

Subject: Science Year: 6

What are the aims and intentions:

The national curriculum for science aims to ensure that all pupils:

- develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
- develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
- are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.

Scientific skills:

- planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- using test results to make predictions to set up further comparative and fair tests
- reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- identifying scientific evidence that has been used to support or refute ideas or arguments

Links to prior learning:

- Animals including humans
- Living things and their habitats
- Light
- Electricity

Term:	Topic:	Knowledge	Skills:	Key Questions
Autumn 1	Ever Changing Auckland – Light	<ul style="list-style-type: none">• 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	<p>To explore ideas To recognise theorists ideology To set up a reliable and accurate investigation To make and explain predictions Make and record accurate observations. Use scientific language to explain their findings</p>	<p>·Can you explain how we see light? •Can you explain how mirrors reflect light and how they can help us to see objects? •Can you explain how refraction changes the direction in which light travels? •Can you investigate how a prism changes a ray of light?</p>

		<p>sources to our eyes or from light sources to objects and then to our eyes</p> <ul style="list-style-type: none"> • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them 	To be able to ask and answer questions based on their learning using scientific language	<p>·Can you investigate how light enables us to see colours?</p> <p>•Can you explain why shadows have the same shape as the object that casts them?</p>
Key Vocabulary: light, travel, straight, reflect, refraction, prism, reflection, light source, object, shadows, mirrors, periscope, rainbow, filters				
Cultural Capital: Durham learning curriculum boxes: Light October- Science week				
Autumn 2	Everyone Evolves- Evolution and Inheritance	<ul style="list-style-type: none"> • 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. 	<p>To develop an understanding of the development of evolutionary ideas and theories over time</p> <p>To explain how human evolution has occurred and compare modern humans with those of the same genus and family</p> <p>To explain the term and use vocabulary surrounding this topic</p> <p>To investigate the ethical issues of human intervention in the process of evolution</p>	<p>·Can you explain the scientific concept of inheritance?</p> <p>·Can you demonstrate an understanding of scientific meaning of adaption?</p> <p>·Can you identify key ideas of the theory of evolution?</p> <p>·Can you explain how humans have evolved?</p> <p>·Can you adaptations can result in both advantages and disadvantages?</p> <p>·Can you explain how human intervention affects evolution?</p>
Key Vocabulary: Evolution, inheritance, inherited traits, adapted traits, natural selection, inheritance, Charles Darwin, DNA, genes, variation, parent, offspring, fossil, environment, habitat, fossilisation, plants, animals, living things				
Cultural Capital: Durham learning curriculum boxes: Evaluation and inheritance November- Science day				

Spring 1	Groovy Greeks- Scientists and Inventors	<ul style="list-style-type: none"> • give reasons for classifying plants and animals based on specific characteristics • To report and present findings from enquiries, including causal relationships, in oral and written forms such as displays and other presentations in the context of Stephen Hawking and his findings on black holes. 	<p>To explain their observation from an enquiry</p> <p>To classify invertebrates by their characteristics</p> <p>To identify how the attitudes of people at different times may have presented obstacles to scientists and inventors.</p>	<ul style="list-style-type: none"> •Can you describe Stephen Hawkings theories about black holes? •Do you understand Libbie Hyman’s work about classification •Can you explain how diet affects the way the body functions? •Can you interpret data on the effects of penicillin? •Can you label parts of the heart and describe their functions? •Can you explain Dr Daniel Hale Williams accomplishments? •Can you explain how Steve Jobs used electronics to design computers • Can you design a simple circuits?
<p>Key Vocabulary: Stephen Hawking, astrophysicists, black hole, gravity, density, Libbie Hyman, classification, taxonomy, zoologist, vertebrate, invertebrate, characteristics. Arteries, veins, heart, capillaries, diet, healthy, cholesterol, carbohydrate, protein, saturated, unsaturated, dairy. Alexander Fleming, penicillin, antibiotic, microorganism, bacteria, correlations, colony/ colonies, diameter, exposed. Mary Leakey, fossil, evolution, human, hominin, ancestor, species, grid reference, Laetoli, excavation, Olduvai Gorge, species, illustrator.</p>				
<p>Cultural Capital: March- Science week Durham learning curriculum boxes: Inventors Careers workshop</p>				
Spring 2	My Heart Skips a Beat- Animals including humans	<ul style="list-style-type: none"> • 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 	<p>To demonstrate prior knowledge of systems within the humans body</p> <p>To understand the processes and functions of the body</p> <p>To decide on the most appropriate type of investigation for their question</p> <p>To report the degree of trust they have in their results.</p> <p>To explain how scientific evidence has changes ideas</p> <p>To choose the most appropriate graphs to represent their data</p>	<ul style="list-style-type: none"> • Can you identify and name parts of the human circulatory system? • Can you describe the functions of the main parts of the circulatory system? •Can you explain how water and nutrients are transported within the body? •Can you describe how diet and exercise impact on human bodies? •Can you explain the impact drugs and alcohol on the body?

		transported within animals, including humans.		
Key Vocabulary: Internal organs, heart, lungs, liver, kidney, brain, skeletal, skeleton, muscle, muscular, digest, digestion, digestive, circulatory system, heart, blood vessels, blood, impact, diet, exercise, drugs, lifestyle, nutrients, water, damage, drugs, alcohol, substances				
Cultural Capital: Durham learning curriculum boxes: Animals including humans February- Penguin awareness March- World bee day, world turtle day				
Summer 1	The Victorious Vikings- Living things and habitat	<ul style="list-style-type: none"> 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. 	<p>To classify animals</p> <p>To identify varies in an investigation</p> <p>To draw conclusions based on their results</p> <p>To describe and compare</p> <p>To design a creature that has a specific set of characteristics</p>	<ul style="list-style-type: none"> Can you give reason for classifying animals based on their similarities and differences? Can you describe how living things are classified into groups? Can you identify the characteristics of different types of animals? Can you describe and investigate helpful and harmful microorganisms? Can you identify the characteristics of different types of microorganisms? Can you explain the classification of organisms found in my local habitat?
Key Vocabulary: Classify, compare, Linnaean, Carl Linneus, classification, domain, kingdom, phylum, class, order, family, genus, species, characteristics, vertebrates, invertebrates, microorganisms, organism, flowering, nonflowering				
Cultural Capital: Durham learning curriculum boxes: Living things and their habitats April- Earth day				
Summer 2	Raging Rivers- Electricity	<ul style="list-style-type: none"> associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit 	<p>To explain how major discoveries led to the widespread use of electricity</p> <p>To draw a circuit diagram using correct symbols and label the voltage correctly</p> <p>To decide which variable to control</p>	<ul style="list-style-type: none"> Can you explain the importance of major discoveries in electricity? Can you observe and explain the effects of differing volts in a circuit? Can you explain variation in components?

		<ul style="list-style-type: none"> • 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 	<p>To decide how to report their findings To make new predictions based on their results To select an appropriate scientific enquiry.</p>	
Key Vocabulary: voltage, brightness, volume, switches, danger, series circuit, safety, sign, circuit diagram, switch, bulb, buzzer, motor, recognised, symbols				
Cultural Capital: Durham learning curriculum boxes: Electricity				