

# Year 3 Knowledge Organisers



At South Hill, we have created 'Knowledge Organisers' to help pupils and parents to know what the children will be learning in each of our Foundation subjects. These contain essential vocabulary and facts for each topic.

Please see 'Knowledge Organisers' attached for Year 3 for the autumn term, which will also be in pupil's books and on working walls in school.

**YEAR 3 ART - PIRATE SHIP COLLAGE**

**COLLAGE**

**PIRATE SHIPS**

**CREATING OUR COLLAGE**

**FOCUS ARTISTS**

**Key Vocabulary**

Collage, Cutting, Gluing, Stamping, Scissors, Tackling, Comparison, George Briscoe, Pablo Picasso, Diego Velazquez

**YEAR 3 DT - STONE AGE JEWELLERY**

**HISTORY OF CLAY**

**DIFFERENT JEWELLERY DESIGNS**

**TECHNIQUES FOR MOULDING CLAY**

**HISTORY OF POTTERY**

**Key Vocabulary**

Stone Age bracelet, Bronze Age necklace, Iron Age brooches, clay hammer, copper tin, heat, bronze, twist, roll, iron squeeze, bone tools, tort cut, smooth

## YEAR 3 SCIENCE — ROCKS, FOSSILS AND SOIL

KNOWLEDGE ORGANISER



**What have we learnt in this topic before and what we will learn this year?**

In Year 1 and 2, we learnt in our topic: **Everyday materials (Materials for different uses)**

- To identify and name everyday materials including wood, plastic, glass, wood, metal, water and rock and to describe simple physical properties. We also grouped materials based on these properties.

**In Year 3, we will learn:**

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
- describe in simple terms how fossils are formed when things that have lived are trapped within rock
- recognise that soils are made from rocks and organic matter

**In Year 5, we will develop this further and learn about comparing and grouping materials by looking at properties such as hardness and solubility.**

### HOW IS SOIL FORMED?

Soil is a mixture of tiny particles of rock, dead plants and animals, air and water. Different soils have different properties depending on their composition.

- Sandy soil is pale coloured and has large particles. These create lots of small air gaps. Water drains through them easily so it usually feels dry.
- Clay soil is usually sticky and has small particles. They contain very few air gaps and water does not drain through it easily.
- Chalky soil is a light brown soil. Water drains through it quickly.
- Peat does not contain any rock particles. It's made from very old decayed plants and is dark, crumbly and rich in nutrients.

### FOCUS SCIENTIST – MARY ANNING - FOSSILS

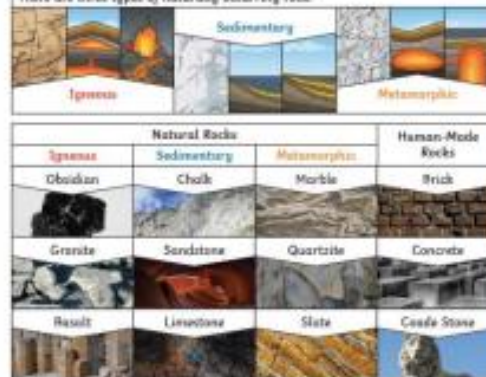
Mary Anning was born in 1799 to a very poor family and lived on the Jurassic Coast in Dorset. Her father used to take her and her brother to look for stones and fossils on the beach. It was here that she found fossils that she would sell to make money for her and her brother after their father also died. ]



Anning was the first person to find a complete fossil of a Plesiosaurus. She also pioneered the study of fossilised pool

### COMPARING AND GROUPING ROCKS

There are three types of naturally occurring rock.



Different types of rocks have different properties.

Some rocks are harder than others. For example, granite is a very hard rock. This makes it a good material for building as it doesn't wear away easily.

Marble is another hard rock. It has an attractive texture and colour and it can be cut and polished. Because of this, it is used to make floor tiles and wall tiles. Some statues are made from marble too.

