Whole School

Science Curriculum

Aims for today:

- Quick curriculum recap
- Introduce and self evaluate science using the TAPS pyramid
- Look at TAPs materials to help plan and deliver and assess scientific enquiry skills across the curriculum
- Plan our first enquiry session

	Advent 1	Advent 2	Lent 1	Lent 2	Pentecost 1	Pentecost 2
Reception	Ourselves	Autumn	Three little pigs	Spring farm	Rainbow fish	Summer fruits
Year 1	Animals inc. humans	Animals inc. humans	Everyday materials	Every day materials	Seasonal changes	Plants
Year 2	Uses of everyday materials	Uses of everyday materials	Living things and life cycles	Living things and life cycles	Plants	Animals inc. humans
Year 3	Light	Rocks and fossils	Animals including humans	Light	Plants	Forces and magnets
Year 4	Animals inc. humans	Sound	Living things	Living things	Solids, liquids and gases	Electricity
Year 5	Forces	Properties and changes of materials	Properties and changes of materials	Living things and their habitats	Animals inc. humans	Earth and space
Year 6	Light	Evolution and Iheritence	Electricity	Living things and their habitats	Animals inc. humans	Animals inc. humans

Whole-school definition of science

Science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments.

Big Ideas of Science

Curriculum Themes

‘Big Ideas’ of Science

The Big Ideas of Science are recurring themes that appear throughout the curriculum in all series.

Each Learning Point that is taught will link to a Big Idea.

The ‘Big Ideas’ focus on the 4 main components of scientific knowledge:

Physics, Chemistry, Biology and Earth Science

Big Ideas of Science
Physics
P1: The universe follows unbreakable rules that are all about forces, matter and energy. P2: Forces are different kinds of pushes and pulls that act on all the matter that is in the universe. Matter is all the stuff, or mass, in the universe. P3: Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it.

Big Ideas of Science
Chemistry
C1: All matter (stuff) in the universe is made up of tiny building blocks. C2: The arrangement, movement and type of the building blocks of matter and the forces that hold them together or push them apart explain all the properties of matter (e.g. hot/cold, soft/hard, light/heavy, etc). C3: Matter can change if the arrangement of these building blocks changes.

Big Ideas of Science
Biology
B1: Living things are special collections of matter that make copies of themselves, use energy and grow. B2: Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago. B3: The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live.

Big Ideas of Science
Earth Science
E1: The Earth is one of eight planets that orbit the sun. E2: The Earth is tilted and spins on its axis leading to day and night, the seasons and the climate. E3: The Earth is made up of several layers, including a relatively thin rocky surface which is divided into tectonic plates, and the movement of these plates leads to many geologic events (such as earthquakes and volcanoes) and geographical features (such as mountains.)

Year 1

Year 1/2 Working Scientifically Overview

New learning and vocabulary
properties, observe, test, magnifying glass, object, record, equipment

- **Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science**
- **Know that we can use magnifying glasses to observe objects closely**
- **Know that we can test our questions to see if they are true**
- **Know that objects can be identified or sorted into groups based on their observable properties**
- **Know that we can write down numbers and words or draw pictures to record what we find**

Year 1 Overview

Block 1	Biology: Animals including Humans
Block 2	
Block 3	Chemistry: Everyday Materials
Block 4	
Block 5	Earth Science: Seasonal Changes
Block 6	Biology: Plants

Year 2

Year 1/2 Working Scientifically Overview

New learning and vocabulary
properties, observe, test, magnifying glass, object, record, equipment

- **Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science**
- **Know that we can use magnifying glasses to observe objects closely**
- **Know that we can test our questions to see if they are true**
- **Know that objects can be identified or sorted into groups based on their observable properties**
- **Know that we can write down numbers and words or draw pictures to record what we find**

Year 2 Overview

Block 1	Chemistry: Uses of Everyday Materials
Block 2	
Block 3	Biology: Living Things and Life Cycles
Block 4	
Block 5	Biology: Plants and Animals Including Humans
Block 6	

Year 3

Year 3/4 Working Scientifically Overview

Revision
properties, observe, test, magnifying glass, object, record, equipment

- **Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science**
- **Know that we can use magnifying glasses to observe objects closely**
- **Know that we can test our questions to see if they are true**
- **Know that objects can be identified or sorted into groups based on their observable properties**
- **Know that we can write down numbers and words or draw pictures to record what we find**

New learning and vocabulary – ongoing from year 3
prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

- **Know that we can ask questions and answer them by setting up scientific enquiries**
- **Know how to make relevant predictions that will be tested in a scientific enquiry**
- **Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same**
- **Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches**
- **Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table**
- **Know how – with structured guidance - to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry**
- **Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true**
- **Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry**
- **Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)**
- **Know that they can draw conclusions from the findings of other scientists**
- **Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry**

