TANKERSLEY ST PETERS C OF E PRIMARY SCHOOL CURRICULUM INTENT – SCIENCE

KS1	LOWER KS2	UPPER KS2
WORKING SCIENTIFICALLY	**WORKING SCIENTIFICALLY**	**WORKING SCIENTIFICALLY**
Asking simple questions and recognising that they can be answered in different ways **Observing** closely, using simple equipment Performing simple **tests** **Gathering** and **recording** data to help in answering questions. Identifying and **classifying** **Using their observations** and ideas to suggest answers to questions	**Asking** relevant questions and using different types of scientific enquiries to answer them Making systematic and careful **observations** and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Setting up simple practical enquiries, comparative and fair **tests** **Gathering**, **recording**, **classifying** and presenting data in a variety of ways to help in answering questions **Using results** to draw simple conclusions, make predictions for new values, suggest improvements and raise further 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 Identifying **differences, similarities** or **changes** related to **simple scientific ideas and processes** Using **straightforward scientific evidence** to **answer questions** or to **support their findings.**	**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 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.

Whole school progression sequences across each area of Science:

Y1	Y2	Y3	Y4	Y5	Y6
Plants					
Plants 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.	**Plants** 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.	**Plants** 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 & how they vary from plant to plant. To 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.			
Y1	Y2	Y3	Y4	Y5	Y6
Animals, including humans					
Animals, including humans. 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	**Animals, including humans.** Know 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	**Animals, including humans.** 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	**Animals, including humans.** 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.	**Animals, including humans.** Describe the changes as humans develop to old age.	**Animals, including humans.** 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

common animals (fish, amphibians, reptiles, birds and mammals, including pets).	different types of food, and hygiene. Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense				transported within animals, including humans.
Y1	Y2	Y3	Y4	Y5	Y6
Living Things and their Habitats					
	Living things and their Habitats Explore and compare differences between things that are living, dead, and 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 micro-habitats. Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain: identify and name different sources of food.		**Living Things and their Habitats** 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.	**Living Things and their Habitats** 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.	**Living Things and their Habitats** 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.

Y1	Y2	Y3	Y4	Y5	Y6
Materials					
Everyday materials 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, 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.	**Uses of everyday materials** 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.	**Rocks** 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.	**States of Matter** 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.	**Properties and changes of materials** 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.	

Y1	Y2	Y3	Y4	Y5	Y6
Seasons					
Seasonal Changes Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.					
Y1	Y2	Y3	Y4	Y5	Y6
Light					
		Light 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 size of shadows change.			**Light** 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.
Y1	Y2	Y3	Y4	Y5	Y6
Electricty					
			Electricity Identify common appliances that run on electricity. Construct a simple series electrical circuit, identifying		**Electricity** Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.

			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.		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.
Y1	Y2	Y3	Y4	Y5	Y6
Forces and Magnets					
		Forces and Magnets To compare how things move on different surfaces. To notice that some forces need contact between two objects, but magnetic forces can act at a distance. To observe how magnets attract or repel each other and attract some materials and not others. To compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and		**Forces and Magnets** To explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. To identify the effects of air resistance, water resistance and friction, that act between moving surfaces. To recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	

		identify some magnetic materials. To describe magnets as having two poles. To predict whether two magnets will attract or repel each other, depending on which poles are facing.			
Y1	Y2	Y3	Y4	Y5	Y6
Sound					
			Sound To identify how sounds are made, associating some of them with something vibrating. To recognise that vibrations from sounds travel through a medium to the ear. To find patterns between the pitch of a sound and features of the object that produced it. To find patterns between the volume of a sound and the strength of the vibrations that produced it. To recognise that sounds get fainter as the distance from the sound source increases.		
Y1	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**
Earth and Space					
				Earth and Space To describe the movement of the Earth, and other planets, relative to the Sun	

				in the solar system. To describe the movement of the Moon relative to the Earth. To describe the Sun, Earth and Moon as approximately spherical bodies. To use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	
Y1	Y2	Y3	Y4	Y5	Y6
Evolution and Inheritance					
					Evolution and Inheritance 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. To recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents. To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 1

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a = Seasonal Changes • Observe changes across the four seasons. To observe and describe weather associated with the seasons and how day length varies. ***KEY VOCABULARY = seasons, autumn, winter, spring, summer, find*** **1b = Everyday Materials** • 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. ***KEY VOCABULARY = materials, rough, smooth, hard, sort***	**2a = Everyday Materials (continued)** • 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. ***KEY VOCABULARY = absorbent, waterproof, float, predict*** **2b = Animals including humans** • Identify and name a variety of common animals including amphibians, birds and mammals • Describe and compare the structure of a variety of common animals (amphibians, birds and mammals including pets) ***KEY VOCABULARY = mammal, bird, amphibian, compare***	**3a = Plants** • 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 ***KEY VOCABULARY = wild plant/flower, seed, stem, roots, deciduous, evergreen*** **3b = Animals including humans** • Identify and name a variety of common animals including fish and reptiles • 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 and reptiles) ***KEY VOCABULARY = fish, reptiles, herbivore, carnivore, omnivore, group***

