

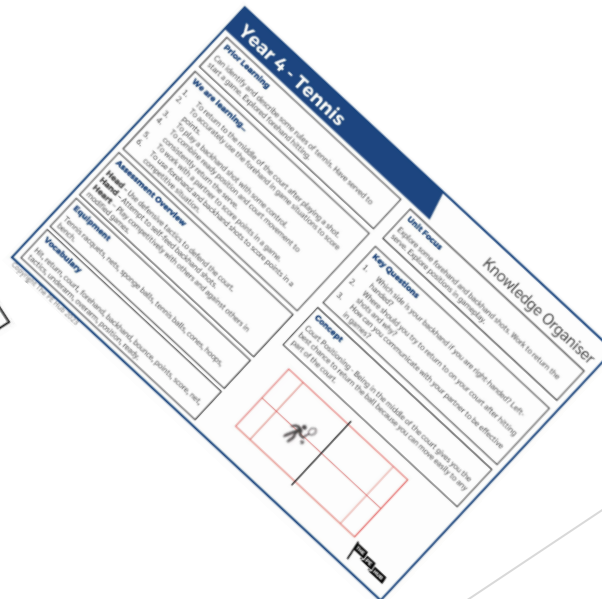
# Year 5

## 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 5 for the Spring term, which will also be in pupil's books and on working walls in school.



## YEAR 5 SCIENCE – FORCES

### 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 Every day 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 learnt 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.

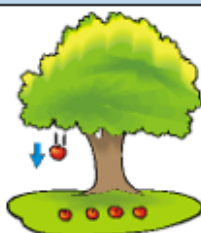
In Year 5, we will learn to:

- 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.

### TYPES OF FORCES

**Gravity** – the force that pulls things to the ground. Gravity also holds Earth and other planets in their orbits around the sun.



**Friction** – friction is a force between 2 surfaces that are sliding or trying to slide across each other. Friction works in the opposite direction to which the object is moving. It slows down the moving object and also produces heat. It can be helpful in certain situations but not helpful in others.

**Air resistance** – a type of friction between air and another material. Aeroplanes and cars are streamlined so that they can move through the air as easily as possible.

**Water resistance** – a type of friction between water and another material. When you go swimming there is friction between your skin and the water particles.

### FOCUS SCIENTIST – ISAAC NEWTON - GRAVITY

Isaac Newton was born in 1643 and became famous for his work on gravity and his three laws of motion. He was also well known for his work on light and colour, and what is now called calculus (a branch of mathematics).

The famous story of an apple falling to the ground from a tree illustrates how Newton's work on gravity was inspired by things he observed in the world around him.

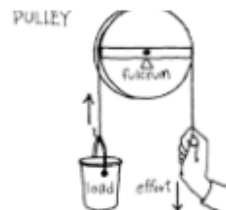


## KNOWLEDGE ORGANISER

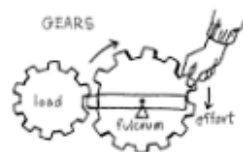


### TYPES OF MECHANISM

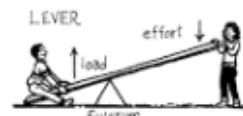
**Pulleys** – they are used to reduce the amount of force needed to lift a load. The more wheels in a pulley the less force is needed to lift the weight.



**Gears or cogs** – are used to change speed, direction or force of a motion. When 2 gears are connected they always turn in the opposite direction to one another.



**Levers** – can be used to make a small force lift a lighter load. A lever always rests on a pivot or fulcrum.



### BALANCED AND UNBALANCED FORCES

Forces are just pushes and pulls in a particular direction. Forces are shown by arrows in diagrams. The direction of the arrow shows the direction in which the force is acting. The bigger the arrow, the bigger the force.

#### Balanced forces

If two forces are balanced, it means the forces are the same size but are acting in opposite directions. If two balanced forces are acting on an object, that object will not change its motion. If it is still, the object will stay still or if it is moving, it will continue moving in the same direction and at the same speed.



#### Unbalanced forces

When two forces acting on an object are not equal in size, we say that they are unbalanced forces. Unbalanced forces do change the way something is moving. They can make objects start to move, speed up, slow down or change direction.



### Key Vocabulary

force	gravity	air resistance	push	pull	balanced	mechanisms	friction	weight	mass	streamline	water resistance
fulcrum	pulley	pivot	opposite	gears	lever	Isaac Newton	Laws of motion	direction	force arrow		

## YEAR 5 SCIENCE – PROPERTIES AND CHANGES OF MATERIALS KNOWLEDGE ORGANISER



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

In Year 1, we learnt about objects and their materials, everyday materials and we explored waterproof materials and Charles Macintosh. We described the basic properties and grouped materials based on these.

