



The John of Gaunt School
A Community Academy

Name

TG

Year 7

Knowledge Organisers

Term 4 2026

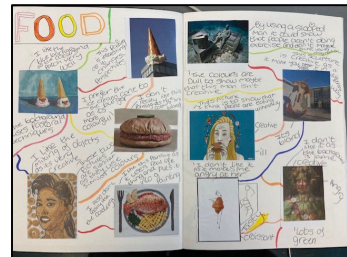
Year 7 Art and Design Knowledge Organiser

What is an Artist Study page?

An artist study page visually represents the artists and analyses their work. It can be based on a set topic. An artist Study page can look at a range of artists and describe the work, link each piece to the project theme and present personal opinion about the work.



Presentation
Key words
Range of images



Opinion
Artistic language
Analysis

Artist study:

Steven Wiltshire is a British Artist.

He is a prodigious cityscape artist, known for capturing intricate details of global skylines after mere glimpses.

He has autism and the phenomenal ability to remember buildings and cityscapes – he has photographic memory.

Stephen has showcased his talent globally with record-breaking exhibits.



Architecture

Key Artists to Study and Analyse:

Steven Wiltshire (born 24 April 1974) is a British architectural artist and autistic.^[1] He is known for his ability to draw a landscape from memory after seeing it just once.



Vast cityscapes
Line
Monochrome
Intricate detail

Alfredo and Isabel Aquilizan

- Both born in the 1960's
- Filipino 3D mixed media artists.
- Use found objects and materials.
- Work based on migration, family, and "cultural displacement"



Sculpture
Form
Cityscape
Found objects

Friedrich Hundertwasser (15 December 1928 – 19 February 2000), was an Austrian visual artist and architect who also worked in the field of environmental protection.



Vivid/bright
Bold
Abstract
Naive

Key Words - definitions

Layout - the way in which text or pictures are set out on a page.

Mixed media - describes artwork in which more than one medium or material has been employed.

Building - the art or business of assembling materials into a structure

Construct – to build or make.

City scape - an artistic representation of a city

Abstract - relating to or denoting art that does not attempt to represent external reality, but rather seeks to achieve its effect using shapes, colours, and textures.

Vivid – Intensely deep or bright colours.

Sketch - A sketch is a rapidly executed freehand drawing that is not usually intended as a finished work.

Line drawing – using only line to create an image






Texture – To give (something) a rough or uneven texture.

Artist Analysis

Describing and analysing artists work is an important skill. We try to analyse work by looking at the formal elements of **colour, line, tone, texture, scale, perspective and shape.**

When writing your opinion make sure you describe **what you do or don't like about a piece of work and why (use the formal elements to help you)** e.g. 'I like Stephen Wiltshire's work because he uses only line to create a 3D effect of buildings

Career readiness means being prepared to succeed in the world of work — not just having a job, but being ready to grow, learn, and thrive in a career. It's about having the skills, knowledge, and attitudes that employers look for. The activities below are to help you reach career readiness.

<p>Term 1</p> 	<p>Who am I? Draw connections between their likes, culture, connections and interests Understand that certain characteristics are protected by law</p> <p>Dream job Exploring more than one dream job</p>	<p>Who Am I work book Who Am I ppt Who Am I digital template</p> <p>Exploring possibilities dream job workbook Exploring possibilities dream job ppt</p>	<p>These are the tasks on unifrog and the suggested time when to do them. You are given the title of the resources so that you can find them yourself but they will appear on unifrog. You will get an email notification. The tasks are tracked. The activities include the teacher powerpoint, which gives suggestions. Sometimes, it might be good to do the activity with a friend or parent so that you can share ideas. The powerpoints are designed for a class of 30 pupils and have the teacher notes to help you. When working on your own, it will take 15 – 30 mins for the activities and longer for the thinking. Create a folder in which to save your worksheets.</p>
<p>Term 2</p> 	<p>What is a career Identify a range of career sectors and jobs that they might be interested in</p> <p>What is an entrepreneur Identify a range of career sectors and jobs that they might be interested in</p>	<p>What is a career workbook What is a career ppt</p> <p>What is an entrepreneur work book What is an entrepreneur ppt</p>	
<p>Term 3</p> 	<p>What is a work life balance</p> <p>Careers for the future How have careers changed over the years</p>	<p>Work life balance workbook Work life balance ppt</p> <p>Careers and the future workbook Careers and the future ppt</p>	
<p>Term 4</p>	<p>Competencies and aiming high Learning about goal setting</p>	<p>Competencies II aiming high workbook Competencies II aiming high ppt</p>	<p>Useful websites to use https://www.johnofgauntschool.org/parents-and-carers/careers-information https://nationalcareers.service.gov.uk/ https://www.gov.uk/apply-apprenticeship https://www.ucas.com/ https://www.wiltshire.ac.uk/ https://www.bathcollege.ac.uk/</p>
<p>Term 5</p> 	<p>Careers and subjects quiz: sustainability Exploring the subjects tool, creating favourites and doing career courses.</p>		
<p>Term 6</p> 	<p>Introduction to the courses tool Complete a course using the courses tool</p>	<p>Careers quiz careers and the Courses tool ppt</p>	

Computer Science

Key content

Sprites

A **sprite** is a character or object in your game or animation.

In order to give the impression that a character is moving you can change the sprites' **costume**.