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 2

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a = Living things and their habitats • Explore and compare differences between things that are living, dead, and never been alive. • Identify and name a variety of plants and animals in their habitats, including micro-habitats. **1b = Living things and their habitats** • 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 • Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain: identify and name different sources of food. ***KEY VOCABULARY = habitat, conditions, living, non-living, observe, food chain, dependency, prey, predator***	**2a = Animals including humans** • 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. • Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **(YEAR 1 OBJECTIVE)** ***KEY VOCABULARY = senses, sight(eye), smell(nose), touch(hand), hear(hand), hygiene, exercise*** **2b = Uses of everyday materials** • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. ***KEY VOCABULARY = materials, natural materials, man-made materials, properties, magnetic***	**3a = Uses of everyday materials (cont)** • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching ***KEY VOCABULARY = recycle, original, direction, apply, exert*** **3b = Plants** • 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 ***KEY VOCABULARY = seed, leaves, stem, flower, roots***

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 3

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a = Light • 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. ***KEY VOCABULARY = light, dark, surface, natural, shadow, artificial, source, blocked, opaque, transparent, translucent*** **1b = Animals including Humans** • 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 ***KEY VOCABULARY = nutrition, vitamins, minerals, fat, proteins, carbohydrates, fibre, muscles, skeleton, contract, relax***	**2a = Rocks** • 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 ***KEY VOCABULARY = fossil, sedimentary, igneous metamorphic, absorbent, texture, permeable, non-permeable, particles, permeability*** **2b = 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. ***KEY VOCABULARY = attract, attraction, contact forces, elastic, magnet, magnetic, non-contact forces, opposite, poles, repel/repulsion***	**3a and b = Plants** • 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 ***KEY VOCABULARY = anther, carpel, dispersal, fertilisation, filament, germinate, nutrients, photosynthesis, pollination, sepal***

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 4

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a and b = Animals including Humans • 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 ***1A KEY VOCABULARY = incisor, canine, premolar, molar, root, plaque, decay, dental, herbivore, carnivore, diagram, conditions*** ***1B KEY VOCABULARY = digestion, tongue, esophagus, stomach, small intestine, large intestine, absorption, food chain, predator, prey explanation (explain), suggestion (suggest)***	**2a = States of Matter** • 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 ***KEY VOCABULARY = material, states of matter, condensation, evaporation, temperature, water cycle, change, Celsius (ºc), fair test, evidence, data, investigation*** **2b = Living things and their habitats** • 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 ***KEY VOCABULARY = classification, habitat, invertebrate, vertebrate, flowering, key, pollution, environment, identify, effects***	**3a = Sound** • 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 ***KEY VOCABULARY = vibrate, volume, ear quiet, pitch, insulate, loud, medium, comparison, variables*** **3b = Electricity** • 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 ***KEY VOCABULARY = appliance, conductor, insulator, battery/cell, switch, circuit, motor, buzzer, predict, conclusion***

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 5

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a and b = Properties and changes of materials • 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 ***1A KEY VOCABULARY = material, properties, dissolve, transparent, translucent, conductor, insulator, permeable, circuit, resistance, variable*** ***1B KEY VOCABULARY = soluble, solution, substance, mixture, filtration, evaporation, reversible, irreversible, reactant, chemical reaction, product, physical reaction***	**2a = Forces** • 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. ***2A KEY VOCABULARY = force, balanced, unbalanced, opposing, gravity, air resistance, water resistance, friction, mechanism, mass, weight, independent variable*** **2b = Earth and space** • 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 ***2B KEY VOCABULARY = spherical, rotate, orbit, Moon, Sun, Solar System, star, axis, geocentric, heliocentric, shadow, dependent variable***	**3a = Animals, including humans** Describe the changes as humans develop to old age ***3A KEY VOCABULARY = prenatal, fetus, infancy, childhood, adolescence, puberty, organism, life cycle, insect, mammal, amphibian, life processes*** • **3b =Living things and their habitats** • 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 *(Link to Puberty / SRE - 1 Decision PHSE unit)* ***3B KEY VOCABULARY = reproduce, asexual reproduction, sexual reproduction, organism, life cycle, insect, mammal, amphibian, life processes, similarities, naturalist, generalisation***

SCIENCE COVERAGE AND KEY VOCABULARY – YEAR 6

AUTUMN TERM	SPRING TERM	SUMMER TERM
1a = Light • 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 ***1A KEY VOCABULARY = iris, pupil, lens, cornea, retina, sclera, concave, convex, light source, reflect, opaque, theory*** **1b = Electricity** • 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 ***1B KEY VOCABULARY = voltage, variation, current, component, resistor, circuit, switch, electrical insulator, electrical conductor, precise***	**2a = Living things and their habitats** • 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 ***2A KEY VOCABULARY = classify, Carl Linnaeus, taxonomy, kingdom, phylum, class, order, family, genus, species, microorganism, organism, refute*** **2b = Evolution and inheritance** • 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 ***2A KEY VOCABULARY = evolution, homosapien, fossil, decompose, inheritance, offspring, trait, variation, adaptation, comparative***	**3a and b =Animals including humans** • 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 ***3A and 3B KEY VOCABULARY = circulatory system, blood vessels, arteries, veins, blood cells, platelets, plasma, organs, bile, precision***