In Year 2, we learnt about the suitability of different materials for different objects and we learnt about John McAdam who changed the roads.

In Year 5, we will develop this further by looking deeper at their properties such as hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. We explore materials dissolving and solutions as well as separating mixtures through filtering, sieving and evaporating. Changes made to materials can be reversible and irreversible which we explore and we learn about Ruth Benerito who saved the cotton industry!

### CLASSIFYING MATERIALS

Different materials are used for particular jobs based on the properties they have.

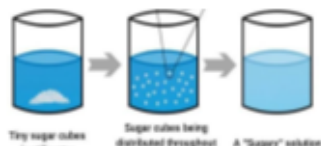
**Conductor** – A conductor is a material that **allows heat or electricity** to easily pass through it. Most metals are **thermal conductors** (conduct heat) and electrical conductors.

**Insulator** – An insulator is a material that **does not allow heat or electricity** to easily travel through it. Woods and plastics are both thermal and electrical insulators.

**Soluble** – Materials that **dissolve** when introduced to **water** and create a solution.

**Insoluble** – Materials that **do not dissolve** when introduced to **water**.

**Transparent** – A material that **allows light** to pass through it.



### FOCUS SCIENTIST – RUTH BENERITO – WASH AND WEAR COTTON FABRICS



Ruth Benerito was an American chemist. She is best known for developing **wrinkle-free cotton fabric**. Benerito also invented a **fat mixture** that could provide nutrients through the veins of patients who could not eat.

In 2008, Benerito was inducted into the **National Inventors Hall of Fame**. She died on October 5<sup>th</sup> 2013.

#### Wrinkle-free cotton

In the 1950s and 60s, synthetic fabrics such as nylon were becoming more popular than cotton as they did not need to be ironed whereas cotton creased really easily.

Ruth added chemicals that fastened to the cotton and acted as 'rungs of a ladder' holding the molecules in place and keeping the fabric smooth.



### CHANGES OF STATE

#### Dissolving

Some substances **dissolve** when you mix them with **water**. When a substance dissolves, it might look like it has **disappeared**, but in fact it has just **mixed** with the water to make a transparent (see-through) liquid called a **solution**.

Substances that dissolve in water are called **soluble substances**. When you mix sugar with water, the sugar dissolves to make a transparent solution. Salt is soluble in water too.

#### Mixtures

A **mixture** is the result of combining **two or more substances**, in which they do **not change their physical state** and no **chemical reaction** takes place. These mixtures are **reversible** as the substances included in the mixture **can be separated** without great levels of difficulty.

Creating a mixture of two or more objects may involve sand and water (suspension) or pasta and paperclips (mixture).

#### Changes of State

A **reversible change of state** refers to any form of process that can be **undone**.

For example, when **ice melts to water** it goes from being a **solid to a liquid**. If you were to continue heating the liquid, it would once again **change state to a gas**.

The original ice cube could be restored once the water was collected by the process of **evaporation and frozen again**.

Therefore the state of a substance is **interchangeable** between a solid, liquid or gas.

### FORMATION OF NEW MATERIALS

When substances create a **new material** through **chemical change**, it is **irreversible**. A change is called irreversible if it cannot be changed back to its original state.

#### Heating

Heating can cause an irreversible change. For example, you heat a raw egg to cook it. The **cooked egg cannot be changed back to a raw egg again**.

#### Mixing

Mixing substances can cause an irreversible change. For example, when vinegar (an acid) and bicarbonate of soda are mixed, the mixture changes and lots of bubbles of carbon dioxide are made. **These bubbles and the liquid mixture left behind, cannot be turned back into vinegar and bicarbonate of soda again**.

#### Burning

**Burning is an example of an irreversible change.**

When you burn wood, you get ash and smoke. You cannot change the ash and smoke back to wood again.

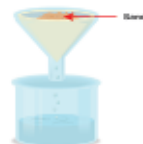


### SEPARATING MIXTURES

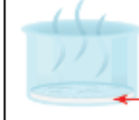


**SIEVING** – a mixture of different sized solid particles can be separated with a sieve. The particles small enough fall through the holes of the sieve, whilst the largest particles remain within it.

