Knowledge Progression Sheet
KS2 Science
September 2025

Year 3	Year 4	Year 5	Year 6
Board Game Bonanza (Autumn 1) ***(Forces & Magnets)*** Know that magnetism is an invisible force that can attract (or repel) certain materials, such as iron and steel. Know that magnetic forces affect how things move on different surfaces. Know that some forces need contact between two objects, but magnetic forces can act at a distance. Know that magnets attract or repel each other and attract some materials and not others. Know that materials can be grouped on the basis of whether they are attracted to a magnet. Know that magnets have two poles (positive and negative). Know that magnets will attract or repel each other, depending on which poles are facing. **Light (Spring 2)**	**Living Things and their habitats** (Science Week) Recognise that living things can be grouped in a variety of ways. Explore and use classification keys to help group, identify, and name a variety of living things in the local and wider environment. Recognise that environments can change and that this can sometime expose dangers to living things. **Bright Sparks (Autumn 2)** ***(Electricity)*** Know about the precautions associated with working safely with electricity. Know how to identify common appliances that run on electricity. Know how to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Know how to identify whether or not a lamp will light in a simple series circuit, based on whether or not the	**All living things and their habitats** (New unit – Science Week) • 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. **Animals** Describe the changes as humans develop to old age. **Reach for the Stars (Autumn 2)** ***(Earth & Space)*** The sun is a star at the centre of our solar system. The sun gives out heat and light and makes life possible on Earth. The sun's light is so bright that it can damage your eyes if you look at it directly. There are eight planets in our solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.	**Discovering Galapagos (Autumn 2)** **Evolution and Inheritance:** To identify variation and adaptation across specific animals and plants (local and global). 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 vary and are not identical to their parents. To recognise the role fossils have in the development of evolutionary theory. To learn more about the work of Anning, Darwin, and Wallace. **Living Things and their Habitats:** To identify inherited characteristics in living things. To understand the adaptation of plants.

Know that sounds are made through vibrations. Know that vibrations from sounds travel through a medium to the ear. Know that there are patterns between the pitch of a sound and the features of the object that produced it. Know that there are patterns between the volume of a sound and the strength of the vibrations that produced it. Know that sounds get fainter as the distance increases. Know that light is needed in order to see things, and dark is the absence of light. Know that light is reflected from surfaces. Know that light from the sun can be dangerous. Know that shadows are formed when the light is blocked. Know that there are patterns in the ways that the sizes of shadows change.	lamp is part of a complete loop with a battery. Know that a switch opens and closes a circuit, and associate this with whether or not a lamp lights in a simple series circuit. Know about some common conductors and insulators, and associate metals with being good conductors. **<u>Sound (new unit here)</u>** Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sounds travel through a medium to the ear. Find patterns between pitch of a sound and features of the object that produced it. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the source increases.	The Earth and other planets orbit the sun. This is because the sun has a powerful gravity force which holds the planets in their orbits around the sun. Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Weight is the force acting on an object due to gravity. It has the unit Newtons (N). Earth rotates on its axis which is at a tilt of 23.5°. Earth takes 24 hours to complete a full rotation. The Earth's rotation makes the sun appear to move across the sky. Seasons on Earth are created by a combination of its tilt and rotation. Mars is our closest neighbour. Mars is sometimes called the red planet because the surface is covered in a thick layer of iron oxide dust. In 2011, NASA launched the Mars Rover Curiosity to take and analyse soil and rock samples to see if life ever existed.	To know that variation occurs within offspring as well as across a species. Identify that most living things live in habitats to which they are suited. Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. To know animals are unique to the Galapagos Islands. To know who Linnaeus was and learn about his classification system. To identify similarities and differences between living things in order to determine their classification. To use classification keys to sort living things according to observable characteristics. To describe the key characteristics of unusual living things from around the world. To use descriptions of features, and online research, to attempt to classify unusual living things. To design, describe, and name a new creature that characteristically sits in a particular kingdom.

