Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Science - Properties of Materials	Theme	Creation	Year Group	5
Key Question	What are the properties of materials and how do they change?				

What should I already know?

- A circuit must have a closed path so that electrical energy can pass through.
- Circuits can include bulbs, wires, switches, buzzers and cells connected in one loop.
- A conductor is a material which allows energy to flow through it.
- An insulator does not allow energy to flow through it.
- Metal is a material which can be hard, shiny and a conductor of electricity.
- Material is what an object is made from.
- Materials which are insulators are rubber, plastic and wood.

Key learning:

- Materials can be grouped according to their properties. Properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.
- An electrical conductor is a material that allows electricity to flow through it, whereas an electrical insulator is a material that does not allow electricity to flow through it.
- Thermal insulators are materials which do not allow heat to travel through them easily. Thermal insulators help to keep hot things hot and cold things cold.
- A comparative test explores the relationship between variables - what will change, what will be measured and what will be kept the same.
- Materials have specific uses based on their properties - metals are good conductors of electricity and heat whereas plastics are good insulators of electricity.

Insulating heat experiment variables

independent variable (what will change) - the material that the beaker is wrapped in.

dependent variable (what will be measured) - the temperature of the water over time

controlled variable (what is kept the same) - the temperature of the water in each beaker at the start of the experiment, the number of layers of insulation wrapped around the beakers, the volume of water in the beakers and the shape and size of the beakers.

Key Vocabulary

anomalous result	a result that does not fit in with the pattern of the other results
bulb	a part in a circuit that produces light
cell	a single device which produces electricity
circuit	a complete path that allows electrical energy to flow
conclusion	what has been found out during an investigation
control beaker	a beaker that is not wrapped in material so it can be used for comparison with other beakers
data	facts and numerical information collected
electrical conductor	a material that lets electricity pass through it
electrical insulator	a material that does not let electricity pass through it
hardness	a measure of how resistant a solid is to a change of shape or indentation when a force is applied
magnetism	a non-contact force created by a magnet
opaque	an object or material that does not allow any light to pass through it
properties	the qualities and characteristics of a material
thermal insulator	material that does not let heat pass through it quickly/efficiently/easily
thermometer	a piece of equipment used to measure temperature
translucent	an object or material that allows some light to pass through it
transparent	an object or material that allows all light to pass through it

Wood

wood - a natural material that is generally hard and comes from the stem or branches of trees and shrubs

Metal

metal - a material that can typically conduct electricity and heat

Plastic

plastic - a man-made material that is often strong, lightweight and can be formed into many shapes

Uses of everyday materials - plastic, wood and metal

- Materials have specific uses.
- Metals are good conductors of electricity and heat.
- Plastics are good insulators of electricity.

Example of data

Insulating material	Temperature (°C)			
	0 min	5 min	10 min	15 min
aluminium foil	45	41	38	36
felt	45	43	40	37

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Science - Reversible and irreversible changes;	Theme	Creation	Year Group	5
Key Question	What are the properties of materials and how do they change?				

What should I already know?

- ❑ Solids have a fixed shape and volume. A solid material will keep its shape if it is transferred from one container to another.
- ❑ Liquids have no fixed shape and will take on the shape of the container they are transferred into. The volume will remain the same.
- ❑ Gases have no fixed shape and no fixed volume. They will spread out and fill any available space.
- ❑ Some materials can change state between a solid, a liquid and a gas.
- ❑ Water can be a solid (ice), a liquid (water) or a gas (water vapour).
- ❑ A thermometer is used to measure temperature.

Key learning:

Reversible and irreversible changes

- ❑ A soluble substance can dissolve in a liquid. Salt and sugar are soluble in a liquid. An insoluble substance cannot dissolve in a liquid. Sand and flour are insoluble in a liquid.
- ❑ Mixtures can be separated out by methods like filtering, sieving and evaporating.
- ❑ Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning toast and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

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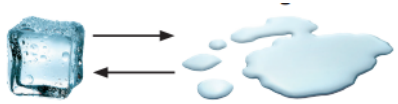
Reversible and Irreversible Changes

reversible change - when a change can be undone to get the same substances back again. To **reverse** means to go back.



