SCIENCE	Long Term Planning Overview					
	AUTUMN 1	**AUTUMN 2**	**SPRING 1**	**SPRING 2**	**SUMMER 1**	**SUMMER 2**
Reception	All About Me	Seasons	Space	Life Cycles and Habitats	Living Things	Properties of Materials
Year 1		**Seasonal Changes**	**Everyday Materials**	**Seasons (revisit)**	**Animals including Humans** Carnivores, herbivores, omnivores and animal groups	**Plants**
Year 2		**Uses of Everyday Materials**	**Animals including Humans** Life cycles, animal needs, exercise diet and hygiene	**Living things and their habitats**		**Plants**
Year 3	**Rocks**	**Magnets and Forces**	**Light and Dark**		**Plants**	**Animals and Humans** Nutrition, Muscles and Skeletons
Year 4	**States of Matter**	**Sound**	**Electricity**		**Animals including humans** Teeth, digestion and Food chains.	**Living Things** Classification Keys Environment changes
Year 5	**Properties of Materials**	**Earth and Space**	**Forces**		**Living Things** Life cycles Reproduction and Plants	**Animals including Humans** Changes to old age. Puberty
Year 6	**Evolution and Inheritance** changes over time offspring adaptation and evolution	**Light**	**Electricity**		**Living things and their habitats** Variation and classification	**Animals including humans** Circulatory systems Nutrient and water transportation Diet and Drugs

SCIENCE

EYFS

LEARNING AREA (e.g. Understanding the World)

3-4 Year Olds

- Use all their senses in hands-on exploration of natural materials.
- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary.
- Explore how things work. • Plant seeds and care for growing plants.
- Understand the key features of the life cycle of a plant and an animal.
- Begin to understand the need to respect and care for the natural environment and all living things.
- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice.

Children in Reception

- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Understand the effect of changing seasons on the natural world around them.

Early Learning Goals

- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

AUTUMN		SPRING		SUMMER	
Unit Focus: All About Me	**Unit Focus: Seasons**	**Unit Focus: Space**	**Unit Focus: Life Cycles and Habitats**	**Unit Focus: Living Things – Who lives on a farm. How do plants grow**	**Unit Focus: Properties of materials/changes of matter**
Domain: Biology	**Domain: Physics**	**Domain: Physics**	**Domain: Biology**	**Domain: Biology**	**Domain: Chemistry**
Areas of Learning					
Common Misconceptions: ● Slang names for body parts. ● No understanding of senses. ● Everyone sees and hears the same	**Common Misconceptions:** ● It always snows in winter. ● It is always sunny in the summer. ● It rains most in the winter.	**Common Misconceptions:** ● The sun is yellow ● The earth is flat ● Stars are lights ● The moon is a light ● The moon is a planet	**Common Misconceptions:** ● All creatures eat the same food ● All creatures hatch from an egg ● A butterfly is different from a caterpillar	**Common Misconceptions:** ● Plants get their food from the soil ● Food doesn't come from plants	**Common Misconceptions:** ● All materials are waterproof ● All materials are magnetic ● Materials can't change

● People see by rays shooting at them from an object.	● There are only two seasons winter and summer.	● Planes fly into space.	● Animals don't grow old.	● Plants can only grow in soil.	
What makes me, me? - Name our body parts What's inside me? -know that we have bones in us. How do I see? - Understand the sense sight How do I smell? - Understand the sense smell. How do I hear? - Understand the sense hear. How do I taste? - Understand the sense taste? How do I feel? - Understand the sense touch. How am I special? - Understand how we are all different and the same.	What are the season? - Name the seasons. What season is this? - Name and order the seasons. Why do the leaves for from the trees? - Understand Autumn Why does it get cold? - Understand Winter Why do hedgehogs go in the hedge? - Understand that some animals hibernate. What animals hibernate? - Understand that some animals hibernate.	Where do we live? - we live on Earth What is in our Solar system? What planets are in our solar system? - Name the planets How do we travel in space? - That we travel in rockets to space What is the moon? When did we go to the moon? - That astronauts have travelled to the moon	What animals have wings? - Name different animals with wings Where do Butterflies come from? - Understand the life cycle of a caterpillar/butterfly Where do minibeasts live? - Name different minibeasts and identify where they live What was the tadpole's promise? - Begin to understand the lifecycle of a frog What came first, the chicken or the egg? - Begin to understand the life cycle of a chicken	What animals live on the farm? - Find out which animals live on the farm. What food comes from the farm? - Find out what foods grow on the farm. What do flowers need to grow? - Find out what flowers need to grow. Do flowers need water? - Investigate what flowers need to grow. Do plants need sunlight to grow? - Investigate what plants need to grow.	What do we use materials for? - What is a material What materials are waterproof? - How do we stay dry What materials are magnetic? - What does a magnet do. What materials sink and float? – some materials sink and some float. Can materials change? - Materials can change from a solid to liquid (candle) Does ice melt? - Ice melts when it is heated up. What happens to water in the freezer? - Liquid turns to a solid
SCIENTIFIC VOCABULARY					
taste, touch, sight, hearing, smell, bones, body,	Seasons, autumn, spring, summer, winter, hot, cold,	Space, moon, planets, sun, astronaut, space ship, Mars,	Life cycle, chrysalis, cocoon, birth, toddler, baby, child,	Seed, sapling, water, leaf, sunlight, soil, compost,	Magnetic, South Pole, North Pole, attract, repel, metal,

different, same, age, size, hair, skin, teeth, compare, group, pattern	warm, measure, investigate, observe, wet, dry	Jupiter, Venus, Saturn, Earth, Mercury, Neptune, Uranus, orbit, alien, solar system	teenager, adult, old age, compare, mini beast, insect, bird, wings, habitat, home, nest, burrow, cave,	grow, decay, life, living things, animals, baby animals, adult animals, tallest, shortest, widest, farm, barn, homes, habitat	cloth, fabric, foam, recyclable, non-recyclable, waterproof, dry, wet, conduct, compare, observe, pattern, solid, liquid, gas, object, melt, freeze, heat
OTHER					
Please individual plans for resources needed					

SCIENCE

YEAR 1

National Curriculum

Working scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Plants –

Pupils should be taught to:

- identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- identify and describe the basic structure of a variety of common flowering plants, including trees

Animals, including humans

Pupils should be taught to:

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Everyday materials

Pupils should be taught to:

- distinguish between an object and the material from which it is made
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
- describe the simple physical properties of a variety of everyday materials
- compare and group together a variety of everyday materials on the basis of their simple physical properties

Seasonal changes

Pupils should be taught to:

- observe changes across the 4 seasons
- observe and describe weather associated with the seasons and how day length varies

AUTUMN		**SPRING**		**SUMMER**	
Unit Focus: (Approximately hours)	**Unit Focus: Seasonal Changes (Approximately 6 hours)**	**Unit Focus: Every Day Materials (Approximately 6 hours)**	**Unit Focus: Seasons – revisit (Approximately 3 hours)**	**Unit Focus: Animals including Humans (Approximately 6 hours)**	**Unit Focus: Plants (Approximately 6 hours)**
Domain:	**Domain: Physics**	**Domain: Chemistry**	**Domain: Physics**	**Domain: Biology**	**Domain: Biology**
Areas of Learning					
Prior Learning: ● **Common Misconceptions:** ●	**Prior Learning:** ● Name the seasons. ● Understand that there are four seasons. ● Understand that certain things happen in different seasons. **Common Misconceptions:** ● It always snows in winter ● It always sunny in the summer ● There are only flowers in spring and summer ● It rains most in the winter	**Prior Learning:** ● Some materials have different properties, sink, float and are magnetic. ● Name some common properties – hard, soft, fluffy. ● Name some common materials – wood, plastic, class. **Common Misconceptions:** ● Only fabrics are material. ● Only building materials are material. ● Solid is another word for hard.	**Prior Learning:** ● Name the seasons. ● Understand that there are four seasons. ● Understand that certain things happen in different seasons. **Common Misconceptions:** ● It always snows in winter ● It always sunny in the summer ● There are only flowers in spring and summer ● It rains most in the winter	**Prior Learning:** ● Name some animals with wings ● Name some insects ● Name animals that live in cold places ● Discuss why some animas hibernate ● Understand the life cycle of a caterpillar, frog and chicken ● Name the five senses ● Name main body parts **Common Misconceptions:** ● All ocean creatures are fish ● All fish lay eggs ● Spiders are insects ● Only large animals are animals	**Prior Learning:** ● Plants need sunlight and water to grow. ● Plants can grow in soil. ● Some plants have flowers ● Food comes from plants **Common Misconceptions:** ● Trees are not plants ● Minerals in the soil are food for plants ● Roots feed the plant ● Leaves take in water ● Plants are not alive.

