



St Joseph the Worker Catholic Primary School
Science Curriculum- Knowledge, Skills and Vocabulary



Year R			
Term/ Topic	Knowledge	Skills	Vocabulary
Changing Seasons	To know: Some trees change in the four seasons. Some signs of each season (leaves on the ground, cold weather, daffodils growing and sunny weather). Some animals hibernate or store food in winter. The weather changes throughout the year. And compare weather types (rain, sun, snow and wind).	Beginning to share ideas and suggestions about what to do when working practically. Beginning to make guesses about what might happen. Commenting on what they see and hear in the natural world. Using non-standard units to measure. Drawing and labelling pictures of plants and animals. Recognising that tables can be used to record information. With support, grouping objects, plants and animals.	Changing seasons: autumn season spring summer weather winter
Animal Adventures	To know: The names of familiar animals (e.g. farm animals, pets and animals seen in storybooks.) The main body parts of common animals (number of legs, wings, fur and tail). Animals, including humans, use their senses to explore the world. Animals need food. Animals and plants move, grow and feed. The difference between things that are living and things that are non-living. Plants and animals live in a range of different places (land, sea, air). Some different places where animals live on the school site. <u>Science action-</u> To know Some different job roles.	With support, asking questions about the natural world. Commenting on what they see and hear in the natural world. Drawing and labelling pictures of plants and animals. With support, grouping objects, plants and animals.	alive compare desert farm group grow home minibeast move non-living ocean polar sort woodland zoo



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Year 1			
Term/Topic	Knowledge	Skills	Vocabulary
Autumn1- Animals: Sensitive Bodies	To know: The key parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth). The five main senses: sight, smell, hearing, taste and touch. The skin is used for touch, the tongue is used for taste, the nose is used for smell, the eyes are used for sight and the ears are used for hearing. <u>Science in action</u> - To know: A range of jobs and careers that use scientific knowledge and methods. About the work of modern-day scientists. There are spiritual, moral, social and cultural links with science.	<u>Posing questions</u> - Recognising there are different types of enquiry (ways to answer a question). <u>Observing (qualitative data)</u> - Using their senses to describe, in simple terms, what they notice or what has changed. <u>Measuring (quantitative data)</u> - Using non-standard units to measure and compare. <u>Recording (diagrams)</u> - Drawing and labelling simple diagrams. <u>Recording (tables)</u> - Using a prepared table to record results including numbers and simple observations. <u>Grouping and classifying</u> - Grouping based on visible characteristics. <u>Analysing and drawing conclusions</u> - Using their results to answer simple questions.	compare group hearing pattern sense(s) sight smell taste touch
Autumn 2- Materials: Everyday Materials	To know: Objects are items or things. A material is what an object is made from. A variety of everyday materials, including wood, plastic, glass, metal, water and rock. Property refers to how a material can be described. Materials can be grouped based on their physical properties.	<u>Posing questions</u> - Responding to suggestions on how to answer questions. <u>Planning</u> -Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable. <u>Predicting</u> - Suggesting what might happen, often justifying with personal experience. <u>Observing (qualitative data)</u> - Using their senses to describe, in simple terms, what they notice or what has changed. <u>Recording (tables)</u> - Using a prepared table to record results including simple observations. <u>Grouping and classifying</u> - Grouping based on visible characteristics. <u>Analysing and drawing conclusions</u> - Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	absorbent fabric glass group material metal object plastic rock tough waterproof wood
Spring 1- Forces and space: Seasonal Changes	To know: The name and order of the four seasons: spring, summer, autumn and winter. That it is unsafe to look directly at the Sun. The weather associated with the four seasons and how it changes (in the UK). That day length varies across the four seasons, with fewer daylight hours in the winter and more in the summer. <u>Science in action</u> - To know: About a range of jobs and careers that use scientific knowledge and methods, e.g. weather reporter.	<u>Posing questions</u> - Exploring the world around them and raising their own simple questions. <u>Predicting</u> - Suggesting what might happen, often justifying with personal experience. <u>Observing (qualitative data)</u> - Using their senses to describe, in simple terms, what they notice or what has changed. <u>Researching</u> - Gathering specific information from one simplified, specified source. <u>Recording (tables)</u> - Using a prepared table to record tally frequency. <u>Graphing</u> - Representing data using pictograms. <u>Analysing and drawing conclusions</u> - Using their results to answer simple questions.	deciduous tree evergreen tree season weather



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Spring 2- Plants: Introduction to Plants	To know: A variety of common plants and how they differ. That deciduous trees lose their leaves seasonally but evergreen trees do not. The basic structure, including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches and stem, of a variety of common plants, including flowering plants and trees. To begin to understand how plants grow and change over time. <u>Science in action-</u> To know: About famous scientists throughout history. About the work of modern-day scientists. There are spiritual, moral, social and cultural links with Science.	<u>Posing questions-</u> Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. <u>Planning-</u> With support, deciding if suggested observations are suitable. Ordering a simple method. <u>Predicting-</u> Suggesting what might happen, often justifying with personal experience. <u>Observing (qualitative data)-</u> Using their senses to describe, in simple terms, what they notice or what has changed. <u>Measuring (quantitative data)-</u> Using non-standard units to measure and compare. <u>Researching-</u> Gathering specific information from one simplified, specified source. <u>Recording (diagrams)-</u> Drawing and labelling simple diagrams. <u>Recording (tables)-</u> Using a prepared table to record results including: numbers; simple observations. <u>Grouping and classifying-</u> Grouping based on visible characteristics. <u>Analysing and drawing conclusions-</u> Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	bulb deciduous diagram evergreen flower fruit garden plants group growth leaf measure observe roots seed stem trunk wild plants
Summer 1- Animals: Comparing animals	To know: A variety of common animals (including fish, amphibians, reptiles, birds and mammals). The main body parts of common animals (arms, legs, wings, tails, fins, head, trunk, horns, tusks and shell). A carnivore is an animal that eats other animals and to give some examples. A herbivore is an animal that eats only plants and to give some examples. An omnivore is an animal that eats both animals and plants and to give some examples. <u>Science in action-</u> To know: About famous scientists throughout history.	<u>Posing questions-</u> Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. <u>Planning-</u> With support, deciding if suggested observations are suitable. <u>Observing (qualitative data)-</u> Using their senses to describe, in simple terms, what they notice or what has changed. <u>Researching-</u> Gathering specific information from one simplified, specified source. <u>Recording (diagrams)-</u> Drawing and labelling simple diagrams. <u>Grouping and classifying-</u> Grouping based on visible characteristics. <u>Graphing-</u> Representing data using pictograms and block charts. <u>Analysing and drawing conclusions-</u> Using their results to answer simple questions.	amphibian bird carnivore compare diet difference fish group herbivore mammal observe omnivore reptile scientist similarity
Summer 2- Making Connections: Investigating Science	<u>Plants-</u> To know: The basic structure, including leaves, flowers (blossom), fruit, roots, bulb, seed, trunk, branches and stem, of a variety of common plants, including flowering plants and trees. How plants grow and change over time. <u>Animals, including humans-</u> To know:	<u>Posing questions-</u> Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. <u>Planning-</u> Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable.	amphibian bird carnivore compare data diet