Trust me I'm a botanist (Summer 1) *(Plants)* Know how to identify and describe the functions of different parts of flowering plants, including roots, stem, leaves and flowers. Know how to explore the requirements of plants for life and growth (air, light, water, nutrients from soil and room to grow), and how they vary from plant to plant. Know how to investigate the way in which water is transported within plants. Know how to explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Know how to draw links between the structure and the functions of plants. **Mortimer V Lyme Regis (Summer 2) *(Rocks)*** Know that there are three main types of rock: sedimentary, metamorphic, and igneous. Know that sedimentary rocks are formed by sediment that is deposited	**Incredible Iceland Land of Fire and Ice (Spring 2)** ***(States of Matter)*** Know that materials can exist in a state of solid, liquid, or gas. Know that most substances can exist in three states: solid, liquid, and gas. Know the properties of a solid, liquid, or gas. Know that some materials can change state by heating or cooling, and measure or research the temperature at which this happens in degrees Celsius (°C). Know that some changes to materials can be reversed but others cannot. Know that materials can change state at different temperatures. Know the different stages of the water cycle. Know what is meant by evaporation, condensation, precipitation, transpiration, surface run-off, ground water and collection in the context of the water cycle. Know that the rate of evaporation is associated with temperature.	A moon is a natural satellite which means that it is an object in space that orbits a planet. Earth has one moon which is held in orbit by gravity. The moon orbits the Earth once every 27.3 days. The moon's gravitational pull causes tides in our oceans. The moon looks different at various times of a month (called the eight phases of the moon) because the moon rotates as it orbits the Earth and the sun's light is reflected on different parts. **Kensuke's Kingdom (Summer 1)** ***(Properties & Changes of materials)*** Everyday materials have properties, and we can compare and group materials based on their properties. Metals – are good conductors of heat and electricity, strong, hard, shiny and some are magnetic. Plastics - made from chemicals, strong, waterproof, not magnetic, good insulators, can be made into any shape when heated. Glass - made by melting sand and other minerals, normally transparent,	**Electricity (Spring 1)** Electricity is energy. This energy can be used to power electrical items such as toasters, kettles, cookers, televisions and computer tablets. Electrical energy is caused by electrons (the particles in atoms) moving about to make a current. Electricity can be created in a variety of ways such as: burning fossil fuels (oil, gas, coal) at power stations, using wind power generated by wind turbines, using solar power generated by the sun, using water power (sometimes called hydropower) generated by running or falling water. Electricity is transported to our homes, schools, and places of work through wires and cables. Electricity can also be stored in batteries (sometimes called cells). A simple series electrical circuit is a circuit for electricity to flow around. It's simple because the circuit is a single wire running from a battery to a bulb and back again. **Light – Northern Lights (Spring 1)** Light travels in straight lines.

over time, usually as layers at the bottom of lakes and oceans. Know that a metamorphic rock is a type of rock which has been changed by extreme heat and pressure. Its name is from 'morph' (meaning form), and 'meta' (meaning change). Know that igneous rock is formed through the cooling and solidification of magma or lava. Know that rocks have various physical properties including texture, weight and colour. Know that the texture of a rock is the size, shape, and arrangement of the grains (for sedimentary rocks) or crystals (for igneous and metamorphic rocks). Know that a fossil is the remains or impression of a prehistoric plant or animal embedded in rock and preserved over time. Know that a fossil is the preserved remains or traces of a dead organism. The process by which a fossil is formed is called fossilisation Know that fossilisation is to preserve an animal or plant so that it becomes a fossil. Know that soil is the upper layer of	**<u>Mortimer Masterchef (Summer 1)</u>** ***(Animals)*** To know the role of our teeth and how to look after them. Know the different names and functions of human teeth. Using models, video clips and other secondary sources label the teeth by name. Know the simple functions of the basic parts of the digestive system in humans. Understand through the use of a range of secondary sources; • The smell of food triggers saliva to be produced. • The digestive system begins with the mouth and teeth where food is ingested and chewed. • Saliva is mixed with the food which helps to break it up. • When the food is small enough to be swallowed, it is pushed down the oesophagus by muscles to the stomach. • In the stomach, food is mixed further. • The mixed food is then sent to the small intestine which absorbs nutrients from the food. • Any leftover broken down food then moves on to the large intestine.	can be made into other shapes, thin glass breaks easily. Wood - comes from trees, strong, flexible, long-lasting and good insulator. Fabrics - made from thin fibres woven together, they have different properties; can be stretchy, insulating or absorbent. Materials which are electrical conductors let electricity pass through them easily e.g. copper, iron and steel. That is why the parts of electrical objects that need to let electricity pass through are always made of metal. Electrical insulators are materials which do not allow electricity to pass through them e.g. plastic, wood, glass. Magnetic materials are always made of metal, but not all metals are magnetic. Iron is magnetic, so any metal with iron in it will be attracted to a magnet. Steel contains iron, so a steel paperclip will be attracted to a magnet too. Some materials will dissolve in a liquid to form a solution. Substances that dissolve in water are called soluble substances. Substances that	Objects are seen because they give out or reflect light into the eye. We see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes. Shadows have the same shape as the objects that cast them because light travels in straight lines. **<u>Blood Heart (Spring 2)</u>** ***<u>(Animals)</u>*** The aorta is the largest artery in the body, and delivers blood from the heart to the rest of the body. An artery is a blood vessel that carries blood away from the heart to the rest of the body. The atriums are the upper chambers of the heart and they collect blood as it enters the heart before it is pumped to the ventricles. Blood is a fluid found in humans and other animals which provides nutrients and oxygen to all parts of the body. Capillaries are tiny blood vessels whose walls are so thin that oxygen, nutrients and waste products flow through them.

