

Science Subject Action Plan

2020-21



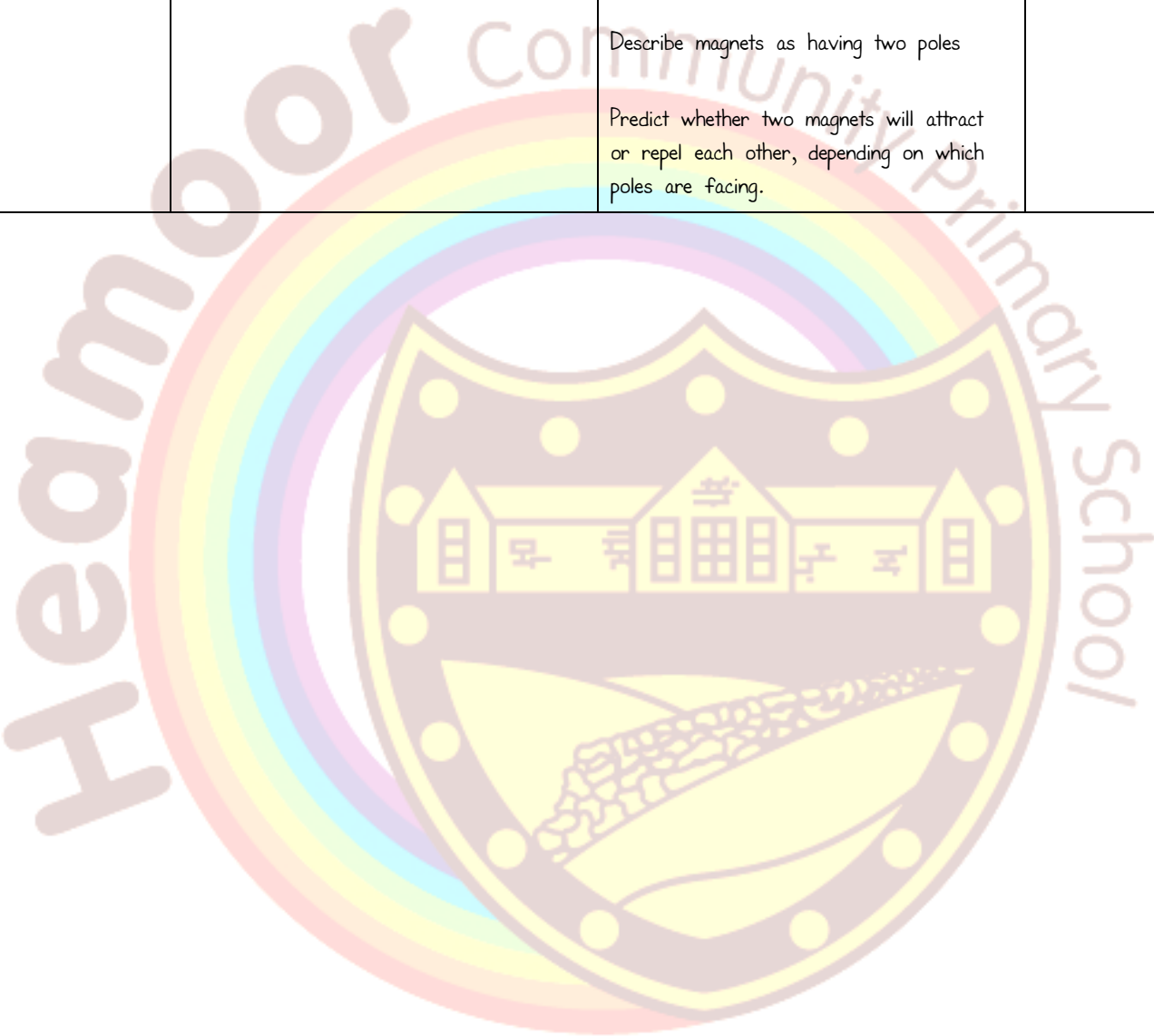
Standards: Subject Data Summary 2020/21

Year	Working Scientifically	Chemistry	Physics	Biology
1	Talk about what they see, touch, smell, hear or taste Use simple equipment to help make observations Perform a simple test Tell other people about what they have done Identify and classify things they observe Think of some questions to ask Explain what has been found out Show their work using pictures, labels and captions Record findings using standard units Put some information in a chart or table	Describe materials using senses using science specific words Explain what material objects are made from Explain why a material might be useful for a specific job Sort materials into groups by a given criteria	Observe changes across the four seasons Observe and describe weather associated with the seasons and how day length varies	Point out some of the differences between different animals classify common animals (birds, fish, amphibians, reptiles, mammals) Describe how an animal is suited to its environment Name the parts of the human body that you can see Classify animals by what they eat (carnivore, herbivore, omnivore) Name the petals, stem, leaf and root of a plant Identify and name a range of common wild and garden plants and trees Sort some animals by body covering, for example: scales, fur and skin

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2	Use some science words to describe what they have seen and measured Ask people questions and use secondary sources to find answers Observe closely, using simple equipment Say whether things happened as they expected Organise things into groups Find simple patterns (or associations) Identify animals and plants by a specific criteria, for example, lay eggs or not; have feathers or not Use (text, diagrams, pictures, charts, tables) to record their observations Perform simple tests Suggest how, and use prompts, to find things out	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.	No objectives	Identify that most living things live in habitats to which they are suited Explain the differences between living and non- living things and things that have never been alive 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 Identify and name different sources of food 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. Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Notice that animals, including humans, have offspring which grow into adults

Year	Working Scientifically	Chemistry	Physics	Biology
3	Use different ideas and suggest how to find something out Plan a fair test and explain why it was fair Set up simple practical enquiries, comparative and fair tests Explain why they need to collect information to answer a question Make systematic and careful observations and, where appropriate, take accurate measurements using standard units Record their observations in different ways, for example, labelled diagrams, charts etc. Explain what they have found out and use their measurements to say whether it helps to answer their question Use a range of equipment, (including a thermometer and data- logger)	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	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. 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	Identify and describe the functions of different parts of flowering plants, for example, roots, stem/trunk, leaves and flowers 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 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 Identify that animals, including humans, need the right types and amount of nutrition Understand that 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

