Early Years

**Seasonal Changes**

Children will be able to talk about the features of their own immediate environment and how environments may vary from another. By the end of the year the children will be confident to talk about the seasonal changes.

| **Checking for understanding:**   * What do we see when we look outside? * What is the same about these two places (environments)? * What is different about these two places (environments)? * What changes from winter to summer? * What is the temperature like in winter,summer,autumn and spring? |
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**Animals**

Children will be able to make observations and explanations of animals. This will include the way animals look, what they eat, where they live and similarities and differences in a variety of animals. Children will be given the opportunity to talk confidently about this.

| **Checking for understanding:**   * What is the name of this animal? * What does this animal look like? * Is this animal big/small? * What is the same about these animals? * What is different about these animals? |
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**Plants**

Children will be able to make observations and explanations of plants. This will include what the plants look like, what plants need in order to survive and similarities and differences in a variety of plants. Children will be given the opportunity to talk confidently about this.

| **Checking for understanding:**   * What is the name of this plant? * Describe what this plant looks like (show visuals) * What does a plant need to stay alive? * What is the same about these plants? * What is different about these plants? |
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**Living Things and their Habitats**

Children will be able to know about similarities and differences in relation to living things. They will also be able to talk about the features of their own immediate environment and how environments might vary from one another.

| **Checking for understanding:**   * What is the same/different about these two animals? * What would you see in a ……. environment? * What type of place would this animal live? * What is different about these two different environments? * What is the same about these environments? |
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**Materials**

Children will be able to know about similarities and differences in relation to materials and objects. The children will be able to confidently talk about some of these similarities and differences when questioned.

| **Checking for understanding:**   * What is the name of this material? * What is this object called? * What does it feel like? * What is the same/different about these materials? * Where have you seen this material before? |
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Year 1

**Animals including humans**

Children will be able to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. All children will be able to name and compare the characteristics of these. They will also be able to identify and name a variety of common animals that are carnivores, herbivores and omnivores. All children will be able to name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

| **Checking for understanding:**   * Give me an example of a fish, amphibian, reptile, bird and mammal. * Explain the following terms:   -carnivore  -herbivore  -omnivore  -vertebrate  -invertebrates   * How can an animal be grouped based on their diet? * What is the difference between a reptile and a mammal? * Name the five senses? What body part helps you to hear, taste, smell, touch, see? |
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**Seasonal changes**

Children will have an understanding of the 4 seasons and will be able to observe changes across them. They will be able to give clear explanations and describe weather associated with the seasons and how day length varies depending on the season we are in.

| **Checking for understanding:**   * When is it normally hot/cold outside? Can you name me the seasons and the months they fall into? * What happens in Autumn? (colder, leaves turn orange, weather mat be sunny, windy or rainy, may find pine cones or conkers) * What happens in winter? (colder than autumn, some trees lose leaves, days get shorter and nights get longer, can be ice or frost) * What happens in spring? (starts to get warmer, leaves and blossoms appear on trees,plants begin to grow, days become longer) * What happens in summer? (hottest season, days are longest in summer, weather may be hot and sunny) |
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**Materials**

Children will be able to clearly distinguish the difference between an object and the material it is made from. They will be able to identify and name a variety of everyday materials including: wood, plastic, glass, metal, water and rock and describe their simple physical properties. All children should be able to compare and group together a variety of everyday materials on the basis of their simple physical properties.

| **Checking for understanding:**   * Which material is this object made from? (glass, metal, rock, plastic, wood, water, brick, paper, fabrics, elastic, foil) * Which word could I use to describe this material? (transparent, waterproof, opaque, stiff, soft, shiny, rough, absorbent, bright, bendy, hard, smooth, dull) * What does manmade mean? * Is this material natural or manmade? * Explain the following terms:   - absorbent  -opaque  -transparent  -waterproof |
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**Plants**

Children will be able to confidently identify and name a variety of common wild and garden plants including deciduous and evergreen trees. They will be able to clearly identify and describe the basic structure of a variety of common flowering plants including trees.

| **Checking for understanding:**   * What is the name of this common/wild garden plant? (Eg common- rose, poppy, sunflower, pansy) (Eg wild- dandelion, daisy, buttercup, nettle, fern) * Can you grow plants to eat? Name me some plants you can grow to eat? (Eg. Carrots, peas, basil, mint) * Can you name me a deciduous tree? What are the features of a deciduous tree? * Can you name me an evergreen tree? What are the features of an evergreen tree? * What are the parts of common trees and plants? Show me where the leaves, twig, crown, branch, trunk, roots are. |
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Year 2

