William Penn
Curriculum Map – Science

	Autumn	Spring	Summer
Year R	**Fantastic Fairytales**	**Amazing Animals**	**Helpful Heroes**
Year 1/2 Cycle A	**Community Heroes**	**Shiver and Sizzle**	**Oh I do like to be beside….**
Year 1/2 Cycle B	**Who Lives Here?**	**Spring Has Sprung**	**Back in Time for…**
Year 3/4 Cycle A	**Raging Rivers and Marvellous Mountains**	**The Roman Empire**	**Groovy Greeks**
Year 3/4 Cycle B	**Ancient Ancestors (Stone Age to Iron Age)**	**We're Sailing down the Nile (Ancient Egypt)**	**Our World**
Year 5/6 Cycle A	**We'll Meet Again (WWII links with Coolham airfield and Battle of Britain)**	**Rulers of the Rainforest (Ancient Mayan Civilization and rainforests)**	**Vikings (Life and Legend)**
Year 5/6 Cycle B	**Wonders of the Universe**	**Super Settlers (Anglo Saxons and Scots)**	**Friends And Heroes (Quakerism and Democracy) A local History Study**

Key Stage One

Year 1/2 Cycle A **Outcomes** **National Curriculum P of S**	**Community Heroes**	**Shiver and sizzle**	**Oh I do like to be beside…**
	Year 1: Animals including humans Scientific drawings of a human body Measuring human body Senses – What are they? Sense investigation Sorting animals into groups Different animal groups e.g. reptiles Similarities and differences between animals Scientific test – testing and recording Animal diets – sorting animals into categories	**Year 2: Living things and their habitats** Basic needs of animals including humans – identifying the differences between needs and wants Providing for the basics needs of pets Testing what happens when we sneeze Explore and compare differences between living things Sorting objects into living, dead and never alive. Design a living creature showing I understand what makes a living thing. Habitats – micro-habitats, school habitats and animal adaptation Habitat investigations – What makes an animal suited to its habitat Constructing food chains	**Year 2: Animals including humans** Observing the impact of exercise on the human body Investigating changes to heartbeat with exercise (prediction, performing simple tests and concluding) Investigating how to kep our bodies safe – Helmets (simle test) Human timeline Life Cycles
	Working scientifically **Year 1: Animals including humans** 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 Describe and compare the structure of a variety of common animals Identify, name, draw and label the basic parts of the human body and say which part is associated with each sense.	**Working scientifically** **Year 2: Animals including humans** Notice that animals including humans have offspring that grow into adults Find out about and describe the basic needs of animals including humans for survival Describe the importance for humans of exercise	**Working scientifically** **Year 2: Living things and their habitats** Explore and compare the differences between things that are living, dead and things that have 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 micro-habitats Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain and identify and name different sources of food
Year 1/2 Cycle B **Outcomes** **National Curriculum P of S**	**Who lives here?**	**Spring Has Sprung**	**Back in time for**
	Year 1: Everyday materials **Year 2: Uses of everyday materials** Identifying and sorting materials Properties of materials Simple tests on materials Natural and man-made materials Origins of materials How materials change Uses of materials	**Year 1: Plants** **Year 2: Plants** Observing growth in seeds and plants Germination – conditions for germination (investigation) Labelling bulbs Identifying common plants and trees Labelling parts of a flower Conditions for plant growth (investigation) Describing seed dispersal	**Year 1: Seasonal changes** Weather observations using simple equipment Day length changes How to work scientifically How to investigate questions How can we observe changes Recording the weather Wind speed investigations
	Working scientifically **Year 1: Everyday Materials** Distinguish between an object and the material from which it is made	**Working scientifically** **Year 1: Plants** Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees	**Working scientifically** **Year 1: Seasonal Changes** Observe changes across the four seasons Observe and describe weather associated with the seasons and

	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 Compare and group together a variety of everyday materials on the basis of their simple physical properties **Year 2: Uses of everyday materials** Identify and compare the suitability of a variety of everyday materials for particular uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Identify and describe the basic structure of a variety of common flowering plants including trees **Year 2: Plants** Observe and describe how seeds and bulbs grow into mature plants Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	how day length varies