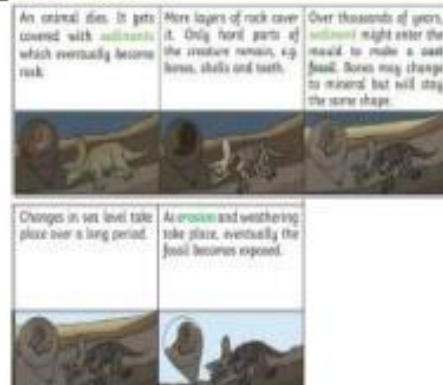
Chalk is a soft rock and wears away easily. This makes it ideal for making chalk sticks to write on blackboards.

### HOW ARE FOSSILS FORMED?

A fossil is the preserved remains or traces of a dead organism. The process by which a fossil is formed is called fossilisation.

It's very rare for living things to become fossilised. Usually after most animals die their bodies just rot away and nothing is left behind. However, under certain special conditions, a fossil can form.

After an animal dies, the soft parts of its body **decompose** leaving the hard parts, like the skeleton, behind. This becomes buried by small particles of rock called **sediment**. As more layers of sediment build up on top, the sediment around the skeleton begins to compact and turn to rock. The bones then start to be dissolved by water seeping through the rock. Minerals in the water replace the bone, leaving a **rock replica** of the original bone called a fossil.



### Key Vocabulary

rock    mineral    fossil    igneous    metamorphic    sedimentary    sediment    magma    lava    erosion  
 organism    density    permeable    impermeable    durable    decompose    chalk    marble    granite

## YEAR 3 SCIENCE – FORCES AND MAGNETS

## KNOWLEDGE ORGANISER



### What have we learnt in this topic before and what we will learn this year?

In Year 2, we learnt in our topic 'Use of Everyday materials' to:

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
- find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

In Year 3, we will learn in our topic 'Forces and Magnets' to:

- compare how things move on different surfaces
- notice that some forces need contact between two objects, but magnetic forces can act at a distance
- observe how magnets attract or repel each other and attract some materials and not others
- compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- describe magnets as having two poles
- predict whether two magnets will attract or repel each other, depending on which poles are facing.

In Year 5, we will develop this further and learn in our topic 'Forces (Gravity, friction and machines) to:

- explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- identify the effects of air resistance, water resistance and friction, that act between moving surfaces
- recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

### FORCES

A force can be a push or a pull. For example, when you push open a door you have to apply a force to the door. You also have to apply a force to pull open a drawer. Forces can make objects speed up, slow down, stop or start moving.

You cannot see a force but often you can see what it does. When a force is exerted on an object, it can change the object's:

- Speed, direction of movement and/or shape (for example, an elastic band gets longer if you pull it)

A force meter, also called a newton meter, is used to measure forces.

Forces can be contact forces, where objects must touch each other to exert a force. Other forces are non-contact forces, where objects do not have to touch each other. These include:

- Gravity, magnetism and forces due to static electricity

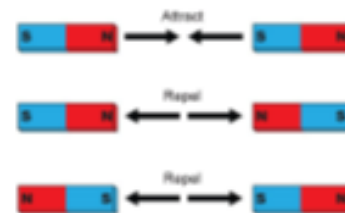


### FOCUS SCIENTIST – JOHN DUNLOP - TYRES

John Boyd Dunlop was a Scottish vet and inventor. He is best known for his work in developing one of the first pneumatic or inflatable tyres, a device still used today. He found that solid wood, rubber or iron wheels made cycling difficult on the bumpy and rough roads. He experimented by using an inflatable rubber tyre on his son's tricycle. In 1889, cyclist Willie Hume tested Dunlop's tyres by taking part in several races in the UK. He was the first member of the public to buy a bicycle with pneumatic tyres. Another Scot, Robert Thomson, also developed a pneumatic tyre about 40 years before Dunlop. Thomson had patented his invention in France in 1846 and in the US in 1847. Dunlop set up a company called 'Pneumatic Tyre and Booth's Cycle Agency'. In 1896, the company was sold to another UK company and was renamed 'Dunlop Rubber'. The company went on to make different types of car tyres, as well as aeroplane tyres and golf balls and is still famous today.