		● Rock describes an object rather than a material. ● All objects are material.		● Only four legged animals like pets are mammals ● Humans are not animals ● Insects are not animals ● Amphibians and reptiles are the same.	
Key Questions					
	• What are seasons? - Can I name the seasons? • How does the weather change across the seasons? SC1- What can I see as the seasons change? • What is the length of an autumn day? SC1- Can I measure time? • Can you describe the weather in autumn? SC1-What does the weather look like in autumn? Can I carry out a rainwater investigation? • What are the signs of autumn? SC1- How do leave change? What do the animals do? • How does our clothing change during the winter? • How do some animals adapt in the winter time? - What do the animals do?	● Can I describe materials using their senses? SC1 - Can I name and identify different materials? ● Can I describe materials using their senses, using specific scientific words? ● Can I explain what material objects are made from? ● Can I explain why a material might be useful for a specific job? SC1 - What materials keep us warm? SC1 - What materials make a good house? ● Can I name some different materials?	● What does a spring look like? ● What does a spring day look like? SC1- Can I measure the time on a spring day? SC1 - How much rain falls in spring? SC1 - What is the temperature in spring?	• Can I classify the different types of animals? SC1 - Can I observe some differences between animals? SC1 - Can I sort pictures of living and non-living things? • Can I describe and compare the structure of animals? Can they classify common animals? (birds, fish, amphibians, reptiles, mammals, invertebrates) -Can I name different body parts of animals? • What is a herbivore, carnivore and an omnivore? SC1 -Can I classify animals by what they eat? (carnivore, herbivore, omnivore • Can you label and name the different parts of the human body? SC1 Can I name the parts of the human body that I can see?	● Can I name the petals, stem, leaf and root of a plant? ● Can I identify and name a range of common plants and trees? -SC1 - Can I name some common wild plants? SC1 -Can I name some garden plants? ● Can they recognise deciduous and evergreen trees? SC1 - Can I identify some trees by their leaves? ● Can they describe the parts of a plant (roots, stem, leaves, flowers)?

		● Can I sort materials into groups by a given criteria? ● Can I explain how solid shapes can be changed by squashing, bending, twisting and stretching?		• Can I name the 5 senses and perform different tests on them? SC1 - Can I identify the main parts of the human body and link them to their senses?	SC1 - Can I plant a bean and discuss how it has grown.
Scientific Enquiry					
	Observing Closely ● Can I talk about what I <see, touch, smell, hear or taste> during autumn? **Recording Findings** ● Can I show my work using pictures, labels and captions? Can I draw an autumn picture? **Performing Tests** ● Can I measure rain water? ● Can I measure the hours in a day? ● Can I measure the temperature in an autumn/winter day? **Scientific Equipment** ● Rain catcher	**Observing Closely** • Can I talk about what I <see, touch, smell, hear or taste>? • Can I use simple equipment to help them make observations? **Identifying and Classifying** • Can I identify and classify things I observe? • Can I think of some questions to ask? • Can I answer some scientific questions? • Can they give a simple reason for their answers? • Can they explain what they have found out? **Scientific Equipment**	**Observing Closely** ● Can I talk about what I <see, touch, smell, hear or taste> during autumn? **Recording Findings** ● Can I show my work using pictures, labels and captions? Can I draw a spring picture? **Performing Tests** ● Can I measure rain water? ● Can I measure the hours in a day? ● Can I measure the temperature on a spring day? **Scientific Equipment** ● Rain catcher	**Observing Closely** ● Can I describe the senses? **Identifying and classifying** ● Can I identify different animals using their structures? Can I sort animals into groups? ● Can I identify animals based on what they eat**?** **Recording Findings** ● Can I record my findings using pictures? ● Can I label different types of animals? ● Can I draw and label different body parts?	**Observing Closely** • Can they talk about what I can see and how some plants/trees are different? • Can they use simple equipment to help them make observations? Can I measure how my bean plant has grown? **Recording Findings** • Can I show my work using pictures, labels and captions? Can I draw a simple flower/plant? • Can they record their finding using standard units? Can I measure my plant using cm? • Can I put some information in a chart or table? Can

	• Thermometer – introduce what a thermometer does, how to hold, different types of thermometers and how to read the scale. • Clock – measuring time.	• Magnifying glasses to observe properties	• Thermometer – introduce what a thermometer does, how to hold, different types of thermometers and how to read the scale. • Clock – measuring time.	**Performing Simple Tests** • Can test my senses using simple taste, sniff, touch, hearing and smell?	we create a table as a class comparing the growth of our plants? **Performing Tests** • Can I perform a simple test? Growing my bean plant. • Can I tell other people about what they have done? Can I talk about how I grew my plant?
SCIENTIFIC VOCABULARY					
	Seasons, autumn, winter, weather, daylight, summer, spring, weather, sunrise, sunset, months, year	Hard, soft, Stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks, tears, rough, smooth, shiny, dull, see through, not see through, object, material, opaque	Seasons, autumn, winter, weather, daylight, summer, spring, weather, sunrise, sunset, months, year	Carnivores, herbivores, omnivores, head body Eyes, ears, mouth, teeth Leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, hair, sight, smell, touch, taste, hear, fish, reptiles, birds, amphibians, mammals	Wild plants, garden plants, weed, deciduous, Evergreen, roots, stem, leaves, flowers, petals, fruit, seed, bulb, leaf Fruit, trunk, branch, stem Bark, deciduous, tree, flower, evergreen
Significant Scientists					
		Charles Macintosh *(1766-1843)* **Martin Brock –** Nanotechnology engineer and XelfleX inventor		**David Attenborough**	**Wangari Maathai** (1940-2011)
KEY LINKS/RESOURCES					
Twinkle, TigTag Jnr, Knowledge Organisers					

SCIENCE
YEAR 2
National Curriculum

Working scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Living things and their habitats

Pupils should be taught to:

- explore and compare the differences between things that are living, dead, and things that have never been alive
- identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- identify and name a variety of plants and animals in their habitats, including microhabitats
- describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food

Plants

Pupils should be taught to:

- observe and describe how seeds and bulbs grow into mature plants
- find out and describe how plants need water, light and a suitable temperature to grow and stay healthy

Animals, including humans

Pupils should be taught to:

- notice that animals, including humans, have offspring which grow into adults
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene

Uses of everyday materials

Pupils should be taught 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

AUTUMN		SPRING		SUMMER	
Unit Focus: Animals including humans (Approximately 6 hours)	**Unit Focus: Uses of Every Day Materials (Approximately 7 hours)**	**Unit Focus: Living Things and Their Habitats (Approximately 6 hours)**	**Unit Focus: (Approximately hours)**	**Unit Focus: (Approximately hours)**	**Unit Focus: Plants (Approximately 7 hours)**
Domain: Biology	**Domain: Chemistry**	**Domain: Biology**	**Domain:**	**Domain:**	**Domain: Biology**
Areas of Learning					
Prior Learning: ● Animals can be grouped in to different categories ● Life cycles of different animals ● Understand the importance of exercise and healthy life styles. **Common Misconceptions:** ● All animals have the same life cycle ● Animals have different needs than humans ● An animal's habitat is like its home ● Respiration is breathing ● Breathing is respiration	**Prior Learning:** ● Name different materials ● Know that materials have different properties **Common Misconceptions:** ● Only fabrics are materials ● Only building materials are materials ● Solid is another word for hard.	**Prior Learning:** ● Know what a herbivore, carnivore and omnivore is. ● Be able to identify mammals, amphibians, reptiles, birds and fish. **Common Misconceptions:** ● Animals all live in the same habitat ● The biggest animal is always the consumer ● Plants are not included in food chains.	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** ● Label parts of the plant ● Name common garden and wild plants ● Name some common trees ● Carry out simple growth measurements on plants. **Common Misconceptions:** ● Plants only grow in the summer ● Plants get food from the soil ● Plants get their food from plants/soil ● Roots are organs for feeding ● Trees are not plants ● Leaves take in water.