Scripts

The commands in Scratch are split in to the following different sections:

Motion, Events, Looks, Control, Sound, Sensing, Pen, Operators, Data and More Blocks

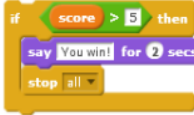
Variables

A variable is used to store data for use in your program.

Variables can be used to store lots of different types of data such as names, numbers and scores.



The data stored in a variable can be changed or "varied" depending on certain conditions within a program.



What is Scratch?

Scratch is a visual **programming language** that allows you to create programs by dragging blocks of scripts.



Operators

Operators are used for **changing** or **comparing** data.

They can **add**, **subtract**, **multiply** and **divide** data

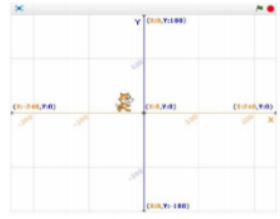


They can also check if values are **less than**, **greater than**, or **equal to** other values.



Stage

The stage is the background of the project. Scratch uses co-ordinates to position different elements around the screen.



Different backgrounds can be imported or you can create your own.



IF Statements

IF statements can be used to select different scripts of a program depending on a condition.

Also known as **selection**.



Sensing

These are colour coded light blue and used to detect different factors of the program.



Loops

Loops are used as a way of repeating instructions. Also known as **iteration**.



Repeats a certain number of times.

Repeats an instruction forever.

Key Vocab

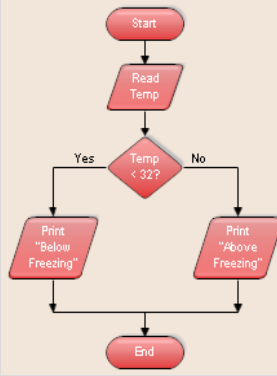
Problem Solving & Scratch

Word	Definition
Computational Thinking	The steps you take to find the best solution to a problem
Decomposition	Breaking a problem down into smaller problems and solving each one individually
Abstraction	Picking out the important bits of information from the problem and ignoring the details that don't matter
Pattern Recognition	Finding similarities and patterns to solve a problem more efficiently
Algorithm	A sequence of logical instructions for carrying out a task
Program	Sequences of instructions for a computer
Programming	The process of writing computer software
Sequence	The specific order in which instructions are performed in an algorithm
Selection	A decision in a program. Allows for more than one path through an algorithm (IF & Else)
Iteration	The process of repeating steps (While & For)
Flowcharts	A diagram to represent the solution using given shapes and basics
Variable	A place in memory to store data that can be changed
String	Used to store a combination of characters (letters, number & symbols)
Integer	Used to store whole numbers
Boolean	When the option is true/false, yes/no

Diagrams:

Data types

String	Float or Real	Integer	Boolean
Title	Rating	TimesViewed	Favourite
Zombie Attack	9.5	83	True
True Love	8.0	5	True
Mission: Pluto	2.5	1	False



Flowcharts

- Flowchart symbols:

Symbol	Name
	Start/end
	Arrows
	Input/Output
	Process
	Decision

More info can be found here:

Scratch is free to download and can be found at: <https://scratch.mit.edu/>
 BBC BiteSize Computational Thinking: <https://www.bbc.co.uk/bitesize/topics/z7tp34j>
 BBC Bitesize Algorithms: <https://www.bbc.co.uk/bitesize/topics/z7d634j>

DESIGN TECHNOLOGY YEAR 7.4 Graphic Communication

Typography This is the study of **Type** and **Text** on a page, it is how it add impact or set the scene for a page. You can change the style of text (font), its size, colour and space around the text to give you different appearances.

Serif: These typefaces have a tail and are mainly used in the body of a text.



Sans Serif: This typeface has no tail and is mainly used for headings as it is plain and clear to read.



Script: These typefaces tend to look handwritten and have a more personal feel.



Stylised: These are more decorative and are aimed at attracting attention or giving some meaning or association.



Key Words	Definitions
Render	To colour in an idea or design to make it look like a material or to make it stand out.
Enlarge	To make or draw an object bigger than the original drawing .
Reduce	To make or draw an object smaller than the original drawing.
Oblique	A 3D drawing technique which shows an image at 45° to a horizontal line.
Annotate	To add notes to your designs that explain what you are aiming to achieve. (eg. Size, Materials, joining techniques)
Freehand	To produce a drawing without the aid of drawing equipment like rulers and set squares.
Crating	The use of simple drawn shapes to draw more complex ideas.

Analysing products

This is where we look at an existing product and say what we think is good and bad about the product

A Aesthetics :- what the product looks like?

C Cost:- How much would it cost to make or buy?

C Client:- Who would buy it?

E Environment:- How and where will it be used? What impact will it have on the environment?

S Safety:- Could the product hurt anyone?

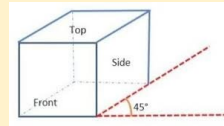
S Size:- How big is it? Is that suitable?

F Function:- What will the product do?

M Materials:- What is it made from?



Freehand drawing techniques



Oblique drawing

Using thick and thin lines to make an object stand out from a page. Rule if you can see two sides the line between is thin. If you can only see one side, the line is thick.



Hatching is the use of lines to give an image the look of shadows, shade and texture.