			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.	
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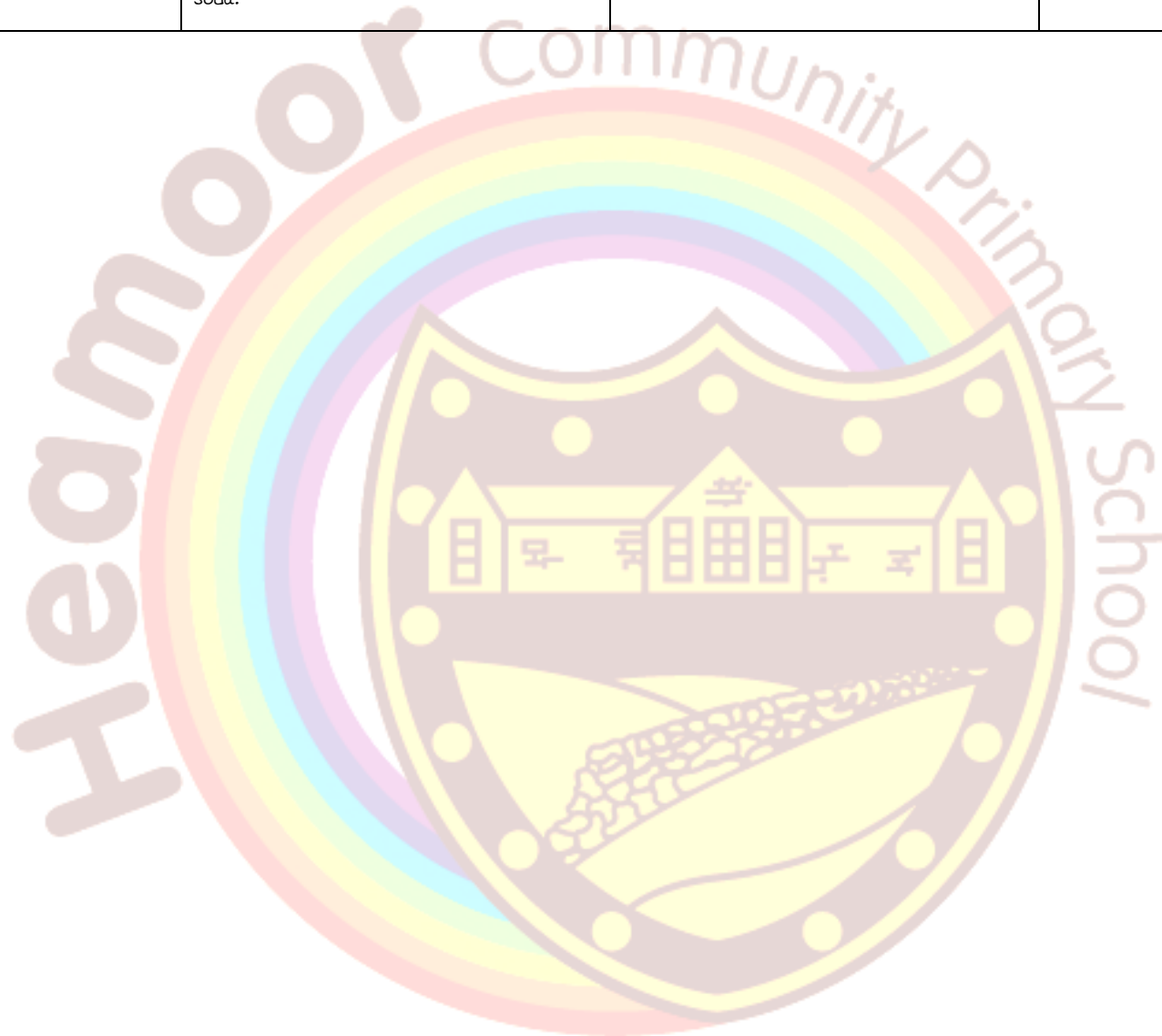


Year	Working Scientifically	Chemistry	Physics	Biology
4	Ask relevant questions and use different types of scientific enquiries to answer them Set up simple practical enquiries, comparative and fair tests Decide which information needs to be collected and decide which is the best way for collecting it Take measurements using different equipment and units of measure and record what they have found in a range of ways Make accurate measurements using standard units Explain their findings in different ways, for example, display, presentation, writing Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	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 Recognise that sounds get fainter as the distance from the sound source increases. 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	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 ($^{\circ}\text{C}$) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Identify and describe the simple functions of the basic parts of the human digestive system Describe the simple functions of the organs of the human digestive system Identify the different types of human teeth and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey 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 this can sometimes pose dangers to living things

	Make predictions based on something they have found out Record and present what they have found using scientific language, drawings, labelled diagrams, keys, bar charts and tables	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 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	
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Year	Working Scientifically	Chemistry	Physics	Biology
5	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments.	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 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 materials, and that this kind of change is not usually reversible,	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. 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.	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. Describe the changes as humans develop to old age.

		including changes associated with burning and the action of acid on bicarbonate of soda.		
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Year	Working Scientifically	Chemistry	Physics	Biology
6	Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs Use test results to make predictions to set up further comparative and fair tests Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations Identify scientific evidence that has been used to support or refute ideas or arguments	No objectives	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	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 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 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

Summary of Key Issues:

Ofsted summary of Science issues – pupils' skills and knowledge not developed as thoroughly as other subjects, feedback and guidance given to pupils needs to be precise to make the best progress, learning experiences in Science need to be purposeful

Monitoring of data and books – more pupils to achieve ARE and Exceeding

Continuing links and creating more opportunities with external Science providers

Priorities for 2020/21

Outcome Targets:

1. Data will be monitored on Insight to ensure that children are meeting expected targets (65% per year group) and exceeding expected targets (25% per year group)
2. New feedback policy in which teacher completes feedback form will be monitored to ensure feedback is precise to further learning
3. Book scrutiny and conferencing to take place to ensure children are given time to respond to their marking
4. Trips/visits/visitors will take place to ensure greater depth of understanding and links to real-world learning (subject to Covid restrictions)

In order to achieve this we will:

1. Monitor data as the year progresses and discuss where issues lie with individual teachers and headteacher – update 04/03/21 following discussions with class teachers, Science Lead will create an assessment document to help teachers to assess Science objectives
2. Feedback sheets to be reviewed – update 04/03/21 feedback policy to change – need to review books following this
3. Allow the children time to respond to feedback
4. Continue to book trips and visitors

This Means that:

- Science data and books will be monitored and close discussion will take place between class teachers and the Science Co-ordinator
- Children will enjoy purposeful learning with appropriate feedback to further their understanding of the subject
- Science visits will be organised to further learning

Success criteria	Action(s) to be taken	Who is responsible?	Who is involved?	Start/ finish dates	Monitoring of implementation			Evaluation against success criteria		
					How?	Who?	When?	How?	Who?	When?
1. Data monitoring and analysis (Insight)	Data to be monitored by Science Lead and discussions to take place regarding any anomalies/areas to be improved. update – 04/03/21 following discussion with class teachers, Science Lead will create an assessment guide in Science	Science Lead Class teachers	Science Lead Class teachers	After each Science Week and at the end of each term	Discussion with coordinator and monitoring of Insight	SLT	End of each term? By end of Summer Term 2021			
1. Complete conferencing	Questionnaires to be given to KS2 children regarding Science Weeks. Teacher whole-class conferencing for KS1 or individual pupil feedback with coordinator. Questionnaires for teachers to complete after each Science Week.	Science Lead	All teachers	To take place after each Science Week	Completed questionnaires Collated data/results	Governors to monitor?	As needed			
2. Book scrutiny	Books will be monitored with SLT re: feedback. (Update 29/06/21 Feedback policy updated – to review after embedded)	SLT	Science Lead SLT	End of Summer Term	Feedback will be given to staff as needed	Science Lead Science Leaddie				
3. Trips/visits to be booked to build Science capital	Science Lead will continue to book trips and visits subject to Covid-19 restrictions (Unable to do so due to continuing Covid restrictions)	Science Lead	Teachers	TBC	Feedback on trips from class teachers	Science Lead	After the trip/visit	04/03/21 Due to Covid restrictions trips and visits have not gone ahead with the exception of Year 6 visit to MBA – this will be priority for 2021-22		

Overall evaluation of progress (2019/20) which has informed 2020/21 Plan

1. Opportunities to support KSI to allow children to reach ARE - 22/01/21 - after discussions with class teachers and conferencing, Science lead will complete training on assessment and then create a 'What Developing/Secure/Exceeding' Looks Like in each year group to ensure continuity and confidence in each year.
2. Conferencing and book scrutiny to continue to ensure KWL grid, WS document and 5 Types of Enquiry are being used and embedded.
3. Continue to book trips subject to Covid-restrictions - update 22/01/21 - this is unlikely to occur this year due to ongoing restrictions but will be a priority for next year.

1. Conferencing to this point has shown teachers are confident with 5 Types of Enquiry and children are enjoying Science. Next steps will be to monitor learning through conferencing - specific to the subject being taught
2. Feedback sheets to be monitored and book scrutiny to cross-reference

Further action required: