

## Key Stage 2 Science

Year	NC link/BSquared	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<p style="text-align: center;"><b>Key Stage 2</b></p> <p>Science is among the mandatory subjects that must be taught at all state-funded schools during KS2. In addition to this, the National Curriculum outlines <a href="#">a list of topics</a> that should be covered by teachers in science lessons.</p> <p>The KS2 Science Curriculum is designed to give children the foundational knowledge required for understanding the world around them and to prepare KS2 children for their secondary education.</p> <p style="text-align: center;">Click for link: <a href="#">Science National Curriculum KS2</a></p>							
5/6	Topic	<u>Living things and their habitats</u>	<u>Animals Including Humans</u>	<u>Properties and Changes of Materials</u>	<u>Earth and Space</u>	<u>Forces</u>  <u>Light</u>	<u>Evolution and Inheritance</u>
	<b>Pupils should know...</b> (Core knowledge and concepts to be learned)	describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird  describe the life process of reproduction in some plants and animals  describe how living things are classified	describe the changes as humans develop to old age  identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood  recognise the impact	compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets know that some materials will dissolve in liquid to form a	describe the movement of the Earth and other planets relative to the sun in the solar system  describe the movement of the moon relative to the Earth  describe the sun, Earth and moon as	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object  identify the effects of air resistance, water resistance and friction, that act between moving surfaces	recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago  recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents

		<p>into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals</p> <p>give reasons for classifying plants and animals based on specific characteristics</p>	<p>of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>describe the ways in which nutrients and water are transported within animals, including humans</p>	<p>solution, and describe how to recover a substance from a solution</p> <p>use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda</p>	<p>approximately spherical bodies</p> <p>use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p>	<p>recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect</p> <p>recognise that light appears to travel in straight lines</p> <p>use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye</p> <p>explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes</p> <p>use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them</p>	<p>identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>
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	<p><b>Pupils should be able to do...</b> (Skills being developed) BSquared progression steps 4-7</p>	<p>Simply describes how an animal or plant is suited to its environment Identifies and names a variety of plants in their environment Identifies and names a variety of animals in their environment Matches a variety of living things to their habitat Explains simply what a habitat is Classifies living things into simple groups using physical features Lists items in the setting which are living and not living States some simple life processes that are common to living things Describes a living thing in simple terms Suggests ways people have an effect on their surroundings Recognises that plants start food chains Orders simple three part food chains</p>	<p>Lists the five human senses Explains how different parts of their body are moving, e.g. bending Names the parts of the human body they can see, e.g. knee, elbow Gives examples of some of the life processes inherent to humans Names and locates parts of the human body, including those related to the senses Compares or matches the body shape and skeleton of different animals Identifies similarities and differences between different animals Describes an animal using correct simple vocabulary, e.g. claws instead of nails Groups animals according to what they eat Names a variety of animals including</p>	<p>Describes some obvious changes to materials as "irreversible", e.g. in cooking Separates some materials as directed, e.g. using sieves to separate soil and stones Includes some simple terms to describe properties and changes to materials, e.g. magnetic, dissolve Explores which processes may be used on different materials, e.g. if