

## Date Palm Primary Science Curriculum: Progression of Skills, Knowledge & Understanding

	Nursery	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Working Scientifically								
<b>Observation and Questioning:</b>			Observe closely using simple equipment (e.g., measuring daylight, observing plants, testing materials). Make simple observations and comparisons (e.g., seasonal differences, animal structures).	Observe and describe the natural world using simple equipment. Gather and record data in various formats (e.g., tables, pictograms).	Make systematic and careful observations using simple equipment. Gather, record, classify, and present data in various formats (e.g., tables, bar charts, labelled diagrams).	Make systematic and careful observations using various equipment. Gather, record, classify, and present data in formats like tables, diagrams, and keys.	Make systematic and careful observations, including using equipment to measure and record data. Use classification keys, tables, scatter graphs, bar and line graphs to record data.	Make systematic and careful observations using a range of equipment. Record data and results of increasing complexity using tables, bar graphs, line graphs, and diagrams.
<b>Classification and Grouping:</b>			Sort and classify objects, plants, animals, and materials based on simple criteria. Use visual tools such as sorting diagrams or tables to organize findings.	Identify, classify, and group objects, plants, animals, and materials based on simple features.				
<b>Testing and Experimentation:</b>			Perform simple tests (e.g., testing material properties, observing sensory responses). Use data to answer questions and make predictions.	Perform simple tests and investigations to explore scientific questions. Use simple equipment to make observations (e.g., thermometers, magnifying glasses).	Set up simple practical enquiries and fair tests. Conduct comparative tests to explore patterns and relationships.	Conduct comparative and fair tests. Identify patterns, similarities, differences, and changes in results.	Plan and carry out comparative and fair tests, identifying variables to control. Draw on prior knowledge to predict outcomes.	Plan and carry out scientific enquiries, including controlling variables. Conduct fair tests and comparative investigations.
<b>Data Collection and Communication:</b>			Gather and record observations in various formats (e.g., drawings, tables). Use observations and data to suggest answers to scientific questions. Communicate findings using simple scientific language	Use observations and data to answer scientific questions. Begin to draw simple conclusions and use appropriate scientific vocabulary.	Use results to draw conclusions and answer questions. Use scientific language to explain findings. Report findings through oral and written explanations, including diagrams and presentations.	Use results to draw conclusions, make predictions, and suggest improvements. Report findings through written explanations, diagrams, or presentations. Use straightforward scientific evidence to answer questions or support findings.	Use results to make conclusions, suggest improvements, and answer questions. Present findings in written, oral, and visual forms using scientific diagrams and labels.	Use results to draw conclusions and make predictions. Present findings using scientific diagrams, written explanations, and oral presentations. Identify scientific evidence used to support or refute ideas or arguments.
Area of study								
<b>Animals including Humans</b>	Understand 'why' questions, like: "Why do you think the caterpillar got so fat?"  Understand the key features of the life cycle of a plant and an animal.  Begin to understand the need to respect and care for the natural environment and all living things.	explain 'why' questions, like: "Why do you think the caterpillar got so fat?"  Investigate and explain the key features of the life cycle of a plant and an animal.  To understand the need to respect and care for the natural environment and all living things.	<b>Animals Including Humans</b> Identify and name a variety of common animals (fish, amphibians, reptiles, birds, mammals). Classify animals by their diet (herbivores, carnivores, omnivores). Compare and describe the structure of different animals (e.g., wings, tails, fur). Name and locate parts of the human body and relate them to the five senses.  <b>Vocabulary:</b> <i>Mammal, bird, reptile, amphibian, fish, herbivore,</i>	<b>Animals Including Humans</b> Identify and name a variety of plants and animals in their habitats, including microhabitats. Describe how animals and plants depend on each other in habitats. Explain the importance of bees for pollination and worms for soil health. Understand the basic needs of animals (including humans) for survival (water, food, air). Explain simple food chains and name sources of food.  <b>Vocabulary</b>	<b>Animals Including Humans</b> Identify and sort foods into groups based on nutrients (carbohydrates, proteins, fats, etc.). Recognize the importance of a balanced diet for health. Explain how the human skeleton and muscles work together for support and movement. Compare skeletons of different animals and discuss their advantages.  <b>Working Scientifically</b> Group and classify foods and animal skeletons.	<b>Animals Including Humans</b> Identify and describe the functions of different types of teeth in humans. Explain tooth decay and how to maintain healthy teeth. Describe the digestive system and its basic functions. Construct and interpret food chains, identifying producers, predators, and prey.  <b>Working Scientifically</b> Plan and conduct tests (e.g., investigating tooth decay). Record findings using	<b>Animals Including Humans</b> Describe the stages of human development from birth to old age. Explain physical and emotional changes that occur during aging.  <b>Working Scientifically</b> Record data using bar and line graphs to illustrate growth patterns. Report findings using diagrams, oral presentations, and written conclusions.  <b>Vocabulary</b> • <i>Development, growth, puberty,</i>	<b>Evolution and Inheritance</b> Recognise that living things produce offspring that are similar but not identical to their parents. Identify how animals and plants are adapted to their environments and how adaptation can lead to evolution. Understand the evidence for evolution provided by fossil records. Explain the key ideas of the theory of evolution and its development over time. Working Scientifically Sort traits into inherited and acquired characteristics.