The three states of matter are **solids, liquids and gases.**
- Some changes can be reversed, such as dissolving, mixing and changes of state.
- Changes of state include freezing, melting, evaporation and condensation.
- If you can retrieve the substances that you started with, then the change is reversible.

irreversible change - when a change cannot be undone to get the same substances back again.

An irreversible change is when a change cannot be undone to get the same substances back again.
- Irreversible changes result in new substances being made.
- When a new substance is made, a **chemical reaction** has taken place.
- Burning is an example of an irreversible change.

Burning vs Heating

Heating means making something hotter without changing what it is. Example: Melting chocolate or ice. This is usually reversible - you can cool it down and get it back.
Burning means a material reacts with oxygen and changes into something new. Example: Burning wood makes ash and smoke. This is irreversible - you cannot turn ash back into wood.

Key Vocabulary

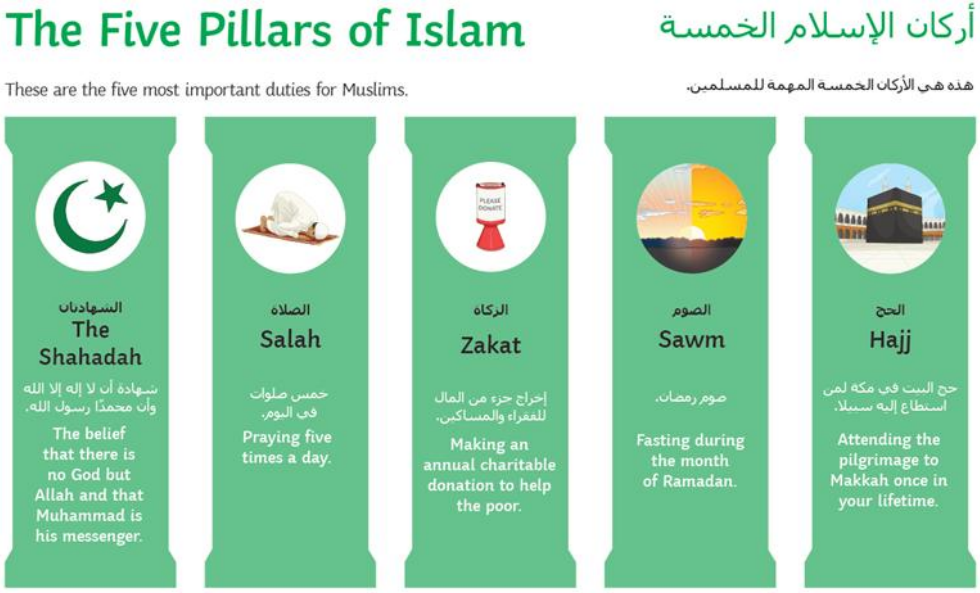
bicarbonate of soda	a white powder that is used in baking
burning	a chemical reaction where a substance is heated in air to make a new substance, which may produce a flame.
chemical reaction	a change where new substances are made
dissolve	when a solution is made from a liquid and one other substance
evaporation	the change of state from a liquid to a gas which happens slowly from the surface of a liquid
filtering	a method of separating insoluble solids from a liquid
filter paper	equipment used to separate insoluble solids from a liquid
heating	raising the temperature of a substance
insoluble	cannot dissolve in a liquid
irreversible change	when a change cannot be undone to get the same substances back again
mixture	two or more substances that can be easily separated
reverse	to go back
reversible change	when a change can be undone to get the same substances back again
sieve	equipment used to separate solids of different sizes
soluble	can dissolve in a liquid
solution	made by dissolving a substance in a liquid
states of matter	the different forms that materials can take
substance	what something is made up of
vinegar	an acid used to flavour and preserve food

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	RE	Theme	Creation	Year Group	5
Key Question	What does it mean to be a Muslim in Britain today?				