**FILTERING** – an insoluble solid can be separated from a liquid when passed through a filter. The liquid passes through and the solid particles are trapped on the filter.



Water vapour



**EVAPORATING** – if a solution is boiled (heated) the water will evaporate into gas and the solid will be left behind.

### Key Vocabulary

solid liquid gas conductor insulator reversible irreversible process dissolve solution mixture separation filtering burning heating evaporating



## YEAR 5 HISTORY — THE VIKINGS

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

In Year 4, we learnt about 'lifestyle' in both Ancient Rome and Ancient Greece including the legacies that both groups left behind.

In Year 5, we will continue looking at the theme of 'lifestyle' by learning more about what life was like for Anglo-Saxons once they had invaded Britain and consider why they wanted to invade and the changes that they made over time.

In Year 6, we will further this by looking more in depth at important events and significant leaders during World War II as well as a study on the ancient civilisation 'The Mayans'.

### TIMELINE

- AD 793 - The Vikings attacked from Norway. They attacked the Monastery of Lindisfarne in Northumbria and the following year they attacked northern Britain.
- AD 866 - The Vikings capture the city of York.
- AD 878 - They had settled permanently in England.
- AD 871 - Alfred the Great becomes King of Wessex. King Alfred agrees to a treaty with the Vikings. Alfred keeps the west and the Vikings are given the east which is later known as 'Danelaw'.
- AD 1042 - Edward II is invited to return from Normandy to become the King of England. Edward II was better known as 'Edward the Confessor' due to his extreme religious devotion (piety).
- AD 1066 - The last Anglo-Saxon king, King Harold II, is defeated by William the Conqueror in the Battle of Hastings and Norman Britain begins.

### LINDISFARNE MONASTERY

Lindisfarne, also known as Holy Island, was one of the first landing sites of the Vikings. Monasteries were places where monks lived and worshipped. Most people respected the monks and gave them money and gifts for their monasteries; however, the Vikings committed terrible violence against the Monks at Lindisfarne. When the Vikings arrived, there was no battle as the monks did not have weapons or believe in fighting. The Vikings killed or enslaved the monks and stole most of the treasure and precious items sending shockwaves throughout Europe.



### Key Vocabulary

Viking	Norway	Alfred the Great		Danelaw	Edward II	King Harold II		Anglo-Saxons	Battle of Hastings	beliefs
monastery	monk	killed	enslaved	Longhouse	11 <sup>th</sup> century	peace	treasure	precious	brutal	skills of their fathers

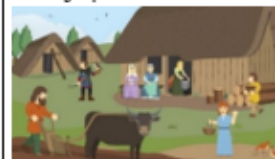
## KNOWLEDGE ORGANISER



### LIFE BEFORE THE VIKINGS INVADED

Anglo-Saxon children were seen as adults by the age of ten. They had to work as hard as any adult and would be punished as adults if they broke the law. Girls worked in the home e.g. housekeeping, weaving cloth and cooking meals and boys learned the skills of their fathers e.g. tree cutting, ploughing a field and using a spear in battle.

Only a few girls and boys learned to read and write and the only schools were run by the Christian church, in monasteries. The sons of Kings or wealthy families might be taught at home by a private teacher.



### LIFE AFTER THE VIKINGS INVADED

The Vikings brought with them their way of life and beliefs. Also known as 'The Norse people', they worshipped many gods and loved to tell stories of magic and monsters around the fire.

Many Vikings worked as farmers which was a tough life. They grew crops (oats, barley and wheat) to make flour, porridge and ale. They planted vegetables and kept animals like cows, sheep, pigs and chickens. Other Vikings were craft workers such as jewellers, woodworkers, leatherworkers, potters and blacksmiths. They made crockery, clothes and weapons. People took these goods to the market to sell and Viking traders travelled the seas to trade their goods for money or for silver, silk, spices and furs to bring back home.

Many Viking families lived together in a longhouse built from wood or stone with a thatched or turf roof. Everyone, including animals, shared one room so they were often crowded and smelly.



### THE DANE LAW

The Danelaw is the name for an area of Northern and Eastern England that was under the control of the Danish Viking empire. In these areas, the laws of the Danes held sway and dominated those of the Anglo-Saxons. There were 5 boroughs (and 15 towns) in Danelaw including Leicester, Nottingham, Derby, Stamford and Lincoln, which by the ninth century were under control of the Vikings. The establishment of Danelaw brought with it an important period of peace as this divided the British Isles up into territories belonging to the ruling societies. This, however, did not last long as the Danes and English were again fighting, into the 10th Century. The English eventually gained the upper hand, and the regaining of York from the Danes in 954 was essentially the end of the Danelaw.