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through stories	A variety of common animals (including fish, amphibians, reptiles, birds and mammals). The main body parts of common animals (arms, legs, wings, tails, fins, head, trunk, horns/tusks and shell). The diets of carnivores, herbivores and omnivores and give examples. <u>Everyday materials</u>- To know: A variety of everyday materials, including wood, plastic, glass, metal, water and rock. Property refers to how a material can be described. The physical properties of a variety of everyday materials. <u>Seasonal changes</u>- To know: The name and order of the four seasons: spring, summer, autumn and winter. The weather associated with the four seasons and how it changes (in the UK). <u>Science in action</u>- To know about a range of jobs and careers that use scientific knowledge and methods.	<u>Predicting</u>- Suggesting what might happen, often justifying with personal experience. <u>Observing (qualitative data)</u>- Using their senses to describe, in simple terms, what they notice or what has changed. <u>Measuring (quantitative data)</u>- Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. <u>Researching</u>- Gathering specific information from one simplified, specified source. <u>Recording (tables)</u>- Using a prepared table to record results including: numbers; simple observations. <u>Grouping and classifying</u>- Grouping based on visible characteristics. <u>Analysing and drawing conclusions</u>- Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions	difference fish group herbivore mammal material object omnivore pattern reptile season similarity trunk waterproof weather
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Year 2			
Term/ Topic	Knowledge	Skills	Vocabulary
Autumn 1- Living things: Habitats	To begin to understand some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. To know the difference between things that are living, dead, and things that have never been alive, using some of the life processes. To know a variety of plants and animals and describe some differences. To name a variety of habitats, including woodland, ocean, rainforest and coastal. To know that a habitat is the environment where an animal or plant lives/grows because it provides what they need to survive. To know that living things depend upon each other (e.g. for food, shelter.) To understand that a food chain can be used to show how animals obtain food from eating either plants and/or other animals.	<u>Posing questions</u> - Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). <u>Researching</u> - Gathering specific information from one simplified, specified source. <u>Recording (tables)</u> - Using a prepared table to record results including simple observations. <u>Grouping and classifying</u> - Grouping based on visible characteristics.	alive carnivore (Y1) dead depend diet (Y1) energy food chain growth (Y1) habitat herbivore (Y1) life processes mammal (Y1) omnivore (Y1) predator prey shelter sort (Y1)
Autumn 2- Living things: Microhabitats	To know: A variety of plants and animals and describe some differences. That a habitat is the environment where an animal or plant lives/grows, because it provides what they need to survive. That a microhabitat is a very small habitat (e.g. under stones, logs and leaf litter). That living things depend upon each other (e.g. for food, shelter).	<u>Posing questions</u> - Exploring the world around them and raising their own simple questions. Recognising that there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. <u>Planning</u> - With support, deciding if suggested observations are suitable. Ordering a simple method. <u>Predicting</u> - Suggesting what might happen, often justifying with personal experience. <u>Observing (qualitative data)</u> - Using their senses to describe, in simple terms, what they notice or what has changed <u>Researching</u> - Gathering specific information from one simplified, specified source. <u>Recording (tables)</u> - Recording results using simple observations and tally frequency. <u>Classification keys</u> - Organising questions to create a simple classification key. <u>Analysing and drawing conclusions</u> - Using results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	food chain microhabitat minibeast research results test



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Spring 1- Materials: Uses of Everyday Materials	To know: Objects are made from materials that suit their uses. One material can be used for a range of purposes. Different materials can be used for the same purpose. A push or pull must be applied to change the shape of a solid object. Solid objects can be stretched, twisted, bent or stretched. Different solid objects may take different amounts of force to change shape. Science in action- To know: A range of jobs and careers that use scientific knowledge and methods. Science in the news and recent discoveries. Spiritual, moral, social and cultural links with Science.	<u>Posing questions</u> - Recognising there are different types of enquiry (ways to answer a question). <u>Measuring (quantitative)</u> - Using non-standard units to measure and compare. <u>Recording (tables)</u> - Using a prepared table to record results including numbers. <u>Grouping and classifying</u> - Grouping based on visible characteristics. <u>Graphing</u> - Representing data using pictograms and block graphs. <u>Analysing and drawing conclusions</u> - Using their results to answer simple questions.	elastic fabric (Y1) flexible glass (Y1) material (Y1) metal (Y1) object (Y1) plastic (Y1) property rock (Y1) suitable wood (Y1)
Spring 2- Animals: Lifecycles and health	To know: That baby, toddler, child, teenager and adult are human life cycle stages. There are differences in the life cycles of different animals. Humans grow as they age.	<u>Posing questions</u> - Recognising there are different types of enquiry (ways to answer a question). <u>Measuring (quantitative data)</u> - Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. <u>Researching</u> - Gathering specific information from one simplified, specified source. Recording (tables)- Using a prepared table to record results including numbers. <u>Analysing and drawing conclusions</u> - Using their results to answer simple questions.	basic needs egg health hygiene life cycle live young pupa spawn survive teenager toddler tadpole



