

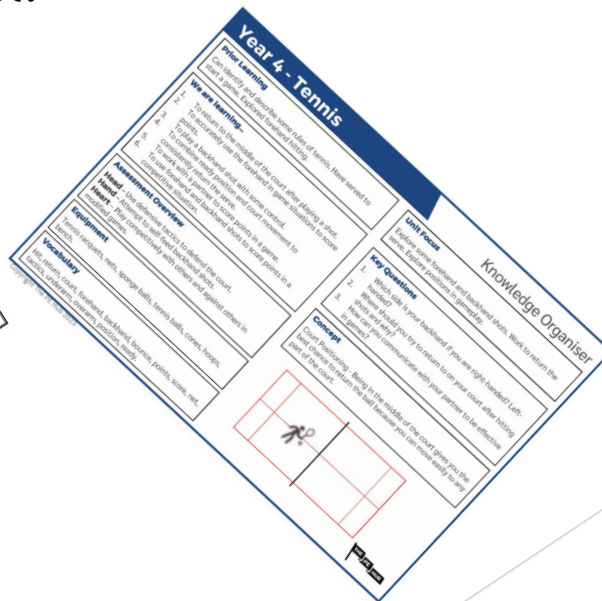
# Year 4

## 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 4 for the autumn term, which will also be in pupil’s books and on working walls in school.



## YEAR 4 SCIENCE – SOUND

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

In EYFS, we learnt in our topic: to relate the sense of hearing to the ears.

In Year 4, we will learn how to:

- Explain how sound sources vibrate to make sounds.
- Explain how vibrations change when the loudness of a sound changes.
- Explain how sounds travel to reach our ears.
- Describe the pitch of a sound.
- Describe patterns between the pitch of a sound and the features of the object that made the sound.
- Explain how sound travels through a string telephone.
- Identify the best material for absorbing sound.
- Create a musical instrument that can play high, low, loud and quiet sounds.
- Make observations and conclusions.
- Be able to answer questions based on your learning.

### Sound

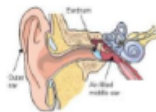
#### Sound Travels to the Ear

Sounds are made when objects **vibrate**. The vibration makes the air around vibrate, and the air vibrations enter your ear. Our brain hears the vibrations and turns this into a sound.



#### How Sound is Made

- Sound travels through the air in waves.
- When you clap your hands, the air around your hands shakes. This is the air molecules vibrating.
- When air molecules inside the ear vibrate, they shake tiny hairs on the insides of the ears. The hairs are connected to nerves under the skin.
- These nerves send messages to your brain to tell you that you heard a noise



### FOCUS SCIENTIST –

Alexander Graham Bell was born on March 3, 1847 in Edinburgh, Scotland. He died on August 2, 1922 at the age of 75. He is widely known for his invention of the first practical telephone. **Bell's** mother and wife were both deaf, this had a major influence on his work. His experiments in sound eventually allowed him to send voice signals down a telegraph wire. He managed to borrow money from investors so that he could hire someone to help him. His name was Thomas Watson. The two of them together came up with the telephone! The first words spoken were by Alexander on March 10, 1876. Any guesses what he said? Well he said, "Mr. Watson, come here, I want to see you." In 1887, Bell and people who lent him the money for his experiments formed the Bell telephone company.



### Key Vocabulary

ear eardrum sound pitch volume vibrations medium insulation travel instrument particle soundproof

## KNOWLEDGE ORGANISER



### How Does Sound Travel ?

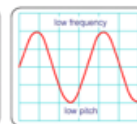
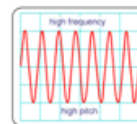
Sound can travel through solids, liquids and gases. Sound travels as a **wave**, vibrating the **particles** in the medium it is travelling in. Sound travels much slower than light, whether in air or in water. You often hear things after you see them, for example, you see the lightning before you hear the thunder.