earth in which plants grow, a black or dark brown material typically consisting of a mixture of organic remains, clay, and rock particles. Know that organic matter (or organic material) is matter that has come from a recently living organism. Know that minerals are inorganic substances, meaning that they do not come from an animal or a plant.	• The food, minus the nutrients, arrives in the rectum where muscles turn it into faeces. It is stored here until it is pushed out by the anus. This is called excretion. Know that different animals eat different diets. Know what a food chain is. Know that living things are classified as producers, predators, or prey, depending on their place in the food chain. Know that a producer makes its own food. Know that a predator eats other animals.	do not dissolve in water are called insoluble substances. It is possible to recover some substances from solutions. Solids keep their shape and always take up the same amount of space. They stay in one place and can be held. Liquids can flow and change their shape depending on the container they are in. They always take up the same amount of space. Gases do not have a fixed shape. They spread out and change their shape and volume to fill the container they are in. The three states of matter (solids, liquids, and gases) can change from one state into another. Heating a solid changes it into a liquid. Heating a liquid so that it turns into a gas is called evaporation. Cooling a gas so that it turns into a liquid is called condensation. Freezing a liquid cools it so that it changes into a solid. There is a range of ways to separate mixtures including filtering, sieving, and evaporating.	Carbon dioxide is a gas produced by animals and people breathing out. Circulation is the movement of blood through the vessels. The heart is a muscular organ that pumps your blood around your body. Heart rate is another term for heart beat or rhythm. The number of times the heart beats in a minute. Organs are a part of your body that have a particular purpose. Oxygen is a colourless, odourless, tasteless gas this is vital for us to live. Respiration links to the process of respiring; breathing; inhaling and exhaling air. A valve is a flap-like structure within the heart that opens and closes to control the flow of blood through, and out of, the heart. The veins are blood vessels that carry blood from around the body, into the heart. The vena cava is a large vein through which deoxygenated blood reaches your heart from your body.

		A reversible change is a change which can be reversed or undone so you can get back the substances you started the reaction with. Dissolving, mixing, evaporating, melting, and freezing are examples of reversible changes. An irreversible change is a permanent change where you cannot get the substance back to what you started with. Burning, heating, and mixing are examples of irreversible changes. Scientists use chemical reactions to create useful new materials. **<u>Fantastic Fairgrounds (Summer 2)</u>** ***(Forces)*** Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Friction is a force between two surfaces that are sliding, or trying to slide, across each other. Friction always works in the direction opposite to the direction in which the object is moving or trying to move.	Ventilation is the exchange of air between the lungs and the atmosphere so that oxygen can be exchanged for carbon dioxide. Ventricles are the two lower chambers of the heart. Vessels are the tubes that carry blood around the body. Choices that can harm the circulatory system: Some choices such as smoking and drinking alcohol can be harmful to our health. Tobacco can cause short-term effects such as shortness of breath, difficulty sleeping and loss of taste, and long-term effects such as lung disease, cancer and death. Alcohol can cause short-term effects such as addiction and loss of control, and long-term effects such as organ damage, cancer and death. Exercise is important as it can: • Tone your muscles and reduce fat. • Increase fitness. • Make you feel physically and mentally healthier. • Strengthen your heart. • Improve lung function. • Improve skin.

		Friction produces heat. If you rub your hands together quickly, you will feel them get warmer. The amount of friction depends on the materials from which the two surfaces are made. The rougher the surface, the more friction is produced. Friction can be a useful force because it prevents our shoes slipping on the pavement when we walk and stops car tyres skidding on the road. When you walk, friction is caused between the tread on shoes and the ground. This friction acts to grip the ground and prevent sliding. Sometimes we want to reduce friction. For example, we use oil to reduce the friction between the moving parts inside a car engine. The oil holds the surfaces apart and can flow between them. The reduced friction means there is less wear on the car's moving parts and less heat produced. Air resistance is a type of friction between air and another material. Water resistance is a type of friction between water and another material. Some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	

		Levers are a type of mechanism that are really good at lifting objects and can make them easier to lift. Gears are toothed wheels that lock together and turn one another. Pulleys are like gears but the two wheels do not lock together. Instead, the wheels are joined by a belt.	