Year 3 Overview

Block 1	Physics: Light
Block 2	
Block 3	Chemistry and Earth Science: Rocks and Fossils
Block 4	Physics: Forces and Magnets
Block 5	Biology: Plants and Animals
Block 6	

Year 4

Year 4 Overview

Block 1	Biology: Animals Including Humans
Block 2	Physics: Sound
Block 3	Physics: Electricity
Block 4	Chemistry: Solids, Liquids and Gases
Block 5	Biology: Living Things and Their Habitats
Block 6	

Year 3/4 Working Scientifically Overview

Revision
properties, observe, test, magnifying glass, object, record, equipment

- **Know that we can ask questions about the world and that when we observe the world to answer these questions, this is science**
- **Know that we can use magnifying glasses to observe objects closely**
- **Know that we can test our questions to see if they are true**
- **Know that objects can be identified or sorted into groups based on their observable properties**
- **Know that we can write down numbers and words or draw pictures to record what we find**

New learning and vocabulary – ongoing from year 3
prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

- **Know that we can ask questions and answer them by setting up scientific enquiries**
- **Know how to make relevant predictions that will be tested in a scientific enquiry**
- **Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same**
- **Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches**
- **Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table**
- **Know how – with structured guidance - to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry**
- **Know that scientific enquiries can suggest relationships, but that they do not prove whether a prediction is true**
- **Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry**
- **Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)**
- **Know that they can draw conclusions from the findings of other scientists**
- **Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry**

Year 5

Year 5 Overview

Block 1	Earth Science and Physics: Earth and Space
Block 2	Physics: Forces
Block 3	Chemistry: Properties and Changes of Materials
Block 4	
Block 5	
Block 6	Biology: Living Things and Their Habitats

Year 5/6 Working Scientifically Overview

Revision
prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

- **Know that we can ask questions and answer them by setting up scientific enquiries**
- **Know how to make relevant predictions that will be tested in a scientific enquiry**
- **Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same**
- **Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches**
- **Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table**
- **Know – with structured guidance - how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry**
- **Know that scientific enquiries can suggest relationships, but that they do <u>not</u> prove whether a prediction is true**
- **Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry**
- **Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)**
- **Know that they can draw conclusions from the findings of other scientists**
- **Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry**

New learning and vocabulary
line graph, relationship, outlier

- **Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)**
- **Know how to identify conditions that were imperfectly controlled and can explain how these might affect results**
- **Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device**
- **Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement**
- **Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary**
- **Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)**

Year 6

Year 5/6 Working Scientifically Overview

Revision
prediction, measurement, enquiry, dependent variable, independent variable, fair test, similar, theory, hypothesis

- **Know that we can ask questions and answer them by setting up scientific enquiries**
- **Know how to make relevant predictions that will be tested in a scientific enquiry**
- **Know that in a fair test one thing is altered (independent variable) and one thing that may change as a result is measured (dependent variable) while all other conditions are kept the same**
- **Know how to use a range of equipment to measure accurately, including thermometers, data loggers, rulers and stopwatches**
- **Know how to draw bar charts; how to label a diagram using lines to connect information to the diagram; how to use a coloured key how to draw a neat table; how to draw a classification key; how to show the relationship between an independent variable in a two-way table; and how to label specific results in a two-way table**
- **Know – with structured guidance - how to write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to precis a scientific enquiry write-up into a brief oral discussion of what was found in a scientific enquiry**
- **Know that scientific enquiries can suggest relationships, but that they do <u>not</u> prove whether a prediction is true**
- **Know that scientific enquiries are limited by the accuracy of the measurements (and measuring equipment) and by the extent to which conditions can vary even, and that repeating enquiries, measurements and taking measures to keep conditions as consistent as possible can improve an enquiry**
- **Know that the conclusions of scientific enquiries can lead to further questions, where results can be clarified or extended to different contexts (e.g. effect of changing sunlight on a plant – does this work with other plants / different types of light / etc)**
- **Know that they can draw conclusions from the findings of other scientists**
- **Know that a theory is an explanation of observations that has been tested to some extent and that a hypothesis is an explanation that has not yet been tested, but that can be tested through a scientific enquiry**

New learning and vocabulary
line graph, relationship, outlier

- **Know how to choose appropriate variables to test a hypothesis (e.g. plant height as a dependent variable when measuring effect of light on plant growth)**
- **Know how to identify conditions that were imperfectly controlled and can explain how these might affect results**
- **Know how to accurately use further measuring devices, including digital and analogue scales, measuring cylinders and beakers, recognizing the relative accuracy of each device**
- **Know how and when to repeat measurements, how to find an average of a set of measurements and how to recognize and remove outliers from a set of data, justifying the removal as a potential mis-measurement**
- **Know how to independently write a simple scientific enquiry write-up including an introduction, a list of equipment, a numbered method, a detailing of results and a conclusion**
- **Know how to present brief oral findings from an enquiry, speaking clearly and with confidence and using notes where necessary**
- **Know examples of instances where scientific evidence has been used to support or refute ideas or arguments (e.g. fossil records as evidence of natural selection)**

