



## Forest Town Primary School

### Science Knowledge Progression Grid

Kind  
Adventurous  
Persevere  
Responsible  
Independent  
Together

At Forest Town Primary, we are scientists! As scientists, we are learning more about the world around us. We are curious investigators who ask why and hypothesise. We pose questions, plan experiments and make predictions. We explain our results and ensure our experiments are fair. We make links with the natural world and investigate how it is ever evolving. We are curious and want to investigate cause and effect. We want our children to be excited about science and the important part it has played in our world- from the development of medicines to cures for diseases, and how it can change people's lives. We want to foster a hunger for scientific knowledge in our children. We want them to remember the fun and the lightbulb moments from science lessons. We want them to want to make a difference and to be involved in shaping our futures.

By the end of KS2, a Forest Town Scientist will:

- Become an **independent** learner through investigating, researching and experimenting in science.
- Use **kindness** when challenging ideas and experimenting
- Develop excellent communication skills when working **together** to research areas of science and make our own discoveries
- Demonstrate a sense of being **adventurous** by questioning, investigating and experimenting.
- Be able to **persevere** and see projects and experiments through to the end to analyse results
- An understanding of the **responsibility** needed in being a good scientist and the importance of their role in this

# SCIENCE

**CURRICULUM LEADER**

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REVIEWED – SEPTEMBER 2024



Forest Town Primary School  
Science Knowledge Progression Grid  
Reviewed 2024

Kind  
 Adventurous  
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**This is how our children’s SUBJECT knowledge builds from EYFS to Year 6.**

*Our Science curriculum sets out to develop in the children a range of transferable skills, especially those of enquiry, that will support them throughout their lives. It will also act in facilitating a prosperous future for our budding scientists by equipping them with the knowledge and skills that will enable them to fulfil the requirements of jobs and careers that at this moment in time do not even exist yet. Furthermore, we endeavour to incorporate a sense of awe, wonder and curiosity into our science curriculum (in which at least 40% of lessons are of a practical / investigative nature) so that it is a subject the children genuinely look forward to and get excited about.*

*Knowledge and skills intertwine, and the provision of sustained practice helps the children to excel in their learning by moving as much learning from working memory to long-term memory in order to foster automaticity; an example of this being their understanding of and application of fair testing in practical investigations.*

*Finally, we promote the acquisition of excellent attitudes to learning in this subject, e.g., perseverance and resilience. When investigations do not go as planned and/or predicted it is important that the children develop an attitude of positivity and unwillingness to give up – just like Thomas Edison. Thus, equipping all our children with the knowledge, skills and general wherewithal to succeed both now and in the future.*

Area of Study	F1	F2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<b>Working Scientifically</b>								
		<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>	<b>To build on prior knowledge and:</b>
<b>Questions</b>	Know how to talk about what they can see happening	Know about what they have noticed and how things have changed	Know that we can ask <b>questions</b> and find answers	Know that we can ask <b>questions</b> about the world and that we observe to answer questions Know that we can test our <b>questions</b> to see if they are true	Know that we can ask <b>questions</b> and answer them by carrying out a scientific enquiry Know that the conclusions of scientific enquiries can lead to further <b>questions</b>	Know that relevant scientific <b>questions</b> need to be asked and use different types of scientific enquiries to answer them	Know how to plan different types of scientific enquires to answer <b>questions</b> , including recognising and controlling variables when necessary	Know how to pose and then select the most appropriate line of enquiry to investigate scientific <b>questions</b>
<b>Observation</b>	Know how to draw pictures to show what they <b>have seen</b>	Know how to <b>observe</b> materials and living things and describe what they see.	Know how to <b>observe</b> closely using the correct simple equipment	Know how to make <b>observations</b> using scientific equipment and	Know how to make decisions about what to <b>observe</b> during an investigation and identify	To know how to make systematic and careful <b>observations</b> .	Know how to plan and carry out comparative and fair tests, making systematic and	Know how to decide which <b>observations</b> to make, using test results and observations to

				describe changes over time	differences and similarities.		careful <b>observations.</b>	make predictions or set up further testing.
<b>Prediction &amp; Testing</b>		Know how to use some scientific equipment	Know that we can test questions to find answers	Know how to perform simple tests in different ways  Know how to write a simple enquiry using a simple numbered method	Know how to make relevant <b>predictions to be tested</b> in a scientific enquiry	Know that in a fair test one thing is altered, the variable.	Know how to make a <b>relevant prediction</b> and give a reason using scientific vocabulary.	Know how to choose appropriate variables to a test a hypothesis  Know how to identify conditions that were imperfectly controlled and an explain how these might affect results  Know which equipment to choose to carry out a scientific enquiry
<b>Identify, grouping and classify Measurement</b>	Know how to discuss similarities and differences Know that things can be <b>grouped</b> in different ways	Know why things have been <b>grouped</b> in a particular way	Know that objects and animals can be <b>identified and sorted</b> into groups based on their properties	Know how to use non-standard units of <b>measure</b> to take recordings	Know how to <b>measure accurately</b> using a range of equipment	Know that scientific enquires are limited by the accuracy of the <b>measurements</b>  Know that accuracy can be improved by <b>repeating measurements.</b>	Know how to accurately use further <b>measuring devices</b> , including digital and analogue scales, measuring cylinders and beakers	Know how and when to <b>repeat measurements</b> , how to find an average of a set of measurements and how to recognise and remove anomalies
<b>Recording &amp; Evaluating</b>		Know how to draw a series of pictures to show changes	Know that we can write down numbers, words or pictures to record what we have found	Know how to gather data, record and talk about their findings in a range of ways, using simple scientific vocabulary.	Know how to draw bar charts.  Know how to label a diagram using lines to connect the information to the diagram  Know how to use a structure to	Know how to use their results to draw simple conclusions  Know how to draw a neat table and how to draw a classification key.	Know how to record data and results of increasing complexity using scientific diagrams and labels.	Know how to choose the most effective approach to record and report results, linking to their mathematical knowledge.

