Our Science Curriculum at Harden Primary School



OUR SCIENCE CURRICULUM INTENT

Introduction

At Harden Primary School we aim for the children to develop an enthusiasm for and enjoyment of Science. We strive to develop their knowledge and understanding of important scientific ideas, processes and skills and encourage them to relate these to their everyday experiences. We teach children different ways of thinking, how to find out things and how to communicate their ideas effectively. We strive to make the children confident learners, to explore values and ideas through Science.

Science Curriculum Aims

At Harden Primary School, we aim to develop pupils' enjoyment and interest in science and an appreciation of its contribution to all aspects of everyday life. To build on pupils' curiosity and sense of awe of the natural world by using a planned range of investigations and practical activities to give pupils a greater understanding of the concepts and knowledge of science. Introduce and adsorb pupils in the language and vocabulary of science and to develop pupils' practical skills and their ability to make accurate and appropriate measurements. To use science as a tool to develop pupils' use of information and communication technology (ICT) in their science studies.

We have created an ever-changing curriculum which is ambitious for all our children and reflective of their needs, who all have unique interests, skills and talents.

To develop a knowledge and understanding of science and its processes

• to develop a knowledge and appreciation of the contribution made by famous scientists to our knowledge of the world including scientists from different cultures

· to encourage pupils to relate their scientific studies to applications and effects within the real world

• to develop a knowledge of the science contained within the programmes of study of the National Curriculum.

To build on pupils' curiosity and sense of awe of the natural world

 to develop in pupils a general sense of enquiry which encourages them to question and make suggestions - to encourage pupils to predict the likely outcome of their investigations and practical activities

To use a planned range of investigations and practical activities to give pupils a greater understanding of scientific facts and concepts

• to provide pupils with a range of specific investigations and practical work which gives them a worth-while experience to develop their understanding of science

to develop progressively pupils' ability to plan, carry out and evaluate simple scientific investigations and to appreciate the meaning of a "fair test".

To develop the ability to record results in an appropriate manner including the use of diagrams, graphs, tables and charts

 \cdot to use scientific and mathematical language including technical vocabulary and conventions and draw diagrams and charts to communicate scientific ideas.

• to give pupils regular opportunities to use the scientific terms necessary to communicate ideas about science

to develop pupils' skills and their ability to make accurate and appropriate measurements
within practical activities give pupils opportunities to use a range of simple scientific measuring instruments such as thermometers and forcemeters and develop their skills to read them.

• to give pupils the opportunities to use ICT to record their work and store results

SEQUENCE OF LEARNING

Step 1 - Starting with a 'Hook'!

Most Science topics will begin with a special trip, visitor or activity which aims inspire and enthuse the children about the area which they will be learning about that half term. We also use a pre-learning task/activity to provide a bespoke curriculum that meets the individual needs of each pupil.

This could involve a trip to a local museum or place of interest or it could involve special workshops/ activities which take place in school (pictured here is a Year 1 trip to Eureka and a Year 3 hook for States of matter).



Step 2 – Learning, research and Skill development.

The main part of the topic is taken up with the children acquiring the scientific skills and knowledge needed to understand the key elements within the topic, including key vocabulary. Wherever possible this will involve children completing practical activities, such as testing and sorting, as well as involving researching, predicting, collecting and analysing data and concluding.



Step 3 – Learning 'Outcome'

We want the children to show us that they have truly mastered the skills and knowledge covered by the topic. Therefore, the last sessions of every science topic is focused around the children's outcome of learning and this is when the children produce a piece of work that demonstrates their learning, which comes indifferent formats depending on the focus.

(In picture, Year 6 presenting work on the digestive system to year 3 and Year 4 showing their knowledge of electricity through producing a mask which lights up using a circuit.)