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

In Year 3 we learnt to identify features using a map, describe physical and human features and use grid references, compass directions and OS map symbols.

In Year 5, we are explaining how locations fit into their geographical locations with reference to physical and human geography. We will be creating a report about South America to showcase all of our learning including countries, climate and culture.

In Year 6, we will learn about biomes, tropics of cancer and Capricorn and how human activity has caused the environment to change. We will also describe human and physical features around the world.

**SOUTH AMERICA**

The Amazon Rainforest

There are 12 countries in South America. The Amazon Rainforest is in eight of these countries.

It is in the Southern Hemisphere.

To fly from London to Brazil it would take approximately 10 hours 45 minutes and London to Chile takes 14 hours and 45 minutes.

**CLIMATE CHANGE**

Climate change is having significant impact throughout South America but this is particularly threatening for The Amazon Rainforest. In 2020 the rate of deforestation was at the highest in twelve years.

**What does this mean?**

- Loss of habitats for millions of species
- Contribution to global warming
- Loss of homes of indigenous people
- Increased carbon emissions (carbon stored in trunks released when cut down)
- Soil erosion because there are no trees to protect it
- Decrease in precipitation

**PHYSICAL GEOGRAPHY**

**Why is the Amazon Rainforest there?**

The red line shows the equator and either side of the equator is the Tropic of Cancer, in the Northern Hemisphere, and the Tropic of Capricorn, in the Southern Hemisphere. In between these is known as 'the tropics' or tropical region.

This makes the Amazon Rainforest a tropical rainforest. This means that the climate is humid and warm all year round with temperatures consistently above 14 °C and precipitation all year round (often daily) between 1.5m and 3m every year.

The Amazon Rainforest sits in the Amazon basin. This is the area that drains into the Amazon River and it is the largest river basin in the world.

**Why are the Andes mountains there?**

The world is made of different tectonic plates and scientists believe these plates move at a maximum rate of around 1-2 inches per year.

The Andes is formed by a convergent plate boundary which can cause earthquakes, mountains and volcanoes.

**Pacific Ring of Fire**  
75% of Earth's volcanoes are along the Pacific Ring of Fire which is a circle formed by subduction of tectonic plates. This is where plates overlap at convergent boundaries like that of the Nazca and South America plate.

**The Andean Volcanic Belt** is found along the Pacific Ring of fire and contains over 200 potential active volcanoes in four different zones.

**HUMAN GEOGRAPHY**

The largest and most densely populated country is Brazil with just over 212,000,000 people.

There is a significant divide between the rich and the poor with 16 million people living in poverty.

On the outskirts of the city you will find extensive favela's where many people live in crowded and significantly poor living conditions.

← A Brazilian Favela

South America's biggest industry is agriculture for example:

- Bananas
- Coffee
- Timber
- Cattle for dairy produce and meat
- Wine
- Metals and metal ore such as gold and copper.

Key Vocabulary

Human geography	Physical geography	continent	country	equator	Tropic of Cancer	Tropic of Capricorn
climate	river basin	tectonic plates	industry	population	climate change	global warming



YEAR 5 DT – SOUTH AMERICAN BAGS

KNOWLEDGE ORGANISER



What have we learnt before in DT and what we will learn next?	FASTENING TECHNIQUES
<p>In Year 4, we worked with felt by creating a Harry Potter inspired bunting, cutting our own applique and using over stitch and backstitch to join materials.</p> <p>In Year 5, we will further our sewing skills by making a South American inspired bag using a range of stitches to join materials and decorate.</p> <p>In Year 6, we will revise our knowledge of Shell structures by building an Anderson Shelter and will use our sewing skills to create accessories.</p>	<p>Bags and satchels can be made from a variety of materials. It is important that the materials are strong enough to bear the weight of the bag's contents. Leather, cotton and polyester are all often used for this purpose.</p> <p>Added compartments or fastenings can be attached to the bag to improve the product's <u>functionality</u>, such as:</p> <ul style="list-style-type: none"><li>- A zip to fasten the bag and keep the contents safe</li><li>- A button/ toggle/ Velcro or press stud to fasten the bag and hold the fabric together</li><li>- A pocket to carry small items</li><li>- A strap to make the bag easier to carry</li></ul>



