Maths

Unit I 🎓
Place value within 10,000,000
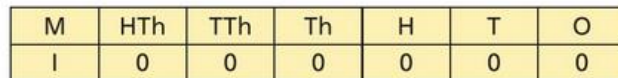
We will need some maths words. Can you explain the words you have met before?

In this unit we will …
⚡ Learn to read and write numbers to 10,000,000
⚡ Partition, compare and order numbers up to 10,000,000
⚡ Round numbers
⚡ Work with negative numbers

ten thousands (10,000s)

hundred thousands (100,000s)

millions (1,000,000s)   ten million (10,000,000)

place value   partition   interval

estimate   compare   order

rounding   negative   positive

Do you remember what this is called? We will use it to help identify the place value of digits in a number.

M	HTh	TTh	Th	H	T	O
1	0	0	0	0	0	0

We will use this too! Can you find what the unlabelled values are?

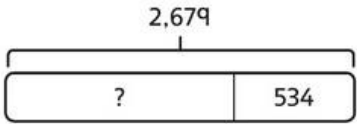-50   0   50

Maths

Unit 2
Four operations ❶

In this unit we will …
- ⚡ Use written methods for addition and subtraction
- ⚡ Find common factors and multiples
- ⚡ Learn about prime, square and cube numbers

Do you remember what this model is called? We will use it to represent different calculations.

What calculation is being shown here?

2,679

?	534

We will need some maths words. Can you identify and explain the ones you already recognise?

column addition	remainder	factor

common factor	common multiple

prime	composite

squared (x^2)	cubed (x^3)

We could use this to help us represent division calculations. Can you explain how it has been used here?

$750 \div 15$

750

250	250	250

50	50	50	50	50	50	50	50	50	50	50	50	50	50	50
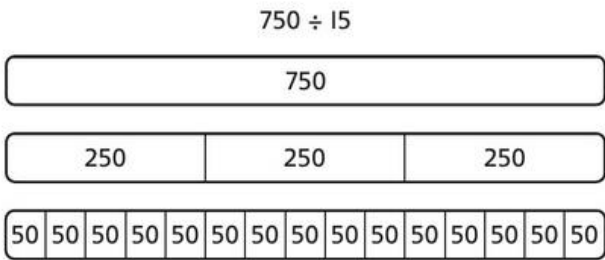
Maths

Unit 3
Four operations ❷

In this unit we will …
- ⚡ Use written methods for multiplication and division
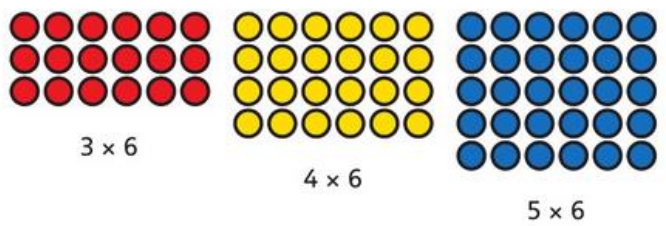- ⚡ Learn about the order of operations
- ⚡ Solve mental calculations

We will need some maths words. Can you identify and explain the ones you recognise?

factor   short division   long division

column multiplication   long multiplication

order of operations   brackets   inverse operation

Do you remember what this model is called? We will use it to represent different calculations. Can you tell what calculation is being represented here?

16

| 10 | 3 | 3 |

We will need to remember multiplication facts. We could use arrays of counters to help us!

3 × 6

4 × 6

5 × 6

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Life in all its Fullness
John 10:10

Knowledge Organiser

Unit 4 🎓
Fractions ①

In this unit we will …
- ⚡ Simplify fractions
- ⚡ Compare and order fractions
- ⚡ Add and subtract fractions including mixed numbers
- ⚡ Solve problems involving adding and subtracting fractions

Do you remember how to add two fractions where one denominator is a multiple of another?
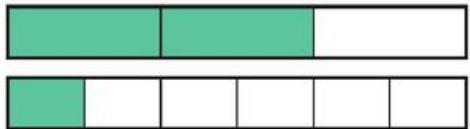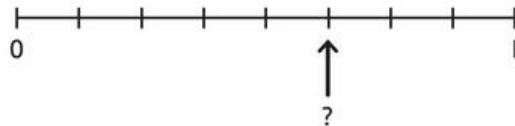
$\frac{2}{3} + \frac{1}{6}$

$+$ $\frac{5}{6}$
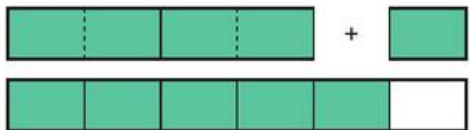
$\frac{2}{3} + \frac{1}{6} = \frac{5}{6}$

We will need some maths words. Do you know what they all mean?

numerator	denominator
common denominator	common factor	equivalent
simplify	simplest form	factor
highest common factor	lowest common multiple (LCM)
compare	order	improper fraction	mixed number
convert	lowest common denominator
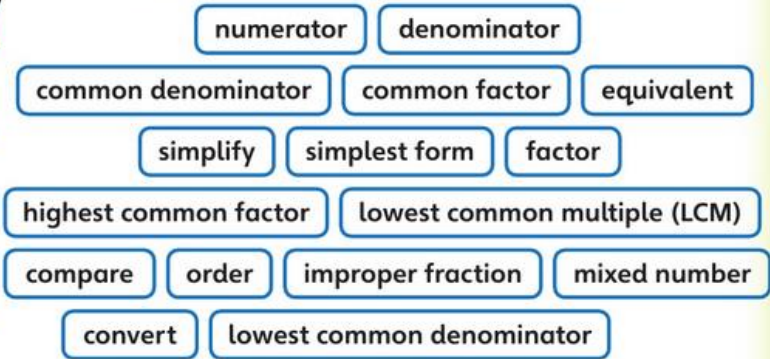
We also need to be able to find where a fraction is on a number line.

0 ————————————— 1
?

Unit 5
Fractions ②

In this unit we will …

⚡ Multiply any fraction by a whole number or another fraction

⚡ Divide a fraction by a whole number

⚡ Solve problems involving all four operations with fractions

⚡ Solve problems involving a fraction of an amount

You will be able to multiply a fraction by a fraction by showing each fraction on the side of a grid. What is $\frac{1}{2} \times \frac{3}{4}$?
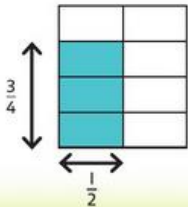
We will need some maths words. How many of these can you remember?

numerator   denominator   whole number

mixed number   convert   simplify   integer

improper fraction   proper fraction

We can use a fraction strip above a number line to help us multiply a fraction by a whole number and convert between improper fractions and mixed numbers. What is $\frac{2}{3} \times 4$ as a mixed number?

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Life in all its Fullness
John 10:10

Knowledge Organiser
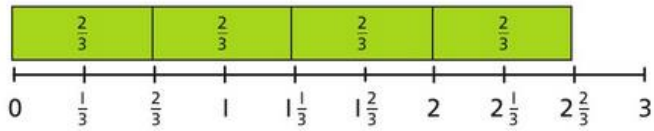
Unit 6 🎓
Measure – imperial and metric measures

In this unit we will …

⚡ Choose the most appropriate metric units of measurement to measure different things

⚡ Convert between metric units, between imperial units and from one to the other

⚡ Solve problems involving metric units

⚡ Recognise the difference between metric and imperial units of measurement and what they are worth

What is I inch about the same as?
What are 5 inches about the same as?

5 inches

I inch	I inch	I inch	I inch	I inch
2·5 cm	2·5 cm	2·5 cm	2·5 cm	2·5 cm

Here are some maths words we will be using. Which words are new to you?

metric | imperial | units of measurement (or measure)

grams (g) | kilograms (kg) | pounds (lbs)

ounces (oz) | feet (ft) | yards | millilitres (ml)

litres (l) | pints | capacity | millimetres (mm)

centimetres (cm) | metres (m) | kilometres (km)

inches (in) | mass | miles | length | convert

conversion table | conversion graph

If there are 100 cm in a metre, how would you convert 4·5 m into centimetres?
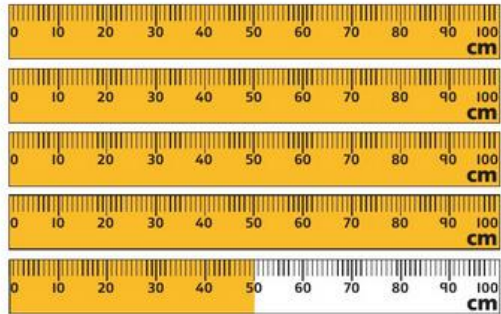
I m = 100 cm

English

Star of Fear, Star of Hope
by Jo Hoestlandt

Star of Fear, Star of Hope

JO HOESTLANDT · ILLUSTRATIONS BY JOHANNA KANG
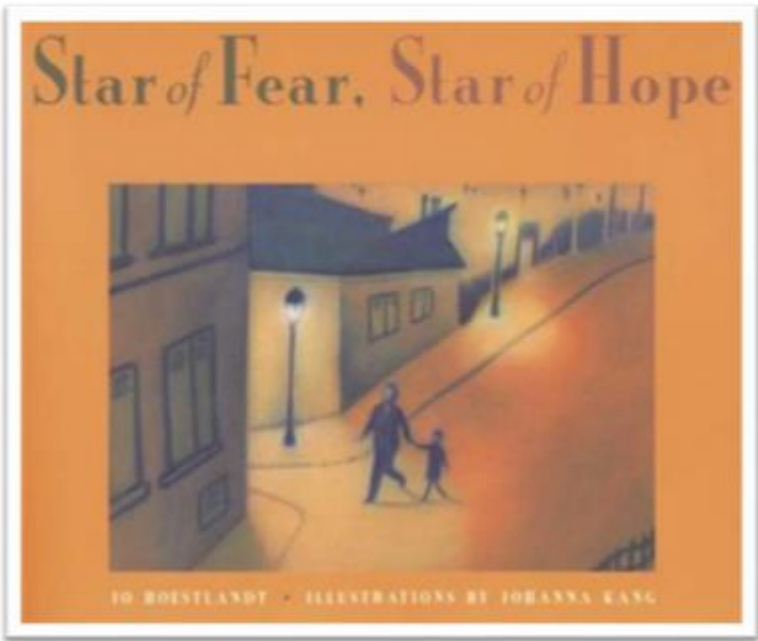
Year 6 *Pathways to Write*: Autumn 1

Outcome: Fiction – Flashback story

Writing outcome:
To write a story with a flashback from another character's point of view

Greater depth writing outcome:
To write a story with a flashback from another character's point of view including a section in recount genre *e.g. diary, letter, eye-witness account*

Additional writing opportunity:
Write a non-chronological report to link with topic work on World Wars, conflict, refugees

🔑 *Pathways to Write* keys		
Gateway keys (non-negotiables/basic skills)	**Mastery keys** (year group national curriculum expectations)	**Feature keys** (vocabulary, manipulating sentences and tense, structure)
• Use devices to build cohesion within a paragraph • Link ideas across paragraphs using adverbials of time, place and number • Use of inverted commas and other punctuation to punctuate direct speech • Use Y5 standard punctuation • Use consistent and correct tense	• **Use expanded noun phrases to convey complicated information concisely** • **Use passive verbs** • **Link ideas across paragraphs using a wider range of cohesive devices** • **Integrate dialogue to convey character and advance the action** **For suggested information text at the end of the unit:** • **Use a colon to introduce a list** • **Punctuate bullet points consistently**	• Use small details for characters to amuse, entertain or create drama • Engage reader through selecting effective grammar and vocabulary e.g. manipulating sentence length, figurative language • Manipulate tense and verb forms • Manipulate structure using a flashback • Use paragraphs to vary pace and emphasis

English

THE PLACE FOR ME:
STORIES ABOUT THE WINDRUSH GENERATION

by Dame Floella Benjamin *et al.*
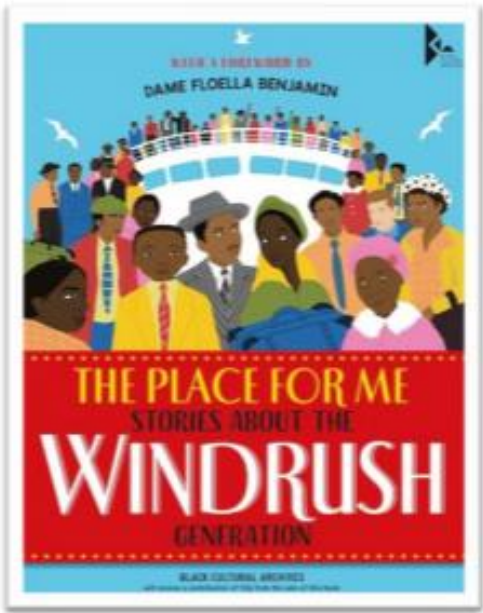
Year 6 *Pathways to Write*: Autumn 2

Outcome: Report writing – Information, recount and explanation hybrid text

Writing outcome:
To write an information leaflet about a period in Black history (hybrid text type including information, recount and explanation).