they can bend, be cut, melt Explores materials to find their properties, e.g. which are magnetic, waterproof, transparent Classifies objects made from a variety of materials, e.g. clay, glass, metal Suggests that a change to a familiar material is irreversible or reversible based on what they have observed Identifies if a substance mixed with water can be separated by filtering or sieving Observes</p>	<p>Classifies the Earth, Sun and Moon as spheres Names some of the planets in the solar system Suggests simple reasons why the Sun is important to life on Earth States that the Moon is made of rock Describes how the shape of the Moon changes over a month Identifies and records what can be seen from space when looking at Earth States how many hours there are in one day Gives a simple reason why the shadow has changed position Describes the changes in shadows throughout the day Describes the rotation of the Earth in simple terms, e.g. on a slant or axis Classifies planets by properties they have researched, e.g. those which have Moons Compares and discusses photos of different planets in the</p>	<p>Describes the poles of a magnet using the terms "North" and "South" Describes a reaction to the movement they have seen which was created by magnetism Demonstrates that a magnet can move a magnetic object Includes related vocabulary to appropriately describe forces, e.g. push, pull, stop Demonstrates how air can move objects, e.g. uses large pieces of cardboard to create a force Examines objects that move using different means, e.g. wind up and push along toy or bicycle Manipulates magnets to make them repel or attract each other Lists objects in the setting that are magnetic Notes how fast a pendulum swings at different lengths Describes what it feels like to run against and with the wind, and why it is more difficult Compares the strength</p>	<p>Identifies similar features when comparing photos of their family Points out the differences in offspring to the parent animal, e.g. colours of kittens in a litter Identifies that some people have different coloured hair or eyes to their parents Organises events in their own life in sequence Identifies that fossils are found underground Makes comparisons between fossils Suggests that a fossil shows the remains of a plant or animal Includes vocabulary that shows a sense of chronology Recognises that all living things produce their own kind Suggests a reason why an animal has a certain attribute Links animals to their environment based on its features Describes how some familiar things change over time Suggests what information we can learn about animals from fossilised footprints or teeth Suggests how different animals have adapted to their environment, e.g. a giraffe Explains simply how their own</p>
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		<p>Explains simply what a micro-habitat is</p> <p>Names sources of food for animals in different habitats</p> <p>Describes how an animal or plant is suited to its environment, explaining how the habitat provides for the animal or plant</p> <p>Sorts common animals and plants into different habitats, e.g. sea, forest or desert</p> <p>Gives examples of different habitats</p> <p>Explores questions on what is/isn't alive, e.g. the Sun</p> <p>Lists some life processes</p> <p>Identifies ways in which the environment can be damaged</p> <p>Makes simple connections between the health of a habitat and the number of living things found there</p>	<p>fish, amphibians, reptiles, birds and Mammals</p> <p>Orders simple life cycles</p> <p>Describes the importance of hygiene</p> <p>Describes the importance of a balanced diet and exercise</p> <p>Lists what all animals and humans need to live, e.g. air, food, water</p> <p>Describes the main changes of young animals and humans as they grow up</p> <p>Describes the stages in the human life cycle simply, e.g. baby, child, adult</p> <p>Explains why they have classified an animal in that group</p> <p>Suggests simple differences they see in body structure of common animals, e.g. in relation to how the animal moves or what it eats</p> <p>Identifies, names and classifies living things generally correctly as</p>	<p>and describes the changes different processes create, e.g. in a raw egg, and cooking it for three and seven minutes</p> <p>Mixes a variety of substances with water to find out if they are soluble</p> <p>Identifies simple changes they see with substances they mix together</p> <p>Demonstrates how some materials can be changed, e.g. by bending and stretching</p> <p>Groups materials according to more than one given properties</p> <p>Uses scientific vocabulary to explain why they have used a specific material or object</p> <p>Separates mixtures using the appropriate equipment, e.g. filter paper or sieve</p> <p>Recognises that some changes are permanent, and others are not</p> <p>Describes the changes they observe to materials which have been heated or cooled, e.g. as a change in their state of matter</p> <p>Describes what</p>	<p>Solar System</p> <p>Recognises the Sun is a star</p> <p>States that the Sun provides light and warmth</p> <p>Recites the names in order of the four planets closest to the Sun</p> <p>Recites the months of the year (in order)</p> <p>Identifies hot and cold places on globe</p> <p>Describes how the shadow's measurements have changed when measuring over time</p> <p>Describes why planet Earth is conducive to life</p> <p>Describes a planet or moon's movement correctly, using the term "orbit"</p> <p>States that the Sun is the centre of our Solar System</p> <p>States that the Earth orbits the Sun once a year</p> <p>States that 1 year = 365 days or 52 weeks or 12 months</p> <p>Recites the order of the planets in our solar system, e.g. by creating a rhyme to help them remember</p> <p>States that it takes 24</p>	<p>needed to walk in water and the speed they can travel</p> <p>Recognises that it requires more effort to pull an object over some surfaces more than others</p> <p>Describes what a simple mechanism does, e.g. lifts</p> <p>Identifies simple levers</p> <p>Notes that a magnet is not touching the object to move it</p> <p>Explains how they think a mechanism works</p> <p>Demonstrates how force can change the direction of an object</p> <p>Demonstrates how force can change the shape of an object</p> <p>Demonstrates how force can change the speed of an object</p> <p>Explores how the force of gravity affects everything on Earth, e.g. by trying to 'beat' gravity, keeping up a blown up balloon in the air as long as possible</p> <p>Recognises and uses the term "balanced" force</p> <p>Gives a simple reason why different surfaces</p>	<p>lives are different to those in the past</p> <p>Suggests how different parts of animals help them to survive, e.g. tusks, whiskers or claws</p> <p>Makes simple judgements on how different dinosaurs lived using fossils as evidence, e.g. sharp teeth = carnivore</p> <p>Creates a simple three tier family tree using given information</p> <p>Follows a simple family tree</p> <p>Suggests why or how a plant has adapted to survive in different conditions, e.g. seaweed or cactus</p> <p>Identifies animals from the same habitat and lists similar adaptations they have made to survive there</p> <p>Recognises that the term "species" means a group of animals or plants that share the same characteristics</p> <p>Defines the term "evolution"</p> <p>Describes features or characteristics which can be inherited</p> <p>Explores how and why some animals metamorphosis at particular points in their life</p> <p>Examines the reasons why or how animals hibernate</p> <p>Examines different strategies animals use to survive, e.g. migration</p>
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		<p>Uses food chains to describe the relationship between animals and plants within a habitat</p> <p>Explains how a habitat helps animals and plants to survive</p> <p>Describes how living things they have found in a habitat depend on each other</p> <p>Names different plants and animals and describes how they are suited to different habitats</p> <p>Lists what all living things need to survive</p> <p>Describes how animals get their food from other animals and/or from plants, and uses simple food chains to describe these relationships</p> <p>Identifies whether things are alive, dead or have never lived</p> <p>Describes the requirements of plants for life and growth</p>	<p>amphibians, birds, fish, mammals and reptiles</p> <p>Describes and compares the observable features of animals from a range of groups</p> <p>Names and labels parts of the human skeleton</p> <p>Describes and simply explains the purpose of the skeleton in humans and some animals</p> <p>Recognises that animals including humans need a certain amount of different types of nutrition</p> <p>Describes the basic needs of animals for survival and the main changes as young animals, including humans, grow into adults</p> <p>Explains in simple terms why exercise is a healthy activity</p> <p>Explores what benefit each food groups have to the human body</p>	<p>has happened to a range of common materials to produce a change, e.g. heated or mixed Groups materials based on a range of simple properties after testing, e.g. transparency magnetic</p> <p>Lists materials that dissolve.