					write up scientific findings.	Know how to write a simple scientific enquiry write-up			
<b>Chemistry</b>									
<b>Properties and changes of materials</b>	Know adjectives to describe materials	Know, observe and discuss what happens to some materials when left in different places  Know and observe what happens when different materials are placed in water	Know what materials different objects are made from  Know some different everyday materials, including wood, plastic, glass, metal, water and rock  Know the simple properties of some everyday materials  Know how to group materials on the basis of their properties	Know that the shape of some solid objects can be changed – squashing, bending, twisting and stretching  Know how different materials are suitable for different uses			<b>Year 5 (not Year 6)</b> Know and compare groups of materials based on their properties – hardness, solubility, transparency, conductivity and response to magnets  Know why everyday materials are used to create everyday objects  Know how to separate some materials based upon their properties, including through sieving, filtering and evaporating.  Know and show that some materials will dissolve to form a solution and describe how to recover a substance from a solution  Know that dissolving, mixing and changes of state are reversible changes.  Know that changes to a material can result in new materials, which may or may not be reversible, including changes associated with burning.		
<b>Rocks</b>					<b>Year 3 only</b> Know how to group and compare different types of rock based on their appearance and simple physical properties				

						<p>Know (in simple terms) how fossils are formed when things that have lived are trapped in rock.</p> <p>Know that soils are made from rocks and organic matter</p>		
<b>States of Matter</b>						<p><b>Year 4 only</b> Know how to compare and group materials together - according to whether they are solids, liquids or gases</p> <p>Know that some materials change state when they are heated or cooled and know how to measure or research the temperature at which this happens in °C</p> <p>Know the part played by evaporation and condensation in the water cycle</p>		
<b>Biology</b>								
<b>Living Things and their habitats</b>	<p>Know how to begin to identify where different animals might live</p>	<p>Know that there are different habitats in the school ground and explore these environmental factors that help animals</p> <p>Know what would happen to the animals if these factors were removed</p>		<p>Know the difference between living, dead and non-living things</p> <p>Know how a habitat provides the basic needs for the things living there and how they depend on each other</p>		<p>Know that living things can be grouped in a variety of ways</p> <p>Know how to use classification keys to help group, identify and name a variety of living things in their local and wider environment</p>	<p>Know the similarities and differences in the life cycles of a mammal, an amphibian, an insect and a bird</p> <p>Know the gestation period of humans and how this differs to other mammals and other animals</p>	<p>Know how to classify living things based on similarities and differences – including micro-organisms, plants and animals</p> <p>Know reasons for classifying plants and animals based on specific characteristics</p>

				<p>Know habitats or microhabitats of various living things</p> <p>Know how to use a simple food chain and name different sources of food</p>		<p>Know that environments can change and that this can sometimes pose dangers to living things</p>	<p>Know the life process of reproduction in some plants and animals</p>	
<b>Animals including humans</b>	<p>Know the names of some parts/features of animals including humans</p> <p>Know how to begin to identify some similarities and differences between the animals observed</p>	<p>Know how animals including humans can be grouped and talk about this</p> <p>Know how to describe and compare the structure of a variety of common animals</p>	<p>Know and name a variety of common animals (fish, amphibians, reptiles birds and mammals)</p> <p>Know that common animals eat different food sources (herbivore, carnivore, omnivore)</p> <p>Know the basic parts of the human body</p> <p>Know which part of the body is associated with which sense</p>	<p>Know what an animal, including humans, need air, water and food to survive</p> <p>Know that animals, including humans, have life cycles</p> <p>Know that exercise, balanced diet and hygiene are important to humans</p>	<p>Know that skeleton and muscles provide support, protection, and movement</p> <p>Know that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p>	<p>Know the functions of the organs in the human digestive system</p> <p>Know and identify the different types of human teeth</p> <p>Know the functions of the different teeth</p>	<p>Know the changes that humans go through as they age</p>	<p>Know the main parts of the human circulatory system</p> <p>Know and describe the function of the heart, blood vessels and the blood</p> <p>Know the impact of diet, exercise drugs and lifestyle on the body</p> <p>Know and describe how nutrients and water are transported in animals, including humans</p>
<b>Plants</b>	<p>Know the difference</p>	<p>Know how a plant has changed and</p>	<p>Know that flowering plants consist of roots, a</p>	<p>Know that under the right conditions seeds</p>	<p>Know the functions of different parts of</p>			