			<p><i>carnivore, omnivore, body parts, senses (touch, smell, taste, hearing, sight).</i></p> <p><b>DT – Perfect Pizzas</b>  - Consider healthy eating and complete a balanced plate by sorting favourite pizza ingredients.  - Explore and discuss what pizza bases are made from and where they would be placed on the balanced diet plate.  - Looking at food categories and balanced diets, sort pizza toppings into groups.  - Design a healthy and balanced pizza, following criteria.</p>	<p><i>Habitat, microhabitat, minibeast, pollination, food chain, survival, water, light, temperature, healthy soil.</i></p> <p><b>Biodiversity &amp; Minibeasts</b>  Identify and match young animals to their adult forms. Describe the main stages of different life cycles (e.g., humans, animals). Explain the basic needs of animals for survival (food, water, air). Describe the importance of exercise, healthy eating, and hygiene. Test and explain the effects of exercise on the human body.</p> <p><b>Vocabulary</b>  <i>Life cycle, offspring, adult, survival, food, air, water, balanced diet, exercise, hygiene, growth, development.</i></p>	<p>Design and carry out fair tests to investigate skeletal or muscular movement. Present findings using tables, diagrams, and scientific vocabulary.</p> <p><b>Vocabulary</b>  <i>Nutrition, carbohydrates, proteins, fats, vitamins, minerals, balanced diet, skeleton, bones, muscles, movement.</i></p>	<p>drawings, keys, and diagrams. Identify patterns and draw conclusions from results.</p> <p><b>Vocabulary</b>  <i>Teeth, incisors, canines, molars, decay, digestion, digestive system, oesophagus, stomach, intestines, food chain, producer, predator, prey.</i></p>	<p><i>aging, stages, lifespan, childhood, adulthood, old age.</i></p> <p><b>PSHCE Growing up unit</b>  - Describe the main changes that occur during puberty.  - Explain how to look after their bodies during puberty;  - Explain the steps to keep oneself clean;  - Name some ways to cope with new or difficult emotions;</p>	<p>Compare modern humans with fossil records of human ancestors. Evaluate evidence supporting evolution and adaptation.</p> <p><b>Vocabulary</b>  <i>Evolution, inheritance, adaptation, natural selection, fossil, species, traits, variation.</i></p> <p><b>Animals including Humans</b>  Identify the main parts of the circulatory system and describe their functions (e.g., heart, blood vessels, blood). Explain the importance of diet, exercise, and lifestyle choices on bodily functions. Understand the effects of drugs and alcohol on the human body.</p> <p><b>Working Scientifically</b>  Plan and conduct investigations into how exercise affects heart rate. Record data using bar and line graphs to demonstrate patterns in results. Evaluate the reliability and implications of findings.</p> <p><b>Vocabulary</b>  <i>Circulatory system, heart, blood, blood vessels, oxygen, nutrients, lifestyle, diet, exercise, drugs.</i></p> <p><b>PSHCE Growing up unit</b>  - Describe the main changes that occur during puberty.  - Explain how to look after their bodies during puberty;  - Explain the steps to keep oneself clean;  - Name some ways to cope with new or difficult emotions;</p> <p><b>DT - Global Food</b>  - Explain how eating different ingredients helps to give us a healthy and varied diet and understand the benefits of this.  - Explain nutritional similarities between different types of food eaten around the world and say why this is important.</p>
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<p><b>Materials</b></p>	<p>Explore materials with different properties.</p> <p>Explore natural materials, indoors and outside.</p> <p>Use all their senses in hands-on exploration of natural materials.</p> <p>Explore collections of materials with similar and/or different properties</p> <p>Talk about the differences between materials and changes they notice.</p>	<p>Explore a variety of natural materials and materials for joining.</p> <p>Explain how they can join materials together.</p> <p>Talk about properties of different materials, sand, ice, metal etc.</p> <p>Experiment with materials and the change occur – melting ice.