Bamford Primary Science SoW - Rolling Programme

(Remember to also use **all** the Working Scientifically objectives for the appropriate Key stage in each cycle alongside the knowledge objectives in the grid below.)

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| **Cycle A** | **Key Stage 1** | **Lower Key Stage 2** | **Upper Key Stage 2** |
| **Physics**  (Cycle A)  2016-17  2018-19  2020-21 |  | **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 a solid object  find patterns in the way that the size of shadows change  **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 some common conductors and insulators, and associate metals with being good conductors  recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit | **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  recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect**.**  **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 a diagram |
| **Chemistry**  (Cycle A) | **Materials**  compare and group together a variety of everyday materials on the basis of their simple physical properties.  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  observe changes across the four seasons *eg what clothes would you wear in each season or make something out of eg. sledge, sunglasses*  *(focus on a different materials for investigations in each cycle eg paper one year and water another )* | **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)  identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. | **Properties and changes of materials**  compare and group together everyday materials on the basis of their properties, including their solubility, conductivity - thermal,  give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic  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    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. |
| **Biology**  (Cycle A) | **Plants**  Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees ( look at trees through seasons)  identify and describe the basic structure of a variety of common flowering plants, including trees.  (observe changes across the four seasons with plants each term)  **Animals including humans**  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  explore and compare the differences between things that are living, dead, and things that have never been alive  describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)  **Seasons**  Observe and describe weather associated with the seasons and how day length varies (and how this affects animals and environments) | **Plants**  identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers  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  **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.  construct and interpret a variety of food chains, identifying producers, predators and prey.  **Living Things and their habitats**  recognise that living things can be grouped in a variety of ways | **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  **Animals Including Humans**  Describe the changes as humans develop to old age.  ( teach these two biology units together if possible)  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 |

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| **Cycle B** | **Key Stage 1** | **Lower Key Stage 2** | **Upper Key Stage 2** |
| **Physics**  (Cycle B)  2017-18  2019-20 |  | **Forces & magnets**  compare how things move on different surfaces ( ie. friction)  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.  **Sound**  identify how sounds are made, ( ie sound sources) associating some of them with something vibrating.  recognise that vibrations from sounds travel through a medium to the ear  recognise that sounds get fainter as the distance from the sound source increases  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 | **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.  **Earth and space**  (explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object)  describe the Sun, Earth and Moon as approximately spherical bodies  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  use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky. |
| **Chemistry**  (Cycle B) | **Materials**  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.  observe and describe weather associated with the seasons and how day length varies.  ( eg. best materials to make a weather station, best material to wear in different weathers) | **Rocks**  compare and group together different kinds of rocks on the basis of their appearance and simple physical properties  recognise that soils are made from rocks and organic matter  describe in simple terms how fossils are formed when things that have lived are trapped within rock | **Properties of materials**  compare and group together everyday materials on the basis of their properties, including their hardness, , transparency, conductivity electrical, and response to magnets |
| **Biology**  (Cycle B) | **Animals, including Humans**  identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.  notice that animals, including humans, have offspring which grow into adults  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  **Living Things and their habitats**  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.  **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.  (observe changes across the four seasons with plants each term)  **Seasons**  Observe changes across the seasons  *(eg.what do animals do and how do their habitats change throuoghout the year)* | **Plants**  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  **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  recognise that environments can change and that this can sometimes pose dangers to living things.  **Animals and 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  . | **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 micro-organisms, plants and animals  give reasons for classifying plants and animals based on specific characteristics.  **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. |

NB The objectives in red could be taught in Key stage 1 but are actually in the Key stage 2 curriculum. They do not need teaching in both key stages so choose as a whole school where you would like to teach them .