



Year 6 Progress Booklet:

Name: _____ Class: _____

Science Teacher: _____

Progress Sheet:

In Science this year I would like to _____

Assessment	Date	Score	W / M / E	😊	😐	😞
Extended Response – Working in a lab						
Baseline Assessment						
Organisms Assessment						
Lightbulb Investigation						
Energy Assessment						
Keys Extended Task						
Genes and Ecosystems Assessment						
Matter Marking Task						

My progress in Science:

	Attitude to learning:	Progress:	How do you feel? Is there something you need to change?
Report 1			
Report 2			
Report 3			

Contents

What is Science and why do we study it?	2
National Curriculum Success Criteria	3
Year 6 Learning Journey	4
Topic 1: Introduction to Science	5
Topic 2: Organisms	6
Topic 3: Electricity and Waves	8
Topic 4: Ecosystems and Genes	10
Topic 5: Matter	12
Year 6 Learning Summary	14

What is Science and why do we study it?



Science is the study of the natural world through observation and experiment.

In science we study a variety of different topics that relate to us and the world around this.

In science we learn knowledge and skills, we consider how we make observations, write predictions, develop inferences that we can make from our observations, how to communicate findings and improve our lives and the world around us.

Biology: the study of living organisms, their structure, adaptations and environment.

Chemistry: studies the properties of matter and how matter interacts with energy.

Physics: the study of matter and small parts that make up matter, its motion and behaviour through space and time, including energy and forces.

Where can science take us?

Whether you choose to continue to study science or use the skills it gives you, science opens a wide variety of doors, including doctor, engineer, material scientist, microbiologist, economist, meteorologist, accountant, analyst.



National Curriculum Success Criteria:

By the end of year 6, I am aiming to work towards meeting the national standard in science, to do this I need to be able to do the following:

	National Curriculum Statement	Evidence 1	Evidence 2	Evidence 3
1	WS: Describe and evaluate own and others scientific ideas using a range of sources.			
2	WS: Ask your own questions about scientific phenomena.			
3	WS: Recognise and control variables and types of enquiry.			
4	WS: Use a range of scientific equipment and take repeat measurements where necessary			
5	WS: Record data and results – including keys, tables, graphs.			
6	WS: Draw conclusions, explain and evaluate your methods.			
7	WS: Raise further questions that could be investigated based on your data and observations.			
8	Biology: Name and describe the functions of the main parts of the circulatory system.			
9	Biology: Describe the effects of diet, exercise, drugs and lifestyle on how the body functions.			
10	Biology: Use observable features to classify and identify organisms.			
11	Biology: Construct and interpret food chains.			
12	Biology: Using the ideas of inheritance, variation and adaptation, describe how living things have changed over time and evolved.			
13	Biology: Describe how fossils are formed and provide evidence for evolution.			
14	Physics: Explain how we see objects.			
15	Physics: Explain the formation of shape and size of shadows.			
16	Physics: Use symbols to represent simple series circuit diagrams.			
17	Physics: Construct and control a series circuit, describe how the circuit is affected by changes made to it.			

What will we learn this year?

Year 6:

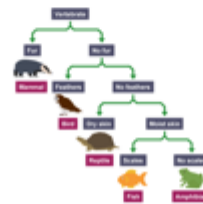
Introduction to science – learn about the lab, the equipment we use and scientific enquiries.



Energy and waves – investigate how to construct electrical circuits, carry out scientific investigations and explore how we see.



Organisms – learn about the systems and how to stay healthy and the impacts of substances on health.



Genes and ecosystems – explore the links between different organisms, write your own classification key. Consider the role of variation and adaptation in evolution.



Revisit and prepare – what happens when we mix and react different substances?

Introduction to Science Target Sheet:

Big Picture: Science involves asking questions, investigating and observing the world around us. What does a scientist need to do to be safe and collect accurate results?

Identify how confident you feel at the start of the topic and the end of the topic.

Red = I know nothing

Amber = I know something

Green = I feel confident with this

Key Knowledge	Confidence before topic - RAG	Confidence after topic - RAG
Safety in a science classroom is important to keep yourself and others safe. Safety rules include: <ul style="list-style-type: none"> • Bags should be put in cupboards. • Hair should be tied up. • Safety goggles to be worn at all times during a practical • No eating or drinking in a science classroom. • Practical work to be completed whilst standing up. • If anything is spilt, inform a teacher. • Broken glassware to be swept up and placed in a glass bin. • All equipment to be placed in the middle of the table. • All washing up to be placed in the washing up bowl when clearing away. • Classrooms to be left in the same condition they were found. 		
Hazard symbols: explosive, flammable, oxidising, gas under pressure, toxic, corrosive, health hazard, serious health hazard, hazardous to the environment.		
A Bunsen burner is used to heat things using an open flame.		
The flame on a Bunsen burner can be orange – this is the safety flame and is created when the air hole is closed.		
The flame on a Bunsen burner can be blue this is the roaring flame and is created when the air hole is open.		
The safety flame must be used when not using the Bunsen burner.		
The blue flame must be used for heating.		
Liquid water boils at 100°C		
The volume of water is measured using a measuring cylinder.		
Temperature is measured in °C using a thermometer.		
Time is measured in seconds using a stopwatch.		

Organisms Target Sheet:

Organisms: All living things are made up of cells, the organisation of these cells leads to different organs, organ systems and organisms. How does our circulatory system work and how do we look after our body?

Identify how confident you feel at the start of the topic and the end of the topic.

Red = I know nothing

Amber = I know something

Green = I feel confident with this

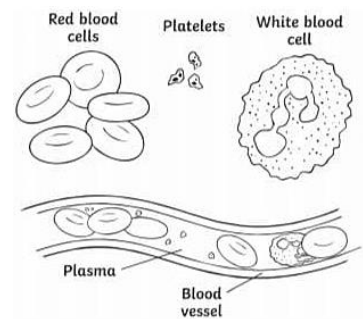
Key Knowledge	Confidence before topic - RAG	Confidence after topic - RAG
The seven life processes are: movement, reproduction, sensitivity, growth, excretion, nutrition.		
Cells --> tissue --> organ --> organ system --> organism		
Blood circulates the body providing nutrients and removing waste substances to the tissues around the body.		
Red blood cells carry oxygen around the body.		
White blood cells fight infections.		
Platelets help the blood to clot.		
Plasma transports dissolved substances such as nutrients and waste substances.		
Blood vessels carry blood around the body.		
There are three types of blood vessel: arteries, veins, capillaries.		
The heart contains 4 chambers.		
The circulatory system consists of the heart, blood vessels and lungs.		
There are 5 types of scientific enquiry observing over time, fair testing, research, pattern seeking, sorting and classifying.		
Independent variable - the thing you change.		
Dependent variable - the thing you measure.		
Control variable - the things you keep the same.		
Pulse rate increases after exercise as the body needs more oxygen and glucose, these are pumped round the body in the blood.		
A balanced diet contains a variety of food, with all food groups present in appropriate proportions.		
A drug is a chemical that has an effect on the body. Drugs can be legal, such as medicines, or illegal.		
Alcohol is a legal drug but there are restrictions and limits on it's use. Alcohol can short and long term effects on the body.		
Smoking cigarettes can have long term health impacts and it is addictive as it contains the drug nicotine.		
Exercise is important for both our physical and mental wellbeing.		

Organisms Revision:

Organisation:

Exercise:

Blood:



The diagram illustrates the components of blood. At the top, three types of cells are shown: 'Red blood cells' (biconcave discs), 'Platelets' (small, irregular fragments), and a 'White blood cell' (a larger cell with a large, multi-lobed nucleus). Below these, a cross-section of a 'Blood vessel' is shown, containing 'Plasma' (the liquid medium) and the various blood cells.

Health (diet, drugs, alcohol):

Heart and Blood Vessels:



The diagram shows the heart and a network of blood vessels. The heart is depicted with its four chambers. Below it, a capillary bed is shown with red vessels on the left and blue vessels on the right. Labels include 'From heart' (pointing to the red vessel), 'To heart' (pointing to the blue vessel), 'Artery' (pointing to the red vessel), and 'Vein' (pointing to the blue vessel). The central network is labeled 'Capillaries'.

Health (smoking):

Electricity and Waves Target Sheet:

Big Picture: Electricity and light are two fundamental physics ideas that we use in our everyday life. How do circuits and light allow us to live our lives effectively?

Identify how confident you feel at the start of the topic and the end of the topic.

Red = I know nothing

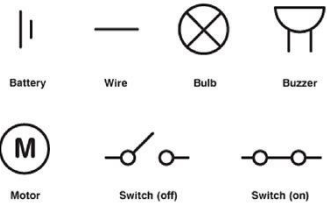
Amber = I know something

Green = I feel confident with this

Key Knowledge	Confidence before topic - RAG	Confidence after topic - RAG
Electricity is dangerous and needs to be used safely. <ul style="list-style-type: none"> • Electrical appliances need to be kept away from water • Do not put anything inside a plug socket. • Electrical hazard signs are used in areas where there is high voltage electricity. 		
Circuits are drawn using a pencil and ruler, to draw straight lines and right-angled corners. The components are represented by circuit symbols.		
For components in a circuit to work, the circuit needs to be complete so the current can flow.		
If there is a gap in a circuit, it is incomplete and the current can't flow.		
A conductor is a material that will allow electricity to pass through it. An example of a conductor is a metal.		
An insulator is a material that will not allow electricity to pass through it. An example of an insulator is plastic.		
Adding more cells to a circuit will make a bulb brighter.		
Adding more bulbs to a circuit will make the bulbs dimmer.		
Light is emitted from a luminous object. Examples of luminous objects include the sun, electrical lights and fire.		
Non-luminous objects can be seen when light reflects off them and into our eyes.		
Light travels in straight lines.		
Opaque objects do not allow light to pass through them.		
Translucent objects allow some light to pass through them.		
Transparent objects let all the light through them.		
Shadows are formed when an opaque object blocks the light.		
If an opaque object is moved closer to the light source, more light is blocked creating a larger shadow.		
Reflection is when light bounces off a surface.		

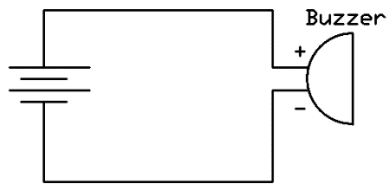
Electricity and Waves Revision:

Circuits:

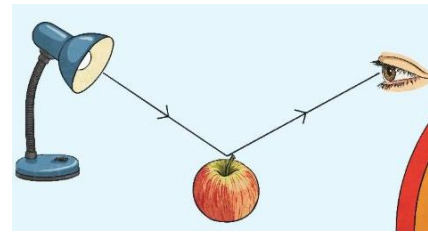


Light:

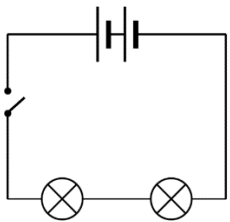
Investigating Buzzers:



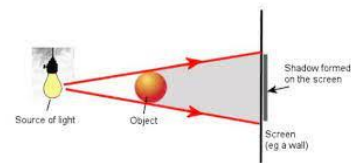
Reflection:



Investigating Bulbs:



Shadows:



Ecosystems and Genes Target Sheet:

Identify how confident you feel at the start of the topic and the end of the topic.

Red = I know nothing

Amber = I know something

Green = I feel confident with this

Ecosystems Big Picture: There are millions of species of plants and animals on Earth, how do we know what they are and how to group them?

Key Knowledge	Confidence before topic RAG	Confidence after topic RAG
Living things are classified based on their characteristics.		
Vertebrates are animals with a backbone.		
There are 5 classes of vertebrate: amphibians, birds, fish, mammals and reptiles.		
Amphibians have moist scaleless skin, lay eggs in water and are cold-blooded.		
Birds are covered in feathers, they lay eggs and are warm-blooded.		
Fish are covered in scales, breath under water and are cold-blooded.		
Mammals are covered in fur, feed their young with milk and are warm-blooded.		
Reptiles are covered in scales, lay eggs and are cold-blooded.		
That invertebrates are animals that do not have a backbone.		
Invertebrates can be split into groups including annelids, molluscs, insects, crustaceans and arachnids.		
There are 5 groups of plants. Flowering plants, conifers, ferns, mosses and algae.		
Keys are used to group organisms based on their visible characteristics.		
A habitat is the area where a particular organism can get all it needs to survive, shelter, space, resources, mating and nesting sites.		
Predators hunt and eat other animals.		
Prey are hunted by and eaten by other animals.		
Plants are the producers in food chains and get their energy from sunlight, in a process called photosynthesis.		
Arrows in a food chain show the movement of energy from one organism to another when it is consumed.		

Genes Big Picture: How do our physical and behavioural characteristics lead to our survival and the evolution of a species over time?

Key Knowledge	Confidence before topic RAG	Confidence after topic RAG
An adaptation is a characteristic that helps an organism to survive in its habitat.		
Variation is the presence of differences between living things of the same species.		
Inherited characteristics are passed on from mother and father in their DNA.		
Environmental characteristics are a result of the environment and surroundings.		
Members of the same species reproduce to produce fertile offspring.		
Natural Selection is the process by which a species changes over time in response to changes in the environment, or competition between organisms, in order for the species to survive i.e. survival of the fittest.		
Evolution is the process of change to animals and plant species over a long period of time.		
Fossils are the remains of dead plants and animals that take millions of years to form. Fossils can provide evidence of evolution.		

Ecosystems and Genes Revision:

<p><i>Variation:</i></p>	<p><i>Classifying Animals: Vertebrates</i></p>
<p><i>Natural Selection:</i></p>	<p><i>Classifying Animals: Invertebrates</i></p>
<p><i>Evolution:</i></p>	<p><i>Classifying Plants:</i></p>

Matter Target Sheet:




Big Picture: Every material has a number of different properties, that are unique to that material. Why are materials used and how do they interact?

Circle how confident you feel at the start of the topic and the end of the topic.

Red = I know nothing

Amber = I know something

Green = I feel confident with this

Key Knowledge	Confidence before topic RAG	Confidence after topic RAG
There are three states of matter - solids, liquids and gases.		
Solids cannot be compressed, they have a fixed volume and a fixed shape.		
Liquids cannot be compressed, they have a fixed volume, they take the space at the bottom of the container and can flow.		
Gases can be compressed, their volume can be changed, they take up the whole container and their shape is not fixed.		
Changes of state: <ul style="list-style-type: none"> • Solid to liquid is called melting. • Liquid to gas is called evaporation. • Liquid to solid is called freezing. • Gas to a liquid is called condensation. 		
Ice melts at 0°C.		
Water boils at 100°C.		
Soluble means a substance will dissolve into a liquid.		
Insoluble means a substance will not dissolve into a liquid.		
When a substance dissolves, it might look like it has disappeared, but in fact it has just mixed with the water to make a transparent (see-through) liquid called a solution.		
A solution is a dissolved solute in a solvent.		
Materials are used for different things based on their properties.		

Matter Revision:

States of Matter:

Dissolving:

Changes of State:

Classifying Materials:

