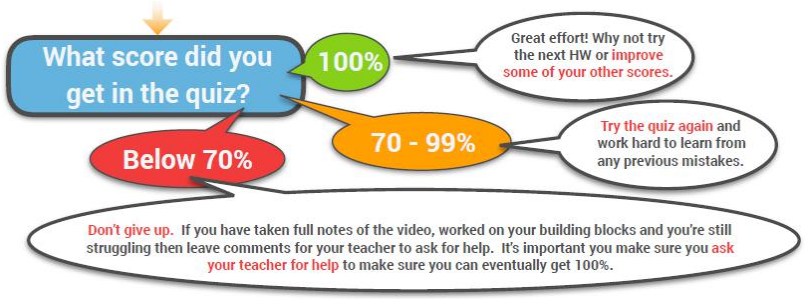
Learning maths is like learning anything. You need to practise and always put in effort. Trying your best and always putting in effort is crucial to the process. HegartyMaths is totally committed to helping students improve at maths.

I was in the bottom set in maths in my school. I started doing lots of HegartyMaths and got better at maths. My teacher saw my progress in HegartyMaths and combined with my end of term assessment I was moved up two sets!

Happy Student @ Heston Community School

HegartyMaths is a amazing place to learn new things it shown me the best videos on how to work out the hardest questions

Happy Student @ Harris Academy Morden



Please refer to your student Planner for additional Maths resources.