PATTERNS AND DESIGNS IN PERUVIAN TEXTILES

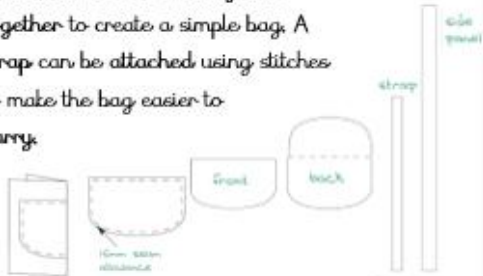


Traditional South American textiles are more than mere fabric; they are imbued with deep cultural and spiritual significance. Patterns, bright colors, repeating patterns and materials often carry symbolic meanings, representing everything from social status and community identity to cosmological beliefs and mythological narratives. Today, these beautiful fabrics can be used to enhance and improve the appearance of our own textile creations.

BAG TEMPLATE AND ATTACHING STRAPS



A template is a form, mold or pattern used as a guide to make something. A paper template with the correct shape can be used to cut out pieces of fabric, which can then be joined together to create a simple bag. A strap can be attached using stitches to make the bag easier to carry.



DECORATIVE SEWING



Textiles designers and makers use a range of stitches and other techniques (e.g. embroidery, tie dye) to add to the aesthetic appeal of their product.

Stitches such as cross stitch, running stitch or fly stitch can be used to add decorative pieces of material, add patterns or even personalisations.

Key Vocabulary

bag	satchel	material	strong	carry	fastening	zip	button	toggle	Velcro	pocket	strap	textile
South American	template	paper template	guide	attach	cross stitch	running stitch	fly stitch	decorate				



YEAR 5 ART – SELF- PORTRAITS

KNOWLEDGE ORGANISER



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

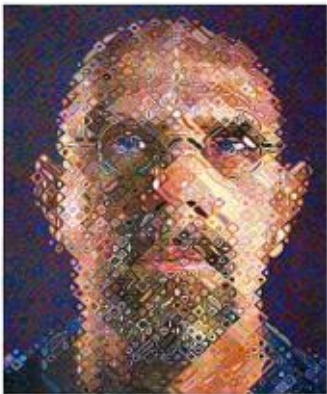
FOCUS ARTIST – CHUCK CLOSE

In Year 4, we developed our sketching and drawing skills to show facial expressions and to create movement in our drawings.

In Year 5, we will extend this to sketching our own self-portraits using grids and geometric designs inspired by the work of Chuck Close. We will also explore how to mix paints to create skin tones.

In Year 6, we will develop our mark making skills to draw our own creatures based on 'The Spiderwick Chronicles' which are imaginative and communicate emotion.

Chuck Thomas Close was born on 5<sup>th</sup> July 1940 in Washington, USA. Close had art lessons as a child. During his teenage years, he visited a Jackson Pollock exhibition of abstract paintings; a type of art that does not try to represent things found in the real world. Instead, it is made up of shapes, colours, lines and marks to create an image.



Close has always used grids to help him to create his enormous paintings. He would take a photograph of the subject before putting a grid over the image. He would then lay out a corresponding grid at a much larger scale on the canvas. This helped Close to keep everything in proportion when painting. He would create his artwork one square at a time.

TONAL SHADING AND SKIN TONES



Tonal shading can help artists to show where lights and shadows appear on a face. This can be done just with different grades of pencil or different tones of colour paint to create skin tone. Skin tones can be put into 3 main groups:

- Dark skin tone - yellows, browns, cobalt blue/purple and black
- Fair skin tone - yellow, ochre to red and light brown, white, pink
- Olive Skin tone - undertones of olive-green, brown and red

Key Vocabulary

USING GRIDS TO CREATE ABSTRACT ART

Abstract art is art that does not attempt to represent an accurate depiction of a visual reality but instead uses shapes, colours, forms and marks to achieve its effect.

Grids can be used to help achieve this effect which can help the artist to section off parts of the art. The picture can then be made up of tiny little squares, each with an individual patterns and colours to give the piece an alternative look.



GEOMETRIC PATTERNS



Geometric patterns are repeating sequences of shapes or lines that follow a specific rule or structure. These patterns can be found in various forms, including abstract designs, architectural structures, and even natural phenomena.



Chuck Close

abstract art

represent

grids

photograph

proportion

tonal shading

skin tone

fair

dark

olive

shapes

colour

form

section off

pattern

geometric

sequence

rule

design

# Year 5 PE - Spring 1



## Year 5 – Gymnastics Unit 2

## Knowledge Organiser

### Prior Learning

Have created longer and more complex sequences and adapted performances. Taken the lead in a group. Developed symmetry. Compared performances and judged strengths and areas for improvement. Selected a component for improvement.