Key Questions					
● Can I describe what animals need to survive? -Revisit MRSGREN ● Can I explain that animals grow and reproduce? -Life Cycles of different animals ● Can I explain why animals have offspring? ● Can I describe the life cycle of some living things? (e.g. egg, chick, chicken) ● Can I explain the basic needs of animals, including humans? ● Can I describe why exercise and a balanced diet are important for humans?	**Classifying and Grouping Materials** • Can I distinguish between an object and the material from which it is made? • Can I identify and name a range of everyday materials? (wood, plastic, metal, water, rock) • Can I describe the simple physical properties of a variety of everyday materials? • Can I compare and classify a variety of materials based on their simple physical properties? **Changing Materials** • Can I explore how the shapes of solid objects can be changed? (squashing, bending, twisting, stretching) • Can I find out about people who developed useful new materials? (Dunlop,	● Can I match certain living things to the habitats they are found in? -What is a habitat? ● Can I describe some of the life processes common to plants and animals, including humans? - MRSGREN ● Can I decide whether something is living, dead or non-living? -MRSGREN ● Can I describe how a habitat provides for the basic needs of things living there? SC1 -Investigate local habitat ● Can I describe a range of different habitats? -Hot, cold, coastal, mountainous ● Can I describe how plants and animals are suited to their habitat? -Why do animals live at certain habitats? Investigation – observe worms in their habitat. ● Can I describe basic food chains?		●	**Review and Revisit** ● Understand that there are many different types of plants. ● Know that plants have different parts: the roots, stems, leaves and flower ● Can I describe what plants need to survive? ● Understand that plants need sunlight, air, water and soil to grow. ● Can I describe how seeds and bulbs grow into plants? Sc1 -observe how plants grow SC1 - project growing seeds/cress heads) ● Can I describe what a plant needs to grow and stay healthy? - Understand that plants make their own food through the process of photosynthesis

	Mackintosh, MacAdam) • Can I identify and compare the uses of a range of everyday materials? (wood, metal, plastic, glass, brick/rock, paper/cardboard)				● Can I explain that plants grow and reproduce? Understand seed dispersal SC1 -seed dispersal investigation Understand the life cycle of a plant SC1 - Life cycle investigation
Scientific Enquiry					
Identifying and Classifying ● Identify the different needs of humans and compare animals to humans **Recording Findings** ● Draw and label different life cycles **Observing Closely** • I can use some science words to describe what humans and animals need to survive?	**Identifying and Classifying** ● Can I identify different materials into groups? **Observing Closely** ● Can I observe the different properties of materials? **Performing Tests** • Can I carry out a simple fair test? • Can I explain why it might not be fair to compare two things? • Can I say whether things happened as they expected? • Can I suggest how to find things out? • Can I use prompts to find things out?	**Identifying and Classifying** ● Can I find simple associations? Do animals that live in similar habitats have similar features? **Observing Closely** ● Can I compare several different habitats and comment on their differences? **Recording Findings** • Can I use diagrams to draw food chains and different animals in different habitats?			**Observing Closely** • Can they use <see, touch, smell, hear or taste to help them answer questions? Growing plant project • Can they use some science words to describe what they have seen and measured? Growing Plant project • Can they compare several things? Compare the life cycles of different plants. **Identifying and Classifying** ● Can they identify plants using a specific criterion? **Recording Findings**

					• Can they use (text, diagrams, pictures, charts, tables) to record their observations? • Can they measure using rulers? **Performing tests** • Can they carry out a simple fair test? Comparing what a flower needs to grow. • Can they say whether things happened as they expected? Make predictions about plants growing. **Equipment** Magnifying glass.
SCIENTIFIC VOCABULARY					
adult, develop, life cycle, offspring, young, live young, human, diet, disease, exercise, germs, hygiene, nutrition, pulse, reproduction, growth, breathing, hygiene, germs disease	Material, wood, plastic, glass, paper, fabric, metal, cardboard, rubber, squash, twist, stretch, Macintosh, Dunlop, McAdams, waterproof, malleable, transparent, translucent, opaque, flexible, rigid, reflective, non-reflective Absorbent, soft, bend, twist	life processes, living, dead, never living, food chain, food sources, habitat, microhabitat, depend, polar, survive, woodland, urban, coastal, rainforest, arctic, desert, ocean, river, mountain, short grass, flowers, rotting wood, under leaves, in and on soil, living, dead, never been alive			Seed, bulb, germinate, seedling, bud, flower, fruit Berry, root, germination, sprout, shoot, seed dispersal, roots, leaves, fruit, flowers, seed, bean, bulb, seed dispersal, sunlight, water, temperature, nutrition, soil, sunlight,
Key Scientists					
Dr Ernest Madu (born 1960)	**John Loudon McAdam** (1756-1836) **Julie Brusaw**	**David Attenbrough**			**David Douglas** (1799-1834)

KEY LINKS/RESOURCES
Plants - TigTag Jnr - https://www.tigtagjunior.com/mindmap/#/topics/CLASS00573 Where do animals live – TigTag Jnr - https://www.tigtagjunior.com/mindmap/#/lessons/CLASS00584 How do animals move – TigTag Jnr - https://www.tigtagjunior.com/mindmap/#/lessons/CLASS00585 Twinkle resources Knowledge Organiser

SCIENCE
YEAR 3
National Curriculum

Working scientifically

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Plants

Pupils should be taught to:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal

Animals, including humans

Pupils should be taught to:

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement

Rocks

Pupils should be taught to:

- 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

Light

Pupils should be taught to:

- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by an opaque object
- find patterns in the way that the size of shadows change

Forces and magnets

- compare how things move on different surfaces
- notice that some forces need contact between 2 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 2 poles
- predict whether 2 magnets will attract or repel each other, depending on which poles are facing

AUTUMN		SPRING		SUMMER	
Unit Focus: Rocks (Approximately 8 hours)	**Unit Focus: Magnets and Forces (Approximately 6 hours)**	**Unit Focus: Light and Dark (Approximately 7 hours)**	**Unit Focus: (Approximately hours)**	**Unit Focus: Plants (Approximately 8 hours)**	**Unit Focus: Animals including Humans (Approximately 8 hours)**
Domain: Chemistry	**Domain: Physics**	**Domain: Physics**	**Domain:**	**Domain: Biology**	**Domain: Biology**
Areas of Learning					
Prior Learning: ● **Common Misconceptions:** ● All rocks are the same. ● Rocks and minerals are the same ● Rocks are all hard ● Concrete and bricks are rocks ● Smooth surfaces (granite work tops) are not rocks ● Certain artefacts like pieces of old pots are rocks	**Prior Learning:** ● Magnets attract to other materials **Common Misconceptions:** ● The term force means that someone is making you do something. ● Movement stops when things run out of push. ● A stationary object had no forces acting on it. ● Mass and weight are the same things	**Prior Learning:** ● The sun a source of light. ● Day and night ● Seasons ● Senses **Common Misconceptions:** ● Shadows are concrete objects ● Reflective surfaces emit light ● Opaque surfaces give out a colour of darkness	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** ● What plants need to grow ● The names of common garden plants ● The names of common wild plants ● The parts of a plant **Common Misconceptions:** ● Plants eat food ● Food comes from the soil ● Flowers are decorative	**Prior Learning:** ● Animals and humans need nutrition ● MRSGREN ● Human structure contains bones ● Basic First Aid (PSHE) ● The importance of a balanced diet **Common Misconceptions:** ● Certain food groups are bad for you 0 fat, sugar, cheese ● Diet and fruit drinks are good for you.