Key Stage Two

Year 3/4 Cycle A Outcomes **National Curriculum P of S**	**Raging Rivers and Marvellous Mountains**	**The Roman Empire**	**Groovy Greeks**
	Year 3: Rocks Identify and classify rocks Observe and compare rocks – group rocks according to their characteristics Plan and investigate different rock characteristics (Rock permeability test Record findings of rock experiment Purposes of different rocks How fossils are formed identify a variety of common fossils. *linked work with geography – Pulborough Brooks trip (Observe and compare soils in local environment).	**Year 4: Electricity** What is electricity? Identify applicances that use it. identify devices that are powered by mains electricity and devices that are powered by batteries. Testing materials - Conductors and insulators Creating switches in a circuit Working safely with electricity poster Investigating how to change the brightness of a bulb (observing patterns e.g. that bulbs get brighter if more batteries are added). **Year 3: Light** Learning by torch light - identify when a shadow would be created. Creating shadows and predict where the shadow will fall. Day and night – asking relevant questions Our shadows over a day – observations Do all materials cast shadows of the same darkness – Transparent, translucent, opaque. Plan investigation - What makes a shadow change length?	**Year 4: Sound** What is sound? (School cound survey) Use data logging equipment to measure sound Loud and quiet investigation – to explain how vibrations change observe and describe patterns between the pitch of sound Class investigation – sound over distance Absorbing sounds investigation **Year 3: Animals including humans** Types of nutrition Explain the importance of the human skeleton and recall key bones. Characteristics of bones Identify the different types of muscles in the human body Observe and explain how exercise affects heart rate and breathing
	Working scientifically **Year 3: Rocks** 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	**Working scientifically** **Year 4: Electricity** 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	**Working scientifically** **Year 4: Sound** 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

		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: Light** 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 Find patterns in the way that the size of shadows change.	Recognise that sounds get fainter as the distance from the sound source increases. **Year 3: Animals including humans** 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.
Year 3/4 Cycle B **Outcomes** **National Curriculum P of S**	**Ancient Ancestors**	**We're Sailing Down the Nile**	**Our World**
	Year 4: Animals including humans Describe the function of different types of teeth. generate relevant scientific questions – tooth decay Observations and conclusion on tooth decay investigation Act out the role of the digestive system Use scientific language to describe food chains. **Year 4: States of matter** Describe the properties of solids and liquids Investigating temperature of the 3 different states Plan investigation fro evaporation Create your own water cycle Experiment - chocolate change of state	**Year 3: Forces and magnets** Recap on work completed on materials in Y2. Forces – pushes and pulls and the impact on the object Use forcemeters to measure forces Plan own experiment - Friction on different surfaces Make a compass (Naturally occurring magnetic rock) Investigate what happens when magnets are put together Make and test predictions about whether materials are magnetic or not Thinking skills investigation – Which magnet has the strongest magnetic force? Describe what happens when a force is exerted on a spring. Record findings - How far does an object travel when an elastic band is stretched.	**Year 3: Plants** Identify and describe the functions of the roots of flowering plants. Water transported within plants – celery experiment. Function of leaves – can plants grow without light experiment The journey of a bee pollinating a flower – life cycle of plants. Explore ways in which flowering plants disperse their seeds. Understand the structure of seeds and their importance as a food source. **Year 4: Living things and their habitats** Identify a variety of habitats and explore why organisms live in different habitats. Group organisms according to their characteristics. Classify animals into specific groups according to their characteristics. Use a classification key to identify animals. Use a classification key to identify plants. Explore the human impact on habitats and environments.
	Working scientifically **Year 4: Animals including humans** 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 Construct and interpret a variety of food chains, identifying producers, predators and prey. **Year 4: States of matter** 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)	**Working scientifically** **Year 3: Forces and magnets** Compare how things move on different surfaces Notice that some forces need contact between two 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 two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing.	**Working scientifically** **Year 3: Plants** Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers Eplore 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 Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Year 4: Living things and their habitats** 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

	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.		recognise that environments can change and that this can sometimes pose dangers to living things.

