Lower Meadow Science Coverage & Knowledge and Skills

Year Group	Autumn		Spring		Summer	
	Term 1	Term 2	Term 1	Term 2	Term 1	Term 2
Nursery	**Seasons** ❖ Explore Autumn and how the weather changes. Observe leaves falling off and changing colours.	**Change in Matter** ❖ Baking gingerbread. Explore how it changes from dough to gingerbread.	**Forces and changes in matter** ❖ Explore how things float and sink. ❖ Changes continued – develop this further by exploring water freezing when it gets cold and ice melting when it gets hot.	**Materials** ❖ Materials to be explored linked to their properties (stretchy and not stretchy) **Seasons continued** ❖ Explore the season of spring and compare this to autumn.	**Life Cycles** ❖ Lifecycle of a plant. ❖ Explore how seeds grow. Children to plant seeds and bulbs and look after them using. ❖ Begin to explore how plants need water and sunlight to grow. ❖ Lifecycle of a butterfly. Explore how a butterfly goes from an egg to caterpillar to cocoon to butterfly.	**Animals and Habitats** ❖ Animals linked to focus stories (bears, wild animals and sea creatures). ❖ Learn about where they live, what they eat and who they live with. **Seasons continued** ❖ Explore the season of summer.

Reception	**<u>Ourselves and Seasons</u>** ❖ Families ❖ Animals (Pets + Farm) ❖ Changes (making bread) ❖ Exploring natural materials ❖ Autumn	**<u>Materials</u>** ❖ Explore materials with a focus on texture and opaque and transparent.	**<u>Changes in Matter and Materials</u>** ❖ Changes continued – develop this further by exploring water freezing when it gets cold and ice melting when it gets hot. ***<u>Disciplinary knowledge</u>*** ❖ To complete an experiment around melting using knowledge developed from nursery and reception. **<u>Materials</u>** ❖ Explore properties of a range of materials. ***<u>Disciplinary knowledge</u>*** ❖ Build on properties of materials but develop this to explore materials for a purpose linked to their properties.	**<u>Forces</u>** ❖ Explore forces linked to the magnets in the train tracks. ***<u>Disciplinary knowledge</u>*** ❖ Explore what the children notice about the magnets here – attract or repel. **<u>Seasons continued</u>** ❖ Explore the season of spring and compare this to autumn.	**<u>Lifecycles</u>** ❖ Explore lifecycles of humans, plants and animals. ❖ Plant seeds/bulbs and look after these. ❖ Life cycle of a butterfly.	**<u>Animals and Habitats</u>** ❖ Animals and their young. ❖ Animals and their habitats (hot, cold, land and sea) **<u>Seasons continued</u>** ❖ Explore the season of summer and compare this to other seasons.
Year 1	**<u>Human Body</u>**	**<u>Animals and their needs</u>** 1. Amazing Animals (Introduction to Animals)	**<u>Seasons and Weather</u>** 1. The four seasons 2. Tools to record the weather	**<u>Taking Care of the Earth (NS)</u>** 1. Taking Care of the Earth 2. Earth's Natural Resources	**<u>Plants</u>** 1. What plants need 2. Parts of plants	**<u>Materials & Magnets</u>** 1. Everyday Materials 2. Properties of Materials

	1. Introduction to Our Body and Our Senses 2. Eyes and Sight 3. Ears and Hearing 4. Touch, taste and smell 5. Understanding Sensory Impairment 6. Assessment	2. Grouping animals: Fish, amphibians, reptiles, birds and mammals 3. Grouping animals: carnivores, herbivores and omnivores 4. Animals as pets 5. Describing animals 6. Assessment	3. Using a graph to show information about the weather 4. Clouds and what they tell us: cirrus, cumulus and stratus 5. Weather forecasting 6. Extra lesson: Dangerous weather around the world 7. Assessment task: Identifying and describing weather	3. Logging 4. Pollution 5. Recycling 6. Assessment	3. Seeds 4. Deciduous and evergreen plants 5. Plants we eat 6. Assessment	3. Uses of Materials 4. Magnets 5. Investigation 6. Assessment
Skills & Knowledge	❖ identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense ***Disciplinary knowledge*** ❖ Is our sense of smell better when we can't see?	❖ identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals ❖ identify and name a variety of common animals that are carnivores, herbivores and omnivores ***Disciplinary knowledge*** ❖ describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)	❖ There are four seasons across the year. ❖ The name of the four seasons are Summer, Winter, Autumn and Spring. ***Disciplinary knowledge*** ❖ observe changes across the 4 seasons ❖ observe and describe weather associated with the seasons and how day length varies ❖ Do trees with bigger leaves lose their leaves fist in Autumn?	❖ understand that humans can have both a positive and negative impact on Earth ❖ understand what natural resources are and how humans use them ❖ what recycling is and why we may use this	❖ identify and name a variety of common wild and garden plants, including deciduous and evergreen trees ❖ identify and describe the basic structure of a variety of common flowering plants, including trees ***Disciplinary knowledge*** ❖ How does an oak tree change over the year?	❖ distinguish between an object and the material from which it is made ❖ identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock ❖ describe the simple physical properties of a variety of everyday materials ***Disciplinary knowledge*** ❖ compare and group together a variety of everyday materials on the basis of their simple physical properties
Year 2	**Human Body** 1. Animals, including humans, survival and offspring 2. The Skeletal System, The Muscular System and Exercise 3. The Digestive system and Healthy Eating 4. The Circulatory system 5. Germs, diseases and preventing illness 6. Assessment lesson	**Living Things and their Environment** 1. Dead or Alive 2. What is a habitat? 3. Rainforest and Desert habitats 4. Meadow habitats 5. Underground habitats 6. Assessment 7. Additional optional lessons	**Electricity (NS)** 1. Introduction to Electricity 2. Safety 3. Exploring Circuits (A) 4. Exploring Circuits (B) 5. Investigating Conductive and non-conductive materials 6. Assessment	**Plants** 1. Plants around us 2. Seeds and bulbs 3. Comparative test 1 4. Comparative test 2 5. Food and Farming 6. Assessment—How does a seed work?	**Materials and Matter** 1. Materials and their uses 2. George de Mestral and Velcro 3. Matter under the microscope 4. Changing Solid Objects 5. Liquids and their properties 6. Assessment	**Astronomy (NS)** 1. Introduction to Astronomy 2. Model the Solar System 3. Orbit and Rotation 4. The Moon and its Phases 5. Constellations 6. Assessment

Skills & Knowledge	○ notice that animals, including humans, have offspring which grow into adults ○ find out about and describe the basic needs of animals, including humans, for survival (water, food and air) ○ describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	○ differences between living, dead and never been alive ○ identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other ○ identify and name a variety of plants and animals in their habitats, including microhabitats	❖ •recognise that electricity is a form of energy and its uses ❖ •that electric current is the flow of electrical charge through a conductor ❖ •electricity can have many uses and many dangers ❖ •electrical charge is a property of matter	○ observe and describe how seeds and bulbs grow to mature plants ❖ ●find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	○ identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses ❖ • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	○ what the solar system includes and understand that all celestial bodies in The Solar System orbit the sun ○ how celestial bodies rotate in space ❖ • that The Moon does not make its own light
Year 1 & 2 Working Scientifically	During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content: • asking simple questions and recognising that they can be answered in different ways; • observing closely, using simple equipment; • performing simple tests; • identifying and classifying; • using their observations and ideas to suggest answers to questions; • gathering and recording data to help in answering questions.					

Year 3	**Human Body** 1. The Muscular System 2. The Skeletal System 3. The Nervous System 4. Preparing to Eat 5. The Digestive System 6. Assessment	**Cycles in Nature** 1. The Four Seasons (prior learning) 2. Seasonal Cycles in Plants 3. Life Cycle of a Plant 4. Animal Migration 5. Life Cycle of a Frog 6. Assessment	**Light** 1. Light and Dark 2. Transparent and Opaque Surfaces 3. Mirrors and Reflection 4. Part 1—Shadows 5. Part 2—Finding Patterns in Changing Shadows 6. Assessment	**Plants** 1. Botany and Flowering Plants 2. Requirements for Life and Growth 3. Water Transportation in Plants 4. Pollination in Flowering Plants 5. Seed Dispersal 6. Assessment 7. Optional Lesson: George Washington Carver	**Rocks** 1. Sorting rocks 2. How Rocks are Formed 3. Permeability 4. Fossils 5. Soil 6. Assessment	**Forces and Magnets** 1. Forces (Gravity) 2. Friction 3. Magnet 4. Magnetic Poles and Fields 5. Investigating the strength of magnets 6. Assessment
Skills & Knowledge	• identify 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	• Recognise that they need light in order to see things and that dark is the absence of light • Notice that light is reflected from surfaces • Recognise that light from the sun can be dangerous and that there are ways to protect their eyes • Recognise that shadows are formed when the light from a light source is blocked by an opaque object	• identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • 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 • investigate the way in which water is transported within plants	• compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter	• compare how things move on different surfaces • notice that some forces need contact between 2 objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • 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 • describe magnets as having 2 poles • predict whether 2 magnets will attract or repel each other, depending on which poles are facing
Year 4	**Human Body** 1. Cells and Nutrients 2. Teeth and Senses 3. Digestion 4. A Healthy Diet 5. Vitamins and Minerals 6. Assessment	**Classification of Plants and Animals** 1. Introduction to classification 2. Classes of vertebrates: Fish and Amphibians 3. Classes of vertebrates: Reptiles, Birds and Mammals	**Ecology** 1. Living Things and Habitats 2. Natural Cycles 3. Web of Living Things 4. Air Pollution—A Human Threat to the Environment 5. Ecology in our Local Areas 6. Assessment	**Sound** 1. What is sound? 2. Speed of sound 3. Qualities of sound—Pitch and Volume 4. Human Voice 5. Ears– How we Hear 6. Assessment	**States of Matter and the water cycle** 1. States of Matter 2. Evaporation 3. Condensation 4. Precipitation 5. The Water Cycle 6. Assessment: The Water Cycle	**Electricity** 1. Electrical Safety 2. Parts of a circuit 3. Switches 4. Thomas Edison and Lewis Latimer 5. Investigating conductive and non-conductive materials 6. Assessment

		4. Classes of invertebrates: Insects, Arachnids and Molluscs 5. Classification of plants 6. Assessment				
Skills & Knowledge	• describe the simple functions of the basic parts of the digestive system in humans • identify the different types of teeth in humans and their simple functions	• 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 their local and wider environment	• recognise that environments can change and that this can sometimes pose dangers to living things. • construct and interpret a variety of food chains, identifying producers, predators and prey.	•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 the 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 sound source increases.	• compare and group materials together, according to whether they are solids, liquids or gases • observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	•identify common appliances that run on electricity; •construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers; •identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery; •recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit; •recognise some common conductors and insulators, and associate metals with being good conductors.
Year 3 & 4 Working Scientifically	**During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • asking relevant questions and using different types of scientific enquiries to answer them; • setting up simple practical enquiries, comparative and fair tests; • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers; • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions; • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables; • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions; • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions; • identifying differences, similarities or changes related to simple scientific ideas and processes; • using straightforward scientific evidence to answer questions or to support their findings.					
Year 5	**The Human Body (puberty)** 1. Gestation and Infancy	**Materials** 1. Properties of materials	**Living Things and their Habitats**	**Forces** 1. Forces Including Gravity	**Astronomy**	**Meteorology (NS)**

	2. Adolescence and Puberty 3. Slowing Down 4. Growth in Humans and Animals 5. Preparation for Assessment (research and scientific drawing) 6. Assessment	2. Which material is best? 3. Solubility- which materials are most soluble/what solubility means 4. Separating mixtures- sieving, filtering, evaporating 5. Reversible changes- dissolving, mixing, change of state 6. Assessment	1. Life Cycles of Plants and Animals in our Local Area 2. Reproduction in Plants 3. Life Cycles of Mammals and Amphibians 4. Life Cycles of Insects and Bats 5. The Work of David Attenborough and Jane Goodall 6. Assessment	2. Air Resistance, Water Resistance and Friction 3/4. Guided Investigation: Paper Drop 5. Pulleys, Gears and Levers 6. Assessment	1. The Big Bang and the expanding universe 2. Gravity 3. Our Solar System 4. The Moon 5. Our Galactic neighbourhood 6. Assessment	1. Meteorology and the Atmosphere 2. The Ozone Layer 3. Air Movement 4. Cold and Warm Fronts 5. Thunder and Lightning 6. Assessment
Skills & Knowledge	•describe the changes as humans develop to old age	•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 solution, and describe how to recover a substance from a solution; •use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating; •give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic;	•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 the 'interconnectedness' of different life cycles	• 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 some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.	•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 approximately spherical bodies; •use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. •	•understand the different atmospheric zones of Earth •understand the role of human's and their impact on atmospheric zones

		•demonstrate that dissolving, mixing and changes of state are reversible changes; •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.				
Year 6	**<u>The Human Body (heart)</u>** 1. The Heart: Circulation of the Blood 2. Blood Vessels and Transport 3. Blood Pressure and Heart Rate 4. Heart Rate- an Investigation 5. Heart Rate– an Investigation continued 6. Assessment 7. Optional extra lesson: components of blood (research and scientific drawing) 6. Assessment	**<u>Classification of Living things</u>** 1. Classifying organisms 2. Cells: Plant and Animal cells 3. Taxonomy 4. Vertebrates 5. Invertebrates 6. Assessment	**<u>Electricity</u>** 1. Simple Series Circuits 2. Voltage 3. Switches 4. Planning an Investigation 5. Investigation 6. Assessment	**<u>Light</u>** 1. How Light Travels 2. How We See 3. Shadows and Their Shapes 4. The Colour of Light 5. Making a Periscope 6. Assessment	**<u>Reproduction</u>** 1. Asexual reproduction 2. Sexual reproduction in non-flowering plants 3. Sexual reproduction in flowering plants 4. Reproduction in animals 5. Growth stages 6. Assessment	**<u>Evolution</u>** 1. Fossils and Mary Anning 2. Inheritance 3. Adaptation 4. Charles Darwin 5. Alfred Wallace 6. Assessment
Skills & Knowledge	•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 of diet, exercise, drugs and lifestyle on the way their bodies function; •describe the ways in which nutrients and water are transported within animals, including humans.	• describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals; •give reasons for classifying plants and animals based on specific characteristics	•associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit; •compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches; •use recognised symbols when representing a simple circuit in a diagram.	•recognise that light appears to travel in straight lines; •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; •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; •use the idea that light travels in straight lines to explain why shadows have	•describe the life process of reproduction in some plants and animals	•recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents; •identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.

				the same shape as the objects that cast them.		
Year 5 & 6 Working Scientifically	**During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:** • planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary; • taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate; • recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs; • using test results to make predictions to set up further comparative and fair tests; • reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations; • identifying scientific evidence that has been used to support or refute ideas or arguments.					