When you hit a drum, the drum skin vibrates. This makes the air particles closest to the drum start to vibrate as well. The **vibration** then pass to the next air **particle**, then the next, then the next. This carries on until the air **particle** closest to your ear **vibrate**, passing the **vibration** into your **ear**.



### PITCH

**Pitch** is a measure of how high or low a sound is. A whistle being blown creates a high-**pitched** sound. A rumble of thunder is an example of a low-**pitched** sound.



You can change the **pitch** of the sound in different ways depending on the type of instrument that you are playing. For example if you are playing a xylophone, striking the smaller bars will create faster **vibrations** and therefore a higher note. Striking larger bars will causes slower **vibrations** which produces a lower note.



## YEAR 4 SCIENCE – ELECTRICITY

### KNOWLEDGE ORGANISER



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

#### ELECTRICITY

In Year 4, we will learn:

Electricity (Circuits and Components)

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
- recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

In Year 6, we will develop this further and learn about:

- Electricity- Changing circuits and symbols.

Lightning and static electricity are examples of electricity occurring naturally but for us to use electricity to power appliances, we need to make it. **Electricity** can be **generated** from wind power used to turn windmills and hydroelectric power from water used in dams. The Sun's rays can be converted into **electricity** by solar panels. Coal, oil and natural gases are fossil fuels which, when burnt, produce heat which can be used to **generate electricity**. Nuclear energy is created when atoms are split. This creates heat, which can be used to **generate electricity**. Geothermal energy is heat from the Earth that is converted into **electricity**.

#### CONDUCTORS AND INSULATORS

Materials can be **conductors** or **insulators**. Conductors allow electricity to pass through them easily whereas **electrical insulators** do not allow electricity to pass through them.

##### Electrical conductors

Many metals, such as **copper**, **iron** and **steel**, are good **electrical conductors**. That is why the parts of electrical objects that need to let electricity pass through are always made of metal.



##### Electrical Insulators

**Plastic**, **wood**, **glass** and **rubber** are good **electrical insulators**, which is **why** they are used to cover materials that carry electricity. The plastic covering that surrounds wires is an electrical insulator. It stops you from getting an electrical shock.



#### FOCUS SCIENTIST – GARRET MORGAN – TRAFFIC LIGHTS

Garrett Morgan was born on March 4, 1877, in Paris, Kentucky. He was an inventor and successful businessman. Many of his inventions helped to improve public safety. These included an early form of a gas mask and a type of traffic signal. In 1923, he created a new kind of traffic signal, one with a warning light to alert drivers that they would need to stop, after witnessing a carriage accident at a busy city T junction. Morgan quickly acquired patents for his traffic signal—a version of the modern three-way traffic light—in the United States, Britain and Canada, but eventually sold the rights to General Electric for \$40,000.



#### Key Vocabulary

battery, cell, wires, switch, crocodile clips, buzzer, bulb, circuit, symbols, insulator, conductor, plastic, metal, appliance, component

#### CIRCUITS AND COMPONENTS

These are the components used to make a circuit.



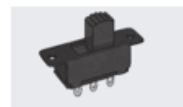
A pathway that **electricity** can flow around. It includes wires and a power supply and may include bulbs, switches or buzzers.

**Electricity** can only flow around a complete **circuit** that has no gaps. There must be wires connected to both the positive and negative end of the power supply/**battery**.



#### SWITCHES

There are wide varieties of switches that can be used. Below are a few examples.



slide switch



push button switch



pull switch



dimmer switch

paddle switch

selector switch

key switch

toggle switch



Switches can be used to open or close a **circuit**. When off, a switch 'breaks' the **circuit** to stop the flow of **electricity**. When on, a switch 'completes' the circuit and allows the **electricity** to flow.

## YEAR 4 HISTORY – THE ROMAN EMPIRE

## KNOWLEDGE ORGANISER



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

In Year 3, the children will have learnt about the historical period of the 'Iron Age', which started approx. 2500 years before 'The Romans'.