WORKING SCIENTIFICALLY SKILLS PROGRESSION – RECEPTION- YEAR 6

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Questioning and	Show curiosity about	Ask simple questions about	Ask questions about the	Ask some relevant	Ask increasingly relevant	Raise different kinds of	Use their scientific
enquiring.	objects, events and people.	the world around us.	world around us.	questions and use different	scientific questions and use	questions about scientific	experiences to explore
				types of scientific enquiries	different types of scientific	phenomenon.	ideas and raise questions.
	Playing and exploring	Begin to recognise that	Recognise that questions	to answer them.	enquiries to answer them.	Begin to select and plan	
	Questions; why things	questions can be answered	can be answered in a			the most appropriate ways	Select and plan the most
	happen.	in a variety of ways.	variety of different ways	Begin to make decisions	Make some decisions	to answer science	appropriate ways to
	(Speaking: 30-50 months.)	in a fanety of mayor	(changes over time.	about which types of	about which types of	questions using different	answer science questions
	(speaking, so so months.)	Use simple secondary	noticing patterns, grouping	enguiry will be the best	enguiry will be the best	types of scientific enquiry	using different types of
	Engage in open ended	resources to find answers.	and classifying,	way of answering	why of answering	(including changes over	scientific enquiry including
	activities.	resources to find answers.	comparative and fair test,	questions (changes over	questions including	different periods of time,	changes over different
	activities.		research).	time, noticing patterns,	changes over time, noticing	noticing patterns, grouping	periods of time, noticing
	Take a rick, and again now		research).	grouping and classifying,		and classifying, carrying out	patterns, grouping and
	Take a risk, engage in new		Find information in books		patterns, grouping and	comparative and fair tests	
	experiences and learn by			comparative and fair test,	classifying, carrying out		classifying, carrying out
	trial and error.		and using computers.	using secondary sources).	comparative and fair tests.	and finding things out using	comparative and fair tests
						a wide range of secondary	and finding things out using
	Comments and asks			Begin to decide when and	Can decide when and how	sources of information.)	a wide range of secondary
	questions about aspects of			how to use secondary	research will help and carry		sources of information.)
	their familiar world such as			sources and carry out their	out research on their own.	Begin to recognise which	
	the place where they live			own research.		secondary sources will be	Recognise which secondary
	or the natural world The					the most useful to research	sources will be the most
	World: 30-50 months					their ideas.	useful.
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Investigating.	Reception Find ways to solve			Year 3 Set up some simple.	Year 4 Set up practical enquiries.		
Investigating,	Find ways to solve	Carry out simple tests with	Year 2 Carry out simple tests	Set up some simple,	Set up practical enquiries,	Set up comparative and	Decide which variables to
recording and	Find ways to solve problems / find new ways		Carry out simple tests	Set up some simple, practical enquiries,		Set up comparative and fair tests and begin to	
recording and reporting	Find ways to solve problems / find new ways to do things / test their	Carry out simple tests with support	Carry out simple tests Begin to make predictions	Set up some simple,	Set up practical enquiries, comparative and fair tests.	Set up comparative and fair tests and begin to decide which variables to	Decide which variables to control and why.
recording and reporting findings,	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking	Carry out simple tests with support Begin to say what might	Carry out simple tests	Set up some simple, practical enquiries, comparative and fair tests.	Set up practical enquiries, comparative and fair tests. Recognise when a fair test	Set up comparative and fair tests and begin to	Decide which variables to control and why. Make and explain
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their	Carry out simple tests with support	Carry out simple tests Begin to make predictions and give a reason.	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide	Set up comparative and fair tests and begin to decide which variables to control.	Decide which variables to control and why. Make and explain predictions using complex
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically	Carry out simple tests with support Begin to say what might happen in an investigation.	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and	Set up practical enquiries, comparative and fair tests. Recognise when a fair test	Set up comparative and fair tests and begin to decide which variables to control. Make and explain	Decide which variables to control and why. Make and explain predictions using complex scientific language and
recording and reporting findings,	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what	Carry out simple tests Begin to make predictions and give a reason.	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up.	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and	Decide which variables to control and why. Make and explain predictions using complex scientific language and
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects,	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up.	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence.
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects,	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation Gather and record data	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge.	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary.	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate findings in a range of ways-	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge with simple reasons to	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge. Gather, record and classify	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary. Begin to record data and	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using scientific diagrams and
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recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Create simple representations of events,	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation Gather and record data with adult support Begin to record simple	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate findings in a range of ways- use simple tables.	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge with simple reasons to back up their ideas.	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge. Gather, record and classify data in a variety of ways.	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary. Begin to record data and results of increasing complexity using scientific	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar, line or scatter
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recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Create simple representations of events, people and objects Being Imaginative: 40-60+ months	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation Gather and record data with adult support Begin to record simple data Begin to talk about what they have found out and	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate findings in a range of ways- use simple tables. Talk about what they have found out and how they found it out	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge with simple reasons to back up their ideas. Gather, record and begin to classify data in a variety of ways.	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge. Gather, record and classify data in a variety of ways. Record findings using simple scientific language, drawings, labelled diagrams, bar charts, keys	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary. Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs.	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar, line or scatter graphs. Report and present findings from enquiries
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Create simple representations of events, people and objects Being Imaginative: 40-60+ months Develop their own	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation Gather and record data with adult support Begin to record simple data Begin to talk about what they have found out and	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate findings in a range of ways- use simple tables. Talk about what they have found out and how they found it out To say what happened in	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge with simple reasons to back up their ideas. Gather, record and begin to classify data in a variety of ways. Begin to record findings	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge. Gather, record and classify data in a variety of ways. Record findings using simple scientific language, drawings, labelled diagrams, bar charts, keys	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary. Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs. Begin to report and	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar, line or scatter graphs. Report and present findings from enquiries using detailed scientific
recording and reporting findings, drawing	Find ways to solve problems / find new ways to do things / test their ideas Creating & Thinking Critically Know about similarities and differences in relation to places, objects, materials and living things ELG: The World Create simple representations of events, people and objects Being Imaginative: 40-60+ months Develop their own narratives and	Carry out simple tests with support Begin to say what might happen in an investigation. Begin to say what happened in an investigation Gather and record data with adult support Begin to record simple data Begin to talk about what they have found out and how they found it out	Carry out simple tests Begin to make predictions and give a reason. Say what happened in an investigation Gather and record data Record and communicate findings in a range of ways- use simple tables. Talk about what they have found out and how they found it out To say what happened in an investigation and	Set up some simple, practical enquiries, comparative and fair tests. Begin to recognise when a fair test is necessary and help decide how to set it up. Make predictions based on their scientific knowledge with simple reasons to back up their ideas. Gather, record and begin to classify data in a variety of ways. Begin to record findings using simple scientific	Set up practical enquiries, comparative and fair tests. Recognise when a fair test is necessary and decide how to set it up. Make predictions drawing on previous experience and scientific knowledge. Gather, record and classify data in a variety of ways. Record findings using simple scientific language, drawings, labelled diagrams, bar charts, keys and tables.	Set up comparative and fair tests and begin to decide which variables to control. Make and explain predictions based on the scientific knowledge and using more complex scientific vocabulary. Begin to record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs. Begin to report and present findings from	Decide which variables to control and why. Make and explain predictions using complex scientific language and begin to support with scientific evidence. Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar, line or scatter graphs. Report and present findings from enquiries using detailed scientific