Greater depth writing outcome:
To write an information leaflet about a core period in Black history with extra sections about other periods (hybrid text type including information, recount and explanation).

N.B. Black with a capital B is used here as a term for a group of people with shared African heritage and culture.

Pathways to Write keys

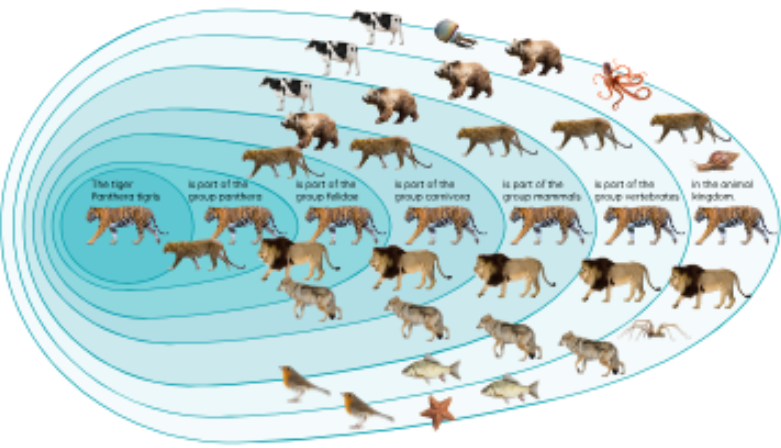| Gateway keys (non-negotiables/basic skills)	Mastery keys (year group national curriculum expectations)	Feature keys (vocabulary, manipulating sentences and tense, structure)
• Use expanded noun phrases to convey complicated information concisely • Apply persuasive language • Use passive verbs • Link ideas across paragraphs using a wider range of cohesive devices • Use clear organisational features	• **Enhance meaning through selecting appropriate grammar and vocabulary** • **Use modal verbs and adverbs to indicate degrees of possibility** • **Use brackets, dashes or commas to indicate parenthesis**	• Use concise word choices • Select language to appeal to the reader • Clarify technical vocabulary • Adapt formality to suit purpose and audience • Provide well-developed factual information for the reader • Manipulate style for specific purpose and audience (hybrid text) • Include a summarising statement

Science

Classifying big and small

Carl Linnaeus

Carl Linnaeus developed the Linnaean system for sorting and classifying living things according to shared characteristics.

The tiger Panthera tigris · is part of the group panthera · is part of the group felidae · is part of the group carnivora · is part of the group mammals · is part of the group vertebrates · in the animal kingdom.

Number keys

The key is made from pairs of questions or statements.

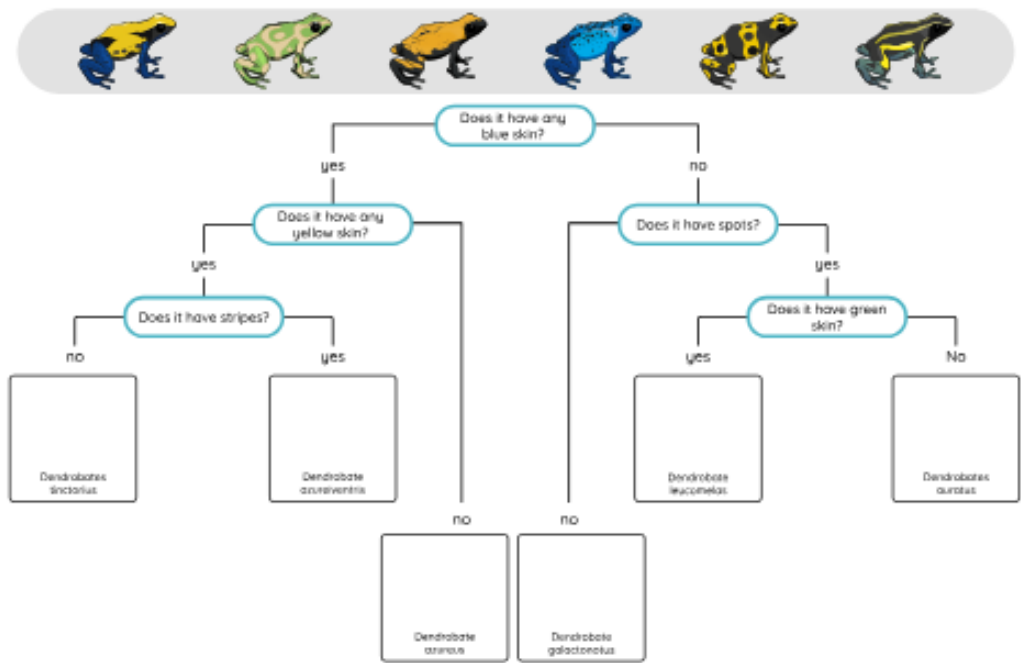The answers lead through the key until a group or name is reached.

1a	Wings are covered by an exoskeleton.	Go to 2.
1b	Wings are not covered by an exoskeleton.	Go to 3.
2a	Exoskeleton is red.	Ladybird.
2b	Exoskeleton is green.	Green beetle.
3a	Wings are broad and wide.	Butterfly.
3b	Wings are long and narrow.	Dragonfly.

Classification keys

Classification keys can be used to sort and classify living things. They can use questions or statements.

Branching keys

Each branch of the key has a question. The answers will eventually lead to a final group or name.

Does it have any blue skin?
- yes → Does it have any yellow skin?
  - yes → Does it have stripes?
    - no → Dendrobates tinctorius
    - yes → Dendrobate azureiventris
  - no → Dendrobate azureus
- no → Does it have spots?
  - yes → Does it have green skin?
    - yes → Dendrobate leucomelas
    - No → Dendrobates auratus
  - no → Dendrobate galactonotus

Science

Classifying big and small

Kapow Primary

Vertebrates: animals with a backbone.

