Science Progression Map – Year 5

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Topic	Africa	Life Cycles	World War II	World War II	Ancient Greece	Ancient Greece
Learning Objective (from DC Pro)	**Working Scientifically** 1. I can recognise which equipment to use for which investigation 2. I can plan different types of scientific enquiries to answer questions including recognising and controlling variables 3. I can use a range of scientific equipment to take measures and repeated readings 4. I can use scientific diagrams, labels, classification keys, tables, scatter graphs, bar and line graphs to record my data and results 4. I can make predictions using my test results to set-up comparative and fair tests					
	Animals incl Humans 1. I can find out and record how the length and mass of a baby changes over time 2. I can identify the changes to male and female bodies as they reach puberty 3. I can describe how humans grow and develop as they age	**Living things and their habitats** 1. I can compare the life cycles of plants in my local environment to different habitats around the world (such as in the rainforest or in the Arctic) 2. I can describe asexual reproduction in plants 3. I can identify the processes of sexual reproduction in plants 4. I can identify the processes of sexual reproduction in animals 5. I can describe the similarities and differences between the life cycles of different animals 6. I can describe the similarities and differences between the life cycles of different plants	**Changing materials (reversible and irreversible changes)** 1. I can explain that certain changes are irreversible and new materials can be formed e.g. burning 2. I can demonstrate that dissolving, mixing and changing are reversible processes 4. I can use my knowledge of solids, liquids and gases to decide how mixtures might be separated 5. I can describe how to recover a substance from a solution 6. I can recognise that some materials will dissolve in liquid to form a solution	**Changing materials (reversible and irreversible changes)** 3. I can use evidence from my tests to decide how to use everyday materials effectively 7. I can compare and group everyday materials on the basis of their properties e.g. hardness, solubility, transparency, conductivity (electrical and thermal) and response to magnets	**Earth and Space** 1. I can explain day and night, using the Earth's rotation and the movement of the Sun across the sky 2. I can identify and describe that a moon orbits a planet 3. I can describe the movement of the Moon relative to the Earth 4. I can describe the movement of the Earth, and other planets, relative to the Sun in the solar system 5. I can describe the Sun, Earth and Moon as approximately spherical bodies 6. I can name all of the planets	**Forces** 1. I recognise that levers, pulleys and gears, allow a smaller force to have a greater effect. 2. I can identify the effects of air resistance, water resistance and friction on a moving object. 3. I can explain how gravity acts on a falling object

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Skills	- Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. - Begin to select the most appropriate ways to answer science questions using different types of scientific enquiry (including observing changes over different periods of time. - Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. -Begin to take accurate and precise measurements – N, g, kg, mm, cm, mins, seconds, cm²V, km/h, m per sec, m/ sec Graphs – pie, line -Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. - Am beginning to read, spell and pronounce scientific vocabulary correctly. -Am beginning to use relevant scientific language and illustration to discuss, communicate and justify scientific ideas. -Am beginning to confidently use a range of scientific vocabulary.	-Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. -Begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. - Begin to identify patterns that might be found in the natural environment. - Begin to use and develop keys and other information records to identify, classify and describe living things and materials. -Begin to recognise which secondary sources will be most useful to research their ideas. - Am beginning to see how science is useful in everyday life. - Am beginning to say which parts of our lives rely on science. - Am beginning to use scientific ideas when describing simple processes. - Am beginning to use the correct science vocabulary	Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. •Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. •Begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. •Choose the most appropriate equipment and know how to use it accurately. •Begin to interpret data and find patterns. •Select equipment on my own. •Can make a set of observations and say what the interval and range are. •Begin to take accurate and precise measurements – N, kg, •Begin to use test results to make predictions to set up further comparative and fair tests. •Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. •Begin to suggest improvements to my method and give reasons. •Begin to decide when it is appropriate to do a fair test. •Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables and bar and line graphs. •Begin to report and present findings from enquiries. •Begin to decide how to record data from a choice of familiar approaches. •Begin to choose how best to present data. •Begin to draw conclusions based on their data and observations, use evidence to justify their ideas, use scientific knowledge and understanding to explain their findings. •Begin to use test results to make predictions to set up further comparatives and fair tests. •Begin to look for different causal relationships in their data and identify evidence that refutes or supports their ideas. •Can use simple models. •Know which evidence proves a scientific point. •Begin to use test results to make predictions to set up further comparative and fair tests. •Am beginning to see how science is useful in everyday life. •Am beginning to say which parts of our lives rely on science. •Begin to use and develop keys and other information records to identify, classify and describe living things and materials.	