Year 3Science

Block	Key NC Science Objectives	Key Science Activities and Extended Writing Opportunities
Autumn 1 – Animals including Humans **Keeping Healthy** *Become a team of personal trainers for (real) clients in need of expert, health, dietary and training advice. Develop specialised knowledge, skills and understanding in nutrition, muscles, bones and joints and even conduct your own research in order to answer your client's questions. Make a presentation tailored to your client's needs that will set them on the road to a healthier life style.*	Animals Including Humans I. 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 II. Identify that humans and some other animals have skeletons and muscles for support, protection and movement Working scientifically I. asking relevant questions and using different types of scientific enquiries to answer them II. setting up simple practical enquiries, comparative and fair tests III. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment IV. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions V. recording findings using simple scientific language, bar charts, and tables VI. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions VII. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions VIII. identifying differences, similarities or changes related to simple scientific ideas and processes IX. using straightforward scientific evidence to answer questions or to support their findings	• Review a food survey to answer questions on diet and look for patterns and trends display using tables and bar charts (**pattern seeking)** • Use knowledge of food groups and a balanced diet to design healthy meals (**exploring/analysing secondary sources**) • Create a skeleton string puppet that has moving joints (**exploring/analysing secondary sources**) • Investigate the question –*Do some people have stronger muscles because they use them more?* (**exploring/pattern seeking**) • Plan and carry out a practical investigation in groups that attempts to answer a scientific question (**exploring/pattern seeking**) • Give an illustrated presentation to clients on health and fitness, using resources they have made throughout the block and evidence from their own research (**Communication**) **Extended writing opportunities** **Recount**: Write up for the TV programme Newsround, as a recount, your investigation 'Do some people have stronger muscles because they use them more?' **Persuasive writing**: Write a letter to the head teacher persuading them of some changes to the school day, lunchtime or break times which you feel would help pupils improve their health and fitness.

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Autumn 2 - Light **Light and Shadows** *During this block you will create your own shadow puppet play using your expert knowledge and skills on light and shadows. You will make a theatre and puppets for the show in groups and conduct your own investigations on shadows, light and reflections.*	Light I. recognise that they need light in order to see things and that dark is the absence of light II. notice that light is reflected from surfaces III. recognise that light from the sun can be dangerous and that there are ways to protect their eyes IV. recognise that shadows are formed when the light from a light source is blocked by an opaque object V. find patterns in the way that the size of shadows change **Working scientifically** – all parts highlighted i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, iv. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions v. recording findings using simple scientific language, drawings, labelled diagrams, and tables vi. reporting on findings from enquiries, including oral and written explanations, vii. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions viii. identifying differences, similarities or changes related to simple scientific ideas and processes ix. using straightforward scientific evidence to answer questions or to support their findings	• Investigate the nature of darkness, light and sight with a torch, a cardboard box and pencil holes (**exploring/drawing conclusions**) • Predict and then investigate how well different colours and materials reflect light in a simulated dark cave, use results to sort and classify the samples (**predicting/exploring/classifying**) • Discover the properties of mirrors and reflections by undertaking different investigative tasks and use scientific knowledge on light to explain their findings (**exploring/drawing conclusions**) • Investigate how different objects create shadows (**exploring**). • Investigate the effect of moving the light source on the size of shadows (**fair testing/pattern seeking**) • Investigate how coloured light beams mix and what its like to look through different coloured filters (**exploring**). **Extended writing opportunities** **Non-chronological report**: Write a report about all that you have discovered about shadows for BBC Bitesize. **Instructions and explanations**: Write a set of instructions for younger children explaining how to make a shadow puppet theatre and puppets.

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Spring 1 – Rocks **Rocks and Fossils** *Create an amazing rock and fossil museum to which you can invite other classes, parents and family, or even members of your local community like the. Natural History or Geology Society! In each session you will build up your knowledge to become expert museum curators and make exhibits, quizzes and activities for your exciting popup museum*	Rocks i. compare and group together different kinds of rocks on the basis of their appearance and simple physical properties ii. describe in simple terms how fossils are formed when things that have lived are trapped within rock iii. recognise that soils are made from rocks and organic matter Working Scientifically (LKS2) i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, gathering, recording, classifying and presenting data in a variety of ways to help in answering questions iv. recording findings using simple scientific language, drawings, labelled diagrams, keys, v. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions vi. identifying differences, similarities or changes related to simple scientific ideas and processes vii. using straightforward scientific evidence to answer questions or to support their findings	• Explore a variety of rocks and group them in different ways according to their observable features and attributes (**exploring, classifying and identifying**) • Investigate the properties of different rocks with fair testing e.g. permeability, hardness and an acid test for the presence of calcium carbonate. Use a rock identification key (**exploring/fair testing/classifying and identifying**) • Go on a rock walk in the local vicinity to identify different rocks for different purposes. Record findings (**classifying and identifying**). Learn about how fossils are made and the life and contribution of the great fossil hunter Mary Anning (**analysing secondary sources**) • Investigate different soils, asking questions and seeking answers through a variety of scientific enquiries (**exploring/ classifying and identifying /fair testing**) • Assemble a variety of exciting exhibits for the Rock and Fossil Museum (**analysing secondary sources**) **Extended writing opportunity** **Recount and letter**: Write a letter to Dr Sarah Stone from the British Rock Society about the information you learnt during your rock survey of the local area. **Persuasive writing**: Create a poster advertising your Amazing Rock and Fossil Museum. **Non –chronological writing**: Write a summary information piece about Rocks and Fossils and create an information booklet that you can give to all the visitors to your Amazing Rock and Fossil Museum.

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Block	Key NC Science Objectives	Key Science Activities and Extended Writing Opportunities
Spring 2 – Forces and Magnets **Amazing Magnets** *Mr Andrew Newton of the British Scientific Society is in need of your help. Are you up to the task of developing some exciting activities on the theme of Magnetism to delight visitors at their annual science fair? If the answer is "Yes" – it's time to have some fun with magnets whilst learning at the same time!*	Properties and changes of materials i. compare how things move on different surfaces ii. notice that some forces need contact between two objects, but magnetic forces can act at a distance iii. observe how magnets attract or repel each other and attract some materials and not others iv. 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 v. describe magnets as having two poles vi. predict whether two magnets will attract or repel each other, depending on which poles are facing Working Scientifically (LKS2) i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment iv. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions v. recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables vi. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions vii. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions viii. identifying differences, similarities or changes related to simple scientific ideas and processes ix. using straightforward scientific evidence to answer questions or to support their findings.	• Ask questions and then investigate how toy vehicles run on different surfaces. Begin to explain in terms of forces **(exploring/ classifying and identifying)** • Investigate how it is forces that make things move (pushes and pulls) and that magnetic forces can move things at a distance without forces touching **(exploring/ classifying and identifying)**. • Investigate how magnets attract some materials and not others, Comparing and grouping materials **(exploring/ predicting/classifying and identifying)** • Investigate the polarisation of magnets, making predictions and testing ideas **(exploring/ predicting)**. Develop a game or activity that uses magnetic forces by trying out a variety of ideas **(exploring)** • Test your knowledge of magnetic forces. Design a poster to explain the science behind your game or activity stage it in an attractive eye catching way **(analysing secondary sources)** **Extended writing opportunity** **Recount**: Write a letter to Mr Andrew Newton of the British Scientific Society to tell him about your initial investigation into the forces needed to move a toy vehicle on different surfaces. **Non-chronological reports**: Write an information leaflet for younger children about the Magic of Magnets. **Explanations**: Write questions and explanations about magnetic forces for the visitors to your science fair.