Fish	Amphibians	Reptiles	Birds	Mammals
• Wet scales. • Soft eggs. • Cold-blooded. • Gills.	• Moist skin. • Jelly-coated eggs. • Cold-blooded. • Gills/lungs/breathe through skin.	• Dry scales. • Leathery eggs. • Cold-blooded. • Lungs.	• Feathers. • Hard-shelled eggs. • Warm-blooded. • Lungs.	• Fur. • Produce milk. • Warm-blooded. • Lungs.

Invertebrates: animals without a backbone.

Worms	Snails	Spiders (arachnids)	Insects
• Soft bodied. • Segmented.	• Soft bodied. • External shell.	• Exoskeleton. • Two body segments. • Eight legs.	• Exoskeleton. • Three body segments. • Six legs. • Two pairs of wings (mostly.)

Plants

Mosses	Ferns	Conifers	Flowering plants
• Simple leaves. • No roots. • Spores.	• Feathery leaves (fronds.) • Roots. • Spores.	• Needle-like leaves. • Roots. • Seeds in cones.	• Broad or long leaves. • Roots. • Seeds (often in fruits.) • Flowers.

Micro-organisms: organisms that are too small to see with the naked eye, including bacteria, protists and some fungi. Bacteria are classified according to their shape:

Spherical	Rod bacteria	Comma	Spiral	Corkscrew

Science

Science - Light and reflection

light	A store of energy that can be seen with our eyes.
light source	Where light comes from.
light ray	A narrow beam of light.
luminous	Something that gives off light.
non-luminous	Something that does not give off light.
transparent	A material that allows light to pass through with minimal scattering or reflection so an object is clearly visible.
translucent	A material that allows some light to pass through. Light may be scattered, causing objects behind to appear fuzzy or distorted.
opaque	A material that blocks or absorbs all light, preventing objects on the other side from being seen.

Light travels in a **straight** line.

The holes must line up exactly for the light to pass through and show on the screen. This is because light cannot move around objects – it travels in a straight line.

torch

cards with holes

screen

Shadow: a dark area caused by something blocking the light.

A **shadow** is formed when an **opaque** object is in the pathway of light because light travels in straight lines.
Shadows have the same shape as the objects that cast them.
The size of a shadow changes as the light source moves.

Light can change direction when it reaches a different material. **Reflection** is when light does not pass through a material and changes direction.

Shiny surfaces **reflect** light **uniformly**, whereas rough surfaces **scatter** the light rays.
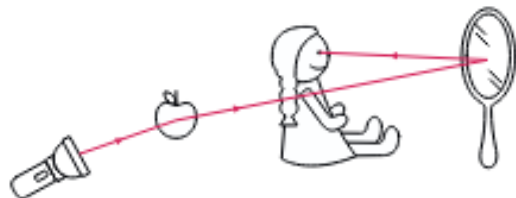
A **ray diagram** is a scientific drawing to show the pathway of light. It can be helpful to explain observations.
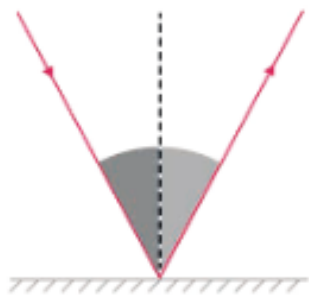
On a smooth surface, the angle of the **incoming ray** is the same as the angle of the **reflected ray.**

Light needs to enter the eye for us to see. It enters through the **pupil.**

pupil
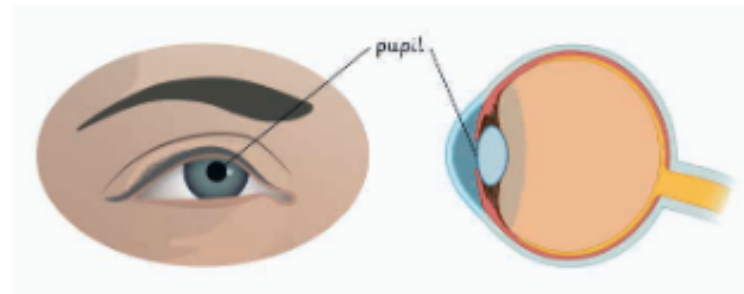
Light may come directly from a **luminous** object or reflect off a **non-luminous** object.

Mirrors are useful in lots of situations:

- Looking at the back of your hair when you get it cut.
- Dentists looking at the inside of the mouth.
- Rear view and side mirrors in a car to look at your surroundings in a vehicle.

Periscopes are long, vertical tubes that contain a set of mirrors to give a view above the position of the eye.

Religious Education

RELIGIOUS EDUCATION
Y6 A1 KNOWLEDGE MAT

DIOCESE OF LICHFIELD · THE ST. BART'S ACADEMY TRUST

WHAT WOULD JESUS DO?

OUTCOMES

- To understand that Christians find out about Jesus from the Gospel accounts.
- Explore different features of the Gospels, e.g., teachings, parables, narratives and what these teach about how Jesus wants Christians to live.
- Explore Jesus' teaching in the Sermon on the Mount and how Christians interpret this teaching.
- Make clear connections between Gospel texts and how Christians live together and as individuals.
- Relate Jesus' teaching to their own lives and discuss how far these teachings are relevant to them.

GOSPEL	MIRACLE
Means 'good news.' The books of the Bible which are accounts of Jesus' life.	An amazing event which cannot be explained by the laws of nature. Christians believe that they are signs to show Jesus was God incarnate.
PARABLE	**SERMON ON THE MOUNT**
Stories that Jesus used to teach a lesson about how to live in the Kingdom of God.	A collection of teaching by Jesus, recorded in the Gospel of Matthew they emphasise teaching about how people should live.

Christians believe Jesus' teaching favour serving the weak and vulnerable.	Christians believe Jesus shows people how to live, setting an example for good behaviours and challenging bad behaviours.
Christians believe that Jesus brought 'Good News' to all people, especially the most vulnerable.	Christians believe that be following Jesus' teaching they bring the good news of the Gospel to life.

Religious Education

RELIGIOUS EDUCATION
Y6 A2 KNOWLEDGE MAT

DIOCESE OF LICHFIELD • THE ST. BART'S ACADEMY TRUST

WHAT DOES IT MEAN IF GOD IS HOLY AND LOVING?