**Living things and their habitats**

Children will be able to clearly explain and compare the differences between things that are living, dead and the things that have never been alive. They will have a clear knowledge and understanding that most living things live in habitats which they are suited to. All children will be able to explain how different habitats provide the basic needs of different kinds of plants and animals and how they depend on each other to survive. They will be able to confidently identify and name a variety of plants and animals in their habitats including those in microhabitats. Children will have an informed view on how animals obtain their food from plants and other animals using the idea of a simple food chain whilst also being able to identify different sources of food.

| **Checking for understanding:**   * What is a habitat? * Can you name some habitats and give me some examples? Local habitats? Micro-habitat? * What might you find in a habitat to allow living things to survive there? * What is a food chain? * Explain the following terms:   -carnivore, herbivore, omnivore  -invertebrate, vertebrate |
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**Materials**

Children will be able to confidently identify and compare the suitability of a variety of everyday materials including: wood, plastic, glass, metal, brick, rock, paper and cardboard for particular uses. They will have a clear understanding of how the shapes of solid objects made from materials can be changed by squashing, bending, twisting and stretching and explain why this might be done.

| **Checking for understanding:**   * Describe this material (shiny, soft, rough, absorbent) * What does the word properties mean? What are the properties of ……….? (Eg.wood, metal, glass) * What could this material be used for? Which material out of these two would be better when making a table? * How can you change the shape of materials? (stretch, twist, bend, squash) * What does opaque/transparent mean? Can you name me a material that is opaque/transparent? |
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**Animals including humans**

Children will have a clear understanding that animals including humans have offspring which grow into adults. They will be able to clearly explain the basic needs that animals including humans need to survive (water, food, air). All children will be able to confidently explain: the importance of exercise for humans, eating the right amounts of different types of food and hygiene.

| **Checking for understanding:**   * What are your 5 senses? * What is a herbivore/omnivore/carnivore? * Animals and humans can have offspring. What does offspring mean? * Can you talk me through the life cycle of a …………(EG.butterfly, frog, human) * Can you name me some things that animals and humans NEED in order to survive? * How do humans stay healthy? * What does a balanced diet mean? * Why is it important to have good hygiene? * Why is it important to exercise? |
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**Plants**

Children will be able to observe and describe how seeds and bulbs grow into mature plants. Children will also have a clear understanding in identifying and describing how plants need water, light and suitable temperature to grow and stay healthy.

| **Checking for understanding:**   * Name me some common/wild garden plants. * What are the properties of a deciduous/evergreen tree? * Are plants living things? * What do plants/seeds/bulbs require in order to grow and stay healthy? * Can you explain the cycle of a seed/bulb growth? * At what time of the year will………….grow? |
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Year 3

**Plants**

Children will be able to Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers. They will also be able 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. Children will be able to investigate the way in which water is transported within plants and will explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

| **Checking for understanding:**   * What type of tree shed their leaves at a certain time of the year (usually autumn)? What type of tree keeps their leaves throughout the year? * What is the function of the root of a flowering plant/petals/stem? * When does pollination occur? * The pollen travels down and meets the ovule. When this happens, seeds are formed. What is this process called? * What is the name of the small, hard part from which a new plant grows? * Which part of the plant absorbs the water and the nutrients? |
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**Animals including humans**

Children will be able to identify that humans need the right types and amount of

nutrition and that they cannot make their own food – they get nutrition from what they eat.

Children will be able to identify that humans have skeletons and muscles for support, protection and movement.

| **Checking for understanding:**   * In order for animals to survive they need THREE things. What are they? * What is the definition of a balanced diet? Give an example of a balanced meal? * Where do humans get their energy from? * What are the FIVE different food groups? * Why is protein/carbohydrates/fibre/fats important for your body? * What are the purposes of a skeleton? * What are substances that help plants and animals grow called? |
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**Light**

Children will be able to recognise that light is needed in order to see things and that dark is the absence of light. They will also be able to notice that light is reflected from the surface.

Children will be able to recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Children will recognise that shadows are formed when the light from a light source is blocked by an opaque object. They will be able to find patterns in the way that the size of shadows change.

| **Checking for understanding:**   * Why do we need light? * What do we call something which gives us light? * Why is the light from the sun dangerous? * Name some common light sources. Is the moon a light source?Is a mirror a light source? * How are shadows created? Why do shadows change shape? * How does light travel? * What do the words opaque, transparent and translucent mean? |
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**Rocks**

Children will be able to compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. Children will also be able to confidently describe in simple terms how fossils are formed when things that have lived are trapped within rocks. All children will recognise that soils are made from rocks and organic matter.

| **Checking for understanding:**   * What does soil contain to help plants grow? * What are the three different types of rock called? * How are metamorphic/ Igneous/ sedimentary rocks made? * What is a fossil? How are fossils usually formed? * Which type of rock do fossils mostly form in? * Categorise the following rocks into their type: granite, basalt, slate, sandstone, marble |
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**Forces and Magnets**