What I should already know

- Muslims believe in Allah as the one true God. They use 99 names for Allah to understand him better.
- They believe that Muhammad is God's messenger.
- There are five pillars in Islam (profession of faith, prayer, charity, fasting, pilgrimage).



Muhammad is so highly respected by Muslims that they will say "peace be upon him" after his name is spoken.

Key Beliefs: Muslims believe that there is only one God called Allah. They believe Allah is the only ruler of the universe. The word 'Islam' means submission and obedience to Allah.

Key Learning

- Muslims believe that God is One and Prophet Muhammad is his messenger.
- The Shahadah is a declaration Muslims make to join the faith. The Shahadah shows that Muslims believe in one God and that Muhammad is the prophet of Allah.
- Muslims believe in the Five Pillars of Islam - faith, fasting, charity, prayer and pilgrimage.
- The pillars of Islam provide structure for Islamic daily life and help Muslims through the journey of life.
- Muslims are expected to pray 5 times a day. Praying gives Muslims a feeling of connection to Allah and to all the other Muslims around the world.
- Zakat is the third pillar of Islam and is all about looking after others. Every year, Muslims give some of their savings to charity.
- Sawm is the fourth pillar and calls for Muslims to fast. During Ramadan, the ninth month, Muslims fast during daylight hours. Fasting allows Muslims to devote themselves to their faith and reminds them of the suffering of others.
- At least once in their life, Muslims go on a pilgrimage to the Kaaba (the sacred house of Allah) in Mecca. It is important to Muslims as Mecca is the place where the Islamic religion started.

Key Vocabulary

Allah: Arabic word for God. In Islam, Allah is the absolute one; unique, all powerful, all knowing.
Five Pillars of Islam: The five things that Muslims are expected to do.
Hajj: Muslim pilgrimage to Mecca
Islam: Second largest religion in the world, founded by the Prophet Muhammad (pbuh).
Mecca: Mecca is an important place to Muslims. It is where Muhammad was born. Muslims face Mecca and pray and try to visit it sometime during their lives.
Mosque: Muslim place of worship.
Muslim: Someone who follows the teachings of Islam.
Prophets: Special messengers sent from Allah.
Prophet Muhammad: The last prophet and the key prophet in Islam.
Shahadah: Muslim belief that there is no God but Allah and Mohammad is the messenger of Allah.
Qur'an: Islamic sacred book believed to be the word of Allah as dictated to Muhammad.
Zakah: Charity

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Computing - Spreadsheets	Theme	Creation	Year Group	5

Key Learning

- To use formulae within a spreadsheet to convert measurements of length and distance.
- To use a spreadsheet to model a real-life problem.
- To use spreadsheet tools to investigate probability.
- To use the count tool to answer hypotheses about common letters in use.

Key Resources

purple mash

2Calculate

Key Questions

How would you add a formula so that the cell shows the product of two other cells?

Click on the cell where you want the product to be displayed then click the formula wizard button. Click on the cell that contains the first number. Choose the x operation then click on the second number. Click OK.

What would you use in 2Calculate to have a cell that automatically calculates the number of days since a certain date?

You could use formulae and the totalling tools. To make the spreadsheet easier to understand, you could use named variables.

Explain what a spreadsheet model of a real-life situation is and what it can be used for?

It represents the data of a situation for example: Budgeting for a party; working out how big a field needs to be for a certain number of animals; working out how to spend your pocket money over time. Using the existing data to predict what time your shadow will be a certain length etc.

Key Spreadsheet Vocabulary

Budget
The amount of money available to spend on a project.

Columns
Boxes running vertically in a spreadsheet.

Computational model
Creating or using a simulation (a model) of a real-life situation, on a computer.

Count tool
Counts how many of a variable there are in a spreadsheet.