OUTCOMES

- Identify different genre of Biblical texts
- Use technical words to describe ideas about God
- Express their own ideas about God
- Explain connections between biblical texts and Christian ideas of God
- Show an understanding of how Christians put their beliefs about God into practice in worship.
- Consider how biblical ides and teachings about God as holy and loving might make a difference in the world

PSALMS	HOLINESS
The book of Psalms contains prayers and songs used by God in private and communal prayer and worship.	God's holiness emphasises ideas of purity and justice— God hates sin and by His nature is separate from it.
WORSHIP	**HUMANIST**
Worship is about your attitude towards God. It is recognising that God is worthy of thanks and praise. It can be individual or corporate	Humanists do not believe in a god. They believe it is possible to live a good and fulfilling life without following a traditional religion.

Christians believe that an important part of God's character is that He is both holy and loving.	Christians express their ideas of God through their art, architecture, and worship songs.
Christians believe that God forgives all those who admit their failings— so that they can be His friend.	Christians believe that Jesus has paid the price of our sins through dying on the cross.

Kapow Primary

Geography – Why does population change?

Map showing global population density

Number of people per km² of land

No data 0 2 5 10 20 50 100 200 500 1,000
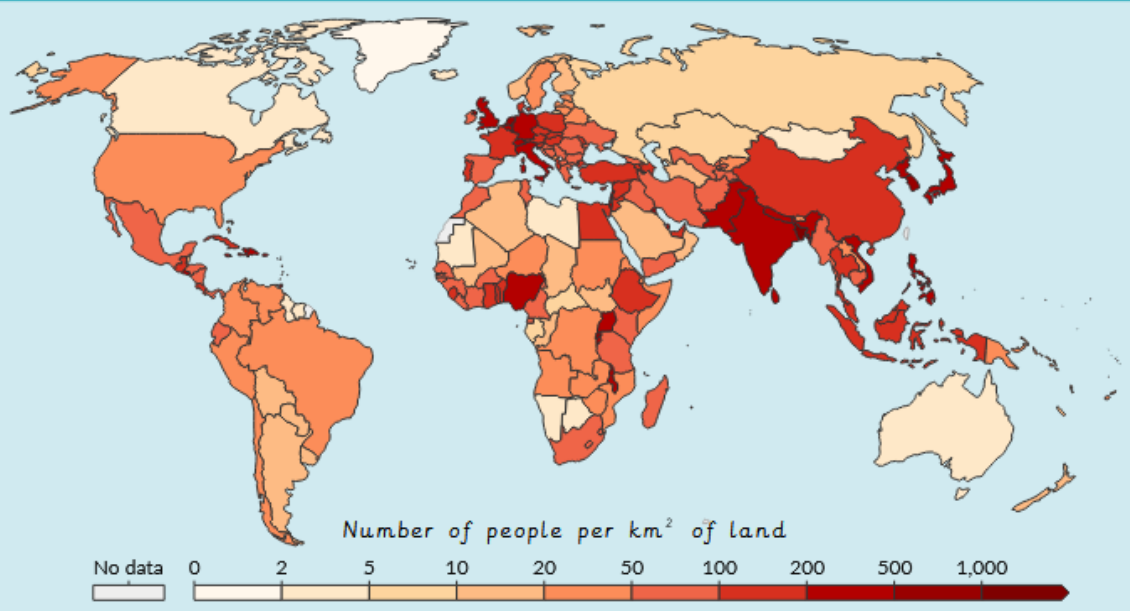
Courtesy of the World Bank and subject to the Creative Commons Attribution 4.0 International License (CC BY 4.0)

Courtesy of the Gapfinder and subject to the Creative Commons Attribution 4.0 International License (CC BY 4.0)

population	The number of people living in a particular place.
densely populated	An area that contains many people relative to its size.
sparsely populated	An area that has few people relative to its size.

Global population distribution

| population distribution | How people are spread across a specific area. |
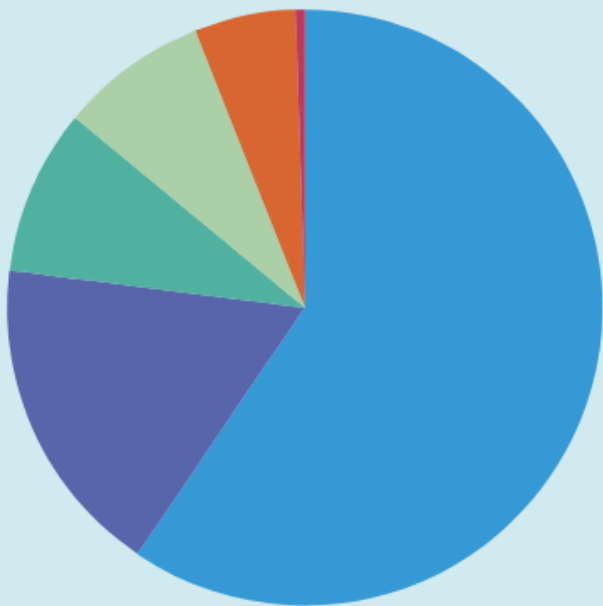
- South America 5.5%
- Oceania 0.5%
- Asia 59.9%
- Africa 17.5%
- Europe 9%
- North America 8%
- Antarctica 0%

Geography

Geography – Why does population change?

Reasons for population growth

- Increase in birth rate.
- Decrease in death rate.
- Increase in immigration.
- Consistent access to food.
- A stable job and income.
- Clean, spacious housing.

Reasons for population decline

- Decrease in birth rate.
- Increase in death rate.
- Increase in emigration.
- Little or no access to clean water.
- Little access to hospitals and medicine.
- War and conflict.
- Natural disasters.
- Spread of disease.

birth rate — The average number of babies born per 1000 people every year.

death rate — The average number of people dying per 1000 people every year.

push factors — Negative factors that push people away from a place.

pull factors — Positive factors that pull people towards a place.

Push factors	Pull factors
•To escape conflict or war.	•To find a good job.
•To escape natural disasters.	•To be closer to family and friends.
•Poverty (little money).	•Good access to healthcare.
•Little access to healthcare.	•Safety (lack of war).
•Few jobs.	•Low crime rate.
•High crime rate.	•Access to good education.
•Little food, crop failure.	•Pleasant climate and landscape.
•Harsh climate.	•To find a better quality of life.
•Little or no access to education.	•Respect for different cultures, religions and beliefs.
•Unhappy.	

migration — The act of people moving from one place to another.

refugee — People forced to leave their country to find safety because of conflict, violence or war.

History

Knowledge Organiser

Kapow

History – What was the impact of World War 2 on the people of Britain?