● Soil and compost are the same things.	● All metals are attracted to magnets ● All silver coloured items are attracted to a magnet ● Larger magnets are stronger than small ones.	● Shiny objects reflect more light than dull objects ● Our eyes produce light so that we can see things ● The moon is a light source ● Shadows are always black		● Plants need sunlight to keep them warm	● Snakes are similar to worms they must be bad for you ● Invertebrates have no form of skeleton
Key Questions					
● How can rocks be compared and sorted based on their physical properties? - SC1 studying rocks ● How can different rocks be useful? ● What are minerals ● What are the differences between sedimentary rocks and igneous rocks? -SC1 modelling rock types ● How are different rocks formed? ● How are fossils formed in sedimentary Rocks? -SC1 Fossil Dig	● What is a magnet? SC1 – Which materials make the strongest magnet ● Why do magnets attract and repel? -SC1 Magnets Maze ● Can I classify which materials are attracted to magnets? - SC1 Which materials are magnetic? ● What is a force? ● Can I describe the speed and direction of moving objects? SC1 – How do things move on different surfaces.	● How do we see? ● What is a light source? ● How does a bulb in a circuit work? Light, reflection SC1 – What are light sources and light reflectors? ● Can they compare the brightness and colour of lights? ● What is reflection -SC1 how does the eye work? How does a Periscope work? ● What is the difference between transparent, translucent and opaque? SC1 – investigate the properties of different materials ● How are shadows formed? -SC1 Investigate the darkness of Shadows	●	● What are the functions of different parts of plants? (roots, stem, leaves and flowers) ● What do plants need for life and growth? SC1 – Compare the growth of potatoes ● How is water transported within plants? -SC1 How does water move within a plant? ● How are nutrients, water and oxygen transported within plants? ● Why do plant parts vary from plant to plant e.g. insect and wind pollinated plants? What are their functions? -SC1 Dissect a plant SC1 Bee Pollination	● Why is a nutritious balanced diet important? ● What are the different nutrients? SC1 – Plan and create a balanced diet SC1 – Exercise and concentration ● How are nutrients, water and oxygen transported within animals and humans? ● What is the skeletal system of a human? SC1 – Investigating Skeletons practical ● Can you explain what the muscular system of a human is? SC1 – Contracting Muscles investigation SC1 – Investigate the effect of exercise on

				• How are seeds formed and dispersed? SC1 – Making detailed fruit observations SC1 – How are seeds dispersed by the wind	muscle fatigue and recovery
Scientific Enquiry					
Planning • Can they use different ideas and suggest how to find something out? Suggest ways to investigate the properties of rocks. • Can they make and record a prediction before testing? Make predictions about the properties of rocks. **Obtaining and Presenting Evidence** • Can they measure using different equipment and units of measure? Ohm scale • Can they record their observations in different ways? (labelled diagrams, charts etc) Record observations about Rocks	**Planning** • Can they use different ideas and suggest how to find something out? Suggest ways to investigate how things move on different surfaces. • Can they make and record a prediction before testing? Predict which materials will be magnetic • Can they explain why they need to collect information to answer a question? Link to which is the best material for a magnet **Obtaining and Presenting Evidence**	**Planning** • Can they use different ideas and suggest how to find something out? Shadow investigation. • Can they make and record a prediction before testing? Which materials will reflect light? • Can they plan a fair test and explain why it was fair? • Can they set up a simple fair test to make comparisons? Properties of materials through light investigation. **Obtaining and Presenting Evidence** • Can they measure using different equipment? Measure on a scale		**Planning** • Can they use their ideas to plan a fair test – water transportation? • Can they make and record a prediction about seed dispersal before testing? • Can they plan a fair test and explain why it was fair? What do plants need to grow? • Can they set up a simple fair test to make comparisons? What do plants need to grow? • Can they explain why they need to collect information to answer a question? What do plants need to grow?	**Planning** • Can they use different ideas and suggest how to find something out? Plan their own skeleton investigations • Can they make and record a prediction before testing? Muscle exercise • Can they plan a fair test and explain why it was fair? Muscle exercise investigation • Can they set up a simple fair test to make comparisons? Muscle exercise investigation • Can they explain why they need to collect information to answer a question? Muscle exercise investigation

• Can they describe what rocks are formed using scientific vocabulary? • Can they explain how fossils are formed using scientific vocabulary? **Considering Evidence and Evaluating** Can they explain if their predictions were correct? **Scientific Equipment** Magnifying glasses, pipettes	• Can they measure using different equipment and units of measure? • Can they record their observations in different ways? Draw diagrams about how magnets work. • Can they describe what they have found using scientific words? - Discuss the effects of magnets and forces using scientific vocabulary ● Can they make accurate measurements using standard units? Measuring the distance of items travelled using rulers. **Considering Evidence and Evaluating** • Can they explain what they have found out and use their measurements to say whether it helps to answer their question?	• Can they record their observations in different ways? Chart - light source/reflective • Can they describe how we see using scientific vocabulary? **Considering Evidence and Evaluating** • Can they explain what they have found out and use their data to explain answers during experiments. • Can they use a range of equipment in a simple test? **Scientific Equipment** Light sources, light reflectors, mirrors, Opaque materials (for example, textbooks, pens) Translucent materials (for example, coloured acetate, plastic containers, sunglasses, tissue paper) Transparent materials (for example, cling film, clear acetate, clear plastic)		**Obtaining and Presenting Evidence** • Can they measure how long it takes for water to move in a plant using time? • Can they record their plant dissection and label? • Can they describe what discuss the functions of plant parts using scientific vocabulary? **Considering Evidence and Evaluating** • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? • Can they use a range of equipment in a simple test? • **Scientific Equipment** Magnifying glass, meter stick, tape measure, stopwatch,	**Obtaining and Presenting Evidence** • Can they measure using different equipment and units of measure? • Can they record their observations in different ways? (labelled diagrams, charts etc) • Can they describe the muscle and skeletal system using scientific vocabulary? • Can they make accurate measurements using standard units? **Considering Evidence and Evaluating** • Can they explain what they have found out and use their measurements to say whether it helps to answer their question? Skeleton investigation **Scientific Equipment**

	• Can they use a range of equipment in a simple test? **Scientific Equipment** Button magnets, bar magnets, 3 same-sized magnets made from different materials (e.g. neodymium, iron and cobalt				Rulers, tape measures, timers
SCIENTIFIC VOCABULARY					
Rocks, igneous, sedimentary, metamorphic, anthropic, permeable, impermeable, chemical fossils, body fossils, trace fossils, cast fossil, mould fossil, replacement fossil, organic matter, topsoil, subsoil and base rock, peat, soil	Force, push, pull, friction, surface, magnet, magnetic, magnetic field, pole, north, south, attract, repel, compass, contact force, non-contact force	Light, source, dark, reflect, visible, bounce, mirror, ray, beam, sun, glare, pupil, retina, travel, straight, opaque, translucent, transparent, block, shadow		Flower, seed, leaf, stem, roots, trunk, petal, pollen, life cycle, dispersal, pollination, fertilisation, germination, ovary, ovule, sepal, stamen, anther, filament, stigma, style.	Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscle, contract, relax.
Key Scientists					
Mary Anning (1799-1847) **Holly Betts**	**Michael Faraday** (1791-1867)	**Justus von Liebig** (1803-1873)		**Joseph Dalton Hooker** (1817-1911) **Professor Monique Simmonds**	**Wilhelm Conrad Rontgen** (1845-1923)
KEY LINKS/RESOURCES					
Rocks – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00271 Magnetism – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00292 Light – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00302 Reflection – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00306 Shadows – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00304 Parts of a plant - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00338 Reproduction in flowering plants – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00339 Diet and Exercise – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00362 The Human Skeleton – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00331					

SCIENCE
YEAR 4
National Curriculum

Working scientifically

During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying and presenting data in a variety of ways to help in answering questions
- recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
- reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
- using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings.

Living things and their habitats

Pupils should be taught to:

- recognise that living things can be grouped in a variety of ways
- explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
- recognise that environments can change and that this can sometimes pose dangers to living things

Animals, including humans

Pupils should be taught to:

- describe the simple functions of the basic parts of the digestive system in humans
- identify the different types of teeth in humans and their simple functions
- construct and interpret a variety of food chains, identifying producers, predators and prey

States of matter

Pupils should be taught to:

- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature

Sound

Pupils should be taught to:

- identify how sounds are made, associating some of them with something vibrating
- recognise that vibrations from sounds travel through a medium to the ear
- find patterns between the pitch of a sound and features of the object that produced it
- find patterns between the volume of a sound and the strength of the vibrations that produced it

- recognise that sounds get fainter as the distance from the sound source increases

Electricity

Pupils should be taught to:

- 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

AUTUMN		SPRING		SUMMER	
Unit Focus: States of Matter (Approximately 7 hours)	**Unit Focus: Sound (Approximately 7 hours)**	**Unit Focus: Electricity (Approximately 5 hours)**	**Unit Focus: (Approximately hours)**	**Unit Focus: Animals including Humans (Approximately 6 hours)**	**Unit Focus: Living Things (Approximately 6 hours)**
Domain: Chemistry	**Domain: Physics**	**Domain: Physics**	**Domain:**	**Domain: Biology**	**Domain: Biology**
Areas of Learning					
Prior Learning: ● Different physical properties of materials ● Materials can change ● Identify and compare the use of different materials. ● Understanding of magnets **Common Misconceptions:** ● Solid is another word for hard or opaque ● Solids are hard and cannot break or change shape easily and are often in one piece. ● Sand and sugar cannot be a solid.	**Prior Learning:** ● Senses work completed on how do we hear ● Different instruments make different sounds **Common Misconceptions:** ● Sound can only travel though air ● Sound can travel through a vacuum ● Sound can be produced without any materials ● Hitting the object harder changes, the pitch of a sound produced ● Confusion between pitch and loudness	**Prior Learning:** ● How to stay safe around electricity, electricity can be dangerous ● Common uses of electricity **Common Misconceptions:** ● Different coloured wires affect how a circuit works ● Wires are made of plastic ● Electricity comes out of both sides of a battery and leads to both sides of the component ● Current voltage and electricity are the same thing	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** ● Understand the importance of eating a balanced diet ● Understand the importance of looking after your teeth and how to clean them ● Know that animals can be identified as herbivores, carnivores and omnivores and know what they eat. **Common Misconceptions:** ● Arrows in a food chain mean eat ● The death of one part of the food chain has no effect on the rest of the chain	**Prior Learning:** ● Understand basic food chains – Year 2 ● Be able to identify different animals and plants ● Different animals/plants live in different habitats ● How food chains and food webs work **Common Misconceptions:** ● Confusion over how to classify ● Amphibians and Reptiles are the same ● Uncertainties around identifying special of animals/plants ● Fungi aren't alive

● Water in different forms are different substances. ● Melting is the same as dissolving	● Sound is slowed down by physical objects ● Sound gets quitter as it travels further away.	● Current gets less as it passes through components ● Electricity is an object that can be seen.		● There is always plenty of food for wild animals ● Organisms at the higher end of the chain/web eat everything in the chain/web ● Top of the food chain has the most energy ● Plants are dependent on humans and not vice versa. ● Your stomach is where your belly button is ● Food is only digested in the stomach ● Your food goes down one tube and your drinks go down another ● The food you eat becomes 'poo' and the liquid you drink becomes 'wee'	
Key Questions					
● What are the different states of matter? ● Can I compare and group materials based on their states of matter, i.e., liquid, solid or gas? -SC1 – Non-Newtonian Fluid -SC1 – Cartisan Divers	● How are different sounds made? ● How are sound different depending on their source? SC1 – Dancing Popcorn investigation ● How to change a sound (louder/softer)? ● How can you change the pitch of a sound?	● How is electricity useful to us? ● How do you construct a simple circuit? ● What is an open and closed circuit ● How does a switch work? SC1 – Simple circuits	●	● What is the human digestive system? ● What happens when we eat? Can I describe the function of the organs of the human digestive system? SC1 – Modelling the Digestive System	● What is a classification key? ● Can I use a classification key to group a variety of living things? (plants, vertebrates, invertebrates) -SC1 – Why Classify ● What are the five different kingdoms that

● What happens to materials when they are heated or cooled? SC1 – Solid Soap Investigation ● What happens to the temperature when materials change state? ● Can I use measurements to explain changes to the state of water? -SC1 – Icy Drinks experiment ● What is evaporation and condensation in the water cycle? SC1 – Separation by Evaporation	● Can different materials affect the pitch and volume of sounds? -SC1 Bottle Chimes -SC1 –Singing Wine Glasses ● How does sound travel from a source to your ear? What happens to sound as it travels away from its source? ● How can you change the pitch of a sound? ● Can different materials affect the pitch and volume of sounds? -SC1 – How does sound travel (How sound energy travels)	SC1 – Simple and parallel circuits ● What is a conductor? ● What materials conduct electricity? ● What is an insulator? ● What materials are insulators? SC1 – Testing Conductors and Insulators investigation ● How do we stay safe with electricity? SC1 – Static Electricity		● What do our different teeth do? (canines, molars, incisors) ● How are the teeth of herbivores and carnivores different? SC1 – Make your own tooth paste ● What does a simple food chain look like? ● What are the feeding patterns of living things? (producer, consumer, predator, prey, herbivore, carnivore, omnivore) SC1 – Food Chain Mobiles ● What happens when an environment changes? ● How does this pose a danger to living things?	living things can be classified into? SC1 – The Great Organism Hunt ● How are plants subdivided (flowering and non-flowering? SC1 – Flowing and Non-Flowing Plants
Scientific Enquiry					
Planning • Can they set up a simple fair test to make comparisons? Ice Drinks Experiment • Can they plan a fair test and isolate variables and explain why it was fair and explain which variables have been isolated? Icy Drinks Experiment	**Planning** • Can they suggest improvements and predictions? Dancing Popcorn • Can they decide which information needs to be collected and decide which is the best way for collecting it? Bottle Chimes • Can they use their findings to draw a	**Planning** • Can they suggest improvements and predictions? Simple • Can they use their findings to draw a simple conclusion? **Obtaining and Presenting Evidence** • Can they take measurements using different equipment and units of measure		**Planning** • Can they set up a simple fair test to make comparisons? • Can they plan a fair test and isolate variables and explain why it was fair and explain which variables have been isolated? Make your own tooth paste investigation	**Planning** • Can they use their findings to draw a simple conclusion? Why Classify investigation **Obtaining and Presenting Evidence** • Can they explain their findings in different ways (display, presentation, writing)? The Great

• Can they suggest improvements and predictions? Icy Drinks Experiments • Can they decide which information needs to be collected and decide which is the best way for collecting it? Separation by Evaporation Experiment • Can they use their findings to draw a simple conclusion**?** Non-Newtonian Liquid investigation **Obtaining and Presenting Evidence** • Can they take measurements using different equipment and units of measure and record what they have found in a range of ways? Solid Soap Investigation • Can they make accurate measurements using standard units? Solid Soap Investigation • Can they explain their findings in	simple conclusion? Bottle Chimes **Obtaining and Presenting Evidence** • Can they explain their findings in different ways (display, presentation, writing)? How does sound travel investigation? **Considering Evidence and Evaluating** • Can they find any patterns in their evidence or measurements? Bottle chimes investigation • Can they make a prediction based on something they have found out? Singing Wine Glasses investigation	and record what they have found in a range of ways? Parallel Circuits investigation • Can they make accurate measurements using standard units? • Can they explain their findings in different ways (display, presentation, writing)? Parallel Circuits investigation **Considering Evidence and Evaluating** • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? Simple and Parallel Circuits investigation **Scientific Equipment** Batteries, bulbs, wires, buzzers, motors, crocodile clips, insulators, conductors,		• Can they use their findings to draw a simple conclusion? **Obtaining and Presenting Evidence** • Can they explain their findings in different ways (display, presentation, writing)? Food chains mobile **Considering Evidence and Evaluating** • Can they find any patterns in their evidence or measurements? Food Chains Mobile • Can they make a prediction based on something they have found out? Make your own tooth paste • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? Modelling the Digestive System	Organism Hunt Investigation **Considering Evidence and Evaluating** • Can they find any patterns in their evidence or measurements? Flowing and non-flowering plant investigation • Can they make a prediction based on something they have found out? The Great Organism Hunt • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? Drawing Identification keys

different ways (display, presentation, writing)? Solid Soap Investigation **Considering Evidence and Evaluating** • Can they make a prediction based on something they have found out? Soap to Solid investigation • Can they record and present what they have found using scientific language, drawings, labelled diagrams, bar charts and tables? Separation by evaporation **Scientific Equipment** Thermometers					
SCIENTIFIC VOCABULARY					
solid, liquid, gas, evaporation, states of matter, condensation, substance, water cycle, materials, temperatures, water vapour, degrees Celsius, molecules, melting, freezing, change of state	volume, amplitude, loud, pitch, travel, wave, particles, quiet, ear, high, low, energy, distance, vibrate, absorb, soundproof, vibration, sound insulation	Electricity, generate, renewable, non-renewable, battery, volts, bulbs, cells, appliances, conductors, insulators, switch, motor, buzzer, light, current, electrical circuit, electrical appliance		digestion, enzyme, teeth, gall bladder, glands, nerves, incisors, liver, pancreas, saliva, roots, molars, stomach, mouth, oesophagus, digestive system, herbivore, carnivore, producer, consumer, predator, prey, food chain	habitat, insect, environment, amphibians, classify, nutrients, birds, species, endangered, flowering, extinct, Mrs Gren, invertebrates, vertebrates, mammals, reptiles, vascular, non-vascular, classification, habitat, migrate, hibernate

Key Scientists					
Bernard Palissy (1510-1590)	**Christian Doppler** (1803-1853)	**Thomas Edison** (1847-1931)		**William Beaumont** *(1785-1853)*	**Jane Goodall** (Born 1934) **Seirian Sumner**

KEY LINKS/RESOURCES

Liquid – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00255
Solids – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00254
Gases – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00256
Changes of State – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00257
Separation and Evaporation – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00276
What is Sound? – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00309
Changing Pitch – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00312
How does sound travel – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00310
Series and Parallel Circuits –TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00291
Conductors and Dangers of Electricity – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00289
The Digestive System – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00333
Teeth – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00364
Food Chains – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00348
Why Classify – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00353
Classifying Living Things – TigTag - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00354

SCIENCE

YEAR 5

National Curriculum

Working scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments.

