

	Year 3 Scientist	Year 4 Scientist	Year 5 Scientist	Year 6 Scientist
National Curriculum	The national curriculum for science aims to ensure that all pupils: - develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics - develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them - are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future. Key Stage 1 - The principal focus of science teaching in key stage 1 is to enable pupils to experience and observe phenomena, looking more closely at the natural and humanly-constructed world around them. - They should be encouraged to be curious and ask questions about what they notice. - They should be helped to develop their understanding of scientific ideas by using different types of scientific enquiry to answer their own questions, including observing changes over a period of time, noticing patterns, grouping and classifying things, carrying out simple comparative tests, and finding things out using secondary sources of information. - They should begin to use simple scientific language to talk about what they have found out and communicate their ideas to a range of audiences in a variety of ways. - Most of the learning about science should be done through the use of first-hand practical experiences, but there should also be some use of appropriate secondary sources, such as books, photographs and videos. 'Working scientifically' is described separately in the programme of study, but must always be taught through and clearly related to the teaching of substantive science content in the programme of study. - Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. - should read and spell scientific vocabulary at a level consistent with their increasing word reading and spelling knowledge at key stage 1. Lower Key Stage 2 - The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. - They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. - They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. - They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. 'Working scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. - Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. - Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge. Upper Key Stage 2 - The principal focus of science teaching in upper key stage 2 is to enable pupils to develop a deeper understanding of a wide range of scientific ideas. - They should do this through exploring and talking about their ideas; asking their own questions about scientific phenomena; and analysing functions, relationships and interactions more systematically. - At upper key stage 2, they should encounter more abstract ideas and begin to recognise how these ideas help them to understand and predict how the world operates. - They should also begin to recognise that scientific ideas change and develop over time. - They should select the most appropriate ways to answer science questions using different types of scientific enquiry, including observing changes over different periods of time, noticing patterns, grouping and classifying things, carrying out comparative and fair tests and finding things out using a wide range of secondary sources of information. - Pupils should draw conclusions based on their data and observations, use evidence to justify their ideas, and use their scientific knowledge and understanding to explain their findings. 'Working and thinking scientifically' is described separately at the beginning of the programme of study, but must always be taught through and clearly related to substantive science content in the programme of study. - Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. - Pupils should read, spell and pronounce scientific vocabulary correctly.			

	Year 3 Scientist	Year 4 Scientist	Year 5 Scientist	Year 6 Scientist
Biology	Plants - Know the function of different parts of flowering plants and trees. - Know what different plants need to help them survive. - Know how water is transported within plants. - Know the plant life cycle, especially the importance of flowers. Animals, including humans - Know about the importance of a nutritious, balanced diet. - Know about the skeletal system of a human. - Know about the muscular system of a human. - Know about the purpose of the skeleton in humans and animals.	Living things and their habitats - Group living things in different ways. - Use classification keys to group, identify and name living things. - Create classification keys to group, identify and name living things (for others to use). - Know how changes to an environment could endanger living things. - Use food chains to identify producers, predators and prey. - Construct food chains to identify producers, predators and prey. Animals, including humans - Identify and name the parts of the human digestive system. - Know the functions of the organs in the human digestive system. - Know how nutrients, water and oxygen are transported within animals and humans. - Identify and know the different types of teeth in humans. - Know the functions of different human teeth.	Living things and their habitats - Know the life cycle of different living things, e.g. mammal, amphibian, insect bird. - Know the differences between different life cycles. - Know the process of reproduction in plants. - Know the process of reproduction in animals. Animals, including humans - Create a timeline to indicate stages of growth in humans.	Living things and their habitats - Classify living things into broad groups according to observable characteristics and based on similarities and differences. - Know how living things have been classified. - Give reasons for classifying plants and animals in a specific way. Animals, including humans - Identify and name the main parts of the human circulatory system. - Know the function of heart, blood vessels, blood. - Know the impact of diet, exercise, drugs and life style on health. - Know the ways in which nutrients and water are transported in animals, including humans. Evolution and inheritance - Know how the Earth and living things have changed over time. - Know fossils can be used to find out about past - Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents). - Know how animals and plants are adapted to suit their environment. - Link adaptation over time to evolution. - Know about evolution and can explain what it is.

	Year 3 Scientist	Year 4 Scientist	Year 5 Scientist	Year 6 Scientist
Chemistry	Rocks - Compare and group rocks based on their appearance and physical properties, giving a reason. - Know about and explain the difference between sedimentary, metamorphic and igneous rock. - Know how fossils are formed. - Know how soil is made.	States of matter - Group materials based on their state of matter (solid, liquid, gas). - Know how some materials can change state. - Explore how materials change state. - Measure the temperature at which materials change state. - Know about the water cycle. - Know the part played by evaporation and condensation in the water cycle.	Properties and changes of materials - Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets). - Know how a material dissolves to form a solution, explaining the process of dissolving. - Know and show how to recover a substance from a solution. - Know how some materials can be separated. - Demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating). - Know and can demonstrate that some changes are reversible, and some are not. - Know how some changes result in the formation of a new material and this is usually irreversible. - Know about reversible and irreversible changes. - Give evidenced reasons why materials should be used for specific purposes.	No content
Physics	Light - Know what dark is (the absence of light). - Know that light is needed in order to see. - Know that light is reflected from a surface. - Know and demonstrate how a shadow is formed. - Explore shadow size and explain the changes. - Know the danger of direct sunlight and describe how to keep protected. Forces and magnets - Know about and describe how objects move on different surfaces. - Know how some forces require contact and some do not, giving examples. - Know about and explain how objects attract and repel in relation to objects and other magnets. - Predict whether objects will be magnetic and carry out an enquiry to test this out. - Know how magnets work. - Predict whether magnets will attract or repel and give a reason.	Sound - Know how sound is made. - Know how sound travels from a source to our ears. - Know how sounds are made, associating some of them with vibrating. - Know the correlation between pitch and the object producing a sound. - Know the correlation between the volume of a sound and the strength of the vibrations that produced it. - Know what happens to a sound as it travels away from its source. Electricity - Identify and name appliances that require electricity to function. - Construct a series circuit. - Identify and name the components in a series circuit (including cells, wires, bulbs, switches, buzzers). - Know how to draw a circuit diagram. - Predict and test whether a lamp will light in a circuit. - Know the function of a switch in a circuit. - Know the difference between a conductor and an insulator, giving examples of each.	Earth and space - Know about and explain the movement of the Earth and other planets relative to the Sun. - Know about and explain the movement of the Moon relative to the Earth. - Know and demonstrate how night and day are created. - Describe the Sun, Earth and Moon (using the term spherical). Forces - Know what gravity is and its impact on our lives. - Identify and know the effect of air resistance. - Identify and know the effect of water resistance. - Identify and know the effect of friction. - Explain how levers, pulleys and gears allow a smaller force to have a greater effect – (covered in DT unit – in Tourism)	Light - Know how light travels. - Know and demonstrate how we see objects. - Know why shadows have the same shape as the object that casts them. - Know how simple optical instruments work, e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. Electricity - Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer. - Compare and give reasons for why components work and do not work in a circuit. - Draw circuit diagrams using correct symbols.

St James' CofE Junior - Science

	Year 3 Scientist	Year 4 Scientist	Year 5 Scientist	Year 6 Scientist
Working Scientifically - Planning	- I can ask questions and I recognise that there are different types of enquiries. - I can set up a simple practical enquiry and I am beginning to understand how to make a test fair. - I make suggestions about what observations and measurements to make and what equipment I need	- I ask relevant questions and use different types of scientific enquiries to answer them. - I can set up simple practical enquiries, comparative or fair tests. - I decide what observations and measurements to make and what equipment to use.	- I ask relevant questions (containing scientific knowledge and understanding) and with help I recognise which type of enquiry is best to answer a question. - I decide what observations and measurements to make (controlling variables with help where necessary) and what equipment to use to make my measurements and observations.	- I ask relevant questions (containing scientific knowledge and understanding). - I recognise which type of enquiry is best to answer a question. - I can plan different types of science enquiries to answer questions. - I recognise and control variables where necessary. - I decide what observations and measurements to make and what equipment to use (giving reasons) to make my measurements and observations.
Working Scientifically - Doing	- I am beginning to make systematic and careful observations. - I sometimes use standard units. - With help, I can use information sources provided to find things out. - I gather data and using a pre-prepared table, I can record data. - I record my findings using a drawing and/or words.	- I use a range of equipment (including thermometers). - I make systematic and careful observations and take accurate measurements using standard units. - I use information sources provided to find things out. - I record results in tables I have started to independently draw.	- I use a range of equipment independently to make a series of observations and measurements I take are adequate for the task. - I use information sources provided to find things out. - I identify possible risks to myself and others with support. - I gather and record non-complex results (data and observations) using e.g. tables and scientific diagrams that I can independently construct.	- I take measurements, using a range of scientific equipment with increasing accuracy and precision. - I take repeat readings when appropriate. - I use relevant information sources to find things out. - I identify possible risks to myself and others. - I record data and results of increasing complexity using e.g. scientific diagrams and labels and tables. - I choose a method to suit the results, e.g. a two-column table.
Working Scientifically - Reviewing	- I present my data in a variety of ways using e.g. Venn diagrams, bar charts, simple scatter graphs and keys. - I can use my results when I talk about what happened and am starting to link to my science knowledge. - I am beginning to recognise if I have an unusual result and begin to offer suggestions as to why this was.	- I present my data in a variety of ways using e.g. Venn diagrams, bar charts, simple graphs and keys. - I can make conclusions and I make predictions for new values. - I communicate what I have found out using straightforward scientific ideas and I report my findings using oral and written explanations and display.	- I present the results (data and observations) in a range of formats e.g. bar and line graphs, simple scatter graphs, keys and frequency charts. - I draw conclusions from my data and observations. - I begin to use basic scientific evidence to support or refute the ideas or arguments for my conclusion. - I can use simple scientific models to present my thinking.	- I present the data and results in suitable formats using e.g. line graphs, bar graphs, scatter graphs and classification key. - From my data and observations, I draw valid conclusions (i.e. consistent with the evidence) including causal relationships. - I identify scientific evidence to support or refute the ideas or arguments for my conclusion. - I can evaluate the validity of my results and make comments how to improve.