Data
A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making

Dice tool
Simulates the roll of a die to a random number between 1 and 6 when you click on it.

Expenses
A cost associated with a project. For example, the cost of buying ingredients for a cake sale, materials for making banners etc.

Format
The way that text looks. Formatting cells is helpful for interpreting a cell's contents for example you might want to format a cell to show a fraction e.g. 4 ½ or include units such as £ or $.

Formula
A group of letters, numbers, or other symbols which represents a scientific or mathematical rule. The plural of formula is formulae.

Formula Bar
An area of the spreadsheet into which formulae can be entered using the "=" sign to open the fomula.

Hypothesis
A concept or idea that you test through research and experiments. The plural of hypothesis is hypotheses.

Profit
Money that is earned in trade or business after paying the costs of producing and selling goods and services. For example, the amount of money there is from a cake sale when the cost of creating them has been subtracted.

Totalling tool
Adds up the value of every cell above it, next to it or diagonal to it according to which total tool is selected.

Rows
Boxes running horizontally in a spreadsheet.

Prior Knowledge

- Understand how to use a **formula wizard** in spreadsheets.
- Know how to apply **cell formatting** (e.g., text, numbers, colours).
- Be familiar with **timer**, **random number**, and **spin buttons** in spreadsheets.
- Experience creating a **budget planner sheet**.
- Ability to create and interpret **line graphs**.
- Understand **data representation** using 2Graph.
- Use software tools to **investigate and analyse data**.

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Computing - Databases	Theme	Creation	Year Group	5

Key Learning

- To learn how to search for information in a database.
- To contribute to a class database.
- To create a database around a chosen topic.

Key Questions

What is a database?

A collection of data organised in such a way that it can be searched, and information found easily. Database usually refers to data stored on computers.

Why is the collaborative feature important?

Making a database collaborative allows lots of people to enter information into the database at the same time. This is a lot quicker than one person entering the data by themselves.

In what ways can I sort information in a database?

A database can hold lots of information so it is essential that information can be effectively investigated. In 2Investigate, data can be searched and sorted in a variety of ways. It can also be presented pictorially.

Key Resources

purple mash

2Investigate

Avatar builder

Key Images

Open, close or share a file

Design a new database

Add a record to the database

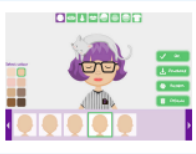
Find information in the database

Sort, group and arrange information

Statistics and reports

Represent the information as a chart

Table view of records



Avatar creator

Key Vocabulary

Arrange
Sorting information in order against a search request.

Avatar
An icon or figure representing a person in a video game, internet forum, etc.

Chart
A diagram that represents data. Charts include graphs and other diagrams such as pie charts or flowcharts.

Collaborative
Produced by, or involving, two or more parties working together.

Data
A collection of information, especially facts or numbers, obtained by observation, questions or measurement to be analysed and used to help decision-making.

Database
A set of data that can be held in a computer in a format that can be searched and sorted for information.

Field
A heading in a database record against which information is entered.

Group
Putting similar pieces of information together in a database so it is easy to read, understand and interpret.

Record
A collection of data about one item entered into a database.

Database Report
A way of producing a written paragraph that incorporates the data from the fields and records of the database.

Search
A way of finding information.

Sort
Organising data by a rule such as alphabetical or numerical.

Statistics
The study and manipulation of data, including ways to gather, review, analyse, and draw conclusions from data.