Living things and their habitats

Pupils should be taught to:

- describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
- describe the life process of reproduction in some plants and animals

Animals, including humans
Pupils should be taught to:

- describe the changes as humans develop to old age

Properties and changes of materials
Pupils should be taught to:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda

Earth and space
Pupils should be taught to:

- describe the movement of the Earth and other planets relative to the sun in the solar system
- describe the movement of the moon relative to the Earth
- describe the sun, Earth and moon as approximately spherical bodies
- use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky

Forces
Pupils should be taught 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

AUTUMN		**SPRING**		**SUMMER**	
Unit Focus: Properties of Materials (Approximately 10 hours)	**Unit Focus: Earth and Space (Approximately 6 hours)**	**Unit Focus: Forces (Approximately 7 hours)**	**Unit Focus: (Approximately hours)**	**Unit Focus: Living Things and their habitats (Approximately 6 hours)**	**Unit Focus: Animals including Humans (Approximately hours)**
Domain: Chemistry	**Domain: Physics**	**Domain: Physics**	**Domain:**	**Domain: Biology**	**Domain: Biology**
Areas of Learning					
Prior Learning: Distinguish between an object and the material from which it is made. · Identify and name a variety of everyday materials,	**Prior Learning:** **In Year 3:** · Compare how things move on different surfaces.	**Prior Learning:** **In Year 3:** · Compare how things move on different surfaces.	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** · Recognise that living things can be grouped in a variety of ways. · Explore and use classification keys to help	**Prior Learning:** · Describe the simple functions of the basic parts of the digestive system in humans.

including wood, plastic, glass, metal, water, and rock. ·Describe the simple physical properties of a variety of everyday materials. · Compare and group together a variety of everyday materials on the basis of their simple physical properties. · 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 **Common Misconceptions:** ● Lots of misconceptions around reversible and irreversible changes. ● Confusion over physical and chemical. ● Thermal insulators keep cold in or out/thermal insulators warm things up. ● Lit candles only melt, which is a reversible change.	· Know how a simple pulley works and use making lifting an object simpler · Notice that some forces need contact between two objects, but magnetic forces can act at a distance. · Observe how magnets attract and 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 with attract or repel each other, depending on which poles are facing. **Common Misconceptions:** ● The sun moves around the earth. ● Th earth moves around the moon. ● Pluto is a planet. ● We can live on the moon. ● The sun is on fire. ● Mercury is the closest fire to the sun so it is the hottest. ● There's a dark side of the moon.	· Know how a simple pulley works and use making lifting an object simpler · Notice that some forces need contact between two objects, but magnetic forces can act at a distance. · Observe how magnets attract and 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 with attract or repel each other, depending on which poles are facing **Common Misconceptions:** ● The best place to put a fulcrum is at the centre of the leaver. ● Mass and weight are the same thing. ● A greater force on a mechanism always has a greater effect on the object.		group, identify and name a variety of living things in their local and wider environment. · Know and label the features of a river · Recognise that environments can change and that this can sometimes pose danger to living things. **Common Misconceptions:** ● Plants don't reproduce ● All animals have the same life cycles. ● All animals reproduce in the same way.	· Identify the different types of teeth in humans and their simple functions. · Construct and interpret a variety of food chains, identifying producers, predators and prey **Common Misconceptions:** ● A baby grows in a mother's tummy ● How a baby is made

• Some children think of all solids as being hard and strong. Try to introduce the children to many different types of solid and use the appropriate language to describe them. Modelling clay is often overlooked as a solid, because it can be easily moulded into different shapes. However, it only changes shape when a force is applied to it					
Key Questions					
• How can different materials be grouped together based on their properties? • What is a solution (materials that have been dissolved) and can a substance be recovered from a solution? • How can mixtures be separated? (through filtering, sieving and evaporating) • Can I give reasons, based on evidence from comparative	• What is in our Solar system? • What are the different types of planets? • How do planets move around the solar system? • How do I explain day and night? • Does the moon move around the earth? • What are the phases of the moon?	• What is gravity? • What effect does air resistance have on moving objects? • What effect does water resistance have on moving objects? • What effect does friction have on moving objects? • How are levers, gears and pulleys useful? - recognise that some mechanisms including levers, pulleys and gears allow a smaller	•	• What are the differences in the life cycles of a mammal, an amphibian, an insect and a bird? • How do plants reproduce? • How do some animals reproduce?	• What are the changes from birth to old age? • How do babies grow? • What changes happen during Puberty? (School nurse visit) • What changes take place in old age? • What are gestation periods and how are they different for different animals? • What is Life Expectancy?

and fair tests, for the particular uses of everyday materials, including metals, wood and plastic? ● What is a reversible change? - evaporation lesson ● Can changes form new materials? (not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda)		force to have a greater effect			
Scientific Enquiry					
Planning • Can they plan and carry out an investigation by controlling variables fairly and accurately? (Cleaning up an oil spill) • Can they make a prediction with reasons? (SC1 What can dissolve water? / Self inflating balloons) • Can they use test results to make	**Planning** • Can they make a prediction with reasons? (SC1 night and day) • Can they present a report of their findings through writing, display and presentation (Report What is in our solar system)? **Obtaining and Presenting Evidence**	**Planning** • Can they plan and carry out an investigation by controlling variables fairly and accurately? (SC1 Explore the forces of friction) • Can they make a prediction with reasons (SC1 Investigating parachutes)? • Can they use test results to make further predictions		**Planning** • Can they plan and carry out an investigation by controlling variables fairly and accurately (SC1 Cultivating plants)? • Can they present a report of their findings through writing, display and presentation (SC1 Observing life cycles, SC1 Matching parents to offspring/	**Obtaining and Presenting Evidence** • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? (SC1 Growth of babies/ SC1 Life expectancy)

further predictions and set up further comparative tests? (SC1 What can Dissolve water? Self-inflating balloons)) • Can they present a report of their findings through writing, display and presentation? (SC1 Solid Structures) **Obtaining and Presenting Evidence** • Can they take measurements using a range of scientific equipment with increasing accuracy and precision? (SC1 Solid Structures, panning for gold) • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? (Separation by Evaporation) **Considering Evidence and Evaluation**	• Can they take measurements using a range of scientific equipment with increasing accuracy and precision? (SC1 Modelling the solar system) **Considering Evidence and Evaluation** • Can they report findings from investigations through written explanations and conclusions? (SC1 keeping the moon in orbit) • Can they use a graph to answer scientific questions (SC1 Sun and Earth)	and set up further comparative tests? (SC1 Explore the Forces of Friction) • Can they present a report of their findings through writing, display and presentation (SC1 Investigating Parachutes)? **Obtaining and Presenting Evidence** • Can they take measurements using a range of scientific equipment with increasing accuracy and precision? (SC1 Spring Scale) • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? (SC1 Spring Scale/ explore the forces of friction/ investigating streamlining) **Considering Evidence and Evaluation**		Spotting variations)? **Obtaining and Presenting Evidence** • Can they take measurements using a range of scientific equipment with increasing accuracy and precision (cultivating plants)? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models (SC1 variation)? **Considering Evidence and Evaluation** • Can they report findings from investigations through written explanations and conclusions? (SC1 observing life cycles)	**Considering Evidence and Evaluation** • Can they report findings from investigations through written explanations and conclusions? (SC1 Human Timeline) • Can they use a graph to answer scientific questions? (SC1 Gestational Periods?)