### MAGNETS

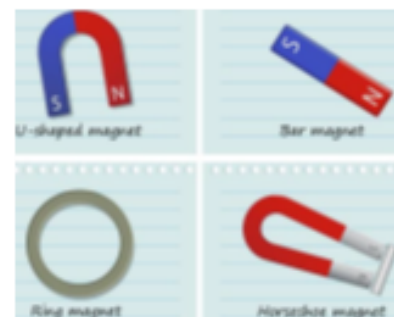


Magnets are objects or materials that produce a magnetic field and attract or repel magnetic objects.

Magnets have 2 poles: north and south. If you put magnets towards each other:

- 1 south pole and 1 north pole will attract
- 1 south pole and another south pole will repel
- 1 north pole and another north pole will repel

### TYPE(S) OF MAGNET(S)



Magnets cannot pull or push anything made of wood, plastic and some other materials. Some metals are magnetic, but not all metals.

There are different types of magnets made for different purposes such as: U shaped magnet, Bar magnet, Ring magnet and Horseshoe magnet.

### MAGNETIC AND NON MAGNETIC

Examples of magnetic materials	Examples of non-magnetic materials
Nickel knife	Wooden table
Cobalt coin	Plastic box
Steel spoon	Piece of paper
Iron nail	Fabric T-shirt



### FRICION

Friction is a force between two surfaces that are sliding, or trying to slide, across each other. For example, when you try to push a book along the floor, friction makes this difficult.

Friction always works in the direction opposite to the direction in which the object is moving, or trying to move. Friction always slows a moving object down.

The amount of friction depends on the materials from which the two surfaces are made. The rougher the surface, the more friction is produced. Smooth, shiny surfaces produce less friction and therefore things travel across them more quickly.

### Key Vocabulary

force, friction, magnet, pole, north, south, object, surface, attract, repel, magnetic, contact force, non-contact force, magnetic field

## YEAR 3 HISTORY - STONE AGE TO IRON AGE KNOWLEDGE ORGANISER



What have we learnt in this topic before and what we will learn this year?

In Year 1, we learnt about the Victorians and this topic takes us back even further in time to learn all about the 'Stone age to iron age'.

In Year 4, we will learn about the Romans, who invaded Britain bringing the Iron Age to an end and bringing about Roman Britain.

Later in Year 5, we also learn about the Ancient Egyptians who existed a little before this and lasted for much longer.

### THE TIMELINE

5000 BC AD 500

The Stone Age is named after the stone tools that the earliest humans used to help them survive. The Beaker People moved across and into Britain bringing with them bronze and tools and utensils made from this. This brought 'The Bronze Age' to Britain. The Iron Age was the last period of prehistoric Britain before the Romans arrived. People were making even more useful tools and learned to make them out of iron.

12,000 BC

The first cave paintings were drawn.

800-700 BC

The first kilns are made.

4000 BC

Wheels are made and used for the first time.

2500 BC

Metal starts to be used to make weapons and tools.

1000 BC

The first copper mines are dug.

### Stonehenge and Skara Brae



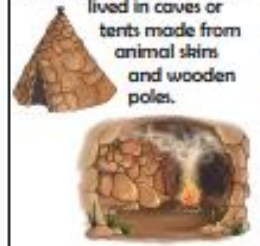
**Stonehenge -**  
How and why was this built?



**Skara Brae -**  
Why was it built like this? Where is this?

### HOUSES

People in the Stone Age moved around from place to place with the seasons, in order to keep safe and warm, and to follow the animals they hunted. They lived in caves or tents made from animal skins and wooden poles.



During the Bronze Age and The Iron Age, people started to live in roundhouses. These could be very large and would have housed many people. One household might have had two houses: one for living and one for cooking and making things.



In the Iron Age, these houses were sometimes rectangular and were often gathered in farming communities on hills. These were known as 'hillforts'. Between 500 and 100 BC, many parts of Britain were dominated by hillforts. These settlements provided a home for hundreds, and later thousands, of people.