Children will be able to compare how things move on different surfaces and will be able to notice that some forces need contact between two objects, but magnetic forces can act at a distance. Children will be able to observe how magnets attract or repel each other and attract some materials and not others. They will be able 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.Children will describe magnets as having two poles and will be able to predict whether two magnets will attract or repel each other depending on which poles are facing.

| **Checking for understanding:**   * Will this object move quicker or slower on… (concrete, carpet, laminate) * Will these poles attract or repel each other? * How could I group these materials? * What is the same/ different about these materials? * Is this material magnetic? * How many poles does a magnet have? |
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Year 4

**States of matter**

Children will be able to compare and group materials together according to whether they are solids, liquids or gases. They will observe that some materials change state when they are heated or cooled:measure or research the temperature at which this happens in degrees C. All children will be able to identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

| **Checking understanding:**   * What is a particle? * Which picture represents a solid/liquid/gas? * What is a solid/liquid/gas? * What happens when a liquid is heated/cooled? * Describe the process of the water cycle * What is condensation? |
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**Animals including humans**

Children will be able to use and build on prior knowledge to construct and interpret a variety of food chains, identifying producers, predators and prey. Children will also be able to describe the simple functions of the basic parts of the digestive system in humans. In addition, all children will be able to identify the different types of teeth in humans and their simple functions.

| **Checking understanding:**   * What are prey/predators? Can you give me some examples of both? * Name the different ways in which humans can stay healthy * What are the functions of the following:   -Canines  -Incisors  -Premolars   * Where does the digestive system begin? * When food is swallowed what does it pass through? After the food reaches the stomach where does it go? * When the food and nutrients have been absorbed in the small intestine, where do the leftover food go? |
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**Living things and their habitats**

Children will be able to recognise that living things can be grouped in a variety of ways and explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Using this knowledge, children will recognise that environments can change and that this can sometimes pose dangers to living things.

| **Checking understanding:**   * How can living things be grouped? * What is a classification key? * Can you give me a question I could put onto an animal classification key? * What is a habitat? * Give a positive/negative way in which a human can affect the environment * What is a food chain? Can you give me an example? |
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**Sound**

Children will be able to identify how sounds are made, associating some of them with something that is vibrating. All children will be able to recognise that vibrations from sounds travel through a medium to the ear. Links must also be made between the pitch of a sound and features of the objects that produced it. Links also need to be made between the volume of a sound and the strength of the vibrations that produced it. Children will be able to recognise and clearly explain that sound gets fainter as the distance from the sound source increases.

| **Checking understanding:**   * What is a sound? * What is the name of the object making the sound called? * How is sound made? How does sound travel? * Give me an example of a medium that sound can travel through * What types of sound waves do high/ low pitched sounds create? (big/small) * Does a quieter sound produce small or strong vibrations? * Give me the definitions for the following:   -pitch  -amplitude  -decibel  -frequency  -medium |
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**Electricity**

Children will be able to identify common appliances that run on electricity as well as construct a simple series electrical circuit. Additionally, children will be able to identify and name the basic parts including cells, wires, bulbs, switches and buzzers. Children will also be able to identify whether or not a lamp will light in its simple series circuit, based on whether or not the lamp is part of a complete loop with a battery. All pupils will recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Common conductors and insulators should also be recognised and be associated with metals that are good conductors.

| **Checking understanding:**   * Can you give me an example of an appliance that needs batteries/uses mains electricity * In a complete circuit what flows through the wires? * Name me some appliances that you could add to a circuit * When a switch is off can electricity flow? * What is the scientific term for materials that allow/do not allow electricity to pass through them? * Can you give me an example of an electrical insulator? Are metals good conductors? |
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Year 5

**Earth and space**

Children will be able to describe the movement of the Earth and other planets relative to the sun in the solar system. They will be able to show a clear understanding and describe the movement of the moon relative to the Earth, as well as describing the sun, Earth and moon as approximately spherical bodies. Children will also use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.

| **Checking understanding:**   * What is at the centre of the solar system? * How many planets are there in the solar system? Order them * How long does it take the Earth to orbit the sun? * Name the three spherical bodies in the solar system * How long does it take the moon to orbit the Earth? Does it go clockwise or anticlockwise? * What causes day and night? |
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**Animals including humans**

Children will be able to describe the changes as humans develop to old age.This will include all pupils being able to confidently explain and describe the main stages such as foetus, newborn, infancy, childhood, adolescence, early adulthood, middle adulthood and late adulthood. Children will have a clear understanding about the changes that happen through puberty for both males and females.

| **Checking understanding:**   * Can you name me the main stages of the human life cycle?Explain what happens in the following stage (foetus, newborn, infancy, childhood, adolescence, early adulthood, middle adulthood, late adulthood) * What changes happen to both females and males during puberty? * What changes can happen for females/males during puberty? * What does reproduction mean? * When does the gestation process happen? |
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**Materials**