Disability



Recycle



Place in bin



No Phones

Signs and symbols

Signs give information to people. They often avoid using words. This makes them easy to recognise, and helps people who don't speak your language or who can't read.

Extension task See how many signs and symbols you can find?

This term we are going to be exploring the world of Harry Potter through the style of Physical Theatre.

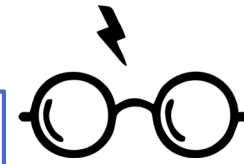
- Harry Potter is the story of a boy who finds out he is a wizard. As he explores the wizarding world he finds his life is not quite as it seems...
- Physical theatre is a practical style that relies on movement to tell the story. We can use physical theatre to create props and set, and create an environment.

Key features of Physical Theatre



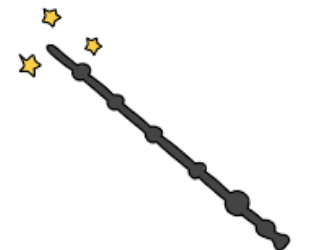
Word	Definition
Physical theatre	Using your body to create props and environment
Accuracy	Looking like the object/prop you are trying to create
Sustainability	Holding the physical theatre shape or movement for long periods of time
Levels	Incorporating different heights into your piece of physical theatre
Body propping	Using your body to create props

Key terminology



9³/₄

Word	Definition
Unison	The same action at the same time as another actor.
Canon	The same action, one after another
Duet	Two actors
Solo	One actor
Proxemics	Distance between actors
Script	A story written to be performed
Dialogue	What the characters say
Stage directions	What the characters do
Blocking	Staging the scene, including proxemics and key physical and vocal skills



Key Information

Fantasy is a genre where a plot cannot happen in the real world. It often explores imaginary and unrealistic elements such as magic and the supernatural.

Vocabulary

Colour Thesaurus:

- 1) **White** = ivory, salt, bone, pearl, porcelain
- 2) **Red** = scarlet, blood, ruby, cherry, mahogany
- 3) **Blue** = indigo, azure, sapphire, arctic, teal
- 4) **Brown** = chocolate, mocha, cedar, caramel, tawny
- 5) **Grey** = graphite, charcoal, slate, ash, pewter
- 6) **Black** = raven, ink, midnight, coal, obsidian
- 7) **Yellow** = citrus, sandy, golden, amber, butterscotch
- 8) **Orange** = rust, bronze, honey, carrot, tiger

Senses (QLAs W1 and W3):

See: *What can you see? Zoom in to the smallest details.*

Touch: *What textures could you feel? E.g. Feathery, coarse, silky, velvety*

Smell: *What smells could you describe? E.g. Flowery, fragrant, citrusy, faint*

Hear: *What sounds could you describe? E.g. Chirping, babbling, fizzing, humming*

Taste: *What tastes could you describe? E.g. Scrumptious, buttery, refreshing, sugary*

Key Vocabulary, Spellings and Definitions

- 1) **Juxtaposition** = Two ideas placed side by side to compare and show their differences.
- 2) **Symbol** = Something that stands for or suggests something else - it represents more than the literal meaning.
- 3) **Genre** = A way of categorising a type of music, art or literature depending on the content.
- 4) **Plot** = Events that make up a story.
- 5) **Simile** = Compares one thing to another - usually using like or as.
- 6) **Metaphor** = Says that something IS something else.
- 7) **Personification** = Inanimate object is given human qualities/ actions.
- 8) **Imaginary** = Something that is not real, and only exists in the imagination.
- 9) **Enchanting** = Something charming that is magical in its appearance.
- 10) **Pathetic Fallacy** = Emotions/Actions that are given to a setting, object or the weather.

Grammar - Sentence Starts

1. **Place, time or direction:** Around the corner, the path stretched and wound its way up the mountain.
2. **Imagine x3:** Imagine a lake of ice, imagine a field of snow, imagine a time from now.
3. **The more, the more, the more:** The more he tried to resist the sirens' charms, the more he was lured in, the more he was enticed in.
4. **One-word phrase:** Friday: the first day of the future.
5. **Emotion (comma):** Stunned, Sara crept swiftly away to the north.

More information/challenge activities can be found on your Unit Cover Sheets.

Key content

Cooking Food

1. A broad range of ingredients, equipment, food skills and techniques, and cooking methods are used to achieve successful results.
2. *Recipes and cooking methods can be modified to help meet current healthy eating messages and repeated at home.*

Why is food cooked?

Some foods can be eaten raw and form an important part of the diet. However, many foods need to be prepared and cooked before they are eaten to:

1. make the food safe to eat by destroying pathogenic micro-organisms and toxins;
2. destroy microorganisms and enzymes that cause food to deteriorate and therefore increase the keeping quality of the food;

Food skills

There are a number of food skills which enable a variety of increasingly complex dishes to be prepared and made.