Adolf Hitler	The leader of the Nazi party and Chancellor of Germany.	cultural exchange*	People from different places sharing and learning about each other's way of life.
advancement*	The act of progressing or moving forward.	Nazi Party	The political group led by Adolf Hitler in Germany, which often shared harmful and extreme ideas.
alliance*	People from different places sharing and learning about each other's way of life.		
appeasement	Giving in to the demands of others to keep the peace and avoid war.	propaganda	Information given out that may not be accurate which is intended to make people believe something or to hold a particular point of view.
cause*	The reason for an action or event.		
conflict*	A disagreement or argument between people, groups or countries, often resulting in violence or war.	Windrush generation	Caribbean people who came to the UK between 1948 and 1971, especially those who arrived on a ship called the Windrush.

The Battle of Britain (July–October 1940)

The Battle of Britain had four phases and was a major air battle over southern England. The German Luftwaffe tried to destroy Britain's Royal Air Force (RAF) to prepare for an invasion. But thanks to the RAF's smart tactics, organisation and use of radar, they stopped the Luftwaffe. The RAF pilots were called 'The Few' because they defended Britain against a much larger airforce.

The Blitz (1940)

Coming from the German word blitzkrieg ('lightning war'), the Blitz was a period of time when German bomber planes began targeting British cities and industrial areas – particularly London, Coventry, Manchester, Cardiff, Belfast and Clydebank.

1

St John's C.E. Primary Academy

Life in all its Fullness
John 10:10

Knowledge Organiser

History - What was the impact of World War 2 on the people of Britain?

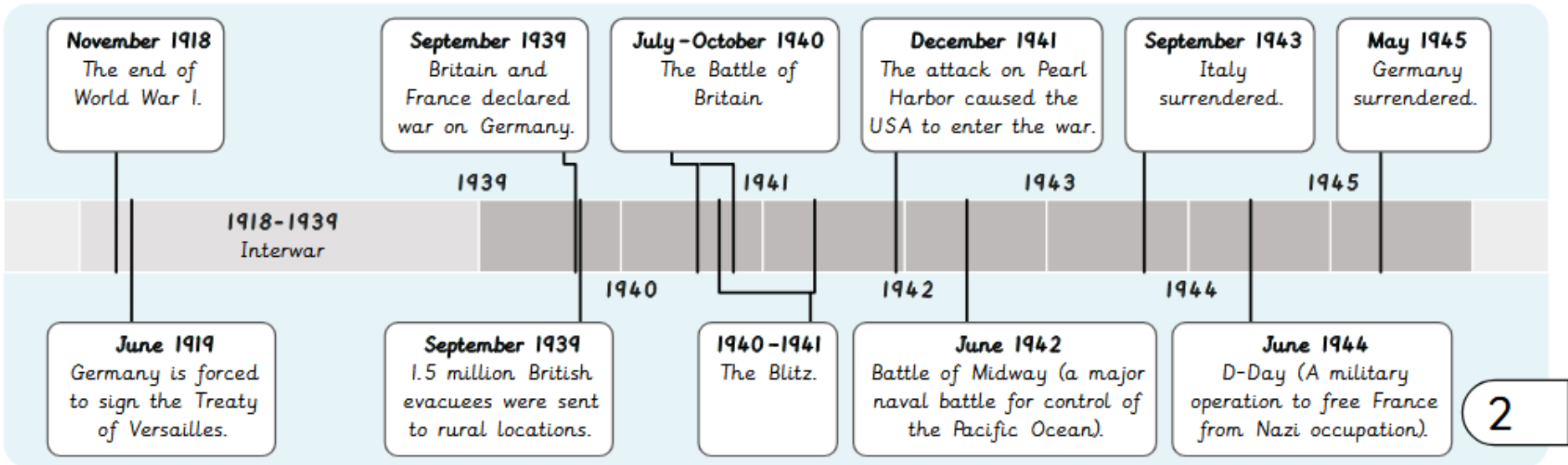Kapow

Women and children (1939-1945)

When war was declared in September 1939, 1.5 million children were evacuated to safer areas in the countryside. More followed during the Blitz in 1940 and again in 1944. Some enjoyed their time with kind hosts, but others felt homesick or struggled to adjust. With many men away, around 5 million women worked at the start of the war, and by 1943, this number grew to over 7 million. Women worked in various industries, including the armed forces.

The Windrush generation (1948-1970s)

Arriving from the Caribbean between 1948 and the early 1970s, the Windrush generation was part of a wider wave of migration from across the British Empire, including people from Africa and Asia, who helped rebuild Britain after World War 2.

The Windrush generation filled important roles in transport, healthcare and many other industries. Their cultural influence — through music, food and traditions — continues to shape Britain today.

November 1918
The end of World War 1.

September 1939
Britain and France declared war on Germany.

July-October 1940
The Battle of Britain

December 1941
The attack on Pearl Harbor caused the USA to enter the war.

September 1943
Italy surrendered.

May 1945
Germany surrendered.

1939   1941   1943   1945

1918-1939
Interwar

1940   1942   1944

June 1919
Germany is forced to sign the Treaty of Versailles.

September 1939
1.5 million British evacuees were sent to rural locations.

1940-1941
The Blitz.

June 1942
Battle of Midway (a major naval battle for control of the Pacific Ocean).

June 1944
D-Day (A military operation to free France from Nazi occupation).

2

St John's C.E. Primary Academy

Life in all its Fullness
John 10:10

Knowledge Organiser

Year 6 - Painting and mixed media

Kapow Primary

abstract	Art that doesn't necessarily look like it does in real-life – use shapes, colours, and gestural marks
analyse	To investigate something in detail to understand it
evaluate	To form an opinion about how good or useful something is
interpret	To understand and explain the meaning of something
medium	The materials used to make a piece of art
mixed-media	Art made from a combination of different materials
narrative	Is a story recalling events whether fictitious or true
respond	To create ideas formed from experiencing art of others
tableau	People recreating a scene from a story, painting in a motionless poses

Artists

David Hockney

Paula Rego

John Singer Sargent

Fiona Rae

Lubaina Himid

'The Dance', 1988 (acrylic on paper laid on canvas) by **Paula Rego**

© Bridgeman images 2022

Untitled, 1991 (oil on canvas) by **Fiona Rae.**

© Bridgeman images 2022

Design and Technology

Year 6 – Digital world: Navigating the world

Term	Definition
Biodegradable	Materials that break down and form part of the soil as part of the natural decomposition process.
Boolean	A form of data, which consists of (true) Is and (false) Os values.
Environmentally friendly	Does not cause harm to nature (animals, plants etc).
Finite	Limited in number, will eventually run out.
If statement	To instruct a program to respond based on two or more conditions (e.g. if it is below 10 degrees celcius turn on the heating; else switch the heating off).
Mouldable	Can be made into any shape.
Product lifecycle	How long an object is expected to last before becoming unusable.
Product lifespan	How long an object will last, before being recycled.
Smart	A device with processing capabilities.
Sustainable	Can be maintained.