### Diet

They were hunter gatherers and their main source of food was animals. They would eat all of the meat and then the marrow from the bones. Once they were in the Iron Age they had become more settled and started farming so this produce then became a source of food for them as well.



### Clothing

The Stone Age people wore animal skins for clothes and would have sewn them together using needles made from the animal bones. They wore animal bone and teeth as necklaces and bracelets for jewellery.



Iron Age people wore clothes made from dyed wool, using natural vegetable dyes. They wore trousers and tunics with a cloak over the top secured with a brooch.

**Key Vocabulary**

BC	AD	iron	bronze	prehistoric	religious	settlement	hunter gatherer	hillfort
artefact		archaeologist	source	tunics	bones	worship		invaded

## YEAR 3 GEOGRAPHY – MAP SKILLS

## KNOWLEDGE ORGANISER



What have we learnt before in Geography and what we will learn next?

In Year 1, through the topic 'Where in the world do we live?' we learnt about where we live and began to use atlases and maps to identify countries and Cities in the UK.

In Year 2, in the topic 'Where in the world?' we looked at a map of the world and learnt about where different countries and continents are located in the world.

In Year 3, during the autumn term, we will start to develop our key map skills by looking at OS maps, keys, map symbols, grid references and compass directions.

In Year 6, we will further develop our map skills by looking at Ordnance Survey Maps in more detail.

### What is a map?

A map is a symbolic representation of selected characteristics of a place, usually drawn on a flat surface. Maps present information about the world or place in a simple, visual way.

Mapmakers, called cartographers, create maps for many different purposes. Vacationers use road maps to plot routes for their trips. Meteorologists—scientists who study weather—use weather maps to prepare forecasts. City planners decide where to put hospitals and parks with the help of maps that show land features and how the land is currently being used.

Some common features of maps include scales, symbols, and grids.

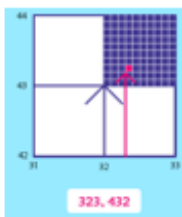


### 4 Figure Grid References



Some maps are crisscrossed with lots of horizontal and vertical lines. This creates lots of squares, known as a grid. Using the grid and squares helps to narrow the area to search – making it easier to locate features on the map!

The numbers along the bottom of the map are called 'Eastings' the numbers along the side of the map are 'Northings'. You read the Eastings first and the Northings second. A good way to remember this is to go along the corridor and up the stairs for example along to 33 and up to 43. This gives you the co-ordinates of the bottom left hand corner of the square you are looking at e.g. (33,43).



### Key Vocabulary

Map	Sketch map	Symbols	Scale	Grid	Key	Ordnance Survey maps	Compass	Directions	North	South
	East	West	North East	North West	South East	South West	4 figure/ 6 figure grid references	Co-ordinates		

### Map Symbols and Keys



To avoid maps becoming over-crowded with writing, symbols are often used to indicate certain places. The symbols have to be very simple so they are easy to understand and can be reproduced.

Here are simple map symbols used on Ordnance Survey maps.



Like a regular key, a key on a map helps us to unlock the information within the map.

Here is an example of a map and key:



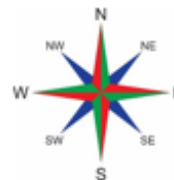
### Compass Points

A compass is a tool for finding direction. A simple compass is a magnetic needle mounted on a pivot, or short pin. The needle, which can spin freely, always points north. The pivot is attached to a compass card. The compass card is marked with the directions. To use a compass, a person lines up the needle with the marking for north. Then the person can figure out all the other directions.



The four main directions are North, East, South and West. You can remember the 4 directions by remembering mnemonics such as Never Eat Shredded Wheat or Never Eat Soggy Waffles.

There are 4 more direction points we increase the accuracy of following or giving directions.



The points between the main 4 points of direction are North East, South East, South West and North West.

## YEAR 3 DT – STONE AGE JEWELLERY

## KNOWLEDGE ORGANISER



What have we learnt before in DT and what we will learn next?