</p>	<p><b>Everyday Materials</b> Identify and name common materials (e.g., wood, plastic, glass, metal, rock, water). Distinguish between an object and the material it is made from. Describe the physical properties of materials (e.g., waterproof, absorbent, hard, soft). Compare and group materials based on their properties.</p> <p><b>Vocabulary:</b> <i>Material, wood, plastic, metal, glass, rock, water, property, hard, soft, flexible, rigid, waterproof, absorbent.</i></p>	<p><b>Uses of Everyday Materials</b> Identify and compare the uses of everyday materials (wood, plastic, glass, metal, paper). Test and explain how shapes of objects made from some materials can be changed (bending, twisting, squashing, stretching). Explain the process and benefits of recycling. Learn about historical figures who developed new materials (e.g., John McAdam).</p> <p><b>Vocabulary</b> <i>Material, wood, plastic, glass, metal, paper, cardboard, rock, recycling, squashing, bending, twisting, stretching, inventor.</i></p>		<p><b>States of Matter</b> - Describe the properties of solids, liquids and gases. - Explain that melting and freezing are opposite processes that change the state of a material. - Identify the melting and freezing point of several different materials. - Explain that heating causes evaporation and cooling causes condensation. - Explain that evaporation and condensation are opposite processes that change the state of a material. - Explain that the higher the temperature, the quicker water evaporates. - Explain what happens to water at the different stages of the water cycle.</p>	<p><b>Properties and Changes of Materials</b> Compare materials based on properties like hardness, transparency, and conductivity. Investigate which materials are thermal and electrical conductors or insulators. Explore dissolving and separating mixtures using processes like filtration, sieving, and evaporation. Identify reversible and irreversible changes (e.g., dissolving, burning).</p> <p><b>Working Scientifically</b> Plan and conduct fair tests (e.g., testing thermal conductivity of materials). Use results to recommend materials for specific purposes. Investigate the processes of separation and identify examples of reversible and irreversible changes.</p> <p><b>Vocabulary</b> <i>Material, property, conductor, insulator, dissolving, solution, filtration, evaporation, reversible, irreversible.</i></p>	
<p><b>Plants</b></p>	<p>Plant seeds and care for growing plants.</p>	<p>Talking about what plants need to grow</p> <p>Describing the stages of plant growth</p>	<p><b>Plants</b> Identify and name common plants (e.g., wild, garden plants) and trees (deciduous, evergreen). Describe the basic structure of flowering plants and trees (roots, stems, leaves, flowers). Compare features of different plants (e.g., leaves, seeds).</p> <p><b>Vocabulary:</b> <i>Plant, seed, bulb, root, stem, leaf, flower, tree, deciduous, evergreen, wild plant, garden plant.</i></p>	<p><b>Plants</b> Observe and describe how seeds and bulbs grow into mature plants. Explain what plants need to grow and stay healthy (water, light, suitable temperature). Investigate what happens when plants don't get everything they need. Explain how some plants are suited to their habitats.</p> <p><b>Vocabulary</b> <i>Seed, bulb, germination, growth, water, light, temperature, healthy, habitat, lifecycle, mature plant.</i></p>	<p><b>Plants</b> Identify and describe the functions of different parts of plants (roots, stem, leaves, flowers). Investigate the requirements of plants for growth (water, light, nutrients, air, space). Explore how water is transported within plants. Understand the role of flowers in pollination, seed formation, and dispersal. Describe the life cycle of flowering plants.</p> <p><b>Working Scientifically</b> Conduct fair tests to explore plant growth under different conditions. Observe and record how water travels through plants. Present results and conclusions using diagrams,</p>			

					tables, and scientific language.  <b>Vocabulary</b> <i>Plant, root, stem, leaf, flower, water, nutrient, growth, pollination, seed, dispersal, life cycle.</i>			
