Firs Primary School Subject Curriculum and Progression

Science

	Early Years	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
National Curriculum	**Understanding the World ELG** (The Natural World ELG) Children at the expected level of development will: -Explore the natural world around them, making observations and drawing pictures of animals and plants -Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class -Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter	**1. Plants**					
		a) identify and name a variety of common wild and garden plants, including deciduous and evergreen trees b) identify and describe the basic structure of a variety of common flowering plants, including trees	c) observe and describe how seeds and bulbs grow into mature plants d) find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	e) identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers f) explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant g) investigate the way in which water is transported within plants *h)* explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			
		2. Animals, Including Humans					
		a) identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals b) identify and name a variety of common animals that are carnivores, herbivores and omnivores c) describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) d) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	e) notice that animals, including humans, have offspring which grow into adults f) find out about and describe the basic needs of animals, including humans, for survival (water, food and air) g) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	h) identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat i) identify that humans and some other animals have skeletons and muscles for support, protection and movement	j) describe the simple functions of the basic parts of the digestive system in humans k) identify the different types of teeth in humans and their simple functions l) construct and interpret a variety of food chains, identifying producers, predators and prey	*m)* describe the changes as humans develop to old age	n) identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood o) recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function p) describe the ways in which nutrients and water are transported within animals, including humans
		3. Living Things and Their Habitats					

			a) explore and compare the difference between things that are living, dead, and things that have never been alive b) identify that most living things live in habitats to which they are suited and describe how different habitats provide the basic needs of different kinds of animals and plants, and how they depend on each other c) identify and name a variety of plants and animals in their habitats, including micro-habitats d) describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food		e) recognise that living things can be grouped in a variety of ways f) explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment g) recognise that environments can change and that this can sometimes pose dangers to living things	h) describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird i) describe the life process of reproduction in some plants and animals	j) 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 k) give reasons for classifying plants and animals based on specific characteristics
		4. Evolution and Inheritance					
							a) recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago b) recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents c) identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution
		5. Light and Sound					

				a) recognise that they need light in order to see things and that the dark is the absence of light b) notice that light is reflected from surfaces c) recognise that light from the sun can be dangerous and that there are ways to protect their eyes d) recognise that shadows are formed when the light from a light source is blocked by a solid object e) find patterns in the way that the size of shadows changes	f) identify how sounds are made, associating some of them with something vibrating g) recognise that vibrations from sounds travel through a medium to the ear h) find patterns between the pitch of a sound and features of the object that produced it i) find patterns between the volume of a sound and the strength of the vibrations that produced it j) recognise that sounds get fainter as the distance from the sound source increases		k) recognise that light appears to travel in straight lines l) 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 m) explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes n) use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them
		6. Electricity					
					a) identify common appliances that run on electricity b) construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers c) 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 d) recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit e) recognise some common conductors and insulators, and associate metals with being good conductors		f) Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit g) 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 h) use recognised symbols when representing a simple circuit in a diagram
		7. Forces and Magnets					

				a) compare how things move on different surfaces b) notice that some forces need contact between two objects, but magnetic forces can act at a distance c) observe how magnets attract or repel each other and attract some materials and not others d) compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials e) describe magnets as having two poles f) predict whether two magnets will attract or repel each other, depending on which poles are facing		g) explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object h) identify the effects of air resistance, water resistance and friction, that act between moving surfaces i) recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect	
		8. Seasonal Change and Earth and Space					
		a) observe changes across the four seasons b) observe and describe weather associated with the seasons and how day length varies				c) describe the movement of the Earth, and other planets, relative to the Sun d) describe the movement of the Moon relative to the Earth e) describe the Sun, Earth and Moon as approximately spherical bodies f) use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky	
		9. Materials, Properties and Changes of Materials, and States of Matter					