These can include:

1. beating, combining, creaming, mixing, stirring and whisking;
2. bridge, claw, julienne, jardinière, brunoise, macedoine .
3. kneading, folding, forming and shaping;
4. knife skills;
5. rubbing-in and rolling-out;
6. use of the cooker: boiling/simmering/poaching, frying, grilling, roasting and baking;

Key vocab

Word	Definition
Bridge	Form a bridge over the ingredient with your hand, making the sure the arch is nice and high so there's plenty of room for the knife to fit underneath. Hold the item securely with your fingers on one side and your thumb on the other.
Claw	keeping the fingers curled inward and gripping the food with the fingernails, the fingers stay out of harm's way. The side of the knife blade should rest against the first knuckle of the guiding hand.
Brunoise	A tiny cube cut from julienne sticks that chefs quarter and dice again, producing cubes that are 1/8 by 1/8 by 1/8 inches
Macedoine	Dicing ingredients into 1/4 inch cubes.
Jardinière	To cut a vegetable into thick batons
Julienne	Food cut into short, thin strips - matchstick
Pathogenic	Any organism or agent that can produce disease.
Deteriorate	Become progressively worse.

Diagrams:

The Bridge Hold



The Claw Grip



Vegetable cuts



batons – 5-6.5cm long x 1 cm square



dice – 1cm square



julienne/match stick – 5-6.5cm long x 3 mm square



fine julienne – 5-6.5cm long x 1.5mm square

To find out more, go to:

<https://bit.ly/2Z97B5f>

<https://www.foodafactoflife.org.uk/14-16-years/cooking/>

<https://www.johnofgauntschool.org/page/?title=Technology&pid=29>

Optional Extra – if you are able to cook at home with an adult – why not try using the bridge and claw technique, along with practicing the vegetable cuts.

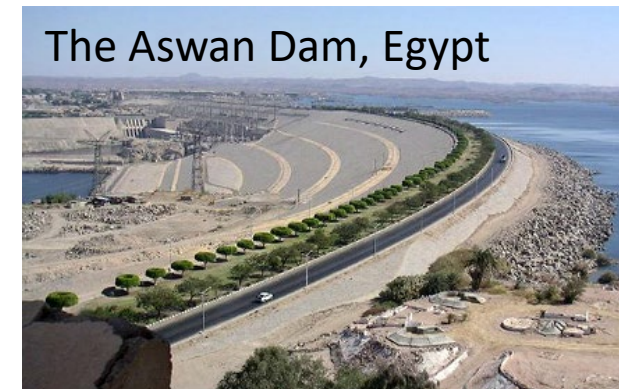
- Africa is a vibrant continent made up of 54 different countries. These countries are incredibly varied with a unit physical and human environment
- People often view Africa through a negative lens, this could not be further from the truth. We will challenge stereotypes and see the continent for the varied and vibrant group of diverse countries that it is.
- It has a varied physical environment including mountains, savanna and deserts
- Kenya: Tourism brings many benefits to countries such as Kenya who receive 2 million visitors every year. Many jobs are created and this boosts the economy. It also brings many challenges such as seasonal work and can be very poorly paid. Tourism has also damaged the environment with increased pressures on ecosystems. Kenya's capital city is called Nairobi. Kibera is an informal settlement on the edge of Nairobi.
- Egypt: The river Nile flows through Egypt. This river is the longest river in the world. In the 1960's a huge dam, called the Aswan Dam was built across the river. This provides sustainable energy called HEP. It also allows Egyptian farmers to irrigate their fields and grow crops in the desert. The Aswan dam also has its negative side; tiny snails have been trapped in Lake Nasser (the lake created behind the dam) and these can cause a disease called schistosomiasis and this can make people very sick. When the dam was built many thousands of people were displaced from their homes
- Nigeria: This country is home to Nollywood, the second biggest film industry in the world. This country has the strongest economy in Africa, its economy is growing on average by 3%. People have benefited enormously from this as jobs are created and people are becoming wealthier. The capital city is called Abuja but the biggest city is called Lagos.

Key vocab

Word	Definition
Tourism	Tourism is travel for business or pleasure, and the operation of businesses providing these services.
Safari	an expedition to observe or hunt animals in their natural habitat, especially in East Africa.
HEP	Hydro electric power
Seasonal work	Work that is only available for part of the year
Dam	An artificial structure that blocks a rivers natural course
Irrigate	To divert water from rivers onto farmland
economy	This is related to the money, jobs and industry in a country
Informal settlement	These used to be called slums, these are illegal settlements made of improvised housing. They typically have a strong sense of community and a range of job opportunities



The Kenyan savanna



The Aswan Dam, Egypt

The role of the Church in Medieval society

STRUCTURE: Pope (1), Archbishops (2), Bishops (17), Priests (5000) – Pope based in Rome (Italy), all others based in England.

1. The church had an important role in the lives of people, as most believed in Heaven, Purgatory (where you reflected on your sins and prepared for Heaven) and Hell.
2. In the Middle Ages, church ceremonies provided for people's religious lives – baptisms, christenings, marriages, confession, the last rites for the dying and burying the dead
3. The Church played a big part in government: Bishops sat in the House of Lords. They could raise an army for the king in times of war. Bishops had large manors with peasants to do the work.
4. The church was usually the largest and most impressive building in a village or town, the priest often the most educated person (could usually speak / read Latin).
5. The Church was very wealthy—everybody paid a tax called a tithe to it. This was 10% of your monthly income. The Church owned 33% of English land.
6. Anybody who was not a Roman Catholic Christian was persecuted (very badly treated)
7. Many people went on a pilgrimage to try to reduce the time they spent in Purgatory. A person who had been on pilgrimage would wear a badge to show which shrine he had visited.

Social purpose of the Church: Local churches and the surrounding land used for feasts, fayres, theatre, circuses, concerts, choirs, sports, games, parties, and education (Sunday school).