Prior Knowledge

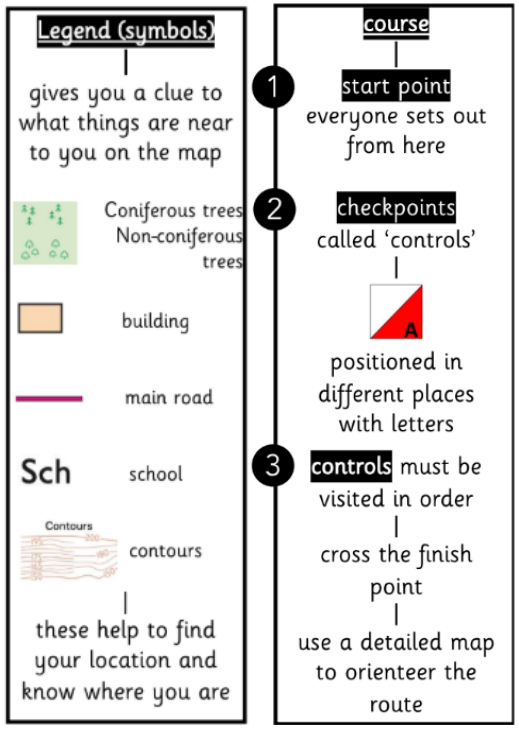
- Use **2Calculate** to collect data and create different types of graphs.
- Understand how to **sort and interrogate data** using branching databases.
- Ability to **display and analyse data in graph form**.
- Basic skills in **logical thinking and debugging**.

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Geography - Orienteering	Theme	Creation	Year Group	5

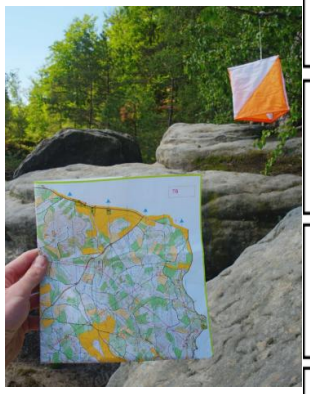
What should I already know?

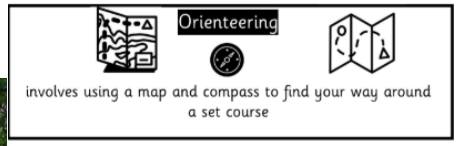
- Understand what a map is and how it shows places from above.
- Use a simple map key to recognise symbols for features.
- Know the 4 main compass points: North, East, South, and West.
- Identify physical and human features (e.g. rivers vs. roads).
- Use basic grid references (letter and number) to find places on a map.
- Use positional language (e.g. near, next to, above, below) to describe locations.

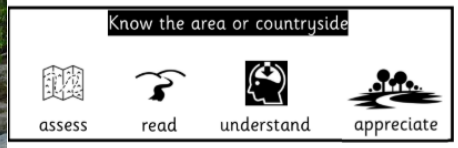


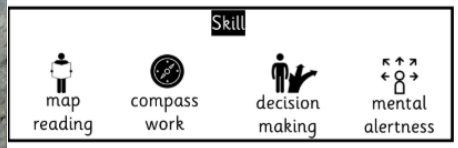
Key learning:

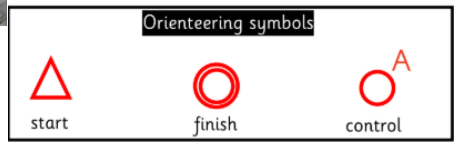
- A 6-figure grid reference pinpoints an exact location within a grid square by dividing it into tenths (e.g., 342 178).
- It combines three numbers for the eastings (left to right) and three for the northings (bottom to top) to give a precise position.
- The 8-point compass includes the cardinal (N, E, S, W) and intercardinal directions (NE, SE, SW, NW). These directions help in giving and following more accurate navigation instructions on a map or in the field.
- A compass is used to face and follow specific directions such as NE or SW when navigating a planned route. Combining compass use with visible landmarks and pacing helps accurately follow a route across terrain.
- Maps use symbols (e.g., tree for woodland, blue line for river) to represent features; these are explained in a map key.
- Understanding common symbols helps identify physical and human features quickly when reading a map.
- An ordnance survey map is a detailed map produced by the British or Irish government map making organisation.
- Physical features are natural parts of the landscape like rivers, hills, and forests
- .Human features are man-made, such as roads, buildings, and bridges, and often relate to land use and settlement.
- Topography is the physical features of an area of land including natural formations such as mountains, rivers, lakes and valleys, and manmade features such as roads, dams and cities.