### Unit Focus

Take responsibility for your own warm-up. Perform more complex actions, shapes and balances with consistency. Use information given by others to improve performance. Remember and repeat longer sequences with more difficult actions.

### We are learning...

1. to use space creatively along an L-shaped pathway.
2. to refine our round-off technique.
3. To refine the over-the-shoulder roll and attempt an alternative action to finish
4. to smoothly link two cartwheels to perform a double cartwheel.
5. to transition into a bridge with control.
6. to develop a 6-element partner sequence incorporating asymmetry.

### Key Questions

1. Describe an asymmetrical balance you saw in someone else work.
2. Why is it important to warm-up before performing specific actions?
3. What are some of the things you must do when linking two cartwheels together?

### Equipment

Mats, bench, low box top, throw down markers, chalk.

### Vocabulary

Speed, partner, asymmetrical, elements, control, balance, strength, bridge, warmup, injury, core temperature.

### Concepts

Warmups prevent injury by increasing the body's core temperature. Warm muscles increase reflexes. A good warm-up should also increase the range of motion and prepare the mind for activity. The need to warm up increases in importance as we age.

### Assessment Overview

**Head** - Explain the significance of a warm-up and how it relates to gymnastics activity.

**Hand** - Work within/on set pathways.

**Heart** - Lead others in a warmup with confidence in their own preparation.





### Prior Learning

Worked well in a team or group within defined roles. Planned and refined strategies to solve problems. Identified the relevance of and used maps, compasses and symbols. Identified what they do well and suggest what they could do to improve.

### Unit Focus

Explore ways of communicating in a range of challenging activities. Navigate and solve problems from memory. Develop and use trust to complete the task and perform under pressure.

### We are learning...

1. to explore different ways of communicating with a blindfolded partner.
2. to follow a designated route at maximum speed and complete a task safely.
3. to use memory methods to recall different objects whilst navigating.
4. to use clear communication to recreate a shape as a team
5. to use imagination and creative thinking to create the tallest marshmallow tower.
6. to send and interpret messages using Morse code.

### Key Questions

1. Can you suggest any other ways to communicate a Morse Code Signal?
2. Can you think of any situations today in which Morse Code might be useful, for example, in an emergency?
3. What happens to our recall the more times we see something new?

### Equipment

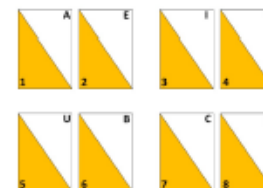
Variety of ropes, hoops, bean bags, a variety of sports equipment, teaching resource cards, softballs, bibs/bands, marshmallows, spaghetti, whiteboard pen, bucket, water, and plastic cups.

### Vocabulary

Challenge, plan, trust, solve, team, design, instructions, extend, orient, morse code, decipher, individual, signal.

### Concept

A control point is a checkpoint within a route or course.



### Assessment Overview

**Head** - Communicate using code.

**Hand** - Work at a high intensity for a sustained period whilst completing a task.

**Heart** - Explore and refine ways of communicating to best complete a set task.



# Year 5 PE - Spring 2



## Year 5 - Hockey

## Knowledge Organiser

### Prior Learning

Learned about attacking as a team and moving toward a goal. Able to follow the basic rules for modified/mini hockey games. Learned how to pass, receive, control, dribble and shoot.

### Unit Focus

Combine basic hockey skills such as dribbling and push passes. Select and apply skills in a game. Play effectively in different positions on the pitch, including in defence. Increase power and strength of passes, moving the ball over longer distances.

### We are learning...

1. to perform a block tackle to dispossess an attacker.
2. to use fast, accurate passes into the D to create scoring opportunities.
3. to mark an attacker closely to stop them from receiving the ball.
4. to perform a sweep hit to send the ball 'first time'.
5. to move the ball quickly from left to right to outwit a defender.
6. to use a variety of techniques to keep possession in a game.

### Key Questions

1. How can you as an individual player help build an attack towards the goal?
2. When you are marking in defence, where should you position yourself?
3. If the ball hits someone's foot what happens?

### Equipment

Sticks, a range of balls (hard foam or quick sticks balls), cones, goals, bibs, stopwatch.

### Vocabulary

Teamwork, score, shoot, positions, power, distance, perform, consistent, fair play.