### HISTORY OF CLAY

In Year 3, we will design and make our own Stone Age jewellery.

In Year 4, we will extend our skills through our topic on the Romans and make a clay pot.

Throughout history, humans have made use of natural materials including clay to make objects. The Stone age people made jewellery out of bits of bone, tooth, tusks, shells and stones.



### HISTORY OF CLAY

Clay is the **oldest known ceramic material**. Prehistoric humans discovered the useful properties of clay and used it for making pottery. Some of the earliest pottery shards have been dated to around 14,000 BC, and clay tablets were the first known writing medium.

Stone Age man made a discovery and invented pottery. They noticed that clay left out in the sun dried and became hard but was brittle and broke easily. If dried clay was left in the rain it became soggy again. Fires were used to keep people warm and to cook food. When these fires were made on top of ground which contained clay, the ground around the fire changed and became stronger. Clay vessels that were baked in fire became pottery. It is believed that the origins of pottery date back to the Ice Age. The process is still very common and used today.

### DIFFERENT JEWELLERY DESIGNS

The Stone age people made jewellery out of bits of bone, tooth, tusks, shells and stones.



The Bronze Age was a time when people started making tools and other things from bronze. Bronze is a metal made from a mixture of copper and tin. They would heat the metal and twist it and hammer it to make interesting shapes. Jewellery included brooches and torcs. A torc is a loop of metal and it could be worn as a bracelet or a necklace.



By the iron age, jewellery was highly decorated. Humans had learnt to melt metals at very high temperatures and use moulds and specialist tools to create highly finished jewellery. They used precious metals like gold and silver to create jewellery in different colours and with gemstones.



### TECHNIQUES FOR MOULDING CLAY

Rolling into a ball/snake		Squeezing the clay		Pulling and pinching	
Carving into the clay with tools.		Making holes and hollows.		Smoothing with fingers.	
Joining clay together		Smoothing			

### Key Vocabulary

Stone Age	Bronze Age	Iron Age	clay	copper	tin	bronze	iron	bone	torc	joining
bracelet	necklace	brooches	hammer	heat	twist	roll	squeeze	tools	cut	smooth

## YEAR 3 ART – PIRATE SHIP COLLAGE

## KNOWLEDGE ORGANISER



What have we learnt before in Art and what we will learn next?

### COLLAGE

In Year 2, we practised our collage techniques when we made our Christmas cards and calendars. We practised using different types of materials and focused on repeating patterns.

In Year 3, we will be developing our collage skills in Autumn term in our Pirate Ship Collages. We will be using different media and working on building texture and detail in our work.

In Year 4, we will be drawing on our collage skills when we make our mosaic tiles. We will develop our current understanding by combining visual and tactile qualities.

In Year 6, we will look at collage again in our unit on landscapes. We will be focussing on the work of Beatriz Milhazes.

Collage is piece of art made by sticking different materials such as photos, clipping, materials etc. on to a backing. Collages tend not to be most accurate/ realistic interpretation of a subject.

When looking at collage, you need to think about

- How it makes you feel
- What you think it shows
- What you can see
- Whether you think it has a message about anything
- What techniques have been used
- What materials and medium have been used

When looking at work by different artists, it can be useful to have a go at interpreting them yourselves. Comparing the work of different collage artists will help you develop a sense of what you appreciate and dislike in art. This may help you to develop your own tastes and style.



Ben Lewis Giles



Pablo Picasso



Kurt Schwitters

### FOCUS ARTISTS

Collage has been around for centuries but it began to become really noticed in the early 20th century. It was the artists George Braque and Pablo Picasso who first coined the phrase collage for this technique, which they used in their Cubist paintings. Both artists are well known for their love of the abstract style. It is not always clear what the subject of their work is and means it is often left up to the interpretation of the viewer.