Key Vocabulary

Map	A drawing that shows an area of land and its features from above.
Ordnance survey	Ordnance survey is the national mapping agency for Great Britain.
Grid Reference	A set of numbers that help locate a specific place on a map.
6-Figure Grid Reference	A more precise location using six numbers (e.g., 342 178).
Eastings	The vertical lines on a map grid that increase as you move east.
Northings	The horizontal lines on a map grid that increase as you move north.
Compass	A tool that shows direction using a magnetic needle that points north.
Compass Points	Directions on a compass (N, NE, E, SE, S, SW, W, NW).
Navigation	The process of planning and following a route.
Route	A planned path to follow from one place to another.
Landmark	A visible feature (natural or man-made) used to help navigate.
Symbol	A small picture or icon used on a map to represent a real-world feature.
Map Key / Legend	A guide that explains the meaning of symbols used on a map.
Physical Feature	A natural part of the landscape, such as hills, rivers, or forests.
Human Feature	A man-made feature, such as roads, buildings, or bridges.
Topography	The physical features of an area of land including natural formations such as mountains, rivers, lakes and valleys, and manmade features such as roads, dams and cities..
Orienteering	An outdoor activity that involves using a map and compass to find locations.
Direction	The line or course along which something moves (e.g., north, south).
Bearing	A measurement of direction using degrees (e.g., 90° for east).
Pacing	A method of measuring distance by counting steps.

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Spanish - La Segunda Guerra Mundial World War 2	Theme	Creation	Year Group	5

La Segunda Guerra Mundial

phonics

b sound in:
- besos

v sound in:
- vivo
- divertida

accents Accents indicate the vowel is stressed. As seen in the word también.

stress placement Words that end in a vowel, 'n' or 's' are normally stressed on the second to last syllable Like a-gra-da-ble.

silent letters 'H' is always silent in Spanish as in the word habla. It is pronounced 'abla'.

vocabulary

As this is a unit that explores language learning strategies, there is a wider range of vocabulary than in other units. Not all will be learnt from memory but there will be opportunity to also revisit core vocabulary and key conjunctions.

pero *but*	porque *because*
y *and*	también *in addition*

grammar

To use conjunctions to make sentences longer, more complex and interesting.

En la ciudad vi bombas pero en el campo vi árboles y flores.

In the city I saw bombs but in the countryside I saw flowers and trees.

Using a wider range of adjectives:

tranquila *calm*	difícil *difficult*	peligrosa *dangerous*

It would help if I already know:

- The letter sounds (phonics & phonemes) from phonics and pronunciation lessons 1, 2 & 3.
- Language introduced from Early Learning and Intermediate units.

What I will learn:

- ☐ Objective 1: I will improve my reading and listening skills by learning how to decode unknown language in longer pieces of Spanish.
- ☐ Objective 2: I will learn the Spanish for a selection of countries and languages involved in WWII.
- ☐ Objective 3: I will improve my listening and reading skills by listening to the story of Ralph (an evacuee) in Spanish.
- ☐ Objective 4: I will improve my range of vocabulary by learning key words and phrases from the countryside and in the city.
- ☐ Objective 5: I will use all my new knowledge to compare life in the city and countryside during WWII.

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Music - South and West Africa	Theme	Creation	Year Group	5

Vocabulary

Chord	Two or more notes that are played at the same time and work in harmony.
Chord progression	A group of chords played in a particular order.
Major chords	A chord made up of three notes. Major chords are often described as happy chords.
Minor chords	A chord made up of three notes. Minor chords are often described as sad chords.
Break	When some instruments stop playing and others change the rhythm.
Call and response	A musical technique that is similar to a conversation. One phrase of music acts as the 'call' and is 'answered' by a different phrase.
A capella	Singing without any musical accompaniment.
Soloist	A musician or singer who performs on their own, known as performing a solo.
Duo	Two musicians or singers who perform together, known as performing a duet.