### Rules

- To start and restart the game after a goal is scored player passes the ball to a teammate from the centre.
- If the ball touches the back of the stick 'back stick', then the opposition gets a free pass where the offence occurred.

### Assessment Overview

**Head** - Apply basic defensive positions.

**Hand** - Able to combine basic skills such as dribbling and passing.

**Heart** - Work as a team to attack and defend.





### Prior Learning

Introduced netball positions. Acquired and applied basic shooting techniques. Demonstrated and implemented some basic rules. Developed netball skills such as marking and footwork. Introduced the concept of preliminary moves.

### Unit Focus

Make choices about which pass to use and where to shoot from. Implement some tactics to get free. Move quickly around the court.

### We are learning...

1. to choose the appropriate pass for different scenarios.
2. to find space to receive in a game.
3. to use different dodging techniques to outwit a defender and get free.
4. to practice and perform pivoting and quick turns.
5. to get into closer shooting positions.
6. to react and move quickly in isolation and in games.

### Key Questions

1. Why is it an advantage to get closer to shoot?
2. What areas of your game would you like to improve?
3. What should you do if you are closely marked by a player when you are trying to find space?

### Equipment

Netballs, cones, bibs, stopwatch, goals (junior posts if possible), hoops, soft balls.

### Vocabulary

Score, shoot, possession, react, foul, umpire, quick turns, dodge, pivot, stationary, shooting circle/semi-circle.

### Rules

- No hitting or slapping the ball out of players' hands.
- You cannot kick the ball.
- You cannot defend the ball in a player's hands, but you can jump once to intercept the pass or shot.

### Assessment Overview

**Head** - Explain the techniques for different passes.

**Hand** - Attempt to get into better shooting positions.

**Heart** - Use verbal and non-verbal communication to show teammates where you want to ball.





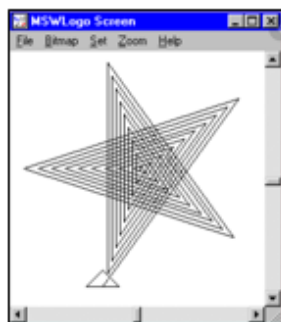
# COMPUTING: PROGRAMMING

## KNOWLEDGE ORGANISER

Y5



### Overview



#### Selection in Physical Computing

- **Programming** is when we make and input a set of instructions for computers to follow.
- **Logo** is a text-based program that we can use in order to create shapes and patterns.
- We use **algorithms** (a set of instructions to perform a task) which we can plan, model and test, in order to create accurate and imaginative shapes and patterns.

### Microcontrollers, LEDs and Motors

- **Microcontrollers:** A microcontroller is a small device that can be programmed to control devices that are connected to it.

- One brand of widely used microcontroller is called a Crumble controller, which can be used to control many things, e.g. LEDs and motors.



#### LEDs:

- LEDs are output devices that emit light. When electricity is passed through an LED it produces light. One type of LED light, controlled by a Crumble controller, is called a Sparkle.

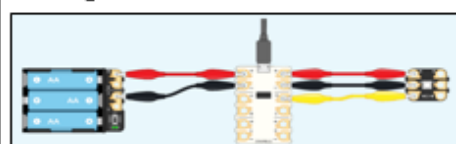


#### Motors:

- Motors are another output device. A motor can start, stop, spin forwards, spin backwards, and go at different speeds.



#### Creating Circuits:



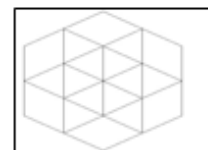
- The USB port connects the microcontroller to a computer. Crocodile clips pass electricity and data through to the LED/motor.
- The + and - power pads on the Crumble should be connected with the + and - power pads on the Sparkle and battery box. The D pads on the Crumble and Sparkle should also be connected.

### Programming Commands

- **Patterns:** Patterns are things that repeat in a logical way. In everyday life, patterns are everywhere!

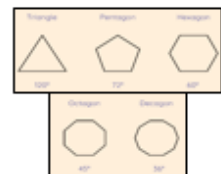


- **Patterns in Logo:** Instead of typing in the code to create each individual shape, we can save time by repeating a sequence of instructions. We use the 'repeat' function.



- **Repeat:** Type the command 'repeat' — this repeats commands a set number of times. The number following repeat is the number of times to repeat the code, and the code to be repeated is in square brackets, e.g. repeat 4 [FD 100 LT 90]

The above code will repeat FD 100 LT 90 four times.