		was surprised at the results	(Teacher lead		explanations, displays or	Begin to decide how to	Decide how to record data
	Builds up vocabulary that	or not.	investigation)	Begin to use results to	presentations.	record data from a choice	from a choice of familiar
	reflects the breadth of	or not.	investigationy	draw simple conclusions,	presentations.	of familiar approaches.	approaches.
	their experience		To begin to say what I	make predictions, suggest	Use results to draw simple	or furnitur approaches.	approaches.
	Understanding: 30-50		would change in my	improvements and raise	conclusions, make	Begin to report and	Choose the best way to
	months		investigation.	further questions.	predictions, suggest	present findings from	present data. Can report
	montris		investigation.	Turtifer questions.			
	Answer how and why			With help, I can look for	improvements and raise	enquiries, including conclusions, causal	and present findings from
					further questions.	-	enquiries, including
	questions about their			changes, patterns,		relationships and	conclusions, causal
	experiences ELG:			similarities and differences	Can spot patterns in results	explanations of and degree	relationships and
	Understanding			in data.	and look for changes,	of trust in results, in oral	explanations of and degre
					similarities and differences.	and written forms.	of trust in results, in oral
				Begin to suggest how I			and written forms.
				could improve an	Say what I have found out	Begin to use evidence to	
				investigation.	linking cause and effect.	justify ideas and	Use evidence to justify
						conclusions.	ideas and conclusions.
					Suggests improvements to		Identify scientific evidence
					an investigation.	Begin to use test results to	that has been used to
						make predictions and set	support and refute ideas.
						up further comparative	Use test results to make
						and fair tests.	predictions and set up
							further tests.
	Descrition	V1	Veen 2	Veen 2	V	Veen F	VeerC
	Reception Closely observes what	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		Talk about what that can	Observe closely using	Begin to make systematic	Make systematic and	Begin to take	Take measurements, using
Observing,	animals, people and	see.	simple equipment	and careful observations	careful observations and	measurements, using a	a range of scientific
Observing, measuring and	animals, people and vehicles do The World 8-20	see.	simple equipment	and careful observations and where appropriate,	careful observations and where appropriate, take	measurements, using a range of scientific	a range of scientific equipment, with increasing
measuring and pattern	animals, people and	see. Use simple equipment with	simple equipment To observe changes over	and careful observations and where appropriate, take accurate	careful observations and where appropriate, take accurate measurements	measurements, using a range of scientific equipment, with increasing	a range of scientific equipment, with increasing accuracy and precision,
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	explain why some things occur, and talk about changes ELG: The World						
Identifying, grouping and classifying.	Reception Develop ideas of grouping, sequences, cause and effect Creating &Thinking Critically	Year 1 Identify and classify with some support. Begin to observe and identify, compare and describe. With support, decide how to group objects and materials.	Year 2 Identify and classify. Decide how to sort and group objects, materials and living things.	Year 3 Begin to identify differences, similarities, or changes related to simple scientific ideas or processes. Begin to talk about criteria for grouping, sorting and classifying. Begin to compare and group according to behaviour or properties.	Year 4 Identify similarities, differences or changes related to simple scientific ideas or processes. Talk about criteria for grouping, sorting and classifying and use simple keys. Compare and group according to behaviour or properties.	Year 5 Begin to use and develop keys and other information records to identify, classify and describe living things and materials.	Year 6 Use and develop keys and other information records to identify, classify and describe living things and materials
	Reception	Year 1	Year2	Year 3	Year 4	Year 5	Year 6
Ways of gathering, recording or representing results.	Comparing Venn Diagrams Observing over time Ordering pictures Drawing pictures of observations Sources of information Age appropriate texts Pictures	Comparing Venn Diagrams Simple tables Observing over time Ordering pictures Drawing pictures of observations Sources of information Age appropriate texts Pictures Simple graphs or tables Create Mind maps	Comparing Venn Diagrams Simple tables Observing over time Ordering pictures Drawing pictures of observations Sources of information Age appropriate texts Pictures Simple graphs or tables Create Mind maps Write Short reports	Sorting and classifying Venn and Carroll diagrams Simple classification keys. Observing over time Ordering pictures Drawing pictures of observations Short chronological reports. Sources of information Age appropriate texts Pictures Graphs and tables Write reports Diary Entries Letters	Sorting and classifying Venn and Carroll diagrams Simple classification keys. Observing over time Ordering pictures Drawing pictures of observations Short chronological reports. Sources of information Age appropriate texts Pictures Graphs and tables Write reports Diary entries Letters	Sorting and classifying Venn and Carroll diagrams More sophisticated classification keys. Observing over time Line graphs Diagrams and written explanations. Chronological reports. Sources of information Age appropriate texts Pictures Graphs and tables Write reports Biographies Diary entries Letters	Sorting and classifying Venn and Carroll diagrams More sophisticated classification keys. Observing over time Line graphs Diagrams and written explanations. Chronological reports. Sources of information Age appropriate texts Pictures Graphs and tables Write reports Biographies

SKILLS PROGRESSION – KNOWLEDGE AND CONCEPTUAL UNDERSTANDING - RECEPTION- YEAR 6

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Plants	Name a variety of common garden plants and herbs. Identify the basic structure of a variety of common flowering plants.	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees	Find out and describe how plants need water, light and a suitable temperature to grow and stay health. Observe and describe how seeds and bulbs grow into mature 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. 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.		Concept Cartoon. Focus – Plants Label the parts of the plant and explain their function. (Use Key vocab)	
Animals including humans	Reception Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals Describe and compare a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body.	Year 1 Explore and compare the differences between things that are living, dead, and things that have never been alive 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 Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	Year 2 Notice that animals, including humans, have offspring which grow into adults. 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.	Year 3 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.	Year 4 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. (Animals teeth - Construct and interpret a variety of food chains, identifying producers, predators and prey.)	Year 5 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. Describe the changes as humans develop to old age. Describe the life process of reproduction in some plants and animals.	Year 6 Evolution and Inheritance. 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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Normality Properties Properies Properies								Year 6
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Seemal Compare a variety of everyphy matricinits on the basic of the simple pipelad properties. wood, plasts, grant and other and reads. from roots and organic matter. Seemal Compare a variety of everyphy matricinits on some site and playdal compare and grant playdal compare and playdal playdal properties. from roots and organic matter shafts, filter playdal compare and playdal compare and playdal compare and playdal compare and playdal playdal properties. wood, plasts, grant and compare and playdal compare and playdal compare and playdal compare and playdal compare and playdal compare and playdal compare and playdal playdal properties. wood, plasts, grant and compare and playdal compare and p		everyday materials	everyday materials, including	cardboard for particular uses.	Recognise that soils are made	-	solubility, transparency,	
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	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Living things and their habitats	Reception Identify and name a variety of plants and animals in their habitats, including microhabitats. Describe Simple lifecycles of minibeast. They talk about the features of their own immediate environments and how environments might vary from one another.	Year 1 Concept Cartoon. Focus – Living things. Describe Simple lifecycles (Use Key vocab)	Year 2 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	Year 3	Year 4 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.	Year 5 Concept Cartoon. Focus – Living things. identify and name a variety of living things in their local and wider environment. Links to Biomes	Year 6 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. 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.
Light	Reception Concept Cartoon. Focus – Light How are shadows formed?	Year 1	Year 2 Concept Cartoon. Focus – Light How light travels through different materials and use key vocabulary. (transparent, translucent, opaque.) (Link to materials)	Year 3 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.	Year 4	Year 5	Year 6 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.

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Forces and magnets	Reception To sort which materials are magnetic and none magnetic.	Year 1 Concept Cartoon. Focus – Forces Which materials are magnetic? Investigate and link to materials topic. (Use Key vocab)	Year 2	Year 3 To compare how things, move on different surfaces Notice that some forces need contact between 2 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 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	Year 4	Year 5 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.	Year 6
Sound	Reception	Year 1 Concept Cartoon. Focus – Sound. How does sound travel? Link to music (Use Key vocab – vibrations, sound wave)	Year 2	Year 3	Year 4 Identify how sounds are made, 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.	Year 5	Year 6

	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Electricity	Identify common appliances that run on electricity.		Concept Cartoon. Focus – Electricity Make a simple circuit to light a bulb, naming equipment and introduce key vocabulary.		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. Recognise some common conductors and insulators, and associate metals with being good conductors. 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.		Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a 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.
	Reception	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Earth and Space			Concept Cartoon. Focus – Earth and space. The solar system. Name and order planets in the solar system. Understand that the planets orbit the sun.	Concept Cartoon. Focus – Earth and space. How does the Earth move and how does this relate to the length of a day and seasons? Link with seasonal changes.		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.	

WHAT DOES SCIENCE AT HARDEN LOOK LIKE?























ASSESSMENT OF SCIENCE

For science, the children are assessed twice every half term on their skills and subject knowledge. We use the TAP's (Teacher assessment in primary science) approach where the children are given planned activities to complete. These activities are carefully planned so that the children can evidence their understanding of a concept and use a different working scientifically skills. We use the Science assessment criteria to identify where the children are working.

Year 1 Assessment statements.

	Working towards	Working at ARE	Working at Greater depth
1.4a.1 Identify and name a variety of	Identify and name a limited range of	Identify a range of local plants.	Identify and notice similarities between
common wild and garden plants,	plants.		various local plants.
including deciduous and evergreen trees			
1.4a.2 Identify and describe the basic	Identify and describe the basic structure	Name parts of a range of familiar plants.	Identify and notice similarities in the
structure of a variety of common	of a common flowering plant.		structure of various local plants
flowering plants, including trees			
1.4a.3 Explore and compare the	Sort items into 'once living' and 'never	Compare and contrast a collection of	Research further examples to add to the
differences between things that are	lived'.	items, sorting into categories: 'living',	categories: 'living', 'dead' and 'things
living, dead, and things that have never		'dead' and 'things that have never been	that have never been alive'.
been alive		alive'.	
1.4b.1 Identify and name a variety of	Identify and name a limited number of	Name a variety of common animals.	Identify common features of the main
common animals including fish,	common animals.		groups of vertebrates.
amphibians, reptiles, birds and			
mammals			
1.4b.2 Identify and name a variety of	Recognise the difference between	Identify and group a range of familiar	Suggest whether an unfamiliar animal
common animals that are carnivores,	carnivores, herbivores and omnivores.	animals.	might be a carnivore, herbivore or
herbivores and omnivores			omnivore.
1.5.1 Describe and compare the	Identify key features of one or two	Identify key features of a range of	Compare key features of familiar and
structure of a variety of common	common animals.	common animals.	unfamiliar animals.
animals (fish, amphibians, reptiles, birds			
and mammals, including pets)			

1.5.2 Identify, name, draw and label the basic parts of the human body and say which part of the body is associated	Describe each of the human senses.	Relate each of the human senses to organs.	Suggest how the senses are used in an activity such as eating.
with each sense			
1.2.1 Observe changes across the four	Recognise that there are seasonal	Describe seasonal changes.	Recognise changes within seasons as
seasons	changes.		well as between seasons.
1.2.2 Observe and describe weather	Recognise that day length alters in	Relate weather patterns and day length	Make and test predictions relating to
associated with the seasons and how	different seasons.	to seasons.	changing day length and weather
day length varies			patterns.
1.2.1 Distinguish between an object and	Identify the material from which an	Correctly identify both object and	Compare the same object made from
the material from which it is made	object has been made.	material.	different materials in terms of its
			effectiveness
LINK 2.3.1			
1.2.2 Identify and name a variety of	Identify and name a limited range of materials.	Identify and name a range of materials.	Identify typical uses of a range of materials.
everyday materials, including wood, plastic, glass, metal, water and rock	materials.		
1.2.3 Describe the simple physical	Recognise that a material has	Describe a range of properties of a	Compare the physical properties of
properties of a variety of everyday	properties.	variety of materials.	different everyday materials.
materials			
1.2.4 Compare and group together a	Compare and contrast two everyday	Classify a variety of materials into	Use simple physical properties to
variety of everyday materials on the	materials.	groups based on physical properties.	suggest classification of materials
basis of their simple physical properties			

Year 2 Assessment

	Working towards	Working at ARE	Working at Greater depth
2.2.1 Identify that most living things live	Identify that a habitat supplies living	Explain how, for a named animal or	Explain why there may be a limit as to
in habitats to which they are suited and	things with what they need.	plant, it gets what it needs from its	how many of a certain living thing can
describe how different habitats provide		habitat and other living things that are	live in a particular area.
for the basic needs of different kinds of		there.	
animals and plants, and how they			
depend on each other.			
2.2.2 Identify and name a variety of	Identify a limited range of living things	Identify a range of living things in	Identify a range of living things and
plants and animals in their habitats,	in their habitats.	habitats of various sizes.	suggest why they may be found in that
including micro-habitats.			habitat.

2.2.3 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.	Identify a predator-prey relationship.	Construct a simple food chain and identify what is eating what.	Suggest, within a simple food chain, what might happen if one of the living things becomes scarce.
2.2.4 Find out and describe how plants need water, light and a suitable temperature to grow and stay health.	Find out one thing that plants need to grow and stay healthy.	Explore and identify what plants need to thrive.	Identify the effects of a shortage of each of the things that plants need to grow and stay healthy
2.4a.1 Observe and describe how seeds and bulbs grow into mature plants.	Identify that seeds and bulbs grow into mature plants.	Describe stages of development of a full grown plant.	Compare and contrast the growth patterns of different types of plants.
2.4b.1 Notice that animals, including humans, have offspring which grow into adults.	Recognise that all animals, including humans, have offspring.	Describe the relationship between adult animals and their offspring.	Compare and contrast adults and their offspring for different animals.
2.4b.2 Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).	Identify the basic needs of animals, including humans, for survival (water, food and air).	Identify human's basic needs.	Suggest how the basic needs of different animals influences their choice of habitat.
2.5.1 Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. LINK 2.4b.2	Recognise the importance to humans of exercise, diet and hygiene.	Describe the importance of a healthy diet and exercise.	Suggest effects of poor diet and hygiene.
2.3.1 Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. LINKS 1.2.1; 2.2.1	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.	Select and justify a material for a particular use.	For particular materials in particular uses, identify limitations as well as suitability.

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	Working towards	Working at ARE	Working at greater depth
3.2.1 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.	Suggest how one of the requirements for plants to stay healthy could be explored.	Explain what all plants need to flourish and recognise how these requirements vary in amount.	Compare the requirements of different plants and link these to particular habitats.
LINK 4.1.2			
3.4a.1 Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Identify different parts of a flowering plant: roots, stem/trunk, leaves and flowers.	Describe what each part of a flowering plant does.	Suggest why parts may vary in size and shape from one species of flowering plant to another.
3.4a.2 Investigate the way in which	Identify that water is transported within	Explain, with the aid of a diagram or	Suggest how this process might vary
water is transported within plants.	plants.	plant, how water is carried up from the soil.	from one type of plant to another.
3.4a.3 Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Describe the processes of pollination, seed formation and seed dispersal.	Explain how pollination, seed formation and seed dispersal play a role in the reproduction of flowering plants.	Suggest why pollination, seed formation and seed dispersal may vary from one type of plant to another.
LINK 6.3.3			
3.4b.1 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 animals, including humans, need the correct nutrition	Describe why animals depend on the correct nutrition.	Explain why a varied diet is important.
LINKS 4.5.1; 4.5.3; 6.3.3			
3.5.1 Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Recognise that humans and some other animals have skeletons and muscle.	Explain which parts of the skeleton provide support and protection, and how they allow for movement.	Compare the ways that the skeletons of different animals provide support, protection and movement.

3.1.1 Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	Understand that fossils indicate the shape of previous life forms	Explain how fossils are formed.	Explain the importance of studying fossils.
LINK 3.2.1			
3.1.2 Recognise that soils are made from rocks and organic matter.	Describe the appearance of soil, recognising that it is a mixture of materials.	Describe how soil is made.	Compare different soils in terms of composition.
3.2.1 Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Identify that rocks vary in terms of appearance and physical properties.	Examine and test rocks, grouping them according to the results.	Suggest uses for different kinds of rocks based on their properties.
LINK 3.1.1			
4.4.1 Identify common appliances that run on electricity.	Recognise that some appliances run on electricity.	List examples of appliances that run on electricity.	Compare and contrast appliances that run on mains electricity with those that run on batteries.
4.4.2 Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.	Construct a simple circuit.	Construct a simple circuit and name its components.	Identify the functions of components within a circuit.
4.4.3 Recognise some common conductors and insulators, and associate metals with being good conductors.	Identify metal as a conductor.	Sort materials into conductors and insulators, identifying metals as conductors.	Investigate graphite as a conductor and relate to other materials.
4.4.4 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.	Understand that a complete circuit is needed for a circuit to operate.	Predict whether a particular arrangement of components will result in a bulb lighting.	Explain why certain arrangements will not result in the bulb lighting.
4.4.5 Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	Describe the function of a switch.	Predict how the operation of a switch will affect bulbs lighting.	Explain how altering the location of a switch affects the operation of the circuit.
3.3.1 Recognise that they need light in order to see things and that dark is the absence of light.	Identify that light is necessary for vision.	Relate being able to see to the presence of light.	Recognise that vision involves light travelling to the eyes.
3.3.2 Notice that light is reflected from surfaces.	Identify that mirrors reflect light.	Describe how some objects reflect light.	Recognise that some surfaces are better at reflecting light than others.

3.3.3 Recognise that light from the sun	Recognise that light from the sun can be	Describe how and why our eyes should	Explain why sunlight can be dangerous
can be dangerous and that there are	dangerous.	be protected from sunlight.	and how types of protection works.
ways to protect their eyes.			
3.3.4 Recognise that shadows are	Recognise that light cannot pass	Explain how shadows are made.	Suggest how light is travelling to form a
formed when the light from a light	through some objects.		shadow.
source is blocked by a solid object.			
3.3.5 Find patterns in the way that the	Identify that the size of shadows can be	Describe how to change the size of a	Relate position of an object and position
size of shadows change.	changed.	shadow.	of a screen to the size of the shadow.
LINK 1.2.1			

Year 4

	Working towards	Working at age related	Working at greater depth
 4.1.1 Recognise that living things can be grouped in a variety of ways. LINK: 6.3.1 4.1.2 Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. 	Suggest a way of grouping living things, e.g. sort shells by colour. Use classification keys to group and identify members from a small group of living things.	Suggest different ways of sorting the same group of living things, e.g. grouping birds according to where they live, what they eat and size of adults. Use classification keys to group and identify members from a range of familiar and less familiar living things.	Suggest why some ways of grouping living things may be more useful than others, e.g. why grouping by number of legs is an easy aid to identification. Devise own classification keys to group living things.
LINK 3.2.1 4.2.1 Recognise that environments can change and that this can sometimes pose dangers to living things. LINK 6.3.3	Describe how environments might change.	Describe examples of living things that are threatened by changes to environments, e.g. owls and habitat loss.	Describe examples of living things adapting to environmental change, e.g. urban foxes, and examples of extinction due to environmental change.
4.5.1 Describe the simple functions of the basic parts of the digestive system in humans.LINK 3.4b.1	Describe the purpose of the digestive system in humans.	Identify what each of the principal organs in the digestive system do.	Explain why the simple functions of the basic parts of the digestive system in humans are necessary.
4.5.2 Identify the different types of teeth in humans and their simple functions.	Recognise that humans have different types of teeth.	Describe the function of each type of tooth in the human skull.	Explain why humans have different types of teeth.

4.5.3 Construct and interpret a variety predators and prey. Understand the roles of producers, predators and prey. Use a food chain to represent predator- prey relationships. Suggest what might happen in a food organisms changes. 1UK 3.4b.1 Recognise the state of matter of different materials. Group materials according to their state of matter. Recognise that some materials (e.g. toothpaste) cannot be easily classified as solid. liquid or gass. 4.4.11 dentify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Relate the terms' evaporation' and 'condensation' to water. Describe how temperature affects evaporation. Apply the relationship between rate of evaporation. 1LIK 5.2.4 Recognise that some materials Recognise that materials may change state. Identify changes of state and research change state which this happens in degrees Celsius (°C). Suggest patterns in which kinds of materials change state at higher or lower temperature as state. UIK 5.2.5 Identify how so unds are made, associating some of them with something wibrating. Recognise that the ear detects vibration how an object makes a sound. Group sound-making objects in terms of how they make sounds. 4.3.3 Recognise that sounds get fainter as the distance from the sound source than others. Suggest why some sounds are louder than others. Describe the fiele of moving further from the sound. Compare the effectiveness of different media in terms of their ability to transmitsound. <t< th=""><th></th><th></th><th></th><th></th></t<>				
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LINK 5.2.4				
	LINK 5.2.4			

Year 5

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	Working towards	Working at age related	Working at greater depth
5.4b.1 Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. LINKS 6.3.2; 5.5.1	Explain what a life cycle is, e.g. that kittens grow into cats, have kittens and die.	Identify similarities and differences in two different life cycles, e.g. sparrow and butterfly, with reference to eggs and intermediate stages.	Suggest similarities in the life cycles of a number of vertebrates, e.g. comparison of dog, human and bird embryos.
5.4b.2 Describe the changes as humans develop to old age. LINK 6.3.2	Identify that people change as they age, e.g. recognise differences in appearance, abilities etc.	Describe the changes as humans develop to old age, e.g. trends in changes to size, weight, mobility etc.	Suggest why some of the changes that take place in humans happen, e.g. suggest why babies have disproportionately large heads compared to adults.
5.5.1 Describe the life process of reproduction in some plants and animals. LINKS 3.4a.1; 5.4b.1	Describe the life process of reproduction in humans.	Describe in sequence the stages of reproduction in some plants and animals, e.g. dog and a thistle.	Compare the process of reproduction in animals and plants, e.g. compare and contrast fertilisation.
5.2.1 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.	Compare and group together everyday materials on the basis of their appearance and feel.	Test and sort a range of materials based on their physical properties.	Suggest why those properties might influence the selection of those materials for certain uses.
5.2.2 Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.	Know that some materials will dissolve in liquid to form a solution.	Describe how some materials, e.g. sugar, will dissolve and can be retrieved.	Identify that some soluble materials are more soluble than others.
5.2.3 Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.	Suggest how mixtures might be separated.	Justify separation techniques proposed, with reference to materials being separated.	Explain why a particular separation method might be more effective.
5.2.4 Demonstrate that dissolving, mixing and changes of state are reversible changes.	Understand that some processes are reversible.	Show how the original materials can be retrieved from each of these changes.	Classify various processes relating to materials as reversible or irreversible.

LINK 4.4.1			
5.2.5 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.	Understand that burning is irreversible.	Identify reactants and products of chemical changes and recognise these as being irreversible.	Provide examples of when changes being irreversible are a good thing, e.g. making bricks, or not, e.g. non- biodegradable plastic bags.
5.3.1 Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic.	Give reasons for the particular uses of everyday materials, including metals, wood and plastic.	Use evidence to justify the selection of a material for a purpose.	Suggest limitations of the uses of selected materials based on test results.
4.4.1 Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	Relate the terms 'evaporation' and 'condensation' to the water cycle.	Describe how evaporation and condensation happen in the water cycle, and how temperature affects evaporation.	Apply the relationship between rate of evaporation with temperature to everyday contexts.
5.1.1 Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.	Describe the effect of gravity on unsupported objects.	Explain that gravity causes objects to fall towards Earth.	Recognise that gravity acts between all masses, e.g. the Sun and the Earth.
5.1.2 Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.	Recognise that motion may be resisted by forces.	Describe how motion may be resisted by air resistance, water resistance or friction.	Identify ways in which forces that oppose motion may be useful (e.g. bicycle handlebar grips) or a nuisance (e.g. bicycle chain).
5.1.3 Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.	Recognise that simple machines transfer force.	Describe how some devices may turn a smaller force into a larger one.	Explain, with reference to everyday contexts, why a force multiplier might be useful.
5.2.1 Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.	Recognise that the planets move, relative to the Sun.	Draw a diagram or use a model to describe planetary orbits.	Identify that the further out a planet is, the longer its orbit is around the Sun.