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Summer- Plants: Plant Growth	To know: Seeds and bulbs grow into seedlings by producing roots and shoots. Seedlings grow into mature plants by developing parts such as roots, stems, leaves and flowers. Seeds need water and warmth to germinate. Plants need water, light and a suitable temperature for growth and health. <u>Science in action-</u> To know: A range of jobs and careers that use scientific knowledge and methods. There are spiritual, moral, social and cultural links with Science.	Posing questions- Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. Planning- Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable. Predicting- Suggesting what might happen, often justifying it with personal experience. Observing- Using their senses to describe, in simple terms, what they notice or what has changed. Measuring (quantitative data)- Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. Recording (diagrams)- Drawing and labelling simple diagrams. Recording (tables)- Using a prepared table to record results including: numbers; simple observations. Analysing and drawing conclusions- Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	diagram (Y1) energy flower (Y1) germinate growth (Y1) leaf (Y1) life cycle nutrient observe (Y1) seed (Y1) shoot stem (Y1) bulb (Y1)
Summer 2- Making connections: Plant Based Materials	<u>Plants-</u> To know: Seeds and bulbs grow into seedlings by producing roots and shoots. Seeds need water and warmth to germinate. Plants need water, light and a suitable temperature for growth and health. <u>Living things and their habitats-</u> To know: Some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. The difference between things that are living, dead and things that have never been alive, using some of the life processes. <u>Materials-</u> To know: Why objects are made from particular materials and to give examples of their suitability. One material can be used for a range of purposes (and to give examples.) Different materials can be used for the same purpose (and to give examples.) Why certain materials are unsuitable for particular objects. Solid objects can be squashed, bent, twisted or stretched. <u>Science in action-</u> To know: About famous scientists throughout history. About the work of modern-day scientists.	<u>Posing questions-</u> Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. Planning- Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable. <u>Predicting-</u> Suggesting what might happen, often justifying it with personal experience. <u>Observing (qualitative data)-</u> Using their senses to describe, in simple terms, what they notice or what has changed. <u>Researching-</u> Gathering specific information from one simplified, specified source. <u>Recording (tables)-</u> Using a prepared table to record results including: numbers; simple observations. <u>Grouping and classifying-</u> Grouping based on visible characteristics. <u>Analysing and drawing conclusions-</u> Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	alive dead fabric (Y1) flexible germinate growth (Y1) invention life processes material (Y1) plastic (Y1) property results seed (Y1) suitable test waterproof (Y1) wood (Y1)



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Year 3			
Term/ Topic	Knowledge	Skills	Vocabulary
Autumn 1- Animals: Movement and nutrition	To know: Animals can be grouped based on the presence of a skeleton. The skeleton in humans and some animals is used for movement, protection and support. The muscular system in humans and some animals works with the skeleton for movement. The main bones in the body. Animals, including humans, need the right types and amount of nutrition. Humans cannot make their own food; therefore, they eat to get the nutrition needed. There are nutrient groups (carbohydrates, protein, fats, fibre, vitamins, minerals and water) with their own functions in the body. A balanced diet should include all nutrient groups. Animals have different diets. <u>Science in action-</u> To know: There are famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. Scientific work is taking place with modern-day scientists. There are science events in the news and recent discoveries. There are methods and equipment used by scientists throughout history that have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. There is current scientific research taking place with aims for the future.	<u>Measuring-</u> Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. <u>Researching-</u> Gathering specific information from a variety of sources. <u>Recording-</u> Using a prepared table to record results including more detailed observations. <u>Grouping and classifying-</u> Grouping based on visible characteristics and measurable properties. <u>Analysing-</u> Writing a conclusion to summarise findings using simple scientific vocabulary. <u>Evaluating-</u> Beginning to identify new questions that would further the enquiry.	balanced diet bone carbohydrate conclusion fat fibre invertebrate joint measure (Y1) mineral movement muscle nutrient protection protein record research (Y2) skeleton support vertebrate vitamin
Autumn 2- Forces and space: Forces and magnets	To know: Examples of contact and non-contact forces. Some forces are a result of contact between two surfaces but some forces can act at a distance (e.g. magnetism). Magnets have a north and south pole. Some examples of magnetic materials, including iron and nickel, and how they react to a magnet and each other. Some different examples of magnets, including bar, horseshoe, button and ring. Some uses of magnets.	<u>Planning-</u> Beginning to select from options which variables will be changed, measured and controlled. Suggesting what observations to make and how long to make them for. Planning a simple method, verbally and in writing. <u>Researching-</u> Gathering specific information from a variety of sources. <u>Recording-</u> Beginning to draw more scientific diagrams by labelling with more scientific vocabulary and using arrows. Representing data using bar charts. <u>Analysing-</u> Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have	attract bar chart conclusion contact force diagram (Y1) force friction investigation magnet magnetic material



