Science

Year 4: Autumn Term 1 Topic 1- What's That Sound?

National Curriculum: Sound

Subject Cultural Capital = understanding subject vocabulary/applying science K & S to different situations
Differentiation= see weekly planning for exceeding, emerging & SEND (please see SEND pupils' IEP's)
Minimum expectations to check for understanding during lessons= targeted questioning/mini whiteboards/peer talk/self-assessment
Long term memory development= LAST, LAST, LAST linked to the WALT
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Term	Week 2 lessons per week	National Curriculum Statement	WALT	Resources/Use all or some of the following activities to cover this objective	NC/Working scientifically skills developed in the activities	Switched on Science Teacher's Guide reference	Switched on Science resources	Vocabulary
Autumn Term: Topic 1 - What's that sound?	1	Identify how sounds are made, associating some of them with something vibrating.	1a.walt: brainstorm what pupils know about Sound 1b. Walt: understand how sounds are made	1. Sources of sound 2. Let's make a sound 3. Feeling and seeing the vibrations.	Set up simple practical enquiries, comparative and fair tests. Use straightforward scientific evidence to answer questions or to support their findings.	Pages 10 - 12		soundsource Vibration Sound
Autumn Term: Topic 1 - What's that sound?	2	Identify how sounds are made, associating some of them with something vibrating. Find patterns between the volume of a sound and the strength of the vibrations that produced it. Find patterns between the pitch of a sound and features of the object that produced it.	2a. walt: understand how low and high (pitch) sounds are made 2b. walt: understand the features of the object contributes to the pitch	4. Percussion sounds. 5. How does a guitar work?	Set up simple practical enquiries, comparative and fair tests Use straightforward scientific evidence to answer questions or to support their findings.	Pages 12 - 14	Activity Resource 1.1	Pitch High/low pitch soundsource frequency denser

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Autumn Term: Topic 1 - What's that sound?	3	Identify how sounds are made, associating some of them with something vibrating. Find patterns between the pitch of a sound and features of the object that produced it.	3a.walt: understand that the loudness (volume) of sound depends on the **size** of the vibration 3b.walt: understand the loudness of sound depends on the **strength** of the vibration	6.Glass bottle orchestra. 7. Make your own pan pipes.	Set up simple practical enquiries, comparative and fair tests Use straightforward scientific evidence to answer questions or to support their findings	Pages 14 - 15		pitch sound source vibration volume
Autumn Term: Topic 1 - What's that sound?	4	Recognise that sounds get fainter as the distance from the sound source increases	4a. walt: recognise that sounds get fainter as the distance from the sound increases 4b. walt: recognise that sounds get louder as the distance from the source reduces	1. How far away can you hear it? 2. Measuring sound.	Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	Pages 16 - 18	Activity Resource 1.2 Activity Resource 1.3	**Datalogger** **Source** **distance** **fainter** **louder**
Autumn Term: Topic 1 - What's that sound?	5	Recognise that vibrations from sounds travel through a medium to the ear.	5a.walt:understand that too much sound can damage our ears 5b. walt: identify the different parts in the ear	3. Sound travelling through different materials. 4. My own questions	Ask relevant questions and use different types of scientific enquiries to answer them. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identify differences,	Pages 18 - 19	Activity Resource 1.4 Activity Resource 1.5	**Inner ear** **outer ear** **Ear drum** **brain**

					similarities or changes related to simple scientific ideas and processes. Use straightforward scientific evidence to answer questions or to support their findings.			
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Autumn Term: Topic 1 - What's that sound?	6	Recognise that vibrations from sounds travel through a medium to the ear.	6a. Walt: explain how sounds reach our ears 6b. Walt: understand how sounds travel through a medium to our ears	5. Muffle that sound	Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Page 20	Activity Resource 1.6	**ear gongs Inner ear outer ear Ear drum brain**
Assessment		Recognise that vibrations from sounds travel through a medium to the ear.		6. Ear gongs	Set up simple practical enquiries, comparative and fair tests. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Page 21		

Science

Year 4:Spring 2: Topic 2- Living Things

National Curriculum: Animals Including Humans

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Term	**Week 2 lessons per week**	**National Curriculum Statement**	**WALT**	**Resources/Use all or some of the following activities to cover this objective**	**NC/Working scientifically skills developed in the activities**	**Switched on Science Teacher's Guide reference**	**Switched on Science resources**	**Vocabulary**
Spring Term: Topic 2 - Living things	1	Recognise that living things can be grouped in a variety of ways.	1a)) walt: brainstorm what we know about living things and their habitat 1b) walt: sort animals according to a range of criteria e.g. , e.g. tails, feathers, carnivores	1. Sort me. 2. Using classification keys.	Ask relevant questions and using different types of scientific enquiries to answer them. Use straightforward scientific evidence to answer questions or to support their findings.	Pages 26 – 28	Activity Resource 2.1	organism Carnivores Herbivores Omnivores Birds Mammals Skeleton Habitat Reptile Amphibian