### Key Vocabulary

Collage    Media    Materials    Interpretation    Comparison    George Braque    Pablo Picasso    Sloops  
 Galleons    Cutting    Folding    Ripping    Scrunching    Twisting    Overlapping    Depth    Texture

### PIRATE SHIPS

Pirate ships were always naval/ private ships that had been hijacked by pirates. This is why they were very elaborate. There were many different types. These included:



#### Sloops

Sloops were the most common choice during Golden Age of Pirates during the 16th and 17th century for sailing around the Caribbean and crossing the Atlantic. These were commonly built in Caribbean and were easily adapted for pirate antics. The great advantage of the sloops were that they were quick and could attack swiftly and get away fast with a top speed of over 10 knots. Another advantage is that it could hide in shallower waters to escape warships because of its shallow draft.

#### Galleons

A Spanish design, the galleon combined the need to carry cargo and be able to defend itself at the same time with cannons. A galleon, could sustain a crew of over 200 with more than 70 canons and guns. However, its cumbersome manoeuvre and slow speed because of its large square sails made it fair game for pirates.



### CREATING OUR COLLAGE

Let's get prepared for collage!

What will you need to explore collage?

Media	Surface	Equipment
Lots of different papers!	I'm leaving the choice to you!	Glue stick
Newspaper	Paper	PVA Glue
Magazines	Fabric	Glue spreader
Gift bags	Card	Paint brush
Wrapping paper	Wood	Scissors
Card	Any flat surface...	
Sticky tape / stickers		

Collages can be created by cutting, folding, ripping, scrunching and twisting. These are all techniques to build texture..

When creating a collage scene it is important to simplify the shape into blocks which you can build upon to add texture and detail using smaller pieces of material.



## Year 3 – Gymnastics Unit 1

## Knowledge Organiser

### Prior Learning

Developed body management. Used core strength to link elements. Attempted to use rhythm while performing a sequence.

### We are learning...

1. To show full extension during a balance
2. To move in and out of contrasting shapes with fluency
3. To perform a sequence using different types of rolls
4. To perform powerful jumps from low apparatus
5. To perform in unison with a partner
6. To create a group performance using contrasting actions

### Assessment overview

**Head** - Identify similarities and differences in sequences.

**Hand** - Perform sequences with contrasting actions.

**Heart** - Explain why strength and flexibility are important in maintaining a healthy, active lifestyle.

### Equipment

Mats, hoops, cones, wall bars, bean bags, low apparatus, ropes, action cards.

### Vocabulary

Fluency, contrasting, unison, low, combinations, full turn, half-turn, flexibility, compositional ideas, healthy active lifestyle.

### Unit Focus

Modify actions independently using different pathways, directions and shapes. Consolidate and improve movements and gymnastics actions. Relate strength and flexibility to actions. To use basic compositional ideas.

### Key Questions

1. How do you perform a sequence in unison?
2. How can you adapt a sequence to include contrasting shapes?
3. Where are you showing strength in your sequence?

### Concepts

Unison is the simultaneous performance by two or more people to complete a gymnastics action such as a roll at the same time or hold a balance.





## Year 3 - Tag Rugby

## Knowledge Organiser

### Prior Learning

Can send and receive a ball using hands and feet. Refined ways to control bodies and a range of equipment. Recalled and linked combinations of skills, for example, dribbling, passing and running with the ball.

### Unit Focus

Handle a rugby ball with confidence. Evade attackers using footwork and body control. Link skills to perform as a team in attack. Use basic game principles of tag rugby and play within simpler rules.

### We are learning...

1. to use speed to run past defenders.
2. how to use a short pass in a game.
3. to use agility to evade being tagged.
4. to understand and apply the tag protocol in game situations.
5. to close down an attacker's space as a defender.
6. to perform a backward pass to continue an attack.

### Key Questions

1. When we practise passing backwards, why do we turn at the hips rather than turning completely around?
2. What did you do to try and defend the space?
3. How did you work with a partner to close down space for the attacker?

### Equipment

Rugby ball, bibs, cones, hoops, tag belts, grids, soft balls.