•Begin to explore and talk about ideas, ask their own questions about scientific phenomena, analyse functions, relationships and interactions more systematically. •Begin to recognise some more abstract ideas and begin to recognise how these ideas help them to understand how the world operates. •Begin to recognise scientific ideas change and develop over time. •Begin to identify patterns that might be found in the natural environment. •Begin to recognise which secondary sources will be most useful to research their ideas. •Am beginning to use relevant scientific language and illustration to discuss, communicate and justify scientific ideas. •Am beginning to confidently use a range of scientific vocabulary.	•Begin to plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. •Begin to take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. •Begin to make their own decisions about what observations to make, what measurements to use and how long to make them for and whether to repeat them. •Choose the most appropriate equipment and know how to use it accurately. •Begin to interpret data and find patterns. •Select equipment on my own. •Can make a set of observations and say what the interval and range are. •Begin to take accurate and precise measurements – N, kg, •Begin to use test results to make predictions to set up further comparative and fair tests. •Begin to recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why. •Begin to suggest improvements to my method and give reasons. •Begin to decide when it is appropriate to do a fair test. •Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables 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Sticky Knowledge	- Know that during puberty we grow taller, our sweat glands produce more sweat, our larynx grows, skin becomes oilier, we grow body hair. - Name 5 changes in boys. - Name 5 changes in girls. Understand the difference between the terms adolescence and puberty. - Describe what happens during menstruation. - To know the seven stages of human development. -	- Know the difference between asexual and sexual reproduction. - Know that mammals produce offspring through sexual reproduction. - To explain the lifecycles of 3 different living things. - Know the names of the male sex cells in plants and animals. - Know the names of female sex cells in plants and animals. - Know the stages of reproduction in plants. - Know two types of pollination. (Insect, wind) - Know the stages of reproduction in at least two animals. - Know the stages of reproduction in humans. - Know the stages of reproduction in birds. - Describe what happens during metamorphosis.	- Explain why the properties of materials determine their use in real life situations. (electrical/ thermal conductivity and insulation, flexibility/ rigidity, transparency/opacity) - Explain what is meant by the term insulator. - Explain what is meant by the term conductor. - Name the three states of materials. - Describe the changes between states – melt, freeze, condense, evaporate. - Explain how to reverse reversible changes such as mixing and dissolving. - Describe a solution. -Explain how you can find out if a material is soluble or insoluble. - Name an irreversible change, the reactants and the new product.	-Name the 8 planets and be able to order them. -Name 3 features of each planet. -Know that Pluto was a planet but it was reclassified as a dwarf planet. -Name the 4 rocky planets. -Name the 4 gaseous planets. -Explain the difference between rocky and gaseous planets. -Explain what a star is and know that the sun is a star. -Describe the moon and know that the Earth has one moon but there are other moons orbiting other planets. -Know the phases of the moon and that it orbits Earth. -Explain why the moon has phases. -Know that one rotation of the Earth equals 1 day. -Know that it takes the Earth 365 ¼ days to orbit the Sun. -Know that daytime is when the Earth faces the sun and that night is when the Earth is facing away. -Know the difference between the heliocentric model and the geocentric model.	- Know that forces can make objects move, stop moving, accelerate, decelerate, change direction and change their shape. - Know that Mass is how much matter is in an object. (Kilograms) - Know that weight is a measure of how strongly an object is pulled down by gravity. (Newtons) - Know that the gravitational pull of an object increases as its mass increases. - Know how Isaac Newton developed his theory of gravity. - Know that water resistance and wind resistance are types of friction. - Name one way that friction is helpful. - Name one way that friction is unhelpful. - Describe what is meant by the word 'streamlined'. - Give examples of how streamlining is used in the real world. -Describe how pulleys work and how they are used in the real world. -Describe how gears and cogs work and give an example of their use in the real wold. -Describe how levers work and an example of their use in the real world.
Vocabulary	Female, male, puberty, adolescence, prenatal, infancy, childhood, adulthood – early, middle, late. Foetus, baby, growth, development, independence, peak, larynx, menstruation, pubic, penis, testicles, scrotum, breasts, vagina, uterus.	Gestation, reproduce, offspring, parent, pregnancy, asexual reproduction, sexual reproduction, fertilisation ,life cycle, pollination, metamorphosis, pupa, nymph, larva, egg, malt, chick, development, birth, sex cells, pollen, stigma, style, stamen, ovule, sperm	materials, solids, gases, melting, freezing, evaporating, condensing, changes of state, conductor, insulator, transparency, opacity, solution, dissolve, particles, soluble, insoluble, reversible, irreversible, sieving, filtering, reactants, separating, mixing, flexible, rigid, magnetism, thermal, electrical.	Sun, star, moon, planet, Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Sphere, Spherical bodies, satellite, orbit, rotate, phase, axis, geocentric model, heliocentric model, waxing, waning, crescent, quarter, lunar, eclipse.	forces, gravity, gravitational pull, weight, mass, friction, air resistance, water resistance, buoyancy, streamlined, mechanism, motion, speed, gears, cogs, levers, pivot, pulley, Newton (N), Kilograms (kg) accelerate, decelerate. Isaac Newton