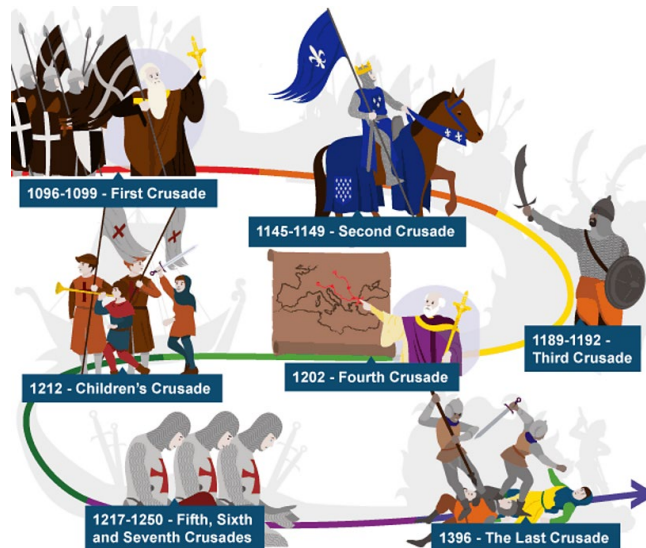
Church role in law and order: God would know guilt so if no evidence = Trial by ordeal (hot-iron / hot water – if you blistered after 3 days then you were guilty + trial by cold water – if “blessed water” rejected you (you floated) then guilty). Done by priest in local church.

Challenge yourself to learn more about Pre-historic Britain here:

<https://www.bbc.co.uk/bitesize/guides/znjnb9q/revision/1>

The Crusades 1096 - 1396

1. Crusades = series of religious wars between Christians and Muslims, fought to secure control of holy sites considered sacred by both groups.
2. For Jews, Christians and Muslims, Jerusalem was, and still is, a holy city.
3. In 1095, Pope Urban II promised the people of Europe forgiveness of their sins if they went on a Crusade to the Holy Land win back Jerusalem for Christianity.



Why people joined?

- Gain land / gain a title / for adventure / free the Holy Land / go to Heaven / avoid paying taxes / peer-pressure / become rich

What did Europe gain from Crusades?






- Maths (place values / numbers), silk, lemons, cotton, mirrors, compasses, wheelbarrows, chess, slippers, syrup, sugar, nutmeg, field irrigation, coffee, maps, concentric castles, trebuchets, rice.

History – KPI 4: The Medieval Church & KPI 5: The Crusades

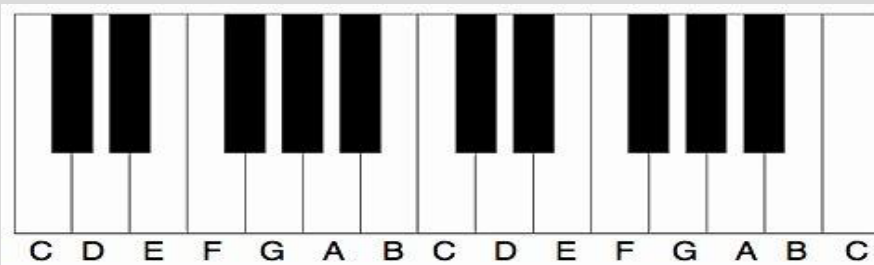
Key term	Definition
Doom Painting	A painting showing Heaven and Hell.
Pope	Leader of the Roman Catholic Church, based in Rome
Holy relics	Remains of a holy person or object, used for prayer
Cleric / Clergy	Anybody who worked for the church
Tithe	Tax paid to the Church (10% income)
Purgatory	A spiritual place where your soul awaited Heaven
Christendom	Christian world in the Medieval period
Monks/Nuns	Men/women who devoted (gave) their lives to God
Pilgrimage	A journey to a special religious place
Chastity	Not marry / flirt / have sexual relations
Abbot / Abbess	In charge of an Abbey (large monastery)
Vows	Holy or sacred promise
Illuminate	To decorate a manuscript with art
Alms	Charity given to the poor / sick
Prior / Prioress	In charge of a Priory (small monastery)
Bishop	An important church leader

Diagrams:

The different beat lengths

Note	Name	Beats
	Semi Breve	4 beats
	Minim	2 beats
	Crotchet	1 beat
	Quaver	1/2 beat
	Semi Quaver	1/4 beat

The order of the notes on the Treble clef stave



Chords we are using:

C = C E G F = F A C G = G B D

Key content

Making up your own music is called **composition**. People who write music are called **composers**. When it comes to composing music there are no set rules. You can write a song any way you want to. The important thing is that you enjoy creating it. You are going to be composing your own short song (verse and chorus) using melody and chords. Don't forget you can use BandLab to work on your ideas at home.