</p>	<p>hours for the Earth to spin on its axis Explains why day and night occur</p> <p>Explains how shadows change length throughout the day</p> <p>States that the Moon orbits the Earth approximately every 28 days</p> <p>Describes the phases of the Moon using given terms, e.g. full, new, waning</p>	<p>make it harder to slip on</p> <p>Relates how shape helps to lower air resistance, e.g. by examining photos of planes or rockets</p> <p>Relates the speed we can travel when swimming in water to when they walk through water</p> <p>States that different poles attract and like poles repel Names the poles on a magnet as north and south</p> <p>Recognises that the surface area can affect the speed of an object dropping to Earth</p> <p>Describes a force as "balanced" as appropriate</p> <p>Describes the downward force as gravity</p> <p>Describes forces using the terms "friction", "water resistance" and "air resistance" correctly in context Shows the direction of different forces acting on objects in diagrams using arrows Sorts objects to show which mechanism they use, e.g. lever, pulley, wedge</p>	<p>Describes how fossils are formed Suggests how palaeontologists find out about things which have lived long ago</p> <p>Recognises that the past can be divided into different periods</p>
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		<p>Explains how environmental changes may have an impact on living things</p> <p>Suggests why all living things are closely dependent on their environment</p> <p>Describes life cycles in some plants and animals simply, including reproduction</p> <p>Identifies the main stages of the human life cycle</p> <p>Raises and answers questions about local living things and their habitats, e.g. by exploring their local environment at different stages throughout the school year</p> <p>Explores the dependency between animals and habitats and predicts what might happen if something changes</p> <p>Creates a simple classification key to name, identify and group living things</p>	<p>Orders a timeline showing stages of growth and development in humans</p> <p>Describes the importance of exercise, balanced diet and hygiene for humans</p> <p>Recognises how they change through the human life cycle and that change is on-going</p> <p>Identifies physical differences between females and males</p> <p>Names and labels the organs which are protected by different parts of the skeleton, e.g. ribs</p> <p>Identifies, names and labels the different teeth in humans and their functions, e.g. canine, incisor</p> <p>Simply describes the process of food digestion using given vocabulary</p> <p>Understands the simple functions of the basic parts of the human digestive system, e.g. saliva,</p>			<p>Describes the effect of forces that act at a distance (magnetic forces, including those between like and unlike poles)</p> <p>Investigates to find out if they can see a torch light through a variety of objects</p> <p>Investigates their reflection in a variety of curved surfaces</p> <p>Examines and comments on the reflection of their name in a mirror</p> <p>Discusses the changes in appearance of their surrounding when looking through different coloured sheets</p> <p>Describes how their shadow is different from them</p> <p>Names three light sources</p> <p>Names the Sun as a light source</p> <p>Explains why simply they should not look directly at the Sun, even with sunglasses on</p> <p>Demonstrates how to use a mirror to look around corners</p> <p>Sorts objects into transparent, translucent and</p>	
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		Names, identifies and groups a variety of living things using classification keys Groups living things in a variety of different ways Constructs and interprets food chains	small intestine Names and describes the functions of the main parts of the digestive system			opaque using a light source to test them Makes simple connections between a light source making its own light and a reflector needing light to glow Experiments how shadows change by moving the torch nearer and further from the object Represents the light they have reflected using arrows away from the light source Examines a selection of light sources and names what is making the light, e.g. flame Explains that there needs to be a light source to make a shadow Recognises that light travels from its source Groups natural and man-made light sources Recognises and uses the terms "transparent" and "opaque" Manipulates a mirror to find different parts of the classroom which are out of sight Recognises that a shiny object needs a light source to	