### Vocabulary

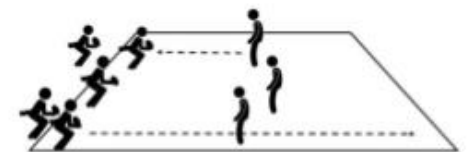
Space, accurately, mark, dodge, attack, defend, footwork, possession, evading, close down, sportsmanlike.

### Rules

- Only the ball carrier can be tagged.
- When the ball carrier is tagged, they must pass the ball within 3 seconds.
- Defenders must return the tag in a sportsmanlike manner.

### Assessment Overview

**Head** - Explore a range of techniques to avoid being tagged.  
**Hand** - Perform a range of ball-handling skills.  
**Heart** - Listen to others to work as an effective team.



### Prior Learning

Experienced different types of small-sided invasion games. Able to send and receive balls. Use a variety of techniques and tactics to play competitively, both attacking and defending.

### Unit Focus

Able to show basic control skills. Send the ball with some accuracy to maintain possession and build attacking play. Implement the basic rules of football.

### We are learning...

1. to use the inside of the foot to pass the ball.
2. to trap a ball that is moving along the ground with control.
3. to pass the ball accurately into space over short distances.
4. to identify and move into space to receive the ball.
5. to use the outside of the foot to control the ball and dribble.
6. to cushion the ball when receiving.

### Key Questions

1. How can we make it easier for our teammates to pass us the ball?
2. When should we look to dribble in a game?
3. Where should you look when dribbling?

### Equipment

Footballs, bibs, cones, targets/goals.

### Vocabulary

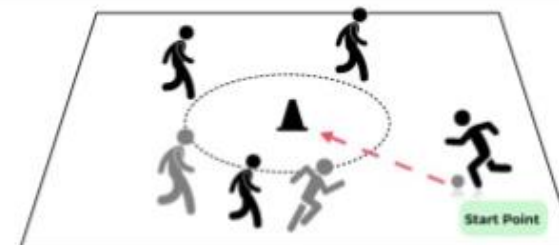
Teamwork, score, shoot, intercept, foot, inside of the foot, touch, possession, accuracy, dribble.

### Rules

- If the ball touches a player's hand, then the opposition get a free kick where the offence occurred.
- No contact.

### Assessment Overview

**Head** - Recognise the need to look forward when attacking a goal.  
**Hand** - Use short passes to keep possession.  
**Heart** - Show support, encouragement and good sportsmanship.



## Year 3 - Dance Unit 1

## Knowledge Organiser

### Prior Learning

Perform using more sophisticated formations as well as an individual. Use the stimuli to copy, repeat and create dance actions and motifs.

### We are learning...

1. To perform a jazz square and use it in our dance
2. To perform a dance showing two contrasting characters
3. To develop movements using improvisation]
4. To use props in our dance sequence
5. To use facial expressions to bring life and emotion to our dance
6. To take on the role of director to help others improve their dance

### Assessment overview

**Head** - Describe features of dances performed by others.

**Hand** - Competently include props and other ideas in their dance.

**Heart** - Share and create short dance phrases.

### Equipment

Music player, music, cones, hoops, throw down spots, balloons, laptop internet access, chairs.

### Vocabulary

Facial expression, improvisation, rehearse, director.

### Unit Focus

Practise and put together a performance. Perform using facial expressions. Perform with a prop.

### Key Questions

1. Why are facial expressions important in dance?
2. What actions might you perform when scared? (or happy or sad)
3. What other props might you have in dance?

### Concepts

- Props are objects that dancers use to enhance their dance like chairs, fans, ribbons and swords.
- Choreography is the act of designing a dance.



## COMPUTING SYSTEMS AND NETWORKS KNOWLEDGE ORGANISER

### Overview



#### Digital Devices

- You should already know that **Technology** is something that has been made by people to help us.
- You should also know that **Information technology (I.T.)** includes computers and things that work with computers.
- Digital devices are things made for a particular purpose, that use processing.
- Digital devices have an input, process, and output (IPO).
- Information and data can be shared across networks. Many devices are used to create networks.