Key vocab

Word	Definition
Chords	2 or more notes played together
Melody	The main tune
Composition	A piece of music you have written
Time Signature	How many beats in a bar
Notation	Writing music on the 5 lines (stave)
Stave	5 lines you write music on
Treble Clef	A musical symbol that tells you the order of the notes on the stave
Verse	A repeating section where the lyrics change
Chord Sequence	A collection of chords put together
Dynamics	The volume of the music

More info can be found here: **Listening**

Ed Sheeran
Taylor Swift
Adele

David Gray
Norah Jones
Sam Fender

Lady Gaga
Paul McCartney
Lin-Manuel Miranda

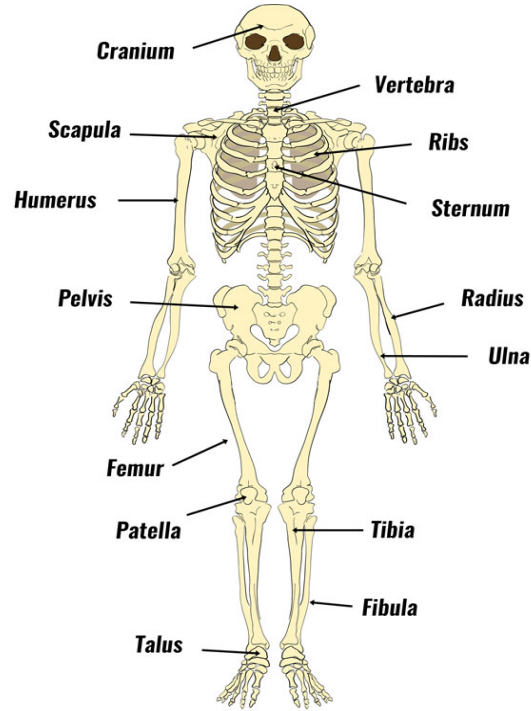


Key Content

Major Bones

Major Muscles

The Heart



The Muscular System

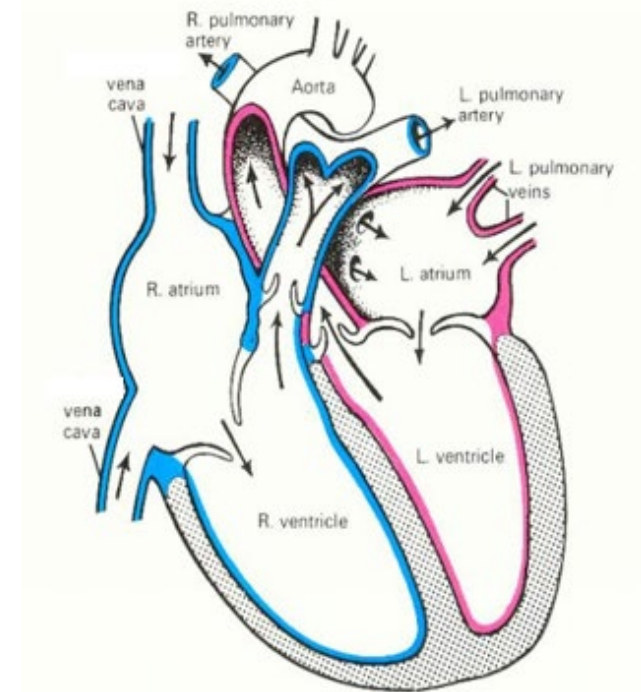
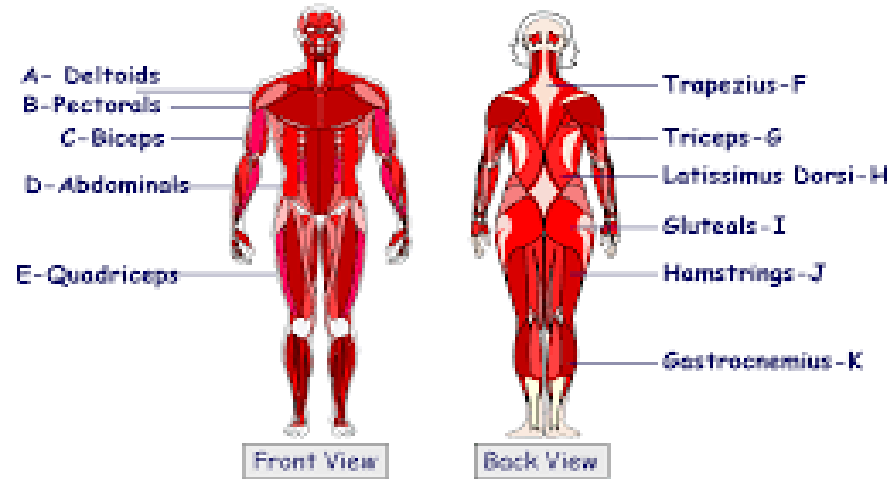


Figure 5.14 Direction of the flow of blood through the heart.

4. HEALTHY ME (Term 4)

BONES

Name major bones in the body



MUSCLES

Name major muscles in the body and some muscle pairs



CARDIO-REPIRATORY

Label the heart and know the direction of blood flow



Key word / Term	Definition
Heart Rate	A measure of how many times your heart is beating in a minute
Pulse	A rhythmical expansion of the arteries as blood is pushed through, typically as felt in the wrists or neck
Response	A reaction to a stimulus on your senses (sight, smell, touch, sound, taste)

Year 7 RE The Environment

Key word	Definition
Creation	Belief that the world and all living things were made by God
Stewardship	The idea that humans are responsible for looking after the Earth
Sustainable	Using natural resources in a way that does not harm the environment
Sacred	Something that is holy, special, worthy of respect
Nature	Plants, animals, land, water and air that make up the natural world
Respect	Treating the Earth and all living things with care and consideration
Compassion	Caring for plants, animals and people in the world
Pollution	Harmful substances that damage the environment
Conservation	Protecting natural resources, like forests, rivers and wildlife
Harmony	Living in balance with nature and all living things
Cycle	Natural patterns, like the water cycle, seasons
Responsibility	Being accountable for how we treat the planet
Community	The idea that humans, animals and plants are all connected and rely on each other



Key Content:

Many people believe that we should look after the environment, but the reasons can come from religion or other worldviews. The environment includes everything around us – the air, water, plants, animals, and land. How we treat it shows whether we live responsibly and respectfully.