Year 5/6 Cycle A Outcomes National Curriculum P of S	We'll Meet Again	Rulers of the Rainforest	Vikings
	Year 6: Light Investigating how light travels Explain how shadows are made Investigating how to change the size of shadows Explaining and investigating reflection including refraction Investigating how we see things Observing how lights reflects and bends Exploring rainbows using prisms Undertstanding white light **Year 6: Electricity** To learn and use circuit symbols (cell, battery, switch, motor, buzzer) To build simple circuits using bulbs, motors, buzzers and switches Investigating what a circuit needs to work Testing simple circuits - fuses Investigating and measuring the brightness of bulbs Design and make a circuit to fit a brief (game) Renewable energy and reducing energy consumption	**Year 6: Living things and their habitats** Classification of animals Identifying key features of animals in each group (plant, mammal, amphibian, bird, fish, reptile, insect, crustacean, arachnid, mollusc) Sub-classifying a single group eg. Plants Carl Linnaeus and classification system Identifying and grouping micro-organisms Joseph Lister Identifying and classifying organisms in the local environment **Year 6: Animals including humans** Human organs and location in body Main function of organs in the circulatory system Modelling the function of the circulation system Identifying the heartbeat in the body Modelling pulse Measuring lung capacity Investigating impact of exercise on breathing rate Investigating impact of exercise on heart rate What is a drug Dangers of smokingand research into impact of drugs on the body Role of diet in health (eg. Vitamins C/D and scurvy/rickets)	**Year 5: Properties and changes of materials** Similarities and differences in properties of materials Investigating properties of materials eg. Which is the bounciest ball? Factors affecting dissolving and investigating using jelly Growing crystals Separating materials (sieving, chalky water, salt solution) Identifying making of new materials by mixing variety of materials with water Investigating irreversible changes (eg. Vinegar and bicarbonate of soda) Researching scientists who have discovered new materials with different properties eg. Patsy Sherman and Scotchguard)
	Working scientifically **Year 6: Light** 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 the same shape as the objects that cast them. **Year 6: Electricity** 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	**Working scientifically** **Year 6: Living things and their habitats** Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals Give reasons for classifying plants and animals based on specific characteristics. **Year 6: Animals including humans** 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.	**Working scientifically** Red – areas not seen on existing MTP **Year 5: Properties and changes of materials** 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 Demonstrate that dissolving, mixing and changes of state are reversible changes Explain that some changes result in the formation of new

	a diagram.		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 5/6 Cycle B **Outcomes** **National Curriculum P of S**	**Wonders of the Universe**	**Super Settlers**	**Friends and Heroes**
	Year 5: Earth and Space What is the solar system Identifying the planets of the solar system Modelling the solar system Aristotle and Ptolemy (Geocentric model) Copernicus (Heliocenric model) Explaining spherical bodies in space Moon's orbit Investigating and explaining night and day **Year 5: Forces** Investigating – what would happen if you drop balls of the same size but different weight at the same time from the same height Gravity as a force Weighing objects using a force meter Researching Newton and Galileo Modelling air resistance using card Investigating how objects fall (cake cases, parachutes, rotocopters) Investigating friction (non-stick pans, sliding surfaces, pulling trainers) Investigating water resistance (sailing boats, plasticine through water	**Year 5: Forces** Identifying parts of machines – lever, pulley, spring, gear Labelling machines to identify force/motion Sorting everyday objects and identifying the mechanisms Design and make a variety of mechanisms **Year 6: Evolution and Inheritance** Identifying environmental and inherited features in humans/animals Adaptation of plants/animals to their environment Understanding how animals have become adapted to their environment Charles Darwin and the Galapagos Islands (Finches) Timeline of life on earth (How the Borks Became) Scientific evidence from the past – fossils	**Year 5: Living things and their habitats** Parts of a flowering plant Pollination Growing plants in different ways eg. from root cuttings Lifecycles of butterflys and frogs Lifecycles of birds and mammals Seeds and sperm – ability of animals to care for different numbers of offspring Endangered animals and extinction **Year 5: Animals, including humans** Timeline identifying how humans change over time Gestation Investigating how height changes with age. Looking for patterns in the data – gender Understanding changes during puberty Identifying changes in humans as they age Investigating how life expectancies have changed and understanding the factors that have affected this
	Working scientifically **Year 5: Earth and Space** 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. **Year 5: Forces** 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	**Working scientifically** **Year 5: Forces** Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **Year 6: Evolution and Inheritance** 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 Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	**Working scientifically** **Year 5: Living things and their habitats** 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 **Year 5: Animals, including humans** describe the changes as humans develop to old age.