### Digital Devices – Input, Process Output (IPO)

- A device is something that has been made for a particular purpose (it has a special use).
- Digital devices use processing (have a process) There is more than just an on-off function. Digital devices have an input, process, output (IPO)

**Input:** Something that sends a message to the device. E.g. You press a button on the keyboard.



**Input Devices:** Keyboard, joystick, mouse, web cam, microphone, touch screen, track ball, digital camera.

**Process:** The device acts on the message. E.g. The computer follows a program that tells it what to do when the keyboard is pressed.



**Output:** Something that is sent out by the device. E.g. The letter that you have typed on the screen.



**Output Devices:** Screen/monitor, printer, headphones, projector, speaker, smartboard.

### Networks and Network Devices

#### Connections and Networks

- In Computing, a connection describes a link between the computer and something else.
- For example, a computer may be connected to the internet through wires, a mobile data system, or **WiFi.**
- A computer network is a set of connections that joins computers together.
- The computers in the network can send and receive information to one another.



#### Network Devices

- Network switch:** a device that helps different devices on a network to be connected with each other.
- Server:** a computer that manages the network and stores files
- Wireless access point (WAP):** a device, connected to a wired network, that sends and receives wireless signals to and from devices.



### Why Networks Are Useful

- Computer networks allow us to send and receive information between computers that are in different places.
- Networks can help us to communicate quickly and easily.
- Networks can also join computers to shared devices, like scanners and printers.
- The internet is a global network of computers. Imagine how different life would be without the internet!
- If information is shared on a network, it helps to reduce the risk of data being lost, e.g. if one computer breaks.



### Important Vocabulary

Digital Device

Input

Process

Output

Connection

Network

Network Switch

Server

WAP

E-Safety



## COMPUTING: DATA AND INFORMATION KNOWLEDGE ORGANISER



### Overview

#### Branching Databases



- **Data** is raw numbers and figures. **Information** is what we can understand from looking at data.
- Objects can be organised into groups, based on what they are or their different attributes.
- Branching databases can help us to identify objects within sets of data. They are useful when we want to **classify** objects (consider objects within a certain group).



### Grouping and Separating

**-Grouping:** Objects can be put into different groups. These groups can be made up of objects that are the same, or objects that have the same attributes (features).



Computers can help us by allowing us to put different objects into groups.

**-Yes or No Questions:** Questions that require yes and no answers can be useful for helping us to find out the attributes of different objects. For example:

- Is it big? (size)
- Is it red? (colour)
- Is it made of plastic? (material)
- Is it heavy? (weight)



**-Multiple Groups:** Sometimes, we need to split objects into more than two groups, and so one yes or no question alone is not enough. For example, we may wish to classify animals into the different animal types (mammals, birds, reptiles, amphibians, fish, etc.). We may ask multiple yes or no questions, such as 'does it lay eggs?' 'does it have hair or fur?' etc.

### Branching Databases

**-Branching Databases:** A branching database (sometimes known as a binary tree) is a way of classifying a group of objects. If it has been designed correctly, a branching database can be used to help someone identify one of the objects.



**-Creating Branching Databases:** Programs such as *zdata* can help you to create branching databases. Firstly, you need to select which objects you would like to use in your database. You can then type in 'yes' or 'no' questions to sort your objects. Add as many questions as needed until all of the objects are sorted individually.



### Structuring Branching Databases

-Remember that for your branching database to be effective, the strength of the questions that you ask is hugely important. Your questions need to separate different objects based on their attributes. E.g. the question 'does it have stripes?' would separate the animals below. You should also carefully consider the order that you ask questions.



### Presenting Information

-Both pictograms and branching databases can be used in order to **answer questions and solve problems**.

-You should know which is best to use in different situations. E.g. a pictogram is best to show the **favourite colours** of children in the class, whilst branching diagrams are best to identify different types of minibeasts.



### Important Vocabulary

Information

Data

Attributes

Group

Branching

Database

Multiple

Classify

Structure

Present