Sometimes we need multiple products to help us achieve something. This can be a lot to carry especially if you are trekking.

GPS tracker

Compass

A map
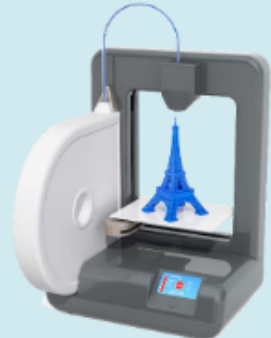
Torch or headlamp

Pedometer

Key facts

One electronic product with multiple functions could help lighten the load.

3D printing

A 3D printer can receive and output a 3D model file as a physical item.

It is very expensive to set up and fill with materials.

The models are restricted by the colour of the material the printer uses, but can be hand-painted after printing to add detail.

Sustainable materials

Cork

Developed from living trees, without causing them harm. Cork comes from bark that regenerates.

Bamboo

Grows rapidly – some species will reach 3 ft in a single day.

Design and Technology

Food - Come dine with me

Accompaniment	Something which goes well together with other foods and drinks.
Cookbook	A book which contains recipes to make various dishes or foods.
Cross-contamination	Cross-contamination is how bacteria can spread. It happens when liquid from raw meats or germs from unclean objects touch cooked or ready-to-eat foods.
Equipment	Items and objects which are needed to complete a task.
Farm	Land or water used to produce crops or raise animals for food.
Flavour	How food or drink tastes. (e.g. sour, sweet, bitter, salty)
Imperative verb	Also known as 'bossy verbs' because they tell you what to do. You put them at the beginning of a command or action. (e.g. bake, grill, add, heat).
Ingredients	Items that make up a mixture e.g. foods that make a recipe.
Method	A way of carrying out a certain process, following a list of instructions.
Nationality	Belonging to a certain group of people in a particular country.
Preparation	The process of getting ready to make something.
Processed	When foods are passed through multiple processes in a factory to change or preserve it so it keeps for longer.
Reared	To breed and raise livestock. e.g. cows.
Recipe	A set of instructions for making or preparing a food item or dish.
Target audience	A particular group or person who a product is aimed at.
Unit of measurement	The unit which you use to measure a quantity. (e.g. litres)

Key facts

The five different food groups are:
1. Carbohydrates
2. Fruits and vegetables
3. Protein
4. Dairy
5. Foods high in fat and sugar

Many countries have traditional dishes. For example: India is known for hot curries, whilst England is known for the fish'n'chips which were historically served in newspaper.

Did you know?

Hawaii produces about 1/3 of all pineapples in the world.

⚠️ You cannot mix raw meat with other ingredients, it is not safe. Remember to also wash your hands after handling raw meat.

Kapow Primary

St John's C.E. Primary Academy

Life in all its Fullness
John 10:10

Knowledge Organiser

Bletchley Park

Acrostic code	A type of code where the first letter of each word, line, or paragraph when put together spells a message.
Brute force hacking	When someone, known as a hacker, uses different types of methods, such as trial and error, to crack entry into secured information.
Caesar cipher	A way in which every letter is replaced with another letter in a fixed number of places down the alphabet.
Chip and pin system	A payment system to buy something securely where a plastic bank card, such as a debit or credit card, has a chip in it, which the card owner can access by entering a Personal Identification Number (PIN).
Cipher	Information that is written in a secret way, also known as a code.
Date shift cipher	A code derived from the date that tells you how many spaces to move each of the letters in the coded message. For example, the date 1 January 1984 written in date format becomes '01011984'. This tells you to move the first letter of your coded word 0 spaces, the second letter by 1 space etc.
Encrypt	Converting information/data into a secret code or message, to avoid unauthorised access.
Invention	A new device or process that solves a problem.
Nth letter cipher	A type of code where you choose the Nth letter of the text /code again and again until the text ends. Say N=10, then you find every 10th letter in the text/code till you reach the end of it, to reveal a secret message.
Password	A unique combination of letters, numbers or symbols that protects personal information online.
Pigpen cipher	A substitution code, where letters are exchanged for symbols, which are parts of a specific grid.
Technological advancement	When scientific discoveries are made that can lead to the development of new or existing technologies to improve on current processes in life.
Trial and error	To test a method of resolving something, and if it fails, to try another method and continue this process until success has been achieved.

Key facts

Kapow Primary

Over 10,000 people worked for Bletchley Park. Over 75% of the workers were women.

In 1943, the Colossus computer was constructed by codebreakers during World War II. This enormous machine was the world's first electronic programmable computer. It took hours rather than days and weeks to crack encrypted messages to help win the war.
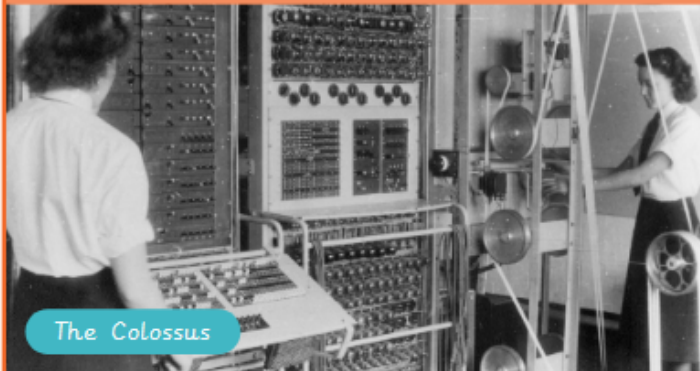
The Colossus

Enemy messages, which were encrypted, had to be written down on paper. Then they were sent over to Bletchley Park, often by motorbike.