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						<p>shine Draws a picture of themselves with their shadow (without any features) in the correct position Demonstrates how light travels from its source Gives examples of primary light sources Suggests ways to protect our eyes from the Sun Groups natural and man-made light sources Recognises and uses the terms "transparent" and "opaque" Manipulates a mirror to find different parts of the classroom which are out of sight Recognises that a shiny object needs a light source to shine Draws a picture of themselves with their shadow (without any features) in the correct position Demonstrates how light travels from its source Gives examples of primary light sources Suggests ways to protect our eyes from the Sun Groups natural and man-made light sources Recognises and uses the terms "transparent" and "opaque"</p>	
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						<p>Manipulates a mirror to find different parts of the classroom which are out of sight Recognises that a shiny object needs a light source to shine</p> <p>Draws a picture of themselves with their shadow (without any features) in the correct position</p> <p>Demonstrates how light travels from its source</p> <p>Gives examples of primary light sources</p> <p>Suggests ways to protect our eyes from the Sun</p> <p>Sorts objects or materials into transparent, translucent and opaque</p> <p>Recognises that shiny objects are not light sources Recognises that light is reflected off different objects</p> <p>Explains how light is reflected off mirrors to create reflections of reflections</p> <p>Gives examples of materials that reflect light Explains why it is dangerous to look at the Sun directly</p> <p>Recognises that when it</p>	
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						<p>is dark, there is no light source</p> <p>Uses the idea that light from light sources, or reflected light, travels in straight lines and enters our eyes to explain how we see objects and the shape of shadows</p> <p>Recognises that we need light to see things</p>	
	<p><b>Why are we doing this now?</b></p> <p>How does it prepare for knowledge and learning still to come?</p>	<p>To learn key concepts in preparation for the KS3 topics: 7D,</p>	<p>To learn key concepts in preparation for the KS3 topics: 7A, 7B and 7C.</p>	<p>To learn key concepts in preparation for the KS3 topics: 7F, 7G, 7H, 8E, 8G 9E and 9F.</p>	<p>To learn key concepts in preparation for the KS3 topics: 8L, 8H and 9J</p>	<p>To learn key concepts in preparation for the KS3 topics: 7I, 7K, 9I, 9J, 8J, 8K.</p>	<p>To learn key concepts in preparation for the KS3 topics: 7B, 7A, 9A.</p>
	<b>Key Terminology</b>	<p>amphibians,</p> <p>Animal</p> <p>Animal life cycles</p> <p>bird</p> <p>insect</p> <p>mammals,</p> <p>process</p> <p>reproduction</p>	<p>Adolescence</p> <p>Adulthood</p> <p>Birth</p> <p>Childhood</p> <p>Elderly</p> <p>Human lifecycle</p> <p>Infancy</p> <p>Puberty</p>	<p>Conductivity:</p> <p>Dissolve</p> <p>Electrical</p> <p>Evaporate</p> <p>Filter</p> <p>Hardness</p> <p>Insoluble</p> <p>Irreversible</p> <p>Magnetic</p> <p>Non-magnetic</p> <p>Reaction</p> <p>Reversible</p> <p>Separate</p> <p>Sieve</p> <p>Solubility</p> <p>Soluble</p>	<p>Day</p> <p>Earth</p> <p>Moon</p> <p>Movement</p> <p>Names of planets</p> <p>Orbit</p> <p>Planet</p> <p>Rotate/rotation</p> <p>Solar system</p> <p>Sphere/spherical</p> <p>Spin</p> <p>Sun</p>	<p>Absorb</p> <p>Air resistance</p> <p>Block</p> <p>Cast</p> <p>Direct/direction</p> <p>Earth</p> <p>Fall</p> <p>Force</p> <p>Friction</p> <p>Gear</p> <p>Gravity</p> <p>Lever</p> <p>Light</p> <p>Mechanism</p> <p>Moving surface</p> <p>Names of light</p>	<p>Adaptation</p> <p>Characteristics</p> <p>Classification</p> <p>Differences</p> <p>Environment</p> <p>Evolution</p> <p>Family</p> <p>Fossils</p> <p>Genus</p> <p>Inherit/inheritance</p> <p>Kingdom</p> <p>Living things</p> <p>Natural selection</p> <p>Offspring</p> <p>Order</p> <p>Similarities</p>

				<div>Solution</div> <div>Thermal</div> <div>Transparency</div>		<div>Object</div> <div>Opaque</div> <div>Pulley</div> <div>Reflect/reflective</div> <div>Refraction</div> <div>Shadow</div> <div>Shape</div> <div>sources</div> <div>Straight</div> <div>Support</div> <div>Transfer</div> <div>Translucent</div> <div>Transparent</div> <div>Travel</div> <div>Water resistance</div> <div>Weight</div>	<div>Species</div> <div>Suited</div> <div>Vary/variation</div>
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