In **Christianity**, people believe that God created the world and everything in it. Humans are seen as caretakers, or stewards, of the Earth. This means Christians think it is their responsibility to protect nature, care for animals, and avoid pollution. The Bible teaches that the world is God's creation, so it should be treated with respect.

In **Islam**, the Earth is also seen as a gift from Allah. Humans are considered stewards, called *khalifah*, who must look after the planet. Islamic teachings encourage using natural resources wisely, helping others, and avoiding waste. The Qur'an teaches that everything in nature has a purpose, so people should live in balance with the world around them.

Hinduism also encourages respect for nature. Many Hindus believe that all living things have a soul (*ahimsa* teaches non-harm) and that rivers, trees, and animals are sacred. Caring for the environment is part of dharma, which means doing the right thing. Festivals like Diwali remind people to celebrate light and goodness, which can include respecting the natural world.

People who follow **Humanism**, a non-religious worldview, also care about the environment. Humanists believe that we have a responsibility to protect the Earth for ourselves and future generations. They rely on science and reason to understand problems like climate change and pollution and make decisions that are good for people, animals, and plants.

Even though these worldviews are different, they share common ideas. They all teach that humans should be responsible, care for the planet, and live in balance with nature. By understanding these teachings, we can learn to protect the environment, reduce harm, and make the world a better place for everyone.

Science Part 1: Organ Systems

1. Cellular Life & Exchange

- **Unicellular Organisms:** Organisms made of only **one cell** (e.g., **Amoeba**, **Bacteria**, or **Yeast**).
- **Substance Exchange:** They rely on **diffusion**—the movement of particles from a high to low concentration—to move substances across their cell membrane.
- **Multicellular Limits:** Larger organisms cannot rely on diffusion alone because their **surface area to volume ratio** is too small; the distance to the center of the body is too far for diffusion to happen quickly enough.
- **Amoeba Movement:** They use **pseudopodia** ("false feet") to crawl.

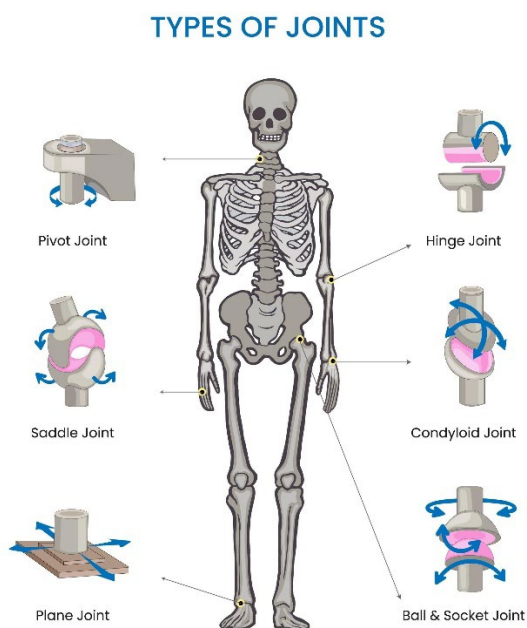
2. The Respiratory System

- **Inhalation:** The **diaphragm** (muscular sheet) contracts and moves down. The **volume** of the chest increases, which causes the **pressure** to decrease, drawing air in.
- **Exhalation:** The diaphragm and **intercostal muscles** relax.
- **Gas Exchange:** Occurs in the **alveoli** (tiny air sacs).
 - **Gases:** Oxygen moves into the blood; Carbon Dioxide moves out.
 - **Adaptations:** Alveoli have a **huge surface area**, are **one cell thick** (short diffusion path), and have a **good blood supply**.

3. The Circulatory System

- **Function:** To transport substances (oxygen, glucose, waste) around the body.
- **Components:** The **heart**, **blood vessels**, and **blood**.
- **Blood Composition:**
 - **Red Blood Cells:** Contain **haemoglobin** to bind and carry oxygen.
 - **White Blood Cells:** Fight infection and pathogens.
 - **Platelets:** Help the blood to **clot** (scab) after a cut.
 - **Production:** All blood cells are made in the **bone marrow**.

4. Skeleton and Muscles



- **Joints:** Where two bones meet.
 - **Hinge Joint:** Moves in one plane (e.g., **Knee** or **Elbow**).
 - **Ball and Socket:** Moves in many directions (e.g., **Hip** or **Shoulder**).
 - **Fixed Joint:** No movement (e.g., **Cranium/Skull**).
 - **Connections:** **Tendons** connect muscle to bone; **Ligaments** connect bone to bone.
 - **Protection:** **Cartilage** reduces friction/absorbs shock; **Synovial fluid** lubricates the joint.
 - **Movement:** Muscles only **pull** (they cannot push). They work in **antagonistic pairs**—as one contracts, the other relaxes (e.g., Biceps and Triceps).
 - **Biomechanics:** The study of how muscles and bones work together as levers.
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Part 2: Sound and Light

1. Properties of Sound

- **Creation:** Sound is created by **vibrations**.
- **Frequency:** Measured in **Hertz (Hz)**. High frequency = **High Pitch** (fast vibrations).
- **Loudness:** Measured in **Decibels (dB)**. Large **amplitude** = **Loud sound**.
- **Mediums:** Sound travels fastest in **solids** (particles are closest) and cannot travel in a **vacuum** (no particles).
- **Echo:** A reflection of sound off a surface. **Echolocation** is using echoes to find the location of objects (used by bats/subs).