	<p>between the stem, flower and root</p>	<p>show this through drawings</p> <p>Know some things that help plants to grow</p>	<p>stem, leaves and flowers</p> <p>Know that a tree's stem is called a trunk</p> <p>Know a range of common trees and plants</p> <p>Know that evergreen trees maintain their leaves throughout the years and that deciduous trees shed their leaves in Autumn</p>	<p>and bulbs will grow into mature plants</p> <p>Know that plants need air, water and food to grow and live</p>	<p>plants; roots, stem, leaves and flowers.</p> <p>Know how plants transport water.</p> <p>Know the requirements of plants for life and growth (air, light, nutrients from soil and room to grow) and how they vary from plant to plant.</p> <p>Know the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.</p>		
<p><b>Evolution and Inheritance</b></p>							<p><b>Year 6 only</b></p> <p>Know that living things change over time and that this gradual change is called evolution</p> <p>Know that the gradual change of species over a million years can be observed by looking at examples of fossils</p> <p>Know that offspring vary and are not identical to their parents</p> <p>Know how animals and plants are adapted to suit their environment in different ways</p>

**Physics**

<p><b>Seasonal Change</b></p>	<p>Know how to describe the weather outside using simple words</p>	<p>Know how to describe the weather outside and compare to the weather of different days</p>	<p>Know that the four seasons are Autumn, Winter, Spring and Summer</p> <p>Know that weather changes through the year across the four seasons</p> <p>Know and describe how the length of the day varies throughout the year</p>					
<p><b>Light</b></p>	<p>Know what happens to their shadow throughout the day</p> <p>Know that some items block light</p>	<p>Know the difference between night and day</p> <p>Know how to begin to make connections between where the sun is and where shadows are</p>			<p><b>Year 3 only</b>                  Know that darkness is the absence of light                  Know that we need light to see things                  Know that light is reflected from surfaces                  Know that opaque objects block light creating shadows                  Know that sunglasses can protect eyes from sunlight but looking at the Sun directly – even with sunglasses – can damage the eyes                  Know that as objects move towards a light source, the size of the shadow increases</p>		<p>Know that light travels in straight lines                  Know that objects are seen because they give out or reflect light into the eye                  Know that we see things because light travels from the light source to the eyes or from the light source to the object and then to the eyes                  Know why shadows have the same shape as the objects that cast them</p>	
<p><b>Forces and Magnets</b></p>	<p>Know what happens when magnets are pushed together</p>	<p>Know that it is important to use the words push and pull when describing how</p>			<p><b>Year 3 only</b>                  Know that some forces need contact between two objects but magnetic forces can act at a distance                  Know that objects move differently</p>	<p>Know what gravity is and explain why unsupported objects fall towards the Earth</p>		



		magnets attract and repel and use these words			<p>on rough and smooth surfaces</p> <p>Know that magnets attract or repel each other and attract some materials and not others</p> <p>Know that magnets have two poles south and north</p> <p>Know how to compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.</p> <p>Know whether two magnets will attract or repel each other depending on which poles are facing</p>	<p>Know and identify the effects of air resistance, water resistance and friction, that act between moving surfaces</p> <p>Know that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect</p>	
<b>Electricity</b>					<p><b>Year 4 only</b></p> <p>Know and name appliances that need electricity to work</p> <p>Know that electricity can flow if the circuit is complete</p> <p>Know what a series circuit is, construct and identify its components</p> <p>Know that a switch completes or breaks an electrical circuit</p> <p>Know when a light will work within a circuit</p> <p>Know that electrical current flows well through some materials, called electrical conductors, and poorly through other materials, called electrical insulators</p>	<p><b>Year 6 only</b></p> <p>Know the recognized symbols for a battery, bulb, motor, buzzer and wire</p> <p>Know how components in a circuit function and give reasons for variations in these – brightness of bulbs, loudness of buzzers and the on/off position of switches</p> <p>Know that as the number and voltage of cells in a circuit increases, the brightness of a bulb or the volume of a buzzer will increase</p>	
<b>Sound</b>					<p><b>Year 4 only</b></p> <p>Know that sounds are made through vibrations</p> <p>Know how sound travels from a source to our ears</p> <p>Know the correlation between pitch and the object producing the sound</p> <p>Know the correlations between the volume of a sound and the strength of the vibrations that produced the sound</p> <p>Know what happens to the sound as you move away from the source of the sound</p>		
<b>Earth and Space</b>						<p><b>Year 5 only</b></p> <p>Know the movement of the Earth, and other planets, relative to the Sun in the solar system</p>	

							<p>Know the movement of the Moon relative to the Earth.</p> <p>Know that the Earth's tilt and orbit create the seasons</p> <p>Know enough about the Earth's rotation to be able to explain day and night and the apparent movement of the Sun across the sky</p> <p>Know that the Sun, Earth and Moon are approximately spherical</p>
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