<b>Living Things &amp; their Habitats</b>	Explore and respond to different natural phenomena in their setting and on trips.	Talking about how animals change through growth.  Sequencing the lifecycle of an animal		<b>Living Things &amp; Their Habitats</b> Compare the differences between living, dead, and never alive. Identify and name plants and animals in local habitats and microhabitats. Explain how living things in habitats depend on each other. Describe how animals obtain food from plants and other animals (food chains). Explore how different habitats provide for the needs of plants and animals.  <b>Vocabulary</b> <i>Living, dead, never alive, habitat, microhabitat, dependency, food chain, producer, consumer, predator, prey.</i>		<b>Living Things and Their Habitats</b> Recognize that living things can be grouped in various ways. Classify animals into vertebrates (mammals, birds, reptiles, amphibians, fish) and invertebrates. Use classification keys to identify and group living things. Recognize how environmental changes can pose dangers to living things.  <b>Working Scientifically</b> Conduct fieldwork to observe and classify living things. Design and use classification keys. Record findings using diagrams and tables. Analyse the impact of environmental changes on local habitats.  <b>Vocabulary</b> <i>Living, vertebrate, invertebrate, mammal, bird, reptile, amphibian, fish, habitat, classification, endangered, environment.</i>	<b>Living Things and Their Habitats</b> Describe the process of reproduction in some plants and animals. Compare the life cycles of mammals, amphibians, insects, and birds. Explain differences between sexual and asexual reproduction. Discuss Jane Goodall's contributions to understanding animal behavior.  <b>Working Scientifically</b> Observe the growth of plant cuttings over time to explore asexual reproduction. Sort plants by their method of pollination (insect or wind). Use classification to compare animal life cycles.  Vocabulary <i>Reproduction, sexual, asexual, pollination, life cycle, mammal, amphibian, insect, bird, habitat.</i>	<b>Living Things and Their Habitats</b> Classify living things into broad groups based on common characteristics using the Linnaean system. Describe the characteristics of vertebrates, invertebrates, and microorganisms. Explain the useful and harmful effects of microorganisms. Investigate environmental factors that influence the distribution of species in local habitats.  <b>Working Scientifically</b> Classify organisms using observable characteristics and create field guides. Conduct experiments to investigate conditions affecting microorganism growth. Use classification keys to organize living things systematically.  <b>Vocabulary</b> <i>Classification, Linnaean system, vertebrate, invertebrate, microorganism, environment, habitat.</i>
<b>Seasonal Changes</b>	Explore and respond to different natural phenomena in their setting and on trips.	Understand the effect of changing seasons on the natural world around them	<b>Seasonal Changes – Autumn and Winter</b> Understand how animals adapt to survive winter (e.g., hibernation, migration). Identify changes in plants and animals during autumn and winter. Observe and describe weather patterns across seasons. Understand variations in daylight hours between autumn and winter.  <b>Seasonal Changes – Spring</b>					

			<p><b>and Summer</b> Recognize key features of plants and animals in spring and summer (e.g., blooming flowers, animal activity). Understand how animals adapt to seasonal changes (e.g., new life in spring). Observe and describe weather patterns in spring and summer. Understand the variation in daylight hours during spring and summer.</p> <p><b>Vocabulary:</b> <i>Season, spring, summer, weather, daylight, change, adapt, autumn, winter, temperature, daylight, wind, hibernation, migration, adaptation.</i></p>					