		a) distinguish between an object and the material from which it is made b) identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock c) describe the simple physical properties of a variety of everyday materials d) compare and group together a variety of everyday materials on the basis of their simple physical properties	e) identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses f) find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	g) compare and group together different kinds of rocks on the basis of their appearance and simple physical properties h) describe in simple terms how fossils are formed when things that have lived are trapped within rock i) recognise that soils are made from rocks and organic matter	j) compare and group materials together, according to whether they are solids, liquids or gases k) 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) l) identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature	m) compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets n) know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution o) use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating p) give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic q) demonstrate that dissolving, mixing and changes of state are reversible changes r) explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda	
		10. Working Scientifically					

		a) ask simple questions and recognise that they can be answered in different ways b) observe closely, using simple equipment c) perform simple tests d) gather and record data to help in answering questions e) identify and classify f) use their observations and ideas to suggest answers to questions	g) ask relevant questions and use different types of scientific enquiries to answer them h) set up simple practical enquiries, comparative and fair tests i) make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers j) record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables k) gather, record, classify and present data in a variety of ways to help in answering questions l) identify differences, similarities or changes related to simple scientific ideas and processes m) report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions n) use straightforward scientific evidence to answer questions or to support their findings o) use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions	p) plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary q) take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate r) record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs s) identify scientific evidence that has been used to support or refute ideas or arguments t) report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations u) use test results to make predictions to set up further comparative and fair tests
Non-Statutory Progression in Scientific Enquiry Skills				
		Scientific Attitudes		
		• Identifies obvious risks and takes appropriate steps to protect themselves and others.	○ Identifies risks and hazards and ensures safe use of all tools, equipment and procedures.	○ Anticipates some risks and hazards
		Skills and attributes of scientifically literate citizens		
		• Talks about science, showing developing understanding of risks and benefits, and listens to the views of others. • Demonstrates awareness of the importance of respecting living things and the environment and of managing the Earth's resources responsibly. • Demonstrates a developing understanding of science in the world around them. Explores the ways in which people use science and science skills as part of their job	• Expresses informed views of scientific issues, both orally and in writing, and respects the views of others. • Makes connections between science and their own health and wellbeing. • Demonstrates awareness of their own impact on the world. • Demonstrates awareness of how people use science in their everyday lives and in a variety of jobs and careers. • Discusses science topics in real-life contexts including those appearing in the media.	• Presents a reasoned argument based on evidence, demonstrating understanding of underlying scientific concepts, and engages with the views of others. • Demonstrates understanding of the relevance of science to their future lives and the role of science in an increasing range of careers and occupations. • Demonstrates increased awareness of creativity and inventiveness in science, the use of technologies in the development of sciences and the impact of science on society. • Expresses informed views about scientific and environmental issues based on evidence

Year 1 Cycle A

Enchanted Woodland

Outstanding Science; Year 1: Plants

- Identifying_Bulbs_And_Seeds
- Identifying_Garden_Plants
- Identifying_Trees
- Identifying_Wild_Plants

Unit Learning Objectives:

- *I can match bulbs and seeds to fully-grown plants.*
- *I can identify some common garden plants.*
- *I can identify some common trees from their shapes, leaves and seeds.*
- *I can identify some common wild plants.*

Investigation types covered: Identifying, Grouping and Classifying

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Match	Bulb
Garden	Group	Seed
Leaves	Wild	Plant names
Fruit		Tree names
		Autumn

Additional or Cross-curricular learning opportunities:
Children will have the opportunity to go on a 'woodland fieldtrip in geography; they should be supported to identify some of the plants and trees studies in the classroom in the Outstanding Science lessons. Other plants and trees found should also be recorded (e.g. sketches or photos,) to be identified once back in the classroom).