LINK 5.1.1			
5.2.2 Describe the movement of the	Recognise that the Moon moves relative	Draw a diagram or use a model to	Relate the Moon's orbit of the Earth to
Moon relative to the Earth.	to the Earth.	describe the Moon's orbit around the	the Earth's orbit of the Sun.
		Earth.	
5.2.3 Describe the Sun, Earth and Moon	Sketch the outlines of the Sun, Earth	Describe the Sun, Earth & Moon as	Recognise that many heavenly bodies
as approximately spherical bodies.	and Moon.	spheres.	are approximately spherical.
5.2.4 Use the idea of the Earth's	Relate day and night to the apparent	Use a diagram or model to explain why	Explain the effect of a planet in the solar
rotation to explain day and night and	position of the Sun.	the Sun seems to travel across the sky,	system rotating at a different rate to
the apparent movement of the sun		and what causes day and night.	Earth.
across the sky.			
LINK 4.3.5			

Year 6

	Working towards	Working at age related expectations	Working at greater depth
6.1.1 Describe how living things are	Identify the broad groups into which	Use similarities and differences in	Explore why some living things, such as
classified into broad groups according to	living things are classified, e.g.	observable features to decide how living	the duck billed platypus, don't neatly fit
common observable characteristics and	mammals.	things should be grouped e.g. a cat is a	into one group.
based on similarities and differences,		mammal because it is warm blooded	
including micro-organisms, plants and		and gives birth to live young.	
animals.			
6.1.2 Give reasons for classifying plants	State how plants and animals can be	Explain why certain features are useful	Explain why other features are less
and animals based on specific	classified using specific characteristics.	in classifying living things, e.g.	useful as a basis for classification, such
characteristics.		backbones in animals and flowers in	as size or colour.
		plants.	
6.3.1 Recognise that living things have	Recognise that fossils provide	Use fossils as evidence that living things	Suggest possible reasons for changes to
changed over time and that fossils	information about living things from	have changed over time, e.g. explain	living things over time, e.g. why
provide information about living things	millions of years ago, e.g. understand	that these have died out and others	penguins can't fly but are good at
that inhabited the Earth millions of	that they are preserved remains of	have taken their place.	swimming.
years ago.	extinct living things.		
LINK 4.1.1			
6.3.2 Recognise that living things	Recognise that living things produce	Recognise that offspring normally vary	Recognise that selective breeding may
produce offspring of the same kind, but	offspring of the same kind, but normally	from each other and from their parents,	result in offspring with certain features,
normally offspring vary and are not	offspring vary, e.g. that puppies have	e.g. that puppies vary from each other	e.g. pedigree dogs with a certain shape
identical to their parents.	common features but are not identical.	and from their parents.	or colour.
LINKS 5.4b.1; 5.4b.2			

6.3.3 Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.	Identify ways in which certain animals and plants are adapted to suit their environment in different ways.	Describe examples of a living thing that has adapted to live in a particular habitat and evolved as a result, e.g. a polar bear or cactus.	Give examples of living things that have evolved in different ways, e.g. different types of finch.
LINKS 3.4a.3; 3.4b.1; 4.2.1			
6.5.1 Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood.	Name the main parts of the human circulatory system, e.g. heart, arteries, veins.	Describe what heart, blood vessels and blood do, e.g. carry oxygen to all parts of the body.	Explain some characteristics of the heart, blood vessels and blood, e.g. explain that the arteries are thicker because they carry blood at a higher pressure.
6.5.2 Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	Recognise that diet, exercise, drugs and lifestyle impact on the way the body functions, e.g. knowing that exercise changes the body.	Suggest how their bodies are affected by substances and actions, e.g. that a high fat diet coupled with little exercise is likely to lead to obesity.	Explain how decisions about lifestyle can affect the quality of life, e.g. recognise that making excessive use of convenience foods may introduce more additives into the diet.
6.5.3 Describe the ways in which nutrients and water are transported within animals, including humans.	Describe that nutrients and water are transported within humans.	Describe with aid of diagrams the route that water takes within animals, e.g. through the human body.	Compare the ways in which nutrients and water are transported in two animals that are quite different.
6.3.1 Recognise that light appears to travel in straight lines.	Recognise that light travels from one point to another.	Represent light using straight line ray diagrams.	Recognise that even when light changes in direction, the path is still continuous.
6.3.2 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.	Recognise that some objects reflect light.	Draw diagrams using straight lines showing light travelling to the eye.	Draw diagrams using straight lines showing light reflecting off objects and into the eye.
6.3.3 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 light travels from light sources to our eyes.	Explain how we can see an object by referring to light travelling into the eye.	Refer to the idea that some objects may be better reflectors than others.
6.3.4 Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.	Relate the shape of shadows to the shape of the object that makes them.	Draw a diagram showing an object, shadow and light to relate object shape to shadow shape.	Use a diagram to explain that although a shadow is the same shape as the object, it may not be the same size.
6.4.1 Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in a circuit.	Recognise that changing the number and voltage of cells may alter the operation of a circuit.	Explain how number and voltage of cells affects the lamp or buzzer.	Relate the number or voltage of cells to the number and operation of bulbs or buzzers that can be run from them.

6.4.2 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.	Identify the function and operation of different components.	Explain the use of switches, how bulbs can be made brighter and buzzers made louder.	Explain the effect of changing the order of the components in a circuit.
6.4.3 Use recognised symbols when representing a simple circuit in a diagram.	Understand that components can be represented by symbols.	Represent a circuit that has been constructed using symbols.	Design circuits using symbols.