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	Friction is a contact force that acts between two surfaces to slow an object down. Magnetism is a non-contact force that affects objects containing magnetic metal. The opposite poles of a magnet attract one another and like poles repel one another. Rougher surfaces have more friction between them than smoother surfaces. The strength of different magnets may vary.	affected another. Beginning to quote results as evidence of relationships. <u>Science in action</u>- Exploring the uses of friction and magnets in everyday life and industry.	magnetism method non-contact force north pole plan (Y1) results (Y2) record repel south pole variable
Spring 1- Materials: Rocks and soils	To know: That rocks can be grouped based on their appearance or properties (e.g. colour, texture, hardness and permeability). That rocks may contain grains, crystals or fossils. That grains and crystals appear differently and can be used to classify rocks. That soils are made from rocks and dead matter. The relationship between the properties of rocks and their uses. That fossils can form from the remains of living things. That rocks can change over time (e.g. erosion and weathering).	<u>Observing</u>- Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. <u>Researching</u>- Gathering specific information from a source. <u>Recording</u>- Beginning to draw more scientific diagrams by: Drawing in 2D to produce simple line diagrams. Labelling with more scientific vocabulary. <u>Grouping and classifying</u>- Grouping based on visible characteristics and measurable properties. <u>Graphing</u>- Representing data using bar charts. <u>Analysing and drawing conclusions</u>- Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Beginning to use identified patterns to predict new values or trends.	bar chart conclusion crystal diagram (Y1) fossil grain group (Y1) hard hardness observe (Y1) predict (Y2) record research (Y2) rock sediment sedimentary rock sedimentation soft soil
Spring 2- Energy: Light and shadow	To know: Light travels from a source (e.g. the Sun, light bulbs and torches). Light is needed to see things and that dark is the absence of light. Light from the Sun can be dangerous and how to protect their eyes. All materials reflect light. Shadows form when the light from a light source is blocked by an opaque object. Shadows change as a result of changing the position of the light source and changing the distances between the light source, object and surface. Shadows change position and length throughout the day as the Sun changes position in the sky.	<u>Posing questions</u>- Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. <u>Planning</u>- Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. <u>Observing</u>- Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.	bar chart cast (a shadow) conclusion group (Y1) investigation light source luminous mirror non-luminous observe (Y1) opaque measure (Y1)



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	<u>Science in action-</u> To know: Famous scientists throughout history. A range of jobs and careers use scientific knowledge and methods. There are spiritual, moral, social and cultural links with Science. Methods and equipment used by scientists throughout history and how these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. Collaboration and peer reviewing are essential for effective scientific progress.	<u>Measuring-</u> Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. <u>Recording-</u> Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables. <u>Grouping and classifying-</u> Grouping based on visible characteristics and measurable properties. <u>Graphing-</u> Reading the value of bars with greater accuracy. <u>Analysing and drawing conclusions-</u> Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends. <u>Evaluating-</u> Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Beginning to identify new questions that would further the enquiry.	mirror patten (Y1) predict (Y2) record reflect reflection reflective (shiny) results table shadow the Sun translucent transparent trustworthy variable Unit resources
Summer 1- Plants: Plant reproduction	To know: The functions of the basic parts of a plant and the relationship between structure and function. Water is transported within a plant from the root, through the stem, to the leaves. Plants need water, light, air, nutrients and a suitable temperature for growth and health. The needs for growth and health vary from plant to plant. The life cycle of a plant from seed to mature plant. Flowers are the reproductive organs of a plant. Pollination is the transfer of pollen to the female (part of the) flower. The process of seed formation is the growth of a seed after pollination. Different methods of seed dispersal and the benefits of each.	<u>Posing questions-</u> Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. <u>Planning-</u> Beginning to suggest what observations to make and how long to make them for. Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. <u>Observing-</u> Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. <u>Measuring-</u> Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. <u>Recording-</u> Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables.	bar chart conclusion female flower (Y1) flowering plant fruit (Y1) male pattern (Y2) pollen pollination predict (Y2) record reproduction results table seed (Y1) seed dispersal transport variable Unit resources



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		<u>Grouping and classifying</u>- Grouping based on visible characteristics and measurable properties. <u>Graphing</u>- Reading the value of bars with greater accuracy. <u>Analysing and drawing conclusions</u>- Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends. <u>Evaluating</u>- Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them.	
Summer 2- Making connections: Does hand span affect grip strength?	This unit revises the following key knowledge from the previous Year 3 units: <u>Movement and nutrition</u>- To know: The muscular system in humans and some animals works with the skeleton for movement. The main food groups (carbohydrates, protein, fats and oils, fibre, vitamins, minerals and water) and their simple functions. <u>Forces and magnets</u>- To know: Friction is a contact force that acts between two surfaces to slow an object down. Rougher surfaces have more friction between them than smoother surfaces. <u>Rocks and soil</u>- To understand the relationship between the properties of rocks and their uses. <u>Light and shadows</u>- To know that shadows are formed when the light from a light source is blocked by an opaque object. <u>Plant reproduction</u>- To know: Flowers are the reproductive organs of a plant. The process of pollination is the transfer of pollen to the female (part of the) flower. The process of seed formation is the growth of a seed after pollination.	This unit revisits the working scientifically skills covered in Year 3, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.	bar chart bone carbohydrate conclusion evaluate fat flower fruit friction grip strength joint light source material muscle nutrition opaque predict property protein seed shadow trustworthy variable



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Year 4			
Term/ Topic	Knowledge	Skills	Vocabulary
Autumn 1- Animals: Digestion and Food	To know: The main organs of the human digestive system are the mouth, teeth, tongue, oesophagus, stomach, small and large intestines and have different functions. The different types of human teeth are incisors, canines, premolars and molars and have different functions. Teeth can be damaged by sugary and acidic food, for example. It is important to brush your teeth twice a day, make good food choices and visit the dentist regularly. The teeth of carnivores and herbivores are different for a reason. Predators hunt for their food and prey are the animals being hunted. Producers make their own food. Food chains begin with a producer, followed by consumers and arrows to show the energy passed on. <u>Science in action</u>- To know: Famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. There is work taking place by modern-day scientists. There are spiritual, moral, social and cultural links with science. There are different methods and equipment used by scientists throughout history and these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of science.	<u>Planning</u>- Beginning to select from options which variables will be changed, measured and controlled. <u>Recording</u>- Beginning to design simple results tables. <u>Grouping and classifying</u>- Grouping based on visible characteristics and measurable properties. <u>Analysing and drawing conclusions</u>- Beginning to suggest how one variable may have affected another. Beginning to use identified patterns to predict new values or trends. <u>Evaluating</u>- Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by reflecting on the quality of results (accurate measurements and maintaining control variables).	canine carnivore (Y1) conclusion (Y3) control variable diagram (Y1) digest digestive system ethics faeces food chain (Y2) fair test group (Y1) herbivore (Y1) incisor large intestine molar mouth nutrient (Y3) oesophagus omnivore (Y1) pattern (Y1) plan (Y1) predator (Y2) premolar prey (Y2) producer proof record (Y3) results table (Y3) saliva small intestine stomach trustworthy (Y3) variable (Y3)
Autumn 2- Energy: Electricity and Circuits	To know: That all electrical appliances need a power source, including batteries or mains electricity.	<u>Posing questions</u>- Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered.	appliance battery/cell bulb buzzer