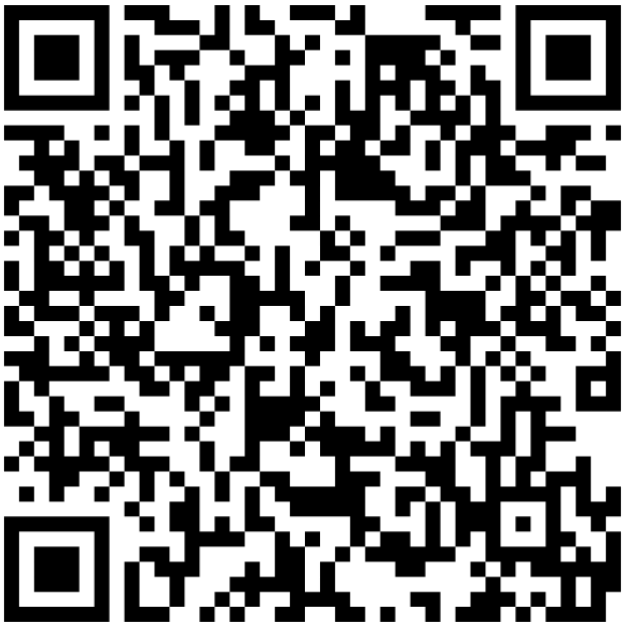
Year 6 Overview

Block 1	Physics: Light
Block 2	Physics: Electricity
Block 3	Biology: Living Things and Their Habitats
Block 4	Biology: Evolution and Adaptation
Block 5	Biology: Animals Including Humans
Block 6	Biology: Animals Including Humans

Using the curriculum document

- Where new learning is based on previous learning, the block starts with a revision session from previous block(s)'s learning.
- Each overview includes Composites and components that need to be covered.
- The lesson-by-lesson knowledge may be taught and learned more flexibly than is exactly specified in the curriculum document to ensure responsive teaching.
- New vocabulary to be taught is given, along with previously taught vocabulary.
- Key concept vocabulary is in **bold.**
- Enquiry sessions are explained, though alternative enquiries that ensure the same breadth of coverage across a year are equally acceptable.
- Significant scientists have been mapped out through the medium term planning
- A minimum of one enquiry is undertaken per block, though more can be undertaken if a teacher sees it as necessary to respond to the needs of their class.
- Completion of the enquiries should be undertake in reference to the linked 'working scientifically' learning points/objectives.

Topic	Small Question	Enquiry	Big Idea(s)	Enquiry Type	Working Scientifically Skill
Animals Including Humans	How can we know things about a dinosaur when they have been extinct for 65 million years?	Following learning about human teeth, chn use information and pictures of different teeth from dinosaurs to try to work out what they might have eaten, justifying their answers. (Use language of carnivore, omnivore and herbivore.)	**B3:** The different kinds of life, animals, plants and microorganisms, have evolved over millions of generations into different forms in order to survive in the environments in which they live. (e.g. the right teeth for their food.)	finding out using secondary sources grouping and classification	Sc4/1.4, Sc4/1.7, Sc4/1.8, Sc4/1.9
Sound	How do instruments make different sounds?	Chn to make a basic guitar or flute with different notes possible to show how different vibrations make notes of different pitch.	**P3:** Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (Sound is one form of energy.)	noticing patterns	Sc4/1.1, Sc4/1.2, Sc4/1.3, Sc4/1.4, Sc4/1.5, Sc4/1.6, Sc4/1.7, Sc4/1.9
Electricity	Does electricity flow easily through all objects?	Chn to create a small circuit to test whether objects are conductors or insulators (e.g. circuit with bulb which lights when a gap in the circuit is bridged.)	**P3:** Energy, which cannot be created or destroyed, comes in many different forms and tends to move away from objects that have lots of it. (Electrical energy in this case 'moves away from' the battery.)	grouping and classification comparative test	Sc4/1.1, Sc4/1.2, Sc4/1.3, Sc4/1.4, Sc4/1.5, **Sc4/1.6 (enquiry write up),** Sc4/1.7, Sc4/1.8, Sc4/1.9
Solids, Liquids and Gases	Does water always melt at the same speed?	Chn to observe and record as ice melts in different conditions (e.g. outside vs radiator, wrapped in insulation vs not)	**C3:** Matter can change if the arrangement of the building blocks, of which is is made, changes.	observing over time comparative test (beginning to include elements of fair testing)	Sc4/1.1, Sc4/1.2, Sc4/1.3, Sc4/1.4, Sc4/1.5, **Sc4/1.6 (enquiry write up),** Sc4/1.7, Sc4/1.8, Sc4/1.9
Living Things and Their Habitats	Are some animals more alike than others?	Children to use pictures to put animals into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals.	**B2:** Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.	grouping and classification	Sc4/1.4, Sc4/1.7, Sc4/1.8
Living Things and Their Habitats	Are some animals more alike than others?	Children to use descriptions to put animals into groups in different ways (e.g. where they live, what they eat, how they move, how many legs, etc) moving on to using keys to differentiate between closely related animals.	**B2:** Living things on Earth come in a huge variety of different forms that are all related because they all came from the same starting point 4.5 billion years ago.	grouping and classification	Sc4/1.4, Sc4/1.7, Sc4/1.8