• Can they report findings from investigations through written explanations and conclusions? (SC1 Make a boat/SC1 Cleaning water) • Can they use a graph to answer scientific questions (SC1 what can dissolve water?)		• Can they report findings from investigations through written explanations and conclusions? (SC1 Explore the forces of friction) • Can they use a graph to answer scientific questions (Investigating streamlining/ gears pulleys and levers investigations)?			
SCIENTIFIC VOCABULARY					
material, property, magnetic, hard, transparent, flexible, permeable, Thermal, conductor, insulator, heat, material, variable, Material, electric, conductor, insulator, resistance, circuit, Dissolve, soluble, insoluble, liquid, solid, Separate, mixture, solution, suspension, soluble, insoluble, dissolve, evaporate, solid, liquid, filter, sieve, magnet, attract, particles, Separate, mixture, solution, suspension, soluble, insoluble, dissolve, evaporate, solid, liquid, filter, sieve, magnet, attract, thermal insulator/conductor, reversible/non-reversible change	Satellite, Spherical bodies, sphere, planet, moon, star, sun, axis, orbit, astronomer, rotates	Gravity, air resistance, water, resistance, friction, surface, force, effect, move, accelerate, decelerate, stop, change direction, brake, mechanism, pulley, gear Spring, theory of gravitation, force meter, load, Newton (N)		Asexual, sexual, reproduction, Mammals, Life cycle, Function, Amphibians, Analyse, Classification, fertilise, metamorphosis, bulb, runner, cutting, tuber	Puberty, pregnancy, baby, toddler, teenager, adult sexual reproduction, menstruation (period), sperm, egg, foetus Gestation, life expectancy, birth, death

Key Scientists					
Spencer Silver (born 1941) **Joe Kiddie**	**Nicolaus Copernicus** (1473-1543) **Maggie Aderin-Pocock** (born 1968)	**Galileo Galilei** (1564-1642) **Sir Isaac Newton** (1642-1726) **Emma England**		**David Attenborough** (born 1926) **Lucy Evelyn Cheesman** (1881-1969)	**Sarah Fowler**

KEY LINKS/RESOURCES

Properties and Changes of Materials

Lesson 1 – Recap on solids, liquids and gases - https://www.tigtagworld.co.uk/mindmap/#/topics/CLASS00253
Lesson 2 Solutions - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00258
Lesson 3 What is mixture - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00274
Lesson 4 Separation by Sieving - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00275
Lesson 5 Separation by Evaporation - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00276
Lesson 6 Separation by Filtration - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00277
Lesson 7 Choosing Suitable Materials - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00269
Lesson 8 Chemical Reactions -- https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00263
Lesson 9 – Burning - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00264

Earth and Space

Lesson 1 and 2 What is in our solar system- https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00316
Lesson 3 and 4 - Sun and Earth - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00317
Lesson 5 and 6 - The Moon - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00318

Forces

Lesson 1 Gravity - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00298
Lessons 2 & 3 Friction - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00296
Lesson 4 Reducing Friction - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00297
Lesson 5 – Gears, levers and Pulleys (including three fifteen-minute practical's) - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00300

Life Cycles

Lesson 1& 2 - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00328
Lesson 3, 4 & 5 - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00329

Animals including Humans

Lessons 1-6 - Twinkl Planit Resources

SCIENCE

YEAR 6

National Curriculum

Working scientifically

During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

- taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Living things and their habitats

Pupils should be taught to:

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics

Animals including humans

Pupils should be taught to:

- identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
- recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- describe the ways in which nutrients and water are transported within animals, including humans

Evolution and inheritance

Pupils should be taught to:

- recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago
- recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents
- identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution

Light

Pupils should be taught to:

- recognise that light appears to travel in straight lines
- use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
- explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
- use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them

Electricity

Pupils should be taught to:

- associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
- compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
- use recognised symbols when representing a simple circuit in a diagram

AUTUMN	SPRING	SUMMER

Unit Focus: Evolution and Inheritance (Approximately 7 hours)	Unit Focus: Light (Approximately 7 hours)	Unit Focus: Electricity (Approximately 7 hours)	Unit Focus: (Approximately hours)	Unit Focus: Living Things and their Habitats (Approximately 7 hours)	Unit Focus: Animals including Humans (Approximately hours)
Domain: Biology	**Domain: Physics**	**Domain: Physics**	**Domain:**	**Domain: Biology**	**Domain: Biology**
Areas of Learning					
Prior Learning: ● Not Applicable **Common Misconceptions:** ● Environmental changes can be inherited ● Humans used to be monkeys ● An individual can evolve during its own life span ● Evolution produces living things perfectly adapted to their environment ● Natural selection is an active process ● Natural selection is always good for the environment ● Evolution and religion are incompatible ● Males inherit from their father ● Females inherit from their mother	**Prior Learning:** · Recognise that they need light in order to see things and that dark is the absence of light. ·Notice that light is reflected from surfaces. · Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. · Recognise that shadows are formed when the light from a light source is blocked by a solid object. · Find patterns in the way that the sizes of shadows change ● **Common Misconceptions:** ● Some children may think that when they look in a mirror the image is formed on the surface of the mirror itself. ● Eyes give out light ● Reflective surfaces emit light ● Only shiny surfaces or water reflect light ●	**Prior Learning:** 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 the 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. · Know the difference between a conductor and an insulator; giving examples of each. · Safety when using electricity. **Common Misconceptions:** ● Electrons flow at the speed of light	**Prior Learning:** ● **Common Misconceptions:** ●	**Prior Learning:** ● Some organisms reproduce sexually where offspring inherit information from both parents. ● Some organisms reproduce asexually by making a copy of a single parent. ● Environmental change can affect how well an organism is suited to its environment. ● Different types of organisms have different lifecycles ● **Common Misconceptions:** ● All microorganisms are dangerous ● Organisms can only be classified in one way.	**Prior Learning:** · Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. · Know the differences between different life cycles. · Know the process of reproduction in plants. · Know the process of reproduction in animals **Common Misconceptions:** ● Your heart is on the left side of your chest ● The heart makes blood ● Blood travels in one loop from your heart to your lungs and around your body ● When we exercise, our heart beats faster to work the muscles more ● Some blood in our bodies is blue and some is red ● Protein is good for you so you can eat as much as you want ● Food only contains fat if you can see it

		• Different coloured wires effect how the circuit works • Wire is made of plastic • If a circuit is broken, energy goes off into the air. • Electricity comes out of both sides of the battery and leads to both sides of a circuit. • Current, voltage and electricity are all the same thing. • Current gets less as it passes through a component • Electricity is an object that can be seen.			• All drugs are bad for you.
Key Questions					
• What is inheritance? • How do animals and plants adapt to suit their environment? What is adaptation? • What are the theories of evolution? Who are Darwin and Wallace? • What is the evidence of evolution? • How have humans evolved? • What are the advantages and disadvantages of	• How do we see? • How does light travel? • What is refraction? • Can I create a light spectrum? • How do we see colours? • Why do shadows have the same shape as the object that cast them?	• What are the major discoveries in electricity? • How is a simple circuit drawn? • What are volts? • How do variations in how components of a circuit work? -plan design, conduct and record findings. • Can I plan further investigations? • How do I stay safe with electricity?	•	• Why do we classify animals and plants? • What is the Linnaean system? • Can I classify creatures based on their characteristics? • What are microorganisms? • What are the different characteristics of Microorganisms? • How can organisms be classified in my local environment?	• What is the circulatory system? • What is the job of the blood and blood vessels? • What effect does exercise have on my body? • What are the benefits of exercise? • How does my diet effect my body? • What impacts do drugs and alcohol have on my body?