Example:
Date shift cipher:

Visual representation:
Date used to encrypt the message: 1st January 1984
In number format this would read: 01 01 1984

Original message:	h	e	l	l	o
Each letter shifted:	0	1	0	1	1
Encrypted message:	h	f	l	m	p

a b c d e f g h i j k l m n o p q r s t u v w x y z

St John's C.E. Primary Academy

Life in all its Fullness
John 10:10

Knowledge Organiser

Introduction to Python

Algorithm	A sequence of instructions which, when followed, solve a problem.
Code (computer)	A set of instructions written in programming language, to tell a computer what to do.
Computer command	To give an order or instruction to a computer, to complete a particular task.
Decompose	To break something down into smaller chunks.
Import (software)	To pull another file into software, to place, edit and manipulate.
Indentation (programming)	In programming (for example Python), indentation is used to define a block of code.
Loop	A repeated sequence of instructions.
Nested loop	A loop, within a loop.
Random numbers	An unpredictable sequence or reveal of numbers.
Remix	Something that has been reworked to produce a varying version of the original.
Script libraries	A series of pre-written, functional codes that can be accessed and imported into a program to save time.
Variable	This could be a number or text, that can change each time the program is run and often in combination with selection to change the end result of the program.

Did you know?

Python is used to teach computers how to think for themselves!

This is sometimes known as artificial intelligence (AI) or machine-learning.

They can learn skills such as speech recognition.

Key facts

Kapow Primary

Python program to display times tables:

Try this Python code out yourself, and change the variable (input = 'x') to display a different times table chart.

```
# Times tables in Python
input = 10
# Iterate 10 times from i = 1 to 10
for i in range (1, 11) :
    print (input, 'x', i, '=', input *i)
```
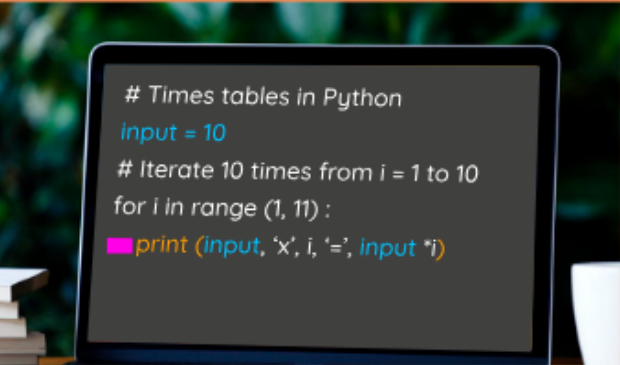
Indentation
Variable
Loop

Algorithm to make a cup of tea:

The steps in the algorithm must be followed, if we ignored step one, we would have no hot water!

1. Mug and hot water
2. Add teabag
3. Remove teabag
4. Dash of milk

Music

Year 6: Songs of World War 2

The songs of WW2 were often very sentimental. They were seen to offer hope and understanding to the feelings of those who were affected by the war effort.

Solfa ladder pitches

The pitches continue to climb, using the ' symbol to show they are an octave* higher.
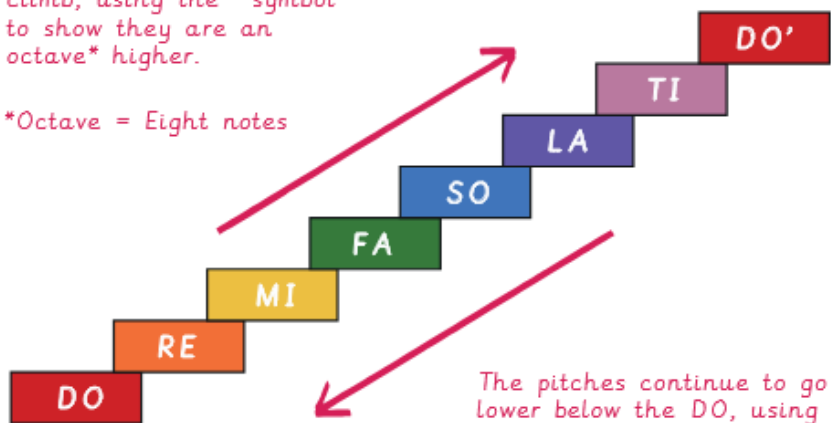
*Octave = Eight notes

DO'
TI
LA
SO
FA
MI
RE
DO

The pitches continue to go lower below the DO, using the , symbol to show they are an octave lower.

Vocabulary

Expression	Playing or singing with a personal response to the music.
Dynamics	The volume of the notes. This often changes throughout a piece of music.

Diaphragm

A dome shaped muscle, which we use to control our breath when singing.

Melody	The combination of pitch and rhythm which forms a tune.
Melody line	The notes that make a melody.
Counter melody	A melody that can be sung to complement the existing melody. It uses harmony to make it sound good, but is different to harmony because it uses a different rhythm.
Pitch	How high or low a note sounds.
Score	A written form of a musical composition.
Graphic score	A way of writing down music on the page without using traditional stave notation, instead using symbols and images to represent the music.

Music

Year 6: Film music

In this unit we explore the music used in film to accompany the action and create atmosphere.

Examples of scenes and types of music

TENSE music
- Long notes follwed by shorts notes or pauses.
- Melody switching between two notes (think of 'Jaws').
- Useful for making the viewer think something bad is going to happen.

PURPOSEFUL music
- Military drum sounds.
- A major key (happy sounding music).
- A medium tempo.
- Useful for characters getting a job done, or planning to defeat the enemy, etc.

ROMANTIC music
- Slow, long notes.
- Sweeping melodies (getting higher and lower very smoothly and quickly).
- High, twinkly notes.
- Useful for showing which characters are the love interest.

DANGER music
- Getting higher and faster.
- Using lots of instruments to create a chaotic sound.
- Useful for building a sense of impending doom.

Vocabulary

Chromatics	Notes played from the chromatic scale which can make the music sound 'creepy'.
Composition	A creative work, such as a piece of music.
Evoke	To bring forth emotions.
Graphic score	A way of writing down music on the page without using traditional stave notation, instead using images to represent the music.
Imagery	Visually descriptive music.
Improvise	Making up music as it is played or performed
Major key	A tonality where the music sounds happy or bright.
Minor key	A tonality where the music sounds sad or tense.
Modulates	Changing from one key to another (eg major to minor key).
Notate	To write symbols to represent music.
Pitch	How high or low a note sounds.
Sound effects	Effects made that imitate real sounds.
Soundtrack	The background music, together with the main songs, create the soundtrack to a film.
Tremolo	A trembling effect, achieved by creating a loud and then quiet sound with a single note.
Unison	Playing or singing notes at the same pitch, at the same time.