Assessment moderation

Subject:

Date

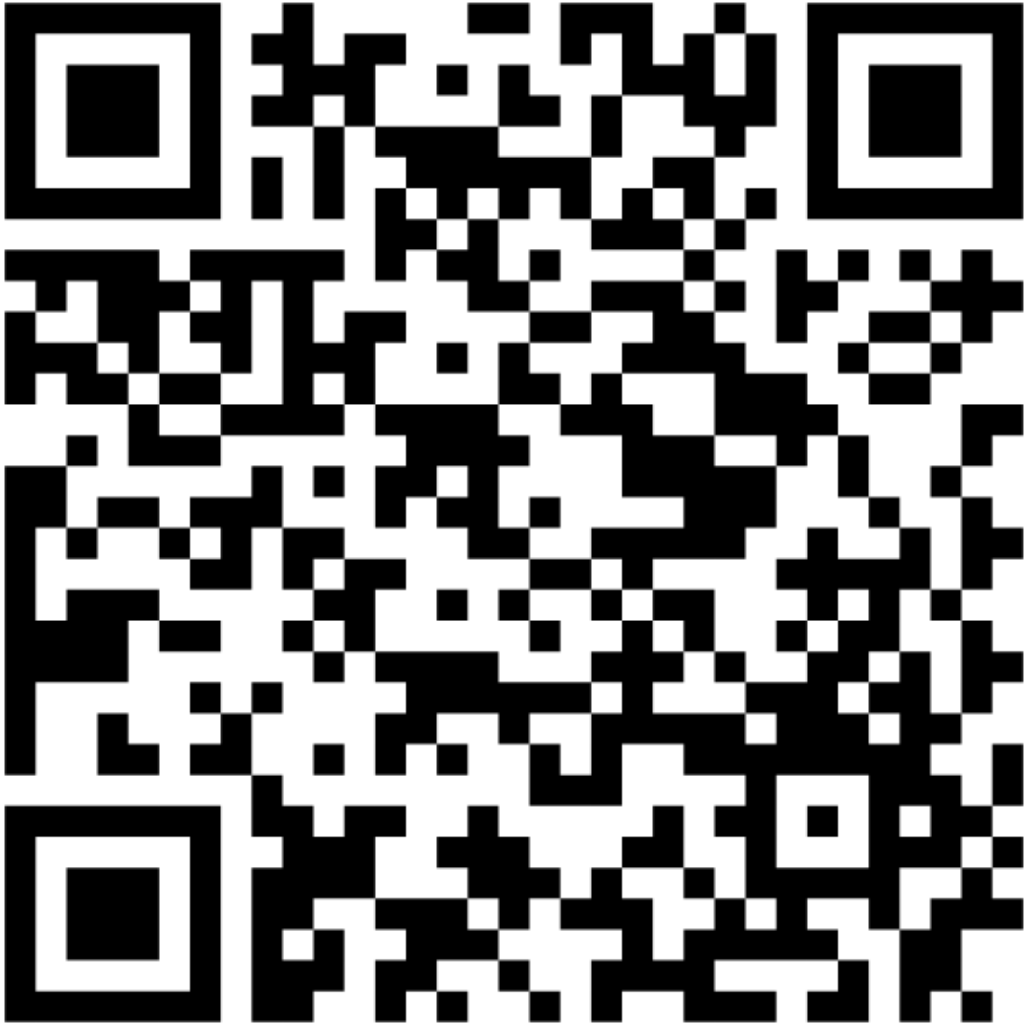
Completed by:

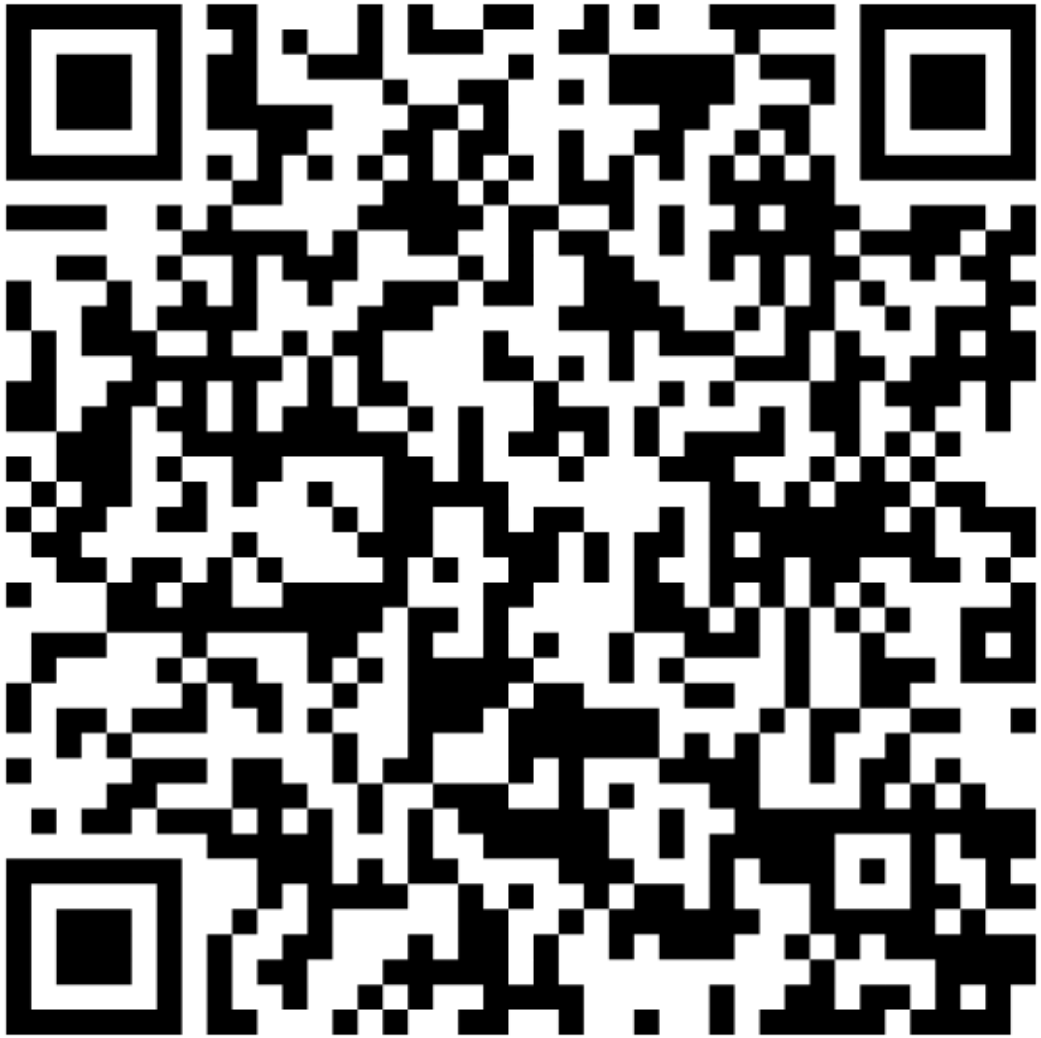
1	2
3	4

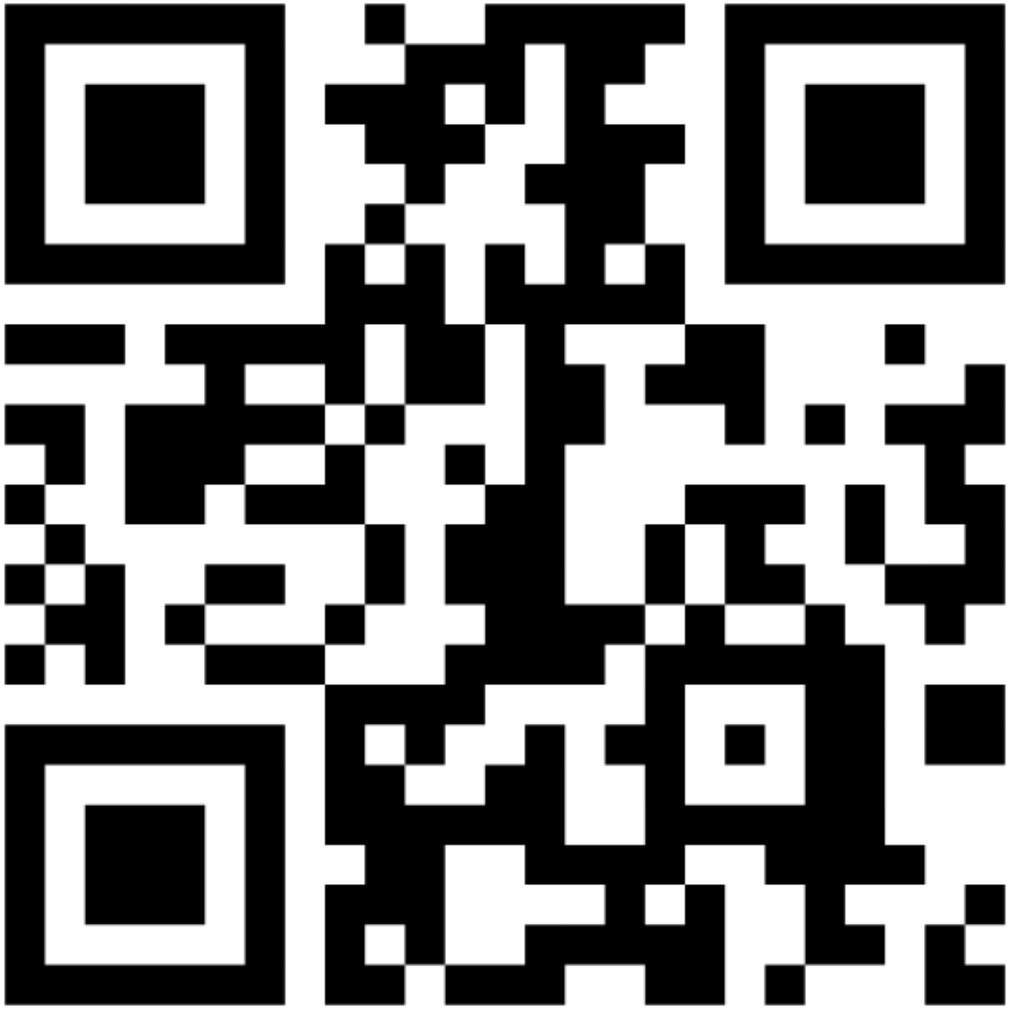
Lesson:		Absent:	
Composite:			
Component:			
1	2	3	4

What to consider...	How do I know...
Do they recall key knowledge? Do they show fluency with their knowledge (transferring it in and across subjects)? Do they answer questions in class, giving explanations for their answers? Do they ask questions/show curiosity? Do they take pride in their work? Do they demonstrate application of knowledge? Do they make links? Do they use subject specific vocabulary within and across other subjects? Do they show resilience?	Books Questioning Quizzes Group tasks Drop-ins NFER (RWM) Retrieval tasks End of unit assessment task

	1	2	3	4
Curriculum Progress Descriptions **(Based on the ARE curriculum or tailored SEND curriculum)**	Successfully **learning all or nearly all** of the curriculum, demonstrating a **strong understanding** of the knowledge and skills expected.	Successfully **learning most** of the curriculum, demonstrating a **good understanding** of the knowledge and skills expected, although there may be **some gaps**.	Successfully **learning some** of the curriculum, demonstrating a **satisfactory understanding** of the knowledge and skills expected, although there may be **a number of gaps**.	**Not successfully learning** the curriculum, with **significant gaps** in the skills and knowledge expected.
Feedback – **Immediate** (class	The student has successfully closed	The student has responded to	The student has attempted to	The student has not responded to the







Quick start teacher guide to using TAPS Focused Assessments

When using the Teacher Assessment in Primary Science (TAPS) resources for supporting science teaching and assessment, start by trying some TAPS plans with your class.

CHOOSING A FOCUS

Look at the **Focused Assessment Overview**.

Select a TAPS plan linked to your science topic, your Working Scientifically Focus or your pupils' needs.

Two-thirds through your topic is a good time: info can then be used formatively and summatively.

PREPARING

Use the **TAPS plan** to prepare the lesson for your class, maintaining the skill focus.

Familiarise yourself and any supporting adults with the assessment indicators, choice of recording and **questions** to support discussion.

ORGANISING

Organise the class in a way which will both: help the children to use the focused skill; and help you to **observe** and **talk** to the children **during** the activity (e.g. small groups/pairs).

FOCUSED RECORDING

Choose a way of **recording the focused skill** which is appropriate for the task and the pupils, e.g. post-it pupil comments, photos, pupil presentations, written work, peer review...

USING EVIDENCE

Compare pupil outcomes with **Assessment Indicators**.

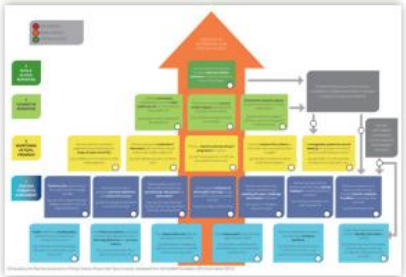
Use judgements to plan next steps for class and individuals.

MODERATING

Discuss and compare pupil outcomes and judgements with colleagues to enhance reliability, supported by criteria and exemplars.

SUMMARY ASSESSMENT

Collating evidence about pupil skills and concepts from FA, alongside a range of other class activities (e.g. from floor books, pupil books, teacher class discussion notes) helps to provide a valid & reliable summary.



Refer to blue layers of TAPS Pyramid for more ideas.

Refer to yellow and green layers of pyramid of TAPS Pyramid for more ideas.

TAPS Focused Assessment overview, plans and TAPS pyramid available on the PSTT website here: pstt.org.uk/resources/curriculum-materials/assessment

Overview of TAPS plans for Focused Assessment of Working Scientifically

(Any focus can be chosen for open-ended enquiries, these are only suggestions)

	PLAN	DO			REVIEW	
	Ask Qs + plan enquiry	**Set up enquiry**	**Observe + Measure**	**Record**	**Interpret + Report**	**Evaluate**
R plans	Brown apples, Scoop sounds	Icy shelter, Mix materials	Frozen balloons, Senses walk	Scavenger sort, Forensic footpr	Butter, Toy forces, Taste test, Bubble snake	
KS1 (age 5-7) Develop close obs	Ask simple Qs and recognise that they can be answered in different ways*.	Perform simple tests	Observe closely, using simple equipment.	Gather and record data to help in answering questions.	Use their observations and ideas to suggest answers to questions. Identify and classify. *Use appropriate scientific language to communicate ideas.*	
Y1 TAPS plans	Reflectiveness, Transparency Dunlop balls	Floating and sinking Teddy zipline	Plant structure, Leaf look Shades of colour	Seasonal change Bridge material testers	Animal classification, Humans body parts Surprise materials	
Y2 TAPS plans	Waterproof, Separating colours Animal home build	Rocket mice, Daisy footprints Feeding simulation	Plant growth Ice escape, Drops on coin	Woodlice habitats Materials hunt	Nature spotters, Living and non, Human handspan Muffling sound, Boat materials	
LOWER KS2 (age 7-9) **Develop systematic approach**	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.	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.	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. Identify differences, similarities or changes related to simple scientific ideas and processes.	Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Use straightforward scientific evidence to answer questions or to support their findings.
Y3 TAPS plans	Investigating skeletons Cupcake parachutes Litter pick Qs	Shoe grip forces Magnet tests	Measuring plants Plant close obs, Ice cream Forensic fingerprints	Making shadows Cars down ramps	Rock reports Eco Action, Wind power vehicle Macintosh waterproof	Function of stem Balloon rockets Egg drop packaging
Y4 TAPS plans	Investigating pitch Cornflour slime, Microfibres	Drying materials	Measure temperature Circuit products	Local survey of living things	Electrical conductos String phones, Digestion model	Teeth(eggs) in liquids Dunking biscuits
UPPER KS2 (AGE 9-11) **Develop independ-ence**	Plan different types* of scientific enquiries to answer *their own questions*, including recognising and controlling variables where necessary.	Use test results to make predictions to set up further comparative and fair tests.	Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	Report and present findings from enquiries, inc conclusions and causal relationships, in oral and written forms such as displays and other presentations, *using appropriate scientific language.*	Explain degree of trust in results. Identify *and evaluate* scientific evidence *(their own and others')* that has been used to support or refute ideas or arguments.
Y5 TAPS plans	Dissolving, Nappy absorbency Paper planes Space travel Qs	Thermal insulation layers Zipline testing	Human growth survey Spinner dropping Titanic pulleys	Sugar cubes Space craters, Bottle flip Seed dispersal	Champion tapes Research: Life cycle, Solar system Dirty water filter	Aquadynamics, Marblerun force Forensic powders Jump patterns
Y6 TAPS plans	Bulb brightness, Light Qs O-wing flight, Flower sampling	Human heart rate Bird beaks	Conductive dough Terrific tasters	Living things keys Shadows invest Camouflagued moths	Invertebrate research	Bridge engineers, Pollution survey Fossil habitats, Egg strength
Transition	Reaction catches	Yeast growth	Formula 1 tubs	Blood splatter	Lolly stick catapults	Cleaning coins

***Types of enquiry including: observing changes over time, noticing patterns, grouping and classifying, comparative and fair tests, using secondary sources.**

Progression statements are taken directly from England's 2014 National Curriculum, *with small additions in italics from the 2018 Teacher Assessment Framework.*

Topics based in: Biology, Chemistry, Physics

Examples of CST in Science

Year 1 Block 1 Animals Including Humans Big Idea(s): B2, B3	**New vocab:** energy, growth, habitat, fish, amphibian, reptile, bird, mammal, offspring, carnivore, herbivore, omnivore, vertebrate, skeleton, organ
	Composites: I can classify animals based on what they eat I can describe the structure of a variety of common animals (fish, birds, mammals, amphibians, insects,reptiles) I can emphasize the uniqueness and dignity of each individual, highlighting the idea that every person is special and valuable.
Week 1	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • Know that a trout is an example of a fish; a frog is an example of an amphibian; a lizard is an example of a reptile; a robin is an example of a bird; a rabbit and a human are examples of a mammal and explore further examples of each animal type
Week 2	• **Know that herbivorous animals eat plants; carnivorous animals eat other animals; omnivorous animals eat both animals and plants**
Week 3	• Know that a cat is an example of a carnivore; that a rabbit is an example of a herbivore; know that many humans are examples of omnivores (though not vegetarians)
Week 4	• **Know that fish, amphibians, reptiles, birds and mammals are similar in that they have internal skeletons and organs; these are known as vertebrates, which means they are animals that have a backbone**
Week 5	• **Know that fish are different to other animals in having gills so that they can breathe underwater and scaly skin**
Week 6	• **Know that amphibians are different to other animals in that they begin their lives with gills but then develop lungs and breathe on land**

Year 1 Block 5 Earth Science Big Idea(s): E2	**New vocab:** energy, freezing, melting, orbit, reflection, Sun, clouds, wind, snow, ice, spring, summer, autumn, winter (NB: the Sun and the Earth are capitalized when being discussed in an astronomical context.)
	Composites: I can recognise and describe seasonal changes within the UK. I can describe how the weather changes across the seasons within the UK. I can say how the weather impacts human lives.
Week 1	• **Science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments (retrieval)** • **Know that days are longer in the summer and shorter in winter**
Week 2	• **Know that weather changes through the year, getting hotter in the summer and colder in the winter** • **Know that the four seasons are spring, summer, autumn and winter and know the order of the cycle**
Week 3	
Week 4	• **Know that the winter is likely to bring ice on the ground when water freezes due to the cold**
Week 5	
Week 6	• **Know that the Earth orbits the Sun with one orbit constituting a year of roughly 365 days**

Year 4 Block 1 Animals Including Humans Big Idea(s): B2, B3	**Retrieval vocab:** absorption, component, dissolving, energy, nutrients, consumption, hygiene, herbivore, carnivore, organ **New vocab:** digestion, excretion, peristalsis, anus, duodenum, small intestine, large intestine, stomach, rectum, oesphagus, tongue, saliva, acid, bile, enzymes, incisors, canines, molars, predator, prey, producer, consumer, primary, secondary, tertiary
	Composites: I can describe the simple functions of the basic parts of the digestive system in humans, I can identify the different types of teeth in humans and their simple functions , I can construct and interpret a variety of food chains **Stewardship – All things are connected Dignity of the human person – I have been given a gift from God**
Week 1 (retrieval)	• **Know that science is a way to understand our world by carefully thinking about it and testing our guesses with observations and experiments** • **Know that proteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy (e.g. calcium for healthy bones and teeth)** • **Know that a food group can cause ill health, such as tooth decay due to excess sugar** • **Know that living things move, grow, consume nutrients and reproduce** • **Know that plants absorb energy from the Sun; that this energy is consumed by herbivorous animals; and that carnivorous animals eat other animals**
Week 2	• **Know that food passes through the body with the nutrients being extracted and the waste products excreted, and that this process is called digestion** • **Know that the process of digestion involves breaking complex foodstuffs into simpler building blocks that can be absorbed by the body**
Week 3	• **Know that the process of digestion begins with food being chewed in the mouth by the teeth and saliva added** • **Know that a human has three types of teeth – incisors, canines and molars – and that these each perform different functions** • **Know that incisors slice food, canines tear food (especially meat) and that molars grind food** • Know that children develop an initial set of teeth which are gradually replaced between the ages of 6 and 12

Nuclear

This is the energy that is created with atoms are either combind or split, creating heat. This can be converted into electricity

Renewable	Non-renewable
Solar Geothermal Hydro Wind nuclear	Fossil fuels (coal and oil)

CST Reflection

Why should we try to use renewable sources of energy?

We should try and use renewable sauces because they do not run out of electricity. So you do not have to by more of it because it does not run out. We should also use renewable energy sautses because they are that more expensive even tho they do not last as long and renewable is better.

Three in a Row

Which word is missing from this definition of appliances: 'A piece of equipment or a device designed to perform a particular ____'.

What is the name of this circuit component?

buzzer

Give an example of a mains-powered appliance.

fan ✓

What is the name of this circuit component?

CST reflection

How can we protect our planet and help stop species becoming extinct?

We can help protect our planet by puting you rubish in the bin, nat droping it on the floor

Dezatesation is causing animals to die because they have no place to live and to hide from pray. Pollution is killing animals because they get traped in the pollution and dijest things that they ate nat supost to. Poaching is eligill killing animals

https://www.youtube.com/watch?v=A0t70bwPD6Y

Any questions?