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	That an electrical circuit needs a complete path for the electrical charge to flow through. The main components in a series circuit. The precautions for working safely with electricity. That some materials allow electric charge to pass through them quickly and these are known as electrical conductors (e.g. metals). That some materials do not allow electrical charge to pass through them easily and these are known as electrical insulators (e.g wood and plastic). That metals are used for cables and wires because they are good conductors of electricity. That plastic is used to cover cables and wires because it is a good insulator. That an open switch breaks a series circuit so the components will be off. That a closed switch completes a series circuit so the components will be on. The relationship between bulb brightness and the number of bulbs in a circuit.	<u>Planning</u>- Planning a simple method, verbally and in writing. Beginning to write a simple method in numbered steps. Selecting and beginning to decide what simple equipment might be used to aid observations and measurements. <u>Predicting</u>- Making predictions about what they think will happen by predicting a trend by considering how the changing variable will affect the measured variable. <u>Observing</u>- Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. <u>Recording</u>- Beginning to draw scientific diagrams that are in 2D and simple line diagrams. Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables. <u>Grouping and classifying</u>- Grouping based on visible characteristics and measurable properties. <u>Analysing and drawing conclusions</u>- Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to use identified patterns to predict new values or trends.	circuit conclusion (Y3) electrical conductor electrical insulator electricity mains method (Y3) motor pattern (Y1) power source predict (Y2) property results table (Y3) switch wire variable (Y3)
Spring 1- Materials: States of Matter	To know All substances around us can exist as solids, liquids and gases. A property of a solid is that it keeps its shape unless a force is applied to it. A property of a liquid is that it can flow freely and take on the shape of a container. A property of a gas is that it does not have a fixed shape and can escape from an unsealed container. Heating causes solids to turn into liquids (melting) and liquids to turn into gases (evaporating). Cooling causes gases to turn into liquids (condensing) and liquids to turn into solids (freezing). Water can exist as a solid, a liquid or a gas. The melting point of water is zero degrees Celsius and the boiling point of water is 100 degrees Celsius. Water flows around the world in a continuous process called the water cycle. In the water cycle, evaporation is when bodies of water are heated and turn into water vapour. In the water cycle, condensation is the process of water vapour cooling to form water droplets in clouds, which can result in precipitation. The rate of evaporation increases as the temperature rises.	<u>Posing questions</u>- Considering what makes a testable question. <u>Measuring</u>- Using standard units to measure and compare. Using measuring equipment with increasing accuracy. <u>Recording</u>- Drawing in 2D to produce simple line diagrams. Labelling diagrams with more scientific vocabulary. <u>Researching</u>- Gathering specific information from a variety of sources. <u>Analysing and drawing conclusions</u>- Beginning to use identified patterns to predict new values or trends. Writing a conclusion to summarise findings using simple scientific vocabulary.	boiling conclusion (Y3) condensing diagram (Y1) evaporating evaporation rate freezing gas liquid measure (Y1) melting precipitation predict (Y2) rate research (Y2) solid steam stopwatch (Y3) temperature thermometer the water cycle



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Spring 2- Energy: Sound and Vibration	To know: Sound is a result of vibrations. Vibrations from sounds travel through mediums to the ear. An insulating material reduces the amount of vibrations that pass through it and this can be used to protect the ears from damaging sounds. Different materials provide different amounts of insulation against sound. A variety of ways to change the pitch or volume of a sound. Quicker vibrations cause higher-pitched sounds and slower vibrations cause lower-pitched sounds. Stronger vibrations cause louder sounds and weaker vibrations cause quieter sounds. Sounds get fainter as the distance from the sound source increases.	<u>Planning-</u> To suggest what observations to make and how long to make them for. <u>Observing-</u> To observe closely how different instruments create a sound. <u>Researching-</u> To research how cetaceans communicate underwater. <u>Recording-</u> To present results using a bar chart. To design simple results tables. <u>Analysing and drawing conclusions-</u> To identify when results or observations do not match predictions.	air bar chart (Y3) eardrum insulator observe (Y1) pitch plan (Y1) predict (Y2) proof record (Y3) research (Y2) results table (Y3) sound trustworthy (Y3) vibration volume
Summer 1- Living things: Classification and Changing Habitats	To know: Living things can be grouped in different ways. A classification key can be used to group and identify plants and animals. Vertebrates are animals that have a backbone and invertebrates are animals that do not have a backbone. Plants can be grouped into flowering or non-flowering varieties. Flowering plants include grasses and non-flowering plants include ferns and mosses. There are five main vertebrate groups: birds, mammals, reptiles, amphibians and fish. Invertebrate groups include snails, slugs, worms, spiders and insects. Habitats can change throughout the year, which can be dangerous for living things. Humans can have both a positive and negative impact on the environment.	<u>Observing-</u> Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. <u>Recording-</u> Recording data in Carroll and Venn diagrams. Using a prepared table to record results, including more detailed observations. Using tables with more than two columns. <u>Grouping and classifying-</u> Grouping based on visible characteristics and measurable properties. Populating a pre-prepared branching and number key. Choosing appropriate questions for classification keys. <u>Researching-</u> Gathering specific information from a variety of sources.	amphibian (Y1) bird (Y1) classification key classify conservation deforestation endangered fish (Y1) flowering plants (Y3) group habitat (Y2) insect invertebrate (Y3) mammal (Y1) nature reserve non-flowering plants observe (Y1) pollution reptile (Y1) research (Y2) snail spider slug vertebrate (Y3) worm