Ostinato
A repeated pattern or phrase.

Polyrhythms
Many rhythms played at once.

Syncopation
Playing on the off-beat.

Rest
The silences in music.

Metronome
A device that can be set to create a steady sound (beat) to help musicians play rhythms accurately.

Tips for improving your performance - FACE

- Fluency - Being able to play without hesitancy.
- Accuracy - Getting the melody and the words correct.
- Control - Controlling the sound and music being created or sung.
- Expression - Giving a personal response to the music.

Instruments

Percussion instruments - Instruments which are played by shaking, tapping or scraping with your hand or a beater.

Key knowledge

- To know that songs sung in other languages can contain sounds that are unfamiliar to us, like the clicks of the Xhosa language.
- To know that 'The Click Song' is a traditional song sung in the Xhosa language and is believed to bring good luck at weddings.
- To understand that major chords create a bright, happy sound.
- To know that poly-rhythms means many rhythms played at once.

Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Art - Painting and mixed media: Portraits	Theme	Creation	Year Group	5

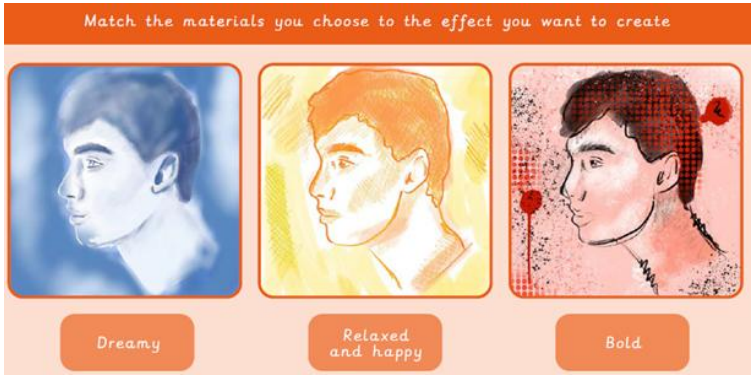
Key Vocabulary

art medium
atmosphere
background
carbon paper
collage
composition
continuous line
drawing
evaluate
justify
mixed media
monoprint
Multi-media
paint wash
portrait
printmaking
represent
research
self-portrait
texture
transfer

Mixed media artwork uses a combination of different materials.

Self-portraits can communicate things about the artist depending on:

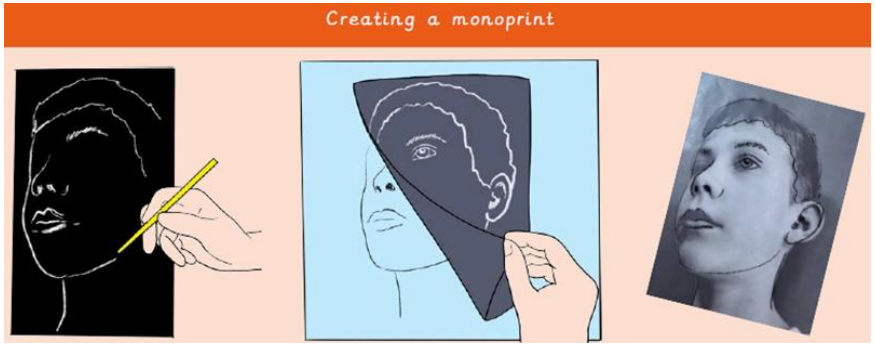
- The composition
- The materials used
- What is included in the background
- The artist's clothes
- Their facial expression



Formal elements:

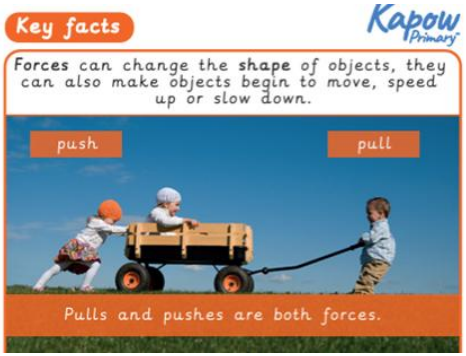
- **Colour:** Artists use colour to create an atmosphere or to represent feelings in artwork, for example by using warm or cool colours.
- **Pattern:** Artists create pattern to add expressive detail to art works, for example Chila Kumari Singh Burman using small everyday objects to add detail to sculptures.
- **Tone:** Tone can help show the foreground and background in artwork.