In Year 4, we will learn about the 'Roman invasion' and then we will go on to learn about 'Roman Entertainment'.

In Year 5, the children will learn about the 'The Vikings and the Anglo-Saxon struggle', which took place after the Roman Empire.

### ENRICHING THE CURRICULUM

To bring this topic to life, the children will go on a trip to the 'Verulamium' museum in St. Albans to look at Roman artefacts and to take part on a workshop.

### WHAT HAVE THE ROMANS GIVEN US?

The Romans, even today, play an important part in our lives. Many of the things we do or have originated from the Romans **The Romans gave us:**

**Language** - The language we used today was developed from the Romans. The Romans spoke and wrote in Latin and many of our words are based on Latin words.

**The Calendar** - Did you know that the calendar we use today is more than 2,000 years old? It was started by Julius Caesar, a Roman ruler. It is based on the movement of the earth around the sun, and so is called the 'solar calendar.' The solar calendar has 365 days a year, and 366 days every leap year, or every fourth year. The names of our months are taken from the names of Roman gods and rulers. The month 'July,' in fact, is named after Julius Caesar himself!

**Laws and a legal system** - The laws and ways we determine what to do with someone who is accused of breaking a law came originally from the Roman Empire.

**The Census** - The Roman Empire was huge and included millions of people living over a large area. How did they keep track of all these people? Easy! They counted them! The Roman Empire began the practice of taking a census, or a 'count,' of all the people within its boundaries every so often. Today, many countries like ours take a census every 10 years.

**The Romans also gave us:** straight roads, central heating, concrete, aqueducts (bridges for water).



### HISTORICAL FIGURE – ROMULUS AND REMUS

According to **Roman legend**, there was once a pair of twin brothers called **Romulus and Remus**. Their mother was **Rhea Silvia**, the daughter of **King Numitor**, and their father was **Mars, the God of War**. King Numitor had a brother, Amulius, who wanted to be king so much that he took the throne for himself. When **Romulus and Remus** were born to Rhea Silvia, Amulius was shocked and very angry. In his rage, he put the twin boys into a **basket** and threw them into the **river Tiber** where they were rescued by a **mother wolf** who cared for them.

Once Romulus and Remus got bigger, they were taken home by a shepherd called **Faustulus**. He and his wife looked after them in his home until they were adults. One day, Romulus and Remus discovered who they really were and made a plan to kill Amulius and **reclaim the throne** for their own family and they decided to build a city of their own. They disagreed about where to build it. Romulus thought that they should build it on the **Palatine Hill**, but Remus wanted to use the **Aventine Hill**. They each began to build their **own walled city**. One day, Remus paid Romulus a visit. Remus mocked Romulus's city and its low walls. Romulus became so infuriated that he **killed Remus instantly**, declaring that he would kill any person who ever made fun of his city, which he called Rome. He continued to **build up his city and officially made himself king in 753 BC**.



### Key Vocabulary

The Roman Empire Rome Army The Celts Legion Remus Romulus legend invasion formation armour legionnaire auxilarie Colchester Census Straight roads concrete central heating aqueducts St. Albans Picts Celts Roman roads Verulamium

### TIMELINE FOR THE ROMAN EMPIRE

753 BC	The building of Rome begins, with the legend of Romulus and Remus
264 BC	The Romans begin invading other parts of Italy and take control
146 BC	The Romans begin invading other parts of the world, including 3 wars are fought successfully
55BC	Julius Caesar invades Britain and fought the Celts, eventually taking over some parts of Britain a year later
AD 1	Jesus is born and the Romans reign
AD 43	Emperor Claudius invades Britain and, after years of fighting, takes control of more of the land
AD 60-61	Boudicca leads a rebellion with the Celts to try to overthrow the Romans but eventually fails
AD 410	Roman rule in Britain ends as many Roman soldiers are needed back in the Empire to defend it
AD 476	Roman rule ends when the Romans are conquered by the 'Barbarians'