<p><b>Electricity &amp; Forces</b></p>	<p>Explore and talk about different forces they can feel.</p>	<p>Investigate and explain different forces they can feel.</p>	<p><b>DT - Moving Pictures</b> - Make a picture which aims to have two moving mechanisms.</p>	<p><b>Forces and Magnets</b> Identify different types of forces (push, pull, friction). Investigate the effects of friction on different surfaces. Recognize that magnets produce a force that can act at a distance. Identify magnetic and non-magnetic materials. Understand that magnets have poles and can attract or repel depending on pole orientation.</p> <p><b>Working Scientifically</b> Test objects to identify magnetic and non-magnetic materials. Conduct comparative tests to explore friction and magnet strength. Record and present findings (e.g., bar charts) to explain conclusions.</p> <p><b>Vocabulary</b> <i>Force, push, pull, friction, surface, magnet, magnetic, non-magnetic, attract, repel, pole.</i></p> <p><b>DT - Story Books</b> - Recognise products that contain lever and linkage systems. - Explain why a particular mechanism has been used</p>	<p><b>Electricity</b> Identify common appliances that run on electricity. Construct simple series circuits and identify components (e.g., cells, wires, bulbs, switches). Recognize when a circuit is complete or incomplete. Identify materials as electrical conductors or insulators. Explain how a switch works and its role in a circuit.</p> <p><b>Working Scientifically</b> Group and classify appliances and circuit components. Conduct tests to identify conductors and insulators. Record results using diagrams and tables. Make predictions and conclusions based on investigations.</p> <p><b>Vocabulary</b> <i>Electricity, appliance, circuit, series circuit, cell, battery, wire, bulb, switch, buzzer, conductor, insulator.</i></p> <p><b>DT - Battery Operated Lights</b> - Explore and make a series and parallel circuit, diagnosing faults when necessary, and follow</p>	<p><b>Forces</b> Identify and explain the effects of forces, including gravity, air resistance, water resistance, and friction. Explain Newton's contribution to understanding gravity. Explore how mechanisms like levers, pulleys, and gears allow a smaller force to have a greater effect like kinetic and potential energy. Investigate the relationship between an object's weight and mass.</p> <p><b>Working Scientifically</b> Plan fair tests (e.g., investigating the impact of parachute shape on air resistance). Observe and measure the effects of friction and resistance. Design mechanisms to achieve specific purposes.</p> <p><b>Vocabulary</b> <i>Force, gravity, weight, mass, air resistance, water resistance, friction, lever, pulley, gear, mechanism.</i></p>	<p><b>Electricity</b> Understand the importance of discoveries in electricity and how knowledge has evolved. Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells in a circuit. Compare and explain variations in how components function (e.g., brightness of bulbs, loudness of buzzers). Use circuit symbols to draw diagrams.</p> <p><b>Working Scientifically</b> Investigate how voltage affects circuit components. Plan and conduct tests on circuit configurations and analyse the effects of varying components. Record data using circuit diagrams and scientific labels.</p> <p><b>Vocabulary</b> <i>Electricity, circuit, cell, battery, voltage, bulb, buzzer, switch, conductor, insulator.</i></p> <p><b>DT - Automata Animals</b> - Use their knowledge of the animal and movement made by the cam in the design of their automaton. - Incorporate real-world engineering applications, such as understanding how</p>	

					<p>for a particular purpose.</p> <ul style="list-style-type: none"> <li>- Use technical vocabulary to describe lever and linkage systems.</li> <li>- Cut and shape materials with some precision to make their mechanisms work.</li> </ul>	<p>instructions to make a selection of different switches.</p> <ul style="list-style-type: none"> <li>- Make a well finished product considering the aesthetic and functional qualities.</li> </ul>		<p>cams mechanisms are used in construction or machinery.</p> <ul style="list-style-type: none"> <li>-Work mainly independently to make a mechanical device, selecting materials to make a framework, handle, cam mechanism and finishing the device.</li> </ul> <p><b>DT/Computing - Crumble Buggy</b></p> <ul style="list-style-type: none"> <li>- Use their knowledge of circuits and programming to steer buggy.</li> </ul>