Children will be able to draw upon prior knowledge to compare and group everyday materials based on their properties, including hardness, solubility, transparency, conductivity (electrical and thermal) and magnetism. They will know how some materials dissolve in liquid to form a solution and describe how to recover a substance from solution. Knowledge will be used of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Children will be able to give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, woods and plastic. They will demonstrate that dissolving, mixing and changes of states are reversible changes. Clear explanations will be given to explain that some changes result in the formation of new materials and that these changes are not usually reversible, for example changes from burning or the action of acid on bicarbonate of soda.

| **Checking understanding:**   * Explain and give examples of the following properties:   -magnetic  -transparent  -soluble  -insoluble  -permeable  -thermal insulator  -thermal conductor  -electrical insulator  -electrical conductor   * Give an example of how a material can change state * What does reversible mean? * What does irreversible mean? * Name the different ways mixtures can be separated |
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**Living things and their habitats**

Children will be able to recall basic information on life cycles from previous year groups (butterflies, chickens etc.) to build upon and describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. They will also be able to confidently describe the life process of reproduction in some plants and animals.

| **Checking understanding:**   * What is the name of the process of how animals reproduce? * Does sexual/asexual reproduction require both male and female parents? * Is the offspring produced by sexual reproduction identical to the parent? * Is a plant produced by asexual reproduction identical to the parent plant? * Describe the life cycle of an insect, amphibian, bird and mammal * Can plants reproduce through both sexual and asexual reprodiction? |
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**Forces**

Children will be able to clearly explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. They will also be able to identify the effects of air resistance, water resistance and friction that act between moving surfaces. Children will recognise that some mechanisms including levers, pulleys and gears allow smaller force to have a greater effect.

| **Checking understanding:**   * What is gravity? * What will happen to unsupported objects? * What is friction/water resistance/ air resistance and how can it affect the speed of a moving object? * What does streamlined mean? * What is a mechanism? Can you give me some examples of mechanisms? |
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Year 6

**Living things and their habitats**

Children will be able to describe how living things are classified into broad groups according to common observable characteristics and differences, including microorganisms, plants and animals. They will understand and give reasons for classifying plants and animals based on specific characteristics.

| **Checking understanding:**   * How could we group living things? * Explain what characteristics are? * Name me some characteristics of (a specific) microorganism/plant/animal * What are the difference between these two microorganisms/plants/animals * How would you classify this plant/ animal? Explain your choices |
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**Evolution and inheritance**

Children will be able to recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. Children will regconise and explain that living things produce offspring, but normally offspring vary and are not identical to their parents. They will identify how animals and plants are adapted to suit their environment and that adaptations lead to evolution.

| **Checking understanding:**   * What is evolution? * Are offspring identical to their parents? * What is the scientific term for when there is competition to survive? * What is inheritance? * What are mutations? * Name some characteristics that you can inherit from your parents * What evidence is there that evolution has occurred? * What does adaptation mean? Can you give me an example of an animal that has had to adapt to its environment? |
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**Light**

Children will be able to recognise that light appears to travel in straight lines and use that idea to explain that objects are seen because they give out or reflect light into the eye. They will also be able to explain that we see things because light travels from light source to our eye or from light sources to objects and then to our eye. Children will use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

| **Checking understanding:**   * What does light travel in? * Explain how reflection happens * Explain how we are able to see objects * What does opaque mean? * How are shadows formed? * Explain how the size of a shadow can change * What is a light source? Can you give me an example? |
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**Electricity**

Children will associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. They will compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of the buzzers and the on/off position of switches. Children will use recognised symbols when representing a simple circuit in a diagram.

| **Checking understanding:**   * Can you tell me what the following symbols represent:   -bulb  -buzzer  -battery  -motor  -switch (open)  -switch (closed)  -wire   * Is this statement true or false - The higher the voltage the brighter/louder a bulb/buzzer would be. * Will adding more batteries to a circuit increase the voltage? * What is the scientific term for the parts of the circuit? * Will this circuit work? (show circuit) * In which circuit will the bulb be brighter? (show a circuit with one and another with two cells |
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**Animals including humans**

Children will be able to describe the ways in which nutrients and water are transported within animals (including humans). They will identify and name the main parts of the human circulatory system and describe the functions of the heart, blood vessels and blood. Children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. They will draw on this and be able to describe the way in which nutrients and water are transported within humans and other animals.

| **Checking understanding:**   * What is the circulatory system? * What do veins carry from the body to the heart? * Name the three things that are exchanged through the capillaries? * What choices can be made that can harm the circulatory system? * How many chambers is the heart composed of? * Name me the main areas of the heart |
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