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Summer 2- Making connections: How does the flow of liquids compare?	This unit revises the following key knowledge from the previous Year 4 units: <u>States of matter</u>- To know: How to compare and group materials together, according to whether they are solids, liquids or gases. The part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <u>Classification and changing habitats</u>- To know: And use classification keys to help group, identify and name a variety of living things in their local and wider environment. Environments can change and that this can sometimes pose dangers to living things. <u>Electricity and circuits</u>- To know: A switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Some common conductors and insulators, and associate metals with being good conductors. <u>Sound and vibrations</u>- To know: How sounds are made, associating some of them with something vibrating. Vibrations from sounds travel through a medium to the ear. <u>Digestion and food</u>- To know the simple functions of the basic parts of the digestive system in humans.	This unit revisits the working scientifically skills covered in Year 4, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.	bar chart condensing cell/battery conclusion evaluate evaporating gas insect liquid medicine motor pharmacology pharmacologist precipitation predict solid switch temperature the water cycle trustworthy variable viscosity water vapour
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Year 5			
Term/ Topic	Knowledge	Skills	Vocabulary
Autumn 1- Materials: Mixtures and Separation	To know: Some substances will dissolve in a liquid to form a solution. The factors that affect the time taken to dissolve, including temperature and stirring. Some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes.	<u>Researching</u> - Gathering answers to open-ended questions from a variety of sources. <u>Recording (diagrams)</u> - Labelling with a broader range of scientific vocabulary. Annotating diagrams to explain concepts and convey opinions. <u>Posing questions</u> - Selecting the most appropriate enquiry method to answer questions and give justification. <u>Observing (qualitative data)</u> - Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. <u>Planning</u> - Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for.	control variable (Y4) dissolve evaporation filtering insoluble mixture sieving soluble solution stopwatch (Y3) variable (Y3)
Autumn 2- Materials: Properties and Changes	To describe a broader range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets. To know: Dissolving, mixing and changes of state are reversible changes. Some changes result in the formation of new materials, which are usually irreversible (e.g. burning, rusting, the action of acid on bicarbonate of soda).	<u>Planning</u> - Writing a method including detail about how to ensure control variables are kept the same. <u>Predicting</u> - Making increasingly scientific predictions by: using previous scientific knowledge and evidence to inform their predictions; using scientific language to describe a potential outcome or explain why they think something will happen; making links between topics to evidence a prediction. <u>Measuring (quantitative data)</u> - Using standard units to measure and compare with increasing precision (decimals). <u>Recording (tables)</u> - Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. <u>Analysing and drawing conclusions</u> - Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. <u>Evaluating</u> - Identifying which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by also reflecting on: accuracy (human error with equipment); reliability (repeating results).	burning control variable (Y4) conductor electrical conductivity (Y4) hardness (Y3) hazard insulator irreversible change method (Y3) reversible change rust rusting safety thermal conductivity transparency trustworthy (Y3) variable (Y3)
Spring 1- Forces and space: Earth and Space	To know: The Sun is a star at the centre of our Solar System. The Sun, Earth and Moon are approximately spherical bodies. The names, order and relative positions of the planets and other main celestial bodies.	<u>Posing questions</u> - Raising questions throughout the enquiry process. Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. <u>Recording</u> - Drawing scientific diagrams by: Using a wider range of standard symbols. Drawing with increasing accuracy. Labelling with a broader range of scientific vocabulary. Annotating diagrams to	celestial bodies data day (daytime) degrees Celsius (Y4) discovery Earth



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	A moon is a celestial body that orbits a planet and give examples of moons that orbit other planets. The Earth and other planets orbit around the Sun. The tilt of the Earth and its orbit around the Sun causes the seasons. The Moon orbits around the Earth. How the Earth's rotation causes day and night and the apparent movement of the Sun across the sky. Science in action- To know: To know about famous scientists throughout history. To know how scientific knowledge has changed over time, leading to the current understanding of Science. To know that mistakes can lead to new discoveries. To know about the work of modern day scientists. To know about science in the news and recent discoveries. To know about the methods and equipment used by scientists throughout history and how these have led to modern methods. To know about current scientific research and what it aims to achieve in the future. To know that collaboration and peer reviewing is essential for effective scientific progress.	explain concepts and convey opinions. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. <u>Analysing and drawing conclusions</u>- Using identified patterns to predict new values or trends.	evidence gravity Jupiter line graph line of best fit Mars Mercury model moon Neptune night (nighttime) orbit phase planet Pluto Saturn season (Y1) solar system spherical star temperature (Y4) testable Uranus Venus
Spring 2- Living things: Lifecycles and Reproduction	To know: A life cycle shows the changes an animal or plant goes through until the reproduction of a new generation when the cycle starts again. All living things must reproduce for the species to survive. Sexual reproduction requires two parents whereas asexual reproduction only requires one parent. There are different processes plants and animals use to reproduce (asexual and sexual reproduction). <u>Science in action</u>- To know: There are a range of jobs and careers that use scientific knowledge and methods. There is current scientific research taking place with aims for achievement in the future. Scientific evidence is used to support or refute ideas or arguments.	<u>Posing questions</u>- Raising questions throughout the enquiry process. Identifying testable questions. <u>Planning</u>- Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. <u>Observing</u>- Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. <u>Measuring</u>- Using standard units to measure and compare with increasing precision (decimals). <u>Researching</u>- Gathering answers to open-ended questions from a variety of sources. <u>Recording</u>- Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. <u>Analysing and drawing conclusions</u>- Suggesting with increasing independence how one variable may have affected another. Quoting	adolescence amphibian (Y1) asexual reproduction bird (Y1) characteristic data estimate fertilisation germination gestation gills incubation insect life cycle (Y2) line graph line of best fit lungs