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Spring Term: Topic 2 - Living things	2	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.	2a)walt: classify animals according to key characteristics 2B) walt: classify animals into their appropriate groups	3. Classify the animals. 4. Vertebrates and invertebrates.	Sorting Identifying, comparing, classifying and grouping Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables Questioning Asking relevant questions and suggesting where and how answers may be found	Pages 28 - 29	Activity Resource 2.1 Activity Resource 2.2 Activity Resource 2.3 Activity Resource 2.4 Activity Resource 2.5	**Birds** **Mammals** **reptiles** **Amphibians** **Vertebrates** **invertebrates**
Spring Term: Topic 2 - Living things	3	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	3a) walt: classify leaves according to fine detail 3b) walt: use a classification key to identify plants or animals	5. Classifying leaves 1. Identifying and recording living things.	Gather, record, classify and present data in a variety of ways to help in answering questions	Pges 30 - 31		Flowering Non flowering plant serrated edges, one main vein classification key

Spring Term: Topic 2 - Living things	4	Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.	4a: walt: use classification keys to identify and name living things 4b) walt: use classification keys to identify and name plants	2. Going on a bug hunt. 3. Going on a plant hunt	Gather, record, classify and present data in a variety of ways to help in answering questions. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Pages 31 - 33		
Term	**Week 2 lessons per week**	**National Curriculum Statement**	**WALT**	**Resources/Use all or some of the following activities to cover this objective**	**NC/Working scientifically skills developed in the activities**	**Switched on Science Teacher's Guide reference**	**Switched on Science resources**	**Vocabulary**
		Sometimes pose dangers to living things.	Due to the season, this topic will be taught in Summer 2.					
Assessment				4. Bee fantastic - Save our bees		Pages 31 / 32 / 36		

Science

Year 4: Spring 1:Topic 3- Looking at States

National Curriculum: States of Matter

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Spring Term: Topic 3 - Looking at states	1	Compare and group materials together, according to whether they are solids, liquids or gases.	1a) walt: brainstorm what we know about States of Matter 1b) walt: sort objects into solids, liquids and gases	1. In a state.	Sorting Identifying, comparing, classifying and grouping	Pages 42 - 43	Activity Resource 3.1	gas: container liquid: matter: material:
Spring Term: Topic 3 - Looking at states	2	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 (°C).	2a) walt: understand that ice melts at 0°C and above 2b) walt: ask questions and carry out a fair test using	2. Ice hands.	Testing Carrying out practical enquires, and comparative and fair tests Researching Using primary and secondary information to find out specific ideas, concepts and laws Measuring	Page 44	Activity Resource 3.2	freezing: freezing point: liquid: matter: material: melting: melting point: temperature

			standard measurement		Estimating, making predictions and measuring accurately, using appropriate equipment			solid: temperature: thermometer: measure
Term	**Week 2 lessons per week**	**National Curriculum Statement**	**WALT**	**Resources/Use all or some of the following activities to cover this objective**	**NC/Working scientifically skills developed in the activities**	**Switched on Science Teacher's Guide reference**	**Switched on Science resources**	**Vocabulary**
Spring Term: Topic 3 - Looking at states	3	Identify differences, similarities or changes related to simple scientific ideas and processes.	3a) walt: explain the differences, similarities and changes related to states 3b) walt: create and use their graph to draw to a conclusion	1. It's melting.	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusion.	Pages 45 - 46		boiling point: boiling: condensing: freezing: freezing point: gas: container liquid: matter: material: melting: melting point: temperature Celsius
Spring Term: Topic 3 - Looking at states	4	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 (°C). Identify differences, similarities or changes related to simple scientific ideas and processes.	4a) walt: know that changes of state from liquid to solid happen because substances freeze 4b) carry out comparative	2. Freezing	Set up simple practical enquiries, comparative and fair tests Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	Pages 46 - 47	Activity Resource 3.3 Activity Resource 3.4	freezing: freezing point: container liquid: matter: material: melting: temperature solid:

			tests and explain what happened					temperature: thermometer: Celsius
Spring Term: Topic 3 - Looking at states	5	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Identify differences, similarities or changes related to simple scientific ideas and processes.	5a) Walt: know about condensation and evaporation 5b) Walt: understand the process of the water cycle	1. Evaporation.	Set up simple practical enquiries, comparative and fair tests. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Pages 48 -49	Activity Resource 3.5	condensing: evaporation: water cycle
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Spring Term: Topic 3 - Looking at states	6	Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Identify differences, similarities or changes related to simple scientific ideas and processes.	6a) walt: explain the link between the rate of evaporation with the temperature Assessment	2. The water cycle.	Set up simple practical enquiries, comparative and fair tests. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Page 50	Activity Resource 3.6	**Water cycle** **temperature**
Assessment				1. Evaporation. 2. The water cycle		Pages 48 / 50	Activity Resource 3.5 Activity	