- **Creating Shapes and Loops:** To make shapes, we need to know the angles of corners of different shapes (see right). Using the repeat function with shapes can help us to make spirals.

### Sequencing and Algorithms

- A **sequence** is a pattern or process in which one thing follows another.

- We design **algorithms** (sets of instructions for performing a task) to help us program the sequence that we require to achieve our desired outcomes.

- **Programming** is the process of keying in the code recognized by the computer (using your algorithm).



### Trialling and Debugging

- Programmers do not put their computer programs straight to work. They **trial** them first to find any errors:



- **Sequence errors:** An instruction in the sequence is wrong or in the wrong place.

- **Keying errors:** Typing in the wrong code.

- **Logical errors:** Mistakes in plan/thinking.

- If your algorithm does not work correctly the first time, remember to **debug** it.

### Important Vocabulary

Programming

Circuit

Electricity

Microcontroller

Code

LED

Algorithm

Motor

Sequence

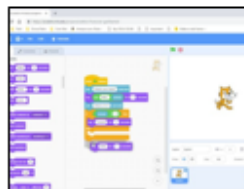
Debugging



## COMPUTING: PROGRAMMING KNOWLEDGE ORGANISER

### Overview

#### Quizzes in Scratch



- **Programming** is when we make a set of instructions for computers to follow.

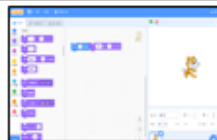
- **Scratch** is a program that we can use in order to code our own quizzes, stories, animations and games. We can input questions using the 'ask' command blocks. We can use **selections and conditions** in order to ensure that there are different outcomes depending upon a user's response.

- We use **algorithms** (a set of instructions to perform a task) to sequence movements, actions and sounds in order to program effective animations.

### The Basics of Scratch

- **What is Scratch?** Scratch is a website/ app that lets us code our own quizzes, stories, games and animations.

- Scratch helps us to learn how to use programming language, whilst also being creative and using problem-solving skills.



#### There are three main areas in Scratch:

- **The Blocks Palette** (on the left) contain all of the different blocks: puzzle piece commands which control the animation.

- **Code Area** (in the middle) is where the blocks are placed to create a program.

- **Stage with Sprite** (right) is where the output of the program is presented. The sprite is the character.



**Attributes:** There are three attributes of the sprite which we can change to make our animation: Code, Costumes, Sounds.

#### -Event Blocks:

Event blocks are coloured yellow and are used to sense different events that happen e.g., the green flag being clicked.



**-Action Blocks:** Action blocks include 'Motion' blocks, 'Sound' blocks and 'Looks' blocks. They make the sprite move, make sounds and change appearance.



### Selections and Conditions

- **Creating Conditions:** The 'If-then' command block helps us to create conditions. It is one of the darker orange control blocks. Other blocks are placed inside the 'If-then' blocks to create conditions.

The 'senses' blocks (light blue) create the 'trigger' (e.g. when a certain key is pressed). We can change the trigger by pressing the downward arrow and selecting from the range of keys/ actions. The 'actions' blocks (e.g. motions, sounds, etc.) are then used to program what will happen when the 'senses' command is triggered.

- **Different Outcomes:** The 'If-then-else' command block helps us to write programs that have selections with two outcomes.

- Actions to be carried out if the condition is 'true' (if the conditions of the 'sense' command are met) are placed below 'then.' Actions to be carried out if the condition is 'false' (e.g. if any other key is pressed) go below 'else.'

- The 'forever' block means that the command will happen continually.



### Asking Questions

- Questions can be included by using the 'ask' command blocks.

- If specific answers are needed (e.g. yes or no), these can be typed in when using the 'answer' sensing block within the = 'Operators' block - drag it into the first white space. In the second white space, we can then type in the desired answer.



- The 'say' command block (in looks) is used to inform the user if the response was correct.

### Algorithms, Trialling, Debugging

- Designing an **algorithm** (set of instructions for performing a task) will help you to program the sequence that you require.

- Programmers do not put their computer programs straight to work. They **trial** them first to find any errors:

- **Sequence errors:** An instruction in the sequence is wrong or in the wrong place.

- **Keying errors:** Typing in the wrong code.

- **Logical errors:** Mistakes in plan/thinking.

- If your algorithm does not work correctly the first time, remember to **debug** it.



### Important Vocabulary

Programming

Scratch

Logical

Commands

Algorithm

Condition

Selection

Sequence

Trialling

Debugging