<b>Other topics</b>	<p><b>Space</b></p> <p>Talk about each planet and learn some of the names.</p> <p>To be aware of place beyond their locality. To use world map to locate countries. To recognise how places are linked to other place in the world.</p> <p>To explore and describe the way some materials can be changed.</p>	<p><b>Space</b></p> <p>Learn some of the planets and its properties.</p> <p>Discuss what they think will happen as they approach the sun in their rocket? What can they do to keep themselves safe?</p> <p>To be aware of the dangers associated with the sun.</p>		<p><b>The Environment</b></p> <ul style="list-style-type: none"> <li>- Identify the material of an object.</li> <li>- Suggest ways to reduce, reuse and recycle.</li> <li>- Think of a way to teach people to use less energy.</li> <li>- Communicate ideas to other people.</li> <li>- Use different sources to find out answers to questions.</li> <li>- Label the animal groups.</li> <li>- Record the amount of water measured.</li> </ul>	<p><b>Rocks</b></p> <p>Name and describe the three main types of rock (igneous, sedimentary, metamorphic). Compare rocks based on their properties (e.g., hardness, permeability). Explain how fossils are formed within sedimentary rocks. Recognize that soils are made from rocks and organic matter.</p> <p><b>Working Scientifically</b></p> <p>Group and classify rocks based on their physical properties. Conduct tests to compare rock permeability and hardness. Use secondary sources to learn about fossil formation and soil properties.</p> <p><b>Vocabulary</b></p> <p><i>Rock, igneous, sedimentary, metamorphic, weathering, erosion, fossil, soil, organic matter, permeability.</i></p> <p><b>Light</b></p> <p>Understand that light is needed to see and that darkness is the absence of light. Recognize that light is reflected from surfaces. Investigate how mirrors reflect light and appear to reverse images. Understand that shadows are formed when light is blocked by an object. Explore patterns in how shadow size changes with light source movement.</p>	<p><b>Sound</b></p> <p>Recognize that sounds are made by vibrations. Explain how vibrations travel through a medium to the ear. Find patterns between pitch and the object's features that produce it. Describe how sound gets fainter with distance from the source. Investigate materials that absorb sound.</p> <p><b>Working Scientifically</b></p> <p>Conduct surveys to measure sound levels in different environments. Investigate the relationship between pitch and the size of vibrations. Test materials for sound absorption properties. Record findings using tables and diagrams.</p> <p><b>Vocabulary</b></p> <p><i>Sound, vibration, pitch, volume, medium, absorption, reflection, source, ear, travel.</i></p>	<p><b>Earth and Space</b></p> <p>Describe the Sun, Earth, and Moon as spherical bodies. Explain the movement of the Earth and other planets relative to the Sun. Explain the movement of the Moon relative to the Earth. Use the Earth's rotation to explain day and night and the apparent movement of the Sun.</p> <p><b>Working Scientifically</b></p> <p>Observe the apparent movement of the Sun across the sky and relate it to the Earth's rotation. Conduct research on heliocentric and geocentric models of the solar system. Present findings on planetary movement and day-night cycles.</p> <p><b>Vocabulary</b></p> <p><i>Sun, Earth, Moon, planet, orbit, rotation, heliocentric, geocentric, day, night, solar system.</i></p>	<p><b>Light</b></p> <p>Recognize that light travels in straight lines and is reflected or refracted as it passes through different materials. Explain how light enables us to see objects. Investigate how prisms create the visible spectrum and how light reflection allows us to see colours. Understand that shadows are formed when light is blocked by an object.</p> <p><b>Working Scientifically</b></p> <p>Measure angles of incidence and reflection using mirrors. Investigate how refraction alters light direction. Explore patterns between shadow size and the position of a light source.</p> <p><b>Vocabulary</b></p> <p><i>Light, reflection, refraction, prism, spectrum, angle of incidence, angle of reflection, shadow, color.</i></p>

					<p><b>Working Scientifically</b> Test materials for reflectivity and classify them as opaque, translucent, or transparent. Investigate the relationship between shadow size and light source distance. Record and present findings using diagrams and tables.</p> <p><b>Vocabulary</b> <i>Light, dark, reflection, mirror, opaque, translucent, transparent, shadow, light source.</i></p>			
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