adaptation and evolution?					
Scientific Enquiry					
Planning • Can they use information to help make a prediction? (SC1 inheritance and variation) • Can they explain (in simple terms) a scientific idea and what evidence supports it? (SC1 Human intervention) • Can they present a report of their findings through writing, display and presentation? (SC1 Animal Habitats) **Considering Evidence and Evaluation** • Can they find a pattern from their data and explain what it shows? (SC1 Natural Selection) • Can they link what they have found out to other science? (SC1 Modelling Evolution, SC1 Human intervention)	**Planning** • Can they plan and carry out an investigation by controlling variables fairly and accurately? (SC1 Shadow Length) • Can they explain (in simple terms) a scientific idea and what evidence supports it? (SC1 Creating a Rainbow & Rainbow Bubbles)) • Can they present a report of their findings through writing, display and presentation? (SC1 Creating a Rainbow) **Obtaining and Presenting Evidence** • Can they record their measurements in different ways? (incl bar charts, tables and line graphs) (SC1 Length of a Shadow) • Can they take measurements	**Planning** • Can they explore different ways to test an idea and choose the best way, and give reasons? (SC1 – Electricity investigation) • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? (SC1 – Electricity investigation) • Can they plan and carry out an investigation by controlling variables fairly and accurately? (SC1 – Electricity investigation) • Can they make a prediction with reasons? (SC1 – Electricity investigation) • Can they use information to help make a prediction? (SC1 – Electricity investigation)		**Planning** • Can they explore different ways to test an idea and choose the best way, and give reasons? (SC1 – Classification Key • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? (What makes mould grow) • Can they make a prediction with reasons? (SC1 what makes mould grow? • Can they use information to help make a prediction? (SC1 – Classification Key • Can they present a report of their findings through writing, display and presentation? (SC1 – Classification Key, what makes mould grow?	**Planning** • Can they explore different ways to test an idea and choose the best way, and give reasons? (SC1 Heart Rate Investigation) • Can they vary one factor whilst keeping the others the same in an experiment? Can they explain why they do this? (SC1 Heart Rate Investigation) • Can they plan and carry out an investigation by controlling variables fairly and accurately? (SC1 Heart Rate Investigation) • Can they make a prediction with reasons? (SC1 Heart Rate Investigation) • Can they use information to help make a prediction? (SC1 Blood investigation)

• Can they report findings from investigations through written explanations and conclusions? (SC1 How offspring might vary)	using a range of scientific equipment with increasing accuracy and precision**?** (SC1 Refractions) **Considering Evidence and Evaluation** • Can they find a pattern from their data and explain what it shows? (SC1 Length of a Shadow) • Can they use a graph to answer scientific questions? (SC1 Length of a Shadow) • Can they suggest how to improve their work and say why they think this? (SC1's Refraction) • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? (SC1 Length of a shadow) • Can they report findings from	• Can they use test results to make further predictions and set up further comparative tests? (SC1 – Electricity investigation) • Can they explain (in simple terms) a scientific idea and what evidence supports it? (SC1 – Electricity investigation) • Can they present a report of their findings through writing, display and presentation? (SC1 – Electricity investigation) **Obtaining and Presenting Evidence** • Can they explain why they have chosen specific equipment? (incl ICT based equipment) (SC1 – Electricity investigation) • Can they decide which units of measurement they need to use? (SC1 – Electricity investigation)		**Obtaining and Presenting Evidence** • Can they explain why they have chosen specific equipment? (incl ICT based equipment) • Can they explain why a measurement needs to be repeated? (SC1 – Classification Key • Can they record their measurements in different ways? (incl bar charts, tables and line graphs) (SC1 – Classification Key **Considering Evidence and Evaluation** • Can they find a pattern from their data and explain what it shows? (SC1 – Classification Key • Can they use a graph to answer scientific questions? (SC1 – Classification Key • Can they link what they have found out to other	• Can they use test results to make further predictions and set up further comparative tests? (SC1 Heart Rate Investigation) • Can they explain (in simple terms) a scientific idea and what evidence supports it? (SC1 Heart Rate Investigation) • Can they present a report of their findings through writing, display and presentation? (SC1 Heart Rate Investigation) **Obtaining and Presenting Evidence** • Can they explain why they have chosen specific equipment? (incl ICT based equipment) (SC1 Heart Rate Investigation) • Can they decide which units of measurement they need to use? (SC1 Heart Rate Investigation)

	investigations through written explanations and conclusions? (SC1 Light Learning Lab)	• Can they explain why a measurement needs to be repeated? (SC1 – Electricity investigation) • Can they record their measurements in different ways? (incl bar charts, tables and line graphs) (SC1 – Electricity investigation) • Can they take measurements using a range of scientific equipment with increasing accuracy and precision**?** (SC1 – Electricity investigation) **Considering Evidence and Evaluation** • Can they suggest how to improve their work and say why they think this? (SC1 – Electricity investigation) • Can they record more complex data and results using scientific diagrams,		science? (SC1 – Classification Key • Can they suggest how to improve their work and say why they think this? • Can they record more complex data and results using scientific diagrams, classification keys, tables, bar charts, line graphs and models? (SC1 – Classification Key, what makes mould grow? • Can they report findings from investigations through written explanations and conclusions? (SC1 – Classification Key What makes mould grow)	• Can they explain why a measurement needs to be repeated? (SC1 Heart Rate Investigation) • Can they record their measurements in different ways? (incl bar charts, tables and line graphs) (SC1 Heart Rate Investigation) • Can they take measurements using a range of scientific equipment with increasing accuracy and precision**?** (SC1 Heart Rate Investigation) **Considering Evidence and Evaluation** • Can they find a pattern from their data and explain what it shows? (SC1 Heart Rate Investigation) • Can they use a graph to answer scientific questions? (SC1 Heart Rate Investigation)

		classification keys, tables, bar charts, line graphs and models? (SC1 – Electricity investigation) • Can they report findings from investigations through written explanations and conclusions? (SC1 – Electricity investigation)			• Can they link what they have found out to other science? (SC1 Heart Rate Investigation) • Can they suggest how to improve their work and say why they think this? (SC1 Heart Rate Investigation) • Can they report findings from investigations through written explanations and conclusions? (SC1 Diet and Exercise/Drugs and Alcohol)
SCIENTIFIC VOCABULARY					
Evolution, natural selection, adapted/adaptation, characteristics, cladogram, fossils, Offspring, characteristics, vary/variation, inherit/inheritance, environmental variation, Suited/suitable, environment, natural selection, species	Light, light source, names of light sources, e.g. torch, dark/darkness, reflect, reflective, mirror, shadow, block, absorb, direct/ direction, transparent, opaque, translucent, straight, rainbow, Light, reflect, reflective, mirror, shadow, block, straight, shadow	Electricity, appliances/device, electrical circuit, complete circuit, components, cell, battery, positive/negative, terminal, connect/connection, loose connection, short circuit, wire, crocodile clip, bulb, bright/dim, switch, buzzer, volume, motor, fast(er)/slow(er), conductor, insulator, metal/non-metal, voltage, current, resistance, battery, positive/negative, current, conductor, circuit diagram, circuit symbol		Classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, opinion, similarities, differences, Classification, kingdom, phylum, class, order, family, genus, species, Linnaeus, key, group, observations, support, refute, reptiles, amphibians, mammals, fish, birds, flowering/non-flowering plants	Circulatory system, heart, blood, blood vessels, pumps, oxygen, carbon dioxide, lungs, nutrients, water, diet, exercise, drugs, lifestyle alcohol, smoking

Key Scientists					
Charles Darwin (1809-1882) **Alfred Wallace** (1823-1913)	**Abu Ali al-Hasan (Alhazen)** (965-1040) **Ben Jensen**	**Nicholas Tesla** (1856-1943) **Peter Rawlinson**		**Carl Linnaeus** (1707-1778) **Chris Nelson**	**William Harvey** (1578-1657)

KEY LINKS/RESOURCES

Evolution and Inheritance
Lesson 1 Inheritance – Twinkl Inheritance Planit Session 1
Lesson 2 Adaptation - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00347
Lesson 3 and 4 Evolution - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00351
Lesson 5 Human Evolution – Twinkle Planit session 5
Lesson 6 Advantages and disadvantages of evolution and adaptation – Twinkle Planit session 6

Light
Lesson 1 How do we see – Twinkl Planit Session 1
Lesson 2 How does light travel - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00306
Lesson 3 Refraction – Twinkle Planit session 3
Lesson 4 and 5 – White Light - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00307
Lesson 6 Shadows – Twinkle Planit session 6

Electricity
https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00290
Lessons 1-6 – Twinkl Planit
Lesson 7 Dangers of Electricity - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00289

Animals and their habitats
Lesson 1 – Why do we classify -https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00353
Lesson 2 & 3 – Linnaean System - Twinkl Planit
Lesson 4 & 5 Microorganisms - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00360
Lesson 6 Classifying in my local environment -https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00357

Animals including Humans
Lesson 1, 2 & 3 (including three practical's) - https://www.tigtagworld.co.uk/mindmap/#/lessons/CLASS00335
Lesson 4, 5 and 6 – Twinkl Planit