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		relevant data as evidence of relationships. Using identified patterns to predict new values or trends.	mammal (Y1) mating metamorphosis offspring ovule pollen pollination reproduction (Y3) sexual reproduction testable
Summer 1- Forces and space: Unbalanced Forces	To know: Gravity is a non-contact force that pulls objects together. Air resistance and water resistance are both types of friction. Unsupported objects fall towards the Earth because of gravity. Friction, air resistance and water resistance act in the opposite direction of a moving object. When forces are unbalanced, the speed, shape or direction of an object changes. When forces are balanced, the speed, shape or direction of an object stays the same. Some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Rougher surfaces have more friction between them than smoother surfaces and how that may affect movement. The larger the surface area of an object, the greater the air or water resistance it creates. <u>Science in action</u>- To know: About famous scientists throughout history.	<u>Skills</u> <u>Planning</u>- Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Writing a method that includes details about how to ensure control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. <u>Measuring</u>- Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. <u>Recording</u>- Drawing scientific diagrams by: using a wider range of standard symbols; drawing with increasing accuracy; labelling with a broader range of scientific vocabulary; annotating diagrams to explain concepts and convey opinions. Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. <u>Graphing</u>- Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. <u>Analysing and drawing conclusions</u>- Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends.	air resistance anomaly balanced control variable (Y4) data force (Y3) friction (Y3) gear gravity lever line graph line of best fit pivot pulley relationship surface area trustworthy (Y3) unbalanced variable (Y3) water resistance



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		Evaluating- Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better. Commenting on the degree of trust by also reflecting on: accuracy (human error with equipment); reliability (repeating results); sources of information (e.g. websites, books). Deciding what data to collect to test direct relationships further.	
Summer 2- Animals: Human timeline Making connections: Does the size of an asteroid affect its impact strength?	<u>Human Timeline</u> To know: How to describe the human life cycle, including the stages of growth and development (baby, toddler, child, teenager, adult, elderly). How to describe changes that occur during puberty (in boys and girls). Gestation periods vary across mammals. <u>Science in action-</u> To know: A range of jobs and careers that use scientific knowledge and methods. The methods and equipment used by scientists throughout history and how these have led to modern methods. <u>Does the size of an asteroid affect its impact strength?</u> This unit revises the following key knowledge from the previous Year 5 units: <u>Earth and space-</u> To know: The movement of the Earth, and other planets, relative to the Sun in the solar system. The Sun, Earth and Moon are approximately spherical bodies. <u>Life cycles and reproduction-</u> To know the differences in the life cycles of a mammal, an amphibian, an insect and a bird. <u>Properties and changes-</u> To understand how 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. <u>Unbalanced forces-</u> To know: Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. The effects of air resistance, water resistance and friction, that act between moving surfaces. <u>Mixtures and separation-</u> To understand how to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	<u>Human Timeline</u> <u>Graphing-</u> Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. <u>Analysing and drawing conclusions-</u> Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Using identified patterns to predict new values or trends. <u>Evaluating-</u> Commenting on the degree of trust by also reflecting on the sources of information (e.g. websites, books). Deciding what data to collect to further test direct relationships. <u>Does the size of an asteroid affect its impact strength?</u> This unit revisits the working scientifically skills covered in Year 5, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.	Human Timeline anomaly evidence foetus gestation period hormones life cycle line graph old age period (menstruation) puberty rate (Y3) relationship Does the size of an asteroid affect its impact strength? accurate air resistance asteroid celestial bodies conclusion crater diameter evaluate fair test force gravity hardness material predict property spherical reliable trustworthy variable



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Year 6			
Term/ Topic	Knowledge	Skills	Vocabulary
Autumn 1- Living things: Classifying big and small	To know that 'organism' is a term used to refer to an individual living thing. To know that micro-organisms are incredibly small and cannot usually be seen by the naked eye. To know the characteristics of the different groups of vertebrates and commonly found invertebrates. Science in action- To know about famous scientists throughout history.	Grouping and classifying: Grouping in a broader range of contexts. Organising the layout of number and branching keys. Formulating appropriate questions for classification keys.	amphibian (Y1) bird (Y1) characteristic (Y5) classification key (Y4) classify (Y4) cold-blooded conifer exoskeleton fern fish (Y1) flowering plant (Y3) insect (Y5) invertebrate (Y3) life processes (Y2) mammal (Y1) micro-organism moss organism reptile (Y1) snail (Y4) spider (Y4) vertebrate (Y3) warm-blooded worm (Y4)
Autumn 2- Energy: Light and reflection	To know: Light travels in a straight line from a light source. Luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye. Shiny surfaces reflect light uniformly. When light is reflected off a surface, its direction changes. Mirrors and periscopes work using reflection of light on smooth surfaces. Shadows have the same shape as the objects that cast them as a result of light travelling in straight lines. There are relationships between light sources, objects and shadows. The distance between the object and the screen affects the size of the shadow.	<u>Posing questions</u>- Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. <u>Planning</u>- Suggesting which variables will be changed, measured and controlled. Writing a method including detail about how to ensure control variables are kept the same. <u>Observing</u>- Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. <u>Measuring</u>- Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. <u>Recording</u>- Drawing scientific diagrams with increasing accuracy, labelling with a broader range of scientific vocabulary and annotating	anomaly (Y5) cast (Y3) conclusion (Y3) control variable (Y4) evaluate evidence (Y5) fair test light ray light source (Y3) line graph (Y5) line of best fit (Y5) luminous (Y3) mean average



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	The angle of a reflected ray is affected by the angle of the incoming ray on a smooth surface.	diagrams to explain concepts and convey opinions. Using tables with columns that allow for repeat readings. Calculating the mean average. Graphing- Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. <u>Analysing and drawing conclusions</u>- Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Identifying anomalies in repeat data and excluding results where appropriate. Using identified patterns to predict new values or trends. <u>Evaluating</u>- Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better. Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results).	mirror (Y3) non-luminous (Y3) opaque (Y3) pupil ray diagram reflect (Y3) reflective relationship (Y5) reliable scale shadow (Y3) testable (Y5) units variable (Y3)
Spring 1- Living things: Evolution and inheritance	To know: Living things have changed over time. Fossils provide information about living things that inhabited the Earth millions of years ago. Characteristics are passed from parents to their offspring, but all offspring vary from their parents. Over time, variation in offspring can affect animals' chances of survival in particular environments. Animals and plants have adapted to suit their environment over many millions of years and this process can be called evolution. <u>Science in action</u>- To know: Famous scientists throughout history. A range of jobs and careers use scientific knowledge and methods. The work of modern-day scientists. There are spiritual, moral, social and cultural links with Science. Methods and equipment used by scientists throughout history and how these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. Collaboration and peer reviewing are essential for effective scientific progress. Scientific evidence is used to support or refute ideas or arguments.	<u>Posing questions</u>- Raising questions throughout the enquiry process. Selecting the most appropriate enquiry method to answer questions and give justification. <u>Planning</u>- Suggesting which variables will be changed, measured and controlled. <u>Observing</u>- Using senses to describe, in detail and with a broader range of scientific vocabulary, what is noticed or what has changed. <u>Recording</u>- Using tables with columns that allow for repeat readings. Calculating the mean average. <u>Grouping and classifying</u>- Grouping in a broader range of contexts. <u>Analysing and drawing conclusions</u>- Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. <u>Evaluating</u>- Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better. Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results). Posing new questions in response to the data that would extend the enquiry.	adaptation anomaly (Y5) characteristic (Y5) competition control variable (Y4) environment environmental evaluate evidence (Y5) evolution extinct fossil (Y3) gene habitat (Y2) inherit inheritance mean average model (Y5) natural selection offspring (Y5) parent (biological) population reliable reproduce (Y5) scientific theory



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			selective breeding survival of the fittest variable (Y3) variation
Spring 2- Energy: Circuits, batteries and switches	To know: A variety of components in a series circuit (including buzzer and motor). Conventions are used to draw circuit diagrams, including the recognised symbols for common components and using straight lines. The voltage of a circuit can be changed and this affects bulb brightness (or buzzer volume). Science in action- To know: A range of jobs and careers that use scientific knowledge and methods. How scientific evidence is used to support or refute ideas or arguments.	<u>Planning-</u> Suggesting which variables will be changed, measured and controlled. Writing a method including details about ensuring control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. <u>Predicting-</u> Using previous scientific knowledge and evidence to inform their predictions. Using scientific language to describe a potential outcome or explain why they think something will happen. <u>Observing and measuring-</u> Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. <u>Recording-</u> Drawing scientific diagrams by using a wider range of standard symbols and drawing with increasing accuracy. Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. <u>Analysing and drawing conclusions-</u> Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. <u>Evaluating-</u> Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better.	anomaly (Y5) battery (Y4) bulb (Y4) buzzer (Y4) cell circuit (Y4) circuit diagram control variable (Y4) current data (Y5) electricity (Y4) evaluate evidence (Y5) fair test hazard (Y5) mean average model (Y5) motor (Y4) power source (Y4) relationship (Y5) resistance safety (Y5) switch (Y4) units variable (Y3) voltage wire (Y4)
Summer 1- Animals: Circulation and health	To know: The main parts of the human circulatory system (heart, blood vessels and blood). The heart pumps blood around the body. Blood vessels transport blood around the body.	<u>Planning-</u> Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Writing a method including detail about how to ensure control variables are kept the same. Writing a method that considers reliability by planning repeated readings.	anomaly (Y5) balanced diet (Y3) blood bloodstream blood vessels



St Joseph the Worker Catholic Primary School
Science Curriculum- Knowledge, Skills and Vocabulary



	Blood transports vital substances around the body, including oxygen and nutrients. The relationships between different organ systems. The impact of diet, exercise, drugs and lifestyle on the way a body functions. The heart rate is the number of beats per minute. Exercise increases heart rate. <u>Science in action-</u> To know: There are famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. Science is in the news with recent discoveries. There are spiritual, moral, social and cultural links with Science. There were methods and equipment used by scientists throughout history and these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. Current scientific research is taking place with specific aims for the future.	Suggesting the most appropriate equipment to make observations and measurements and justifying their choices. <u>Predicting-</u> Making increasingly scientific predictions by using previous scientific knowledge and evidence to inform their predictions, using scientific language to describe a potential outcome or explain why they think something will happen and making links between topics to evidence a prediction. <u>Observing-</u> Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. <u>Measuring-</u> Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. <u>Researching-</u> Gathering answers to questions from a variety of sources. <u>Recording (tables)-</u> Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. <u>Graphing-</u> Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. <u>Analysing and drawing conclusions-</u> Recognise the following across a broader range of contexts and in more complexity: naturally occurring patterns and relationships, changes over time and relevant secondary data. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. <u>Evaluating-</u> Commenting on the degree of trust by also reflecting on the reliability (repeating results) and sources of information (e.g. websites, books).	carbon dioxide circulatory system control variable (Y4) data (Y5) drug evaluate evidence (Y5) fair test heart heart rate line graph (Y5) lungs (Y5) mean average model (Y5) oxygen pulse rate (Y4) relationship (Y5) reliable secondary source trustworthy (Y3) variable (Y3)
Summer 2- Making connections: Are some sunglasses safer than others?	This unit revises key knowledge from the Year 6 units. <u>Classifying big and small-</u> To know the characteristics of the different groups of vertebrates and commonly found invertebrates. <u>Light and reflection-</u> To know: When light is reflected off a surface, its direction changes. Luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye.	This unit revisits the working scientifically skills covered in Year 6, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.	adaptation amphibian bar chart bird bulb characteristic circuit



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	<u>Evolution and inheritance</u>- To know: Characteristics are passed from parents to their offspring, but all offspring vary from their parents. Animals and plants have adapted to suit their environment over many millions of years and this process can be called evolution. Over time, variation in offspring can affect animals' chances of survival in particular environments. <u>Circuits, batteries and switches</u>- To know: A variety of components in a series circuit (including buzzer and motor). Conventions are used to draw circuit diagrams, including the recognised symbols for common components and using straight lines. <u>Circulation and health</u>- To know the impact of diet, exercise, drugs and lifestyle on the way a body functions. <u>Science in action</u>- To know: There are spiritual, moral, social and cultural links with Science. A range of jobs and careers use scientific knowledge and methods. The work of modern-day scientists. Scientific evidence is used to support or refute ideas or arguments. Current scientific research is taking place with specific aims for the future.		circuit diagram classify component conclusion control variable electrical circuit evaluate evidence fish habitat health inherit insect invertebrate lifestyle light ray light source luminous mammal method opaque predict reflection refute reptile support translucent transparent trustworthy ultraviolet unit variable vertebrate
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