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Block	Key NC Science Objectives	Key Science Activities and Extended Writing Opportunities
Summer 1 – Plants (requirements for life and growth, naming and function of parts) **Roots and Shoots** *The alien beings on Planet Dock 5 need your help. They want to open a hotel for humans on their planet but they have a problem. It's too far away to have deliveries of fresh food from Earth so they need to build a space farm for Earth food plants. The problem is, they have no idea what these plants need to grow. Can you help by becoming their Earth Plant Researchers?*	Plants i. identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers ii. 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 iii. investigate the way in which water is transported within plants Working Scientifically (LKS2) i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers iv. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions v. recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables vi. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions vii. using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions viii. identifying differences, similarities or changes related to simple scientific ideas and processes ix. using straightforward scientific evidence to answer questions or to support their findings.	• Make a list of what we know and what we want to find out. Plant some beans in transparent jars and place them in different conditions to begin some observations. Use data loggers and other equipment to record light levels, water etc. (**observing over time**) • Use secondary sources to discover the parts of a plant and how they vary. Look at a variety of different plants making labelled sketches (**analysing secondary sources/ exploring**) • Make a list of plants the aliens will need to take to the space farm. Classify according to human use for leaves, stems, roots, flowers, fruits, seeds (**exploring/ classifying and identifying)** • Review the data from beans. Create graphs and charts to compare growth. Ask questions. Set up further tests with fast germinating varieties to test hypotheses. (**exploring/pattern seeking/ fair testing**) • Investigate the way in which water is transported within plants. (**exploring**) • Review all experiments and discuss findings. Make presentations to aliens via a satellite link! (**exploring/pattern seeking/ fair testing**). **Extended writing opportunity** **Recount**: Zinnia wants you to write up one of your investigations as fully as you can so she knows how to carry it out herself. Include all instructions, results and conclusions. **Play-writing**: Write a short play that shows what happened when Zinnia managed to come and visit your classroom to ask questions about plants.

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Summer 2 – Plants (flowers, pollination and seeds) **Artful flowers, fruits and seeds** *Step into the amazing, secret world of flowers. Discover their relationship with bees and other insects. Learn how flowers transform into fruits and seeds to perpetuate the cycle of life and use the inspiration to create some beautiful works of art. Stage your own stunning art exhibition of paintings, sculpture, collage and dance on the theme of Artful Flowers, Fruits and Seeds to delight your visitors.*	Plants i. explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal Working Scientifically (LKS2) i. asking relevant questions and using different types of scientific enquiries to answer them ii. setting up simple practical enquiries, comparative and fair tests iii. making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, iv. gathering, recording, classifying and presenting data in a variety of ways to help in answering questions v. recording findings using simple scientific language, drawings, labelled diagrams,bar charts, and tables vi. reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions vii. identifying differences, similarities or changes related to simple scientific ideas and processes viii. using straightforward scientific evidence to answer questions or to support their findings	• Study a variety of different flowers, making botanical paintings, use hand lenses for close observation. Discover that flowers usually have male and female parts. **(observation/ analysing secondary sources**) • Identify male and female parts and learn their function. Make model flowers and insect puppets for the exhibition. Use puppets and models to demonstrate pollination. (**analysing secondary sources/ observation)** • Research what happens to a flower after pollination. Observe different plants that show seedpod formation at different stages. (**analysing secondary sources, observation**) • Investigate a wide variety of different fruits, pods, berries etc. that "package" seeds (**exploration**). • Investigate other types of dispersal e.g. burrs and wind dispersal. Conduct a wind dispersal investigation (**exploring/pattern seeking/ fair testing**) • Gather together and stage exhibits for the Art and Science exhibition. Write explanations and captions to accompany art, models, real life exhibits and investigation results. (**analysing secondary sources**). **Extended writing opportunity** **Information texts**: Make illustrated zigzag books that explain the development of fruits. **Information texts**: Make creative, informative posters that invite visitors to your exhibition and include key information that they will learn when they attend.

Year 3Science

Hamilton Science; Types of Investigations

'Working Scientifically' is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that children have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. The following types of enquiry are included in Hamilton Science planning.

Exploring:

Discovering what happens through play and exploration, e.g. What happens when you add water to fabric?

Observing over time:

Often linked to exploring but with a time variable included, e.g. Using a thermometer to observe temperature changes of water.

Sorting, classifying and identifying:

Putting things into groups based on their characteristics, e.g. In how many ways can you sort these materials?

Fair test:

Used when we can control all the variables except the one we are changing, e.g. Which 'towel' material will absorb the most water?

Pattern seeking:

Used when there are too many variables to control and so a true fair test is not possible, e.g. Do some people have stronger muscles because they use them more?

Problem solving:

Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

Researching and analysing secondary sources

Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. Which materials are biodegradable?