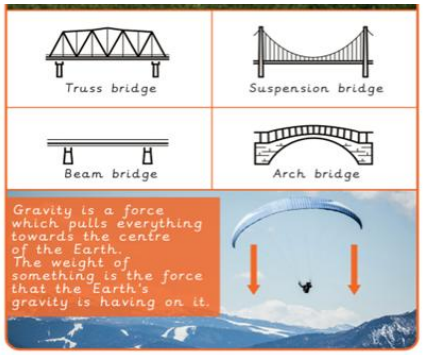
Collage	Cutting, arranging and sticking materials like paper, fabric etc to a background
Identity	Your qualities or beliefs that make you unique
Mixed media	Art made from a combination of different materials
Monoprint	A print that can only be made exactly the same way once
Multi-media	Artwork that includes audio or video elements
Photomontage	Collage made from photographs
Self-portrait	A portrait of the artist, by the artist



Ridgeway Farm CE Academy - Knowledge Organiser

Topic	Design Technology: Structures - Bridges	Theme	Creation	Year Group	5





Key skills:

- Designing a stable structure that is able to support weight.
- Creating a frame structure with focus on triangulation.
- Making a range of different shaped beam bridges.
- Using triangles to create truss bridges that span a given distance and support a load.
- Building a wooden bridge structure.
- Independently measuring and marking wood accurately.
- Selecting appropriate tools and equipment for particular tasks.
- Using the correct techniques to saw safely.
- Identifying where a structure needs reinforcement and using card corners for support.
- Explaining why selecting appropriate materials is an important part of the design process.
- Understanding basic wood functional properties.
- Adapting and improving own bridge structure by identifying points of weakness and reinforcing them as necessary.
- Suggesting points for improvements for own bridges and those designed by others.

Key knowledge:

- To understand some different ways to reinforce structures.
- To understand how triangles can be used to reinforce bridges.
- To know that properties are words that describe the form and function of materials.
- To understand why material selection is important based on their properties.
- To understand the material (functional and aesthetic) properties of wood.

Structures - Bridges

Accurate	Neat, correct shape, size and pattern with no mistakes.
Arch bridge	A bridge which is built with a curved arch.
Beam bridge	A bridge which is built with horizontal beams and vertical pillars.
Bench hook	A tool which hooks onto the edge of the workbench. It's used to hold woodwork still when sawing.
Compression	A squashing force caused when parts of a structure are pushed together.
Coping saw	A saw with a narrow D-shaped metal blade, used for cutting curves in wood.
File	A tool used to smooth down rough edges on wood or metal materials.
Mark out	To measure and mark where a piece of material needs to be cut or shaped.
Reinforce	To make a structure or material stronger, especially by adding another material or element to it.
Sand paper	Strong paper with sand on one side to smooth or polish woodwork.
Set square or Try square	A right-angle triangular plate, wood or metal tool used for drawing lines at 90°, 45°, 60°, or 30°.
Shape	The form of an object.
Structure	Something which stands, usually on its own.
Suspension bridge	A bridge which is supported by vertical cables and suspended by cables which run between pillars that are connected onto either end of the bridge.
Tenon saw	A saw with a flat blade, used for cutting wood in straight lines or angles.
Tension	A stretching force caused by two parts of a structure being pulled apart.
Truss bridge	A bridge which is built from a series of triangular beams.

← wooden truss bridge.