2. Properties of Light

- **Interaction:** Light can be **reflected**, **absorbed**, or **transmitted**.
- **Opacity:** **Opaque** objects do not allow any light to pass through.
- **Reflection:**
 - **Smooth surface:** Regular reflection (clear image).
 - **Rough surface:** **Diffuse** reflection (light scatters).
 - **Law of Reflection:** The **Angle of Incidence** = **Angle of Reflection**. Both are measured from the **Normal** (a line at 90° to the mirror).
- **Refraction:** When light enters a denser medium (like glass), it slows down and bends **towards the normal**.

3. Colour and Vision

- **Dispersion:** Splitting white light into a spectrum (rainbow) using a prism.
- **Primary Colours:** Red, Green, and Blue.
 - Red + Green = Yellow.
 - Red + Blue = Magenta
 - Blue + Green = Cyan
- **Pinhole Camera:** A simple device used to model how the **human eye** forms an image.
- **Ray Diagrams:** Use straight lines with arrows to show the path of light (transmission).

Term 4 Year 7 Grammar

❖ THE ARTICLE UN/UNA/UNOS/UNAS

Remember the word un/una means "a or an" in English. We use it in front of a noun

We use "un" when the noun is masculine; Un perro – a dog

We use "una" when the noun is feminine; Una casa – a house

If we have more than one we will apply the same rule but with the article in plural unos/unas meaning some

Example: unos perros – some dogs

Unas casas – some houses

❖ THE ARTICLE EL/LAS/LOS/LAS

Remember the word El/la means "the" in English. We use it in front of a noun

We use "el" when the noun is masculine; el perro – the dog

We use "la" when the noun is feminine; la casa – the house

If we have more than one we will apply the same rule but with the article in plural los /las meaning the;

Example: los perros – the dogs

❖ PLURALS

To form the plural of a noun you usually add an -s to the end of the word: Perro – perros

When the word ends in consonant you will add -es to the end of the word: Ratón – ratones

If the word ends in consonant -z you will replace the letter z for -ces:

Pez – peces

❖ ADJECTIVES

Lápiz- lápices

The adjectives in Spanish go after the noun (opposite than in English)

They will have to change the ending depending whether the noun is masculine or feminine.

For masculine nouns the adjective will end in -o; for feminine nouns the adjectives will end up in -a

There may be some occasions that our adjectives will end in -e and we won't need to change it.

El perro blanco – the white dog

El perro grande – the big dog

La casa blanca – the white house

La casa grande – the big house

When the noun is plural, our adjective will have to agree also with the plural noun by adding an -s at the end

Unas muñecas blancas – some white dolls

Unos chicos aburridos – some bored boys

To summarise, when using adjectives, they need to agree with gender (masc or fem) and number (plural) of the noun.

❖ VERBS

In Spanish, the form of the verb in the dictionary or the most basic form of a verb is the INFINITIVE FORM.

In Spanish we find the infinitive looking at the endings (-AR -ER -IR) in English they are followed by the word to

Hablar (-AR) – TO Speaking

Comer (-ER) – TO Eat

Vivir (-IR) – TO live

Then our verb will change depending of the person that is doing the action

I - yo

We – nosotros/nosotras

You (singular) - tú

You (plural) – vosotros/vosotras

He/she/it – él/ella

They –ellos/ellas

The present tense is used to say what you normally do or what you do now. To form this tense you follow three simple steps

1. Find the infinitive of the verb being done

eg: to listen – escuchar

2. Take off the 2-letter ending (-ar / -er / -ir) so that you're left with the "stem" of the verb

eg: escuch

3. Add one of the following endings, depending on who or what is doing the verb, and what type of verb it is

The person that does the action	-AR VERBS	-ER VERBS	-IR VERBS
Yo (I)	-o	-o	-o
Tú (You singu)	-as	-es	-es
Él /Ella (he, she)	-a	-e	-e
Nosotros (we)	-amos	-emos	-imos
Vosotros (you, pl)	-áis	-éis	-ís
Ellos/ellas (They)	-an	-en	-en

You must learn this verb endings for a future test.

Example:

You will be given a verb e.g HABLAR and told to write the Spanish for "We talk"

You will take off the -AR + replace it for -AMOS to make "HABLAMOS" which if the correct answer.

TOP IRREGULAR VERBS WE HAVE LEARNT THIS TERM

SER – to be

I am – Soy

You (s) are – eres

He/she/it is – es

We are - somos

You (pl) are – sois

They are - son

TENER – to have

I have– tengo

You (s) have – tienes

He/she/it has – tiene

We have - tenemos

You (pl) have – tenéis

They have - tienen

LAST PAGE