						Resource 3.6	

Science

Year 4: Autumn 2:Topic 4- Teeth and Eating

National Curriculum: Animals Including Humans

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Autumn Term: Topic 4 - Teeth and eating	1	Identify the different types of teeth in humans and their simple functions	1a)) walt: brainstorm what we know about Teeth and Eating 1b) walt: ask a range of questions and suggest what will happen	1. First impressions	Ask relevant questions and use different types of scientific enquiries to answer them. Set up simple practical enquiries, comparative and fair tests. Use straightforward scientific evidence to answer questions or to support their findings.	Pages 55 - 56		
Autumn Term: Topic 4 - Teeth and eating	2	Identify the different types of teeth in humans and their simple functions.	2a) WALT: name the different human teeth	2. My teeth. 3. Looking after our teeth.	Set up simple practical enquiries, comparative and fair tests. Gather, record, classify and present data in a	Pages 56 - 58	Activity Resource 4.1 Activity Resource 4.2	canine: canines: incisors

			2b: WALT: know from their research the names and functions of teeth	variety of ways to help in answering questions.			carnivores enamel herbivore incisor incisors molar molars mammals chewing and grinding mouth omnivores teeth
Autumn Term: Topic 4 - Teeth and eating	3	Describe the simple functions of the basic parts of the digestive system in humans	3a) WALT: identify the different parts of the digestive system 3b) WALT: describe the function of different parts of the digestive system 1. Food's incredible journey.	Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables Observing Identifying differences, similarities and changes, making connections and conclusions Communicating Talking and writing about observations sharing conclusions, suggesting possible reasons for results	Page 59		anus carnivores digestion energy herbivore intestine absorbs water undigested food digestion nutrients chemicals growth, movement, oesophagus omnivores intestine absorbed stomach Saliva Oesophagus Stomach

								Small intestine Large intestine Rectum
Term	**Week 2 lessons per week**	**National Curriculum Statement**	**WALT**	**Resources/Use all or some of the following activities to cover this objective**	**NC/Working scientifically skills developed in the activities**	**Switched on Science Teacher's Guide reference**	**Switched on Science resources**	**Vocabulary**
Autumn Term: Topic 4 - Teeth and eating	4	Describe the simple functions of the basic parts of the digestive system in humans.	4a) WALT: use a model to explain what happens to food in the digestive system 4b) WALT: plan to write a scientific story based on the digestion system	2. Lets make a digestive system.	Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables Observing Identifying differences, similarities and changes, making connections and conclusions Communicating Talking and writing about observations sharing conclusions, suggesting possible reasons for results	Pages 60 - 61	Activity Resource 4.3	
Autumn Term: Topic 4 - Teeth and eating	5	Construct and interpret a variety of food chains, identifying producers, predators and prey.	5a) WALT: create a food chain to show how animals obtain food 5b)Walt: use the cards to make a number of different food chains	1. A chain reaction	Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables e.g. branching keys	Page 62 - 63	Activity Resource 4.4	**Predator Food chain Herbivore Producer Consumer Prey Omnivore Carnivore herbivore**

Autumn Term: Topic 4 - Teeth and eating	6	Construct and interpret a variety of food chains, identifying producers, predators and prey.	6a) WALT: extend their knowledge and recognise food chains in the school grounds 6b)Assessment	2. Predator and prey.	Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables Observing Identifying differences, similarities and changes, making connections and conclusions	Page 63	Activity Resource 4.4	
Assessment				2. My teeth. 2. Let's make a digestive system. 2. Predator and prey.		Pages 56 / 60 / 63	Activity Resource 4.1 Activity Resource 4.2 Activity Resource 4.3 Activity Resource 4.4	