### THE ROMAN ARMY

The spread of the Roman Empire was partly due to the fact that the **Roman army** was so well **organised**. At the time of its **invasion of Britain**, the Roman army was the **most disciplined and efficient killing machine** that the ancient world had ever known. Its men were **well-equipped and highly trained**, and operated in **strict formation on the battlefield**. Roman soldiers were very strong and tough; they had to march over 20 miles a day with heavy things to carry. They had to carry equipment such as **tents, food, cooking pots and weapons** as well as wearing all their **armour**.

The Roman army was divided into two groups - **legionaries and auxiliaries**. The Roman legionary was a soldier who was a Roman citizen **younger than 45**. Legionaries served in the army for **20 years**. They were **well-armed and well-trained** fighting men. They were also skilled **engineers and craftsmen** because they had to **build roads, bridges and forts**. The **Auxiliaries of the Roman army** were **non-Roman citizens**. They were recruited from tribes that had been conquered by Rome or were allied to Rome. Roman Auxiliaries were **paid less** than the legionaries and had to serve for **25 years**, after which they became Roman citizens. A **troop of 120 horsemen**, who served as **scouts and messengers** were attached to each **Roman legion**.



## YEAR 4 HISTORY – ROMAN ENTERTAINMENT

## KNOWLEDGE ORGANISER



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

In Year 3, the children will have learnt about the historical period of the 'Iron age', which started approx. 2500 years before 'The Romans'.

In Year 4, we will learn about the 'Roman invasion' and then we will go on to learn about 'Roman Entertainment'.

In Year 5, the children will learn about the 'The Vikings and the Anglo-Saxon struggle', which took place after the Roman Empire.

### ENRICHING THE CURRICULUM

To bring this topic to life, the children will take part in a 'Roman day', where they will dress as Romans and take part in Roman army drills and enjoy a banquet.

### ROMAN ARTEFACTS

It is an **archaeologist's** job to look at evidence, such as **artefacts and buildings**, from the **past** and to try and **interpret** them!

**Archaeology:** The study of the lives of people in the past

**Evidence:** Information to support an idea/interpretation

**Artefact:** Any object made or changed by people

**Interpret:** To try and explain what something means

**Excavate:** To dig up and record archaeological remains

There are many **Roman artefacts** that can tell us about **what life was like** in Roman times. Examples of these are items such as: **Roman coins, mosaics, lead pipes, vases, containers, ruins and many more.**



### ROMAN CHARIOTS

The ancient Romans borrowed a great many ideas from other ancient civilizations. One of those ideas was the **chariot**, an idea they probably borrowed from the ancient Etruscans. **Most travel in ancient Rome was by cart pulled by oxen, by walking, or by boat.** Chariots were used for travel on the Roman roads when there was no need to carry a lot of weight. But the real use of chariots in ancient Rome was **for racing**. When Rome was a kingdom, young Roman men raced each other on chariots around the **seven hills**, causing destruction to property and danger to pedestrians, causing many problems. **Under the Empire**, chariot racing was much better controlled. There were race tracks all over the Empire and these race tracks were called **circuses**. But the best chariot racing in the Empire was held at the **Circus Maximus** in the city of Rome. **Admission to events in the Circus Maximus was free** and people cheered for their favourite rider or team. Winning chariot riders were treated like movie stars or rock stars are today. It was a very **dangerous** sport, however, and many riders died seeking glory in the Circus Maximus.



### Key Vocabulary

artefact chariot Roman roads circuses seven hills Circus Maximus coins mosaics lead pipes container/vase gladiator arena Colosseum

Archaeologist mosaics lead pipes vases amphitheater Flavian amphitheater combatants Empire cart glory carnage combat sport

### THE COLLOSEUM

When the Romans wanted to have **fun**, they would go to the **Colosseum** to watch **gladiators fight** or to see **plays**. You can still see the Colosseum in Rome – it's not exactly like it was back in Roman times, but you can get an idea of how impressive it would have been back then. The Colosseum was first called the '**Flavian Amphitheatre**'. It was shaped like an **oval**, and is called an Amphitheatre because it does not have a roof. Chariot races were not held at the Colosseum – people would go to the Circus Maximus for that. It was as long as about **six football pitches** put together, and it had **two rounded ends** where the chariots would turn to complete another **lap**.



### GLADIATORS

Gladiators were **combatants** who fought against each other, **condemned criminals** and **wild animals** during the time of the **Roman Republic and Roman Empire**. They were armed with deadly weapons and in most cases fought till either one of them accepted defeat or was killed fighting. Gladiators fought for the **entertainment** of the people and gladiator fighting was a **popular sport** in Rome, just like football is for us today. Roman people enjoyed the sight of blood and carnage.

They built **amphitheaters** like '**The Colosseum**', where gladiator games were held regularly and were witnessed by excited crowds who **cheered** for their favorite fighters just like we cheer our favorite sportsmen and teams today.



## YEAR 4 ART – MOSAICS AND PRINTING

## KNOWLEDGE ORGANISER



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

In Year 3, we used collage to create a pirate boat scene, cutting materials accurately, overlapping materials and using different colours. We also used printed images and combined these with other media.

In Year 4, we will extend this by creating our own mosaic inspired prints, ceramic mosaics and Roman pottery.

In Year 6, we will then create printing blocks using a relief or impressed method as well as using collage to experiment with a range of techniques such as tearing, overlapping and layering to create images and represent textures.

### HISTORY OF ART- THE ROMANS

Through our topic work, we will look at **what life was like during Roman times**. We will learn about how the **Roman empire** established itself and what life was like for **every day Romans**, as well as focusing on **Roman entertainment**.

We will learn about several varieties of **Roman art**, such as **mosaics and pottery**, and extend this to think about how **engraving and printing** have been used throughout many historical periods.



### MOULDABLE MATERIALS - POTTERY

Pottery was an important part of daily living in ancient Rome and a huge quantity of utensils, cooking pots and fine wares were produced. Many have since been discovered during archeological digs and provide a rare insight into Roman life and society.

Unlike Greek pottery in which decorations were painted on the pottery, Romans preferred to engrave them. Fine wares were the more formal and exquisite pottery that was used by Romans for formal occasions and was used to serve food on the table. The most common fine ware pottery was the red glazed pottery called 'terra sigillata'.



### CERMAIC MOSAICS

The floors of **Roman buildings** were often richly decorated with mosaics - **tiny coloured stones called tesserae**.

Many mosaics captured scenes of **history and everyday Roman life**. Mosaic floors were a statement of **wealth and importance**.

**Rich Romans** decorated the floors of their main rooms with mosaics. These were stuck to the floor with **mortar, a type of cement**. Each mosaic used thousands of pieces to make a pattern.



### PRINTING AND ENGRAVING

History of printmaking

**Engraving** is one of the oldest art forms. Engraved designs have been found on **prehistoric bones, stones, and cave walls**. The technique of duplicating images goes back several thousand years to the **Sumerians (c. 3000 BCE)**, who engraved designs and inscriptions on **cylinder seals** (usually made of stone), which, when **rolled over soft clay tablets, left relief impressions**. They conceived not only the idea of **multiplication** but also the **mechanical principle**, the roller, which in more sophisticated form became the **printing press**.



### Key Vocabulary

Mosaic	tesserae	coil	pinch	pottery	printing press	utensils	cooking	archaeological	terra sigillata	
Fineware	decorated		everyday life		engraving	printing	duplicate	inscription	entertainment	art

## YEAR 4 DT - MAKING TORCHES



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

In Year 2, through our topic 'Construction/Use of Materials' we designed and made our own emergency vehicles.

In Year 4, we will design and construct our own torch.

In Year 5, we will extend our skills through our topic 'Electrical and Mechanical components' by incorporating Hydraulics and pneumatics.

### HISTORY OF TORCHES/ FLASHLIGHTS

Throughout history, humans have made use of **portable light sources**. **Torches, candles, oil lamps and kerosene lamps** were designed to be carried around but they could be **dangerous** because they used a **flame** as a source of light.



**Inventions** of the **electric light bulb** and of dry battery at the end of the 19th century enabled solution for this problem and this invention has become known as a **torch or flashlight**.



There are many different types, which can be used for many **different purposes**.

### TYPES OF TORCHES

 Rechargeable torch	 Right angle torch	 Head torch
 Tactical torch	 Penlight	 Keychain and clip torches

### Key Vocabulary

- |           |              |           |           |        |             |              |               |        |         |
|-----------|--------------|-----------|-----------|--------|-------------|--------------|---------------|--------|---------|
| portable  | light source | invention | battery   | safety | danger      | electric     | light bulb    | switch | circuit |
| component | casing       | tube      | reflector | cells  | push button | slide switch | paddle switch | design | use     |

## KNOWLEDGE ORGANISER

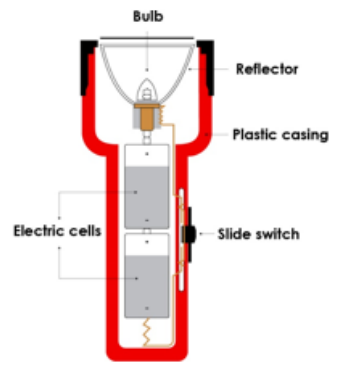


### PARTS OF A TORCH

The **plastic casing** holds all of the components together and the **bulb is the source of light**. The **batteries** rest on a small spring that is connected to two **contact strips**, which are thin strips of metal – often made of copper or brass. This makes the electrical connection between the batteries, the lamp and the switch. These parts **conduct electricity and complete the circuit**.

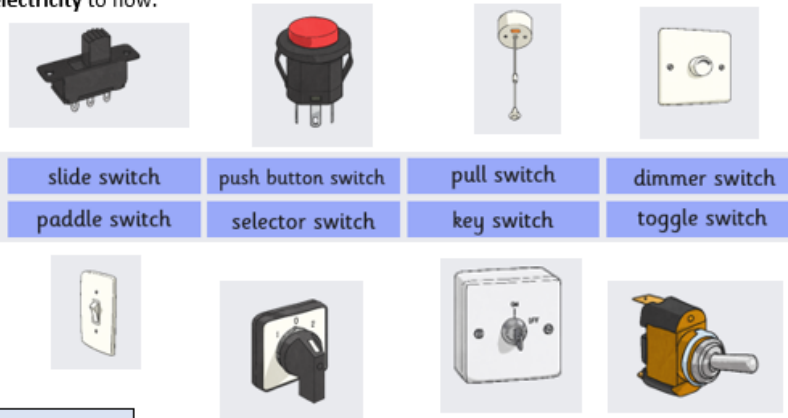
When the **switch** is pushed to the 'on' position, it begins a flow of electricity powered by the battery. When the switch is pushed into the 'off' position, the contact strips are moved apart and the path for the electrical **current is broken**, which stops the torch producing light.

The **reflector** part at the front is formed of plastic and coated with a **shiny aluminum layer**, which bends around the bulb, to direct the rays forward so they provide a steady light beam and this is protected by the **lens**.



### TYPES OF SWITCHES

Switches can be used to open or close a **circuit**. When off, a switch 'breaks' the circuit to stop the flow of **electricity**. When on, a switch 'completes' the circuit and allows the **electricity** to flow.



slide switch	push button switch	pull switch	dimmer switch
paddle switch	selector switch	key switch	toggle switch

## Year 4 - Tennis

## Knowledge Organiser

### Prior Learning

Can identify and describe some rules of tennis. Have served to start a game. Explored forehand hitting.

### We are learning...

1. To return to the middle of the court after playing a shot.
2. To accurately use the forehand in game situations to score points.
3. To play a backhand shot with some control.
4. To combine ready position and court movement to consistently return the serve.
5. To work with a partner to score points in a game.
6. To use forehand and backhand shots to score points in a competitive situation.

### Assessment Overview

**Head** - Use defensive tactics to defend the court.

**Hand** - Attempt to self-feed backhand shots.

**Heart** - Play competitively with others and against others in modified games.

### Equipment

Tennis racquets, nets, sponge balls, tennis balls, cones, hoops, bench.

### Vocabulary

Hit, return, court, forehand, backhand, bounce, points, score, net, tactics, underarm, overarm, position, ready.

### Unit Focus

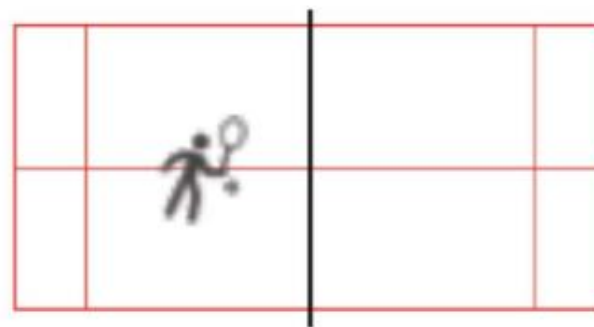
Explore some forehand and backhand shots. Work to return the serve. Explore positions in gameplay.

### Key Questions

1. Which side is your backhand if you are right-handed? Left-handed?
2. Where should you try to return to on your court after hitting shots and why?
3. How can you communicate with your partner to be effective in games?

### Concept

Court Positioning - Being in the middle of the court gives you the best chance to return the ball because you can move easily to any part of the court.





## Year 4 – Gymnastics Unit 1

## Knowledge Organiser

### Prior Learning

Identified similarities and differences in sequences. Developed body management over a range of floor exercises. Attempted to bring explosive movements into floor work.

### We are learning...

1. To perform a 6-element sequence that uses changes in speed and direction
2. To use the STEP principle to create and perform a partner sequence
3. To take weight on our hands, showing control
4. To develop a sequence using compositional ideas, e.g. changing speed
5. To co-operate as a group to refine a short sequence
6. To compare and judge sequences

### Assessment Overview

**Head** - Decide on ways to improve a piece of work using compositional elements and implement changes.

**Hand** - Demonstrate some control when taking weight on hands.

**Heart** - Adapt actions and sequences to work with partners and small groups.

### Equipment

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

### Unit Focus

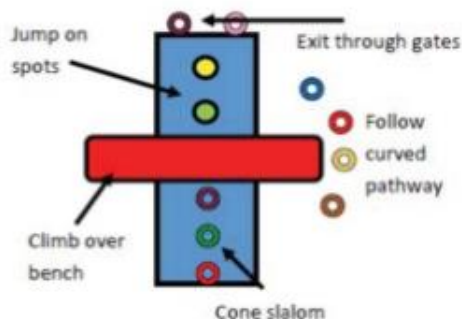
Become increasingly competent and confident to perform skills more consistently. Perform in time with a partner and group. Use compositional ideas in sequences.

### Key Questions

1. How many compositional elements can you identify?
2. Did you use different pathways in your sequence?
3. What safety aspects do you need to consider when performing a cartwheel?

### Vocabulary

Control, group, similar, different, direction, speed, partner, actions, compositional, stamina, leap, refine, progression.



### Concepts

Basic gymnastics shapes are tuck, straddle, pike, star, dish, arch, L-sit, back support, front support, v-sit, bridge, straight, arabesque.