The Holy Spirit Catholic Primary School
Long Term Science Planning

Science Intent
In Science, we inspire pupils with a curiosity and fascination about the world around them. We will develop their scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics. We will develop their scientific language, enabling children to talk about their methods and explain their findings and conclusions. The curriculum will motivate them to become effective communicators of scientific ideas, facts and data whilst enhancing their practical skills of scientific enquiry.

Work Scientifically by:
Scientific Enquiry 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.

National Curriculum Year 3 Subject Content Pupils should be taught

Plants need water!

- 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

- 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

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

National Curriculum Year 4 Pupils should be taught to:

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. 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.

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.

• 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

• 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 two objects, but magnetic forces can act at a distance

• observe how magnets attract or repel each other and attract some materials and not others

• compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials

• describe magnets as having two poles

• predict whether two magnets will attract or repel each other, depending on which poles are facing.

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

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.

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Year 3 / 4 Cycle A	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Knowledge & Skills	**Plants need water! (Y3)** • 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. • I can identify the roots, stem, flower and leaf parts of a plant • I can describe the job of each part of a flowering plant • I can investigate what plants need to grow • I can identify how water moves around a plant • I can explain the importance of pollination. • I can describe the process taken for seed formation • I can identify the importance of seed dispersal in the flower cycle	**Forces (Y3)** • identify what makes something move • investigate what contact is needed to move an object • explore direction force of push and pull • compare how things move on different surfaces • I can identify and draw the forces acting on object to move it. • I can name different forces that can move an object • I can explain pull and push directional force • I can investigate how a toy car moves over different surfaces.	**Living things and their habitats (Y4)** • 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 • I can group animals into vertebrates and invertebrates • I can sort plants into flowering and non-flowering plants •I can investigate living things in my local environment and group them using a classification key •I can identify the factors that can impact different environments • I can explain the effect of a changing environment of different living things	**Magnets (Y3)** • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials • describe magnets as having two poles • I can sort magnetic and nonmagnetic materials • I can investigate the strength of magnets. • I can explore magnetic poles • I can observe how magnets attract some materials.	**Electricity (Y4)** • 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. • I can classify and present data, identifying common appliances that run on electricity. • I can identify circuit components and build working circuits. • I can investigate whether circuits are complete or incomplete. • I can investigate which materials are electrical conductors or insulators. • I can explain how a switch works in a circuit, build switches and report my findings. • I can discuss and solve problems about electricity using reasoning skills.	**Living things and their habitats (Y4) (retrieval)** • 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 • I can group animals into vertebrates and invertebrates • I can sort plants into flowering and non-flowering plants •I can investigate living things in my local environment and group them using a classification key •I can identify the factors that can impact different environments • I can explain the effect of a changing environment of different living things

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Year 3 /4 Cycle B	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Key Knowledge and Skills	**Animals including humans.** • identify that animals, including humans, need the right types and amount of nutrition. • animals need to find their food and 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. • I can describe how the weather changes across the seasons • I can describe day length in autumn. • I can identify signs of autumn. • I can describe how day length varies from autumn to winter. • I can identify changes in the trees and in clothes that we wear from autumn to winter. • I can observe and describe the weather in winter. • I can collect and record data about the weather in winter. • I can explain how some animals adapt in winter.	**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 • I can explain why I need light to see and how dark being an absence of light • I can investigate what materials reflect light best • I can explain why light from the sun can be dangerous and what measure can be put in place to reduce this risk to our eyes • I can explore how shadows are created I can experiment with shadow size to find patterns	**Rocks** •identify how rocks are formed •compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • I can identify which rocks are appropriate for different jobs due to their 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. • I can explain how rocks are created • I can group rocks by their appearance • I can investigate the physical properties of different rock samples • I can explain which rocks are appropriate for certain jobs • I can explain how fossils are formed over time • I can describe how soil is created. • I can investigate how and why soils can differ	**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 • I can identify and name parts of the human digestive system. • I can explain the functions of the digestive system. • I can use scientific evidence to answer questions. • I can identify the types and functions of teeth. • I can identify similarities and differences related to scientific ideas. • I can ask scientific questions and choose a scientific enquiry to answer them. • I can create an enquiry or test. • I can make careful observations, appropriately record my results and use them to develop further investigations. • I can construct and interpret food chains.	**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 • I can describe and explain sound sources • I can explain how different sounds travel • I can explore ways to change the pitch of a sound. • I can investigate ways to absorb sound. • I can make a musical instrument to play different sounds	**State 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 • I can sort and describe materials. • I can investigate gases and explain their properties. • I can investigate materials as they change state. • I can explore how water changes state. • I can investigate how water evaporates. • I can identify and describe the different stages of the water cycle.