Science

Year 4: Summer 1: Topic 5- Power it Up

National Curriculum: Electricity

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Summer Term: Topic 5 - Power it up	1	Identify common appliances that run on electricity.	1a) walt: brainstorm what we know about Electricity 1b: walt: sort common appliances to show whether they are mains-operated, battery operated or both	1. Which source?	Sorting Identifying, comparing, classifying and grouping Observing Identifying differences, similarities and changes, making connections and conclusions	Page 68 - 69	Activity Resource 5.1 Activity Resource 5.3	**Electric Mains-operated Battery operated current**
Summer Term: Topic 5 - Power it up	2	Pupils should be taught about precautions for working safely with electricity. (NSG)	2a) walt: recognise safety hazards inside and	2. Using electricity safely.	Observing Identifying differences, similarities and changes,	Page 69		**socket**

			outside the home		making connections and conclusions			
Summer Term: Topic 5 - Power it up	3	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 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.	3a)walt: explain why a circuit does not work	1. Simple circuits.	Communicating Talking and writing about observations sharing conclusions, suggesting possible reasons for results	Pages 70 - 71		bulb: circuit light cell electric current transmits insulator flow mains rechargeable component circuit on terminals negative positive wires
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Summer Term: Topic 5 - Power it up	4	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.	4a) walt: know that a switch opens and closes a circuit 4b) walt: can use the switch to turn components on and off	2. Switches	Testing Carrying out practical enquires, and comparative and fair tests Researching Using primary and secondary information to find out specific ideas, concepts and laws	Pages 71 - 72		**Switch components**

Summer Term: Topic 5 - Power it up	5	Recognise some common conductors and insulators, and associate metals with being good conductors.	5a) walt: know that metals conduct electricity and other materials are insulators 5b) walt: use their observations to draw conclusions and answer the question	1. Conductors	Use straightforward scientific evidence to answer questions or to support their findings . Testing Carrying out practical enquires, and comparative and fair tests Researching Using primary and secondary information to find out specific ideas, concepts and laws	Pages 73 - 74	Activity Resource 5.2	**Conductor Insulator**
Summer Term: Topic 5 - Power it up	6	Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. 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.	6a) walt: design a model with a working circuit 6b) walt: make a model with a working circuit	2. What can you make using circuits	Recording Gathering, recording, classifying and presenting data using diagrams, charts and tables	Pages 74 - 75		**Evaluate**
Assessment			Assessment	2. What can you make using circuits.		Pages 74 - 75		

Science

Year 4:Summer 2: Topic 2- Living Things

National Curriculum: Animals Including Humans

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	1		Walt: brainstorm about living things					
Summer Term: Topic 2 - Living things	2	sometimes pose dangers to living things.	2a) walt: research and present relevant information about why bees are good for the environment 2b) walt: record and communicate key aspects of the life of a bee (food chains)	1. Bees - friends of foe? 2. The life of a bee.	Using primary and secondary information to find out specific ideas, concepts and laws	Pages 34 - 35		**Food chain** **Habitat** **Insect** **Producers** **Predators** **Prey** **Danger** **Bee**

Summer Term: Topic 2 - Living things	3	Recognise that environments can change and that this can sometimes pose dangers to living things.	3a)walt: explain why bees are important and describe what they have done to encourage bees into the school grounds 3b) walt: assessment	3. Bee survey - Collecting data. 4. Bee Fantastic - Save our bees. 5. Spreading the word.	Use straightforward scientific evidence to answer questions or to support their findings. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Communicating Talking and writing about observations sharing conclusions, suggesting possible reasons for results	Pages 35 - 37		**Food chain** **Habitat** **Insect** **Producers** **Predators** **Prey**
Assessment				4. Bee fantastic - Save our bees		Pages 31 / 32 / 36		

Science

Year 4:: Topic 2- Living Things

National Curriculum:

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Summer Term: Topic 6 - The big build	1			1. Bridging a stream	Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific	Page 79		

				evidence to answer questions or to support their findings.			
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Summer Term: Topic 6 - The big build	2		2. Which shape is the strongest for bridge pillars? 3. Terrific triangles.	Set up simple practical enquiries, comparative and fair tests. Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Use straightforward scientific evidence to answer questions or to support their findings.	Pages 80 - 81		
Summer Term: Topic 6 - The big build	3		1. Tallest towers.	Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables. Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise	Page 82		

				further questions. Use straightforward scientific evidence to answer questions or to support their findings.				
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Summer Term: Topic 6 - The big build	4			2. Spaghetti towers.	Set up simple practical enquiries, comparative and fair tests Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Use results to draw simple conclusions, make predictions for new values, suggest improvements. and raise further questions	Page 83		
Summer Term: Topic 6 - The big build	5			1. Animal homes.	Ask relevant questions and use different types of scientific enquiries to answer them Gather, recording, classifying and presenting data in a variety of ways to help in answering questions 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	Page 84 - 85		
Summer Term: Topic 6 - The big build	6			1. Researching big builds. 2. Big Build - Newspaper bridge or tower	Ask relevant questions and using different types of scientific enquiries to answer them. Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Page 86 - 87		

Assessment			2. Big Build - Newspaper bridge or tower				