Golden Nuggets:

Scientist/Inventor:

Year 2 Cycle A

Enchanted Woodland

Outstanding Science; Year 2: Plants

- Comparing_Plants
- Growing_Plants
- Parts_Of_A_Plant
- Plant_Life_Cycles
- Plant_Reproduction

Unit Learning Objectives:

- *I can investigate the needs of different plants.*
- *I can record how the height of a plant changes over time.*
- *I can label the main parts of a plant and explain their function.*
- *I can sequence the different stages in a plant's life.*
- *I can explain how flowering plants reproduce.*

Investigation types covered:
Comparing plants - Comparative and Fair testing
Growing plants – Observation over time

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Soil	Compare	Bulb
Water	Fair	Roots
Light	Test	Nutrients
Plant	Variable	Stem
Water	Measure	Seed
Leaves	Anchor	Pollen
Flower	Support	Germination
Food	Growth	Reproduce
Fruit	Flowering	Pollination
Insect	Scent	Pollinating
		Lifecycle
		Nectar

Golden Nuggets:

LKS2 Cycle A

Gods and Mortals

Outstanding Science; Year 4: Electricity

- Conductors_And_Insulators
- Electrical_Circuits
- Electrical_Components
- Electrical_Machines
- Electrical_Switches
- Electricity_And_Safety
- Working_Circuits

Unit Learning Objectives:

- *I can investigate which objects are conductors and which are insulators.*
- *I can create a simple electrical circuit.*
- *I can identify electrical components and their symbols.*
- *I can identify machines which need electricity to work.*
- *I can explain how an electrical switch works.*
- *I can identify situations where electricity can be dangerous.*
- *I can predict whether a circuit will work and how it can be fixed.*

Investigation types covered:

- Conductors and Insulators – Identifying, grouping and classifying.
- Electrical Circuits – Pattern Seeking
- Electrical machines - Identifying, grouping and classifying.
- Electrical Switches – Pattern Seeking
- Working Circuits – Problem solving

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Machine	Symbol	Conductor
Electricity	Components	Insulator
Switch	Chemicals	Circuit
Dangerous	Generate	Cell
Wires	Appliance	Circuit-diagram
Bulb	Break	Filament
Light	Complete	Power station
Buzzer	Prediction	Substation

UKS2 Cycle A

A Child's War

Outstanding Science; Year 5: Forces

- Air_Resistance
- Force_Meters
- Gears
- Gravity_And_Weight
- Investigating_Friction
- Investigating_Levers
- Investigating_Pulleys
- Water_Resistance

Unit Learning Objectives:

- *I can investigate the effects of air resistance.*
- *I can make and calibrate a force meter and explain how it works.*
- *I can explain how a gear train works.*
- *I can explain why objects fall to earth.*
- *I can investigate the effects of friction on different materials.*
- *I can explain how a lever works.*
- *I can explain how a pulley works.*
- *I can identify when objects are experiencing high or low water resistance.*

Investigation types covered:
-Air resistance – Comparative and Fair testing and Pattern seeking
-Gravity and weight - Pattern seeking
-Investigating friction - Comparative and Fair testing
-Investigating levers - Comparative and Fair testing and Pattern seeking
-Investigating pulleys - Comparative and Fair testing and Pattern seeking

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Wind	Relationship	Air resistance
Lift	Representative	Water resistance
Weight	Effectiveness	Bar chart
Low	Predict	Line graph
High	Measure	Table

Ring On Off Buzz Metal Water Battery Cable	Observation Conduct Socket	Mains-electricity Short-circuit		

Golden Nuggets:

Easy Difficult Smooth Slide	Energy Calibrate Rotate Diagram Estimate Orbit	Average Mean Bean Fulcrum Pivot Force meter Gravity Newtons (N) Pulley Force Gear Gear train Friction

Golden Nuggets:

Moon Zoom
Year 1 and Year 2 to complete:
Outstanding Science (Year 1: Seasonal Change)

- Daylight_Graph
- Dressing_For_The_Season
- Hours_Of_Daylight
- Ordering_The_Seasons
- Plants_Through_The_Seasons
- Seasonal_Events
- Types_Of_Weather
- Weather_And_The_Seasons

Unit Learning Objectives:

- *I can create a pictogram of the number of hours of daylight in different seasons.*
- *I can explain why we need to wear different*
- *clothes in different seasons.*
- *I can explain how much daylight we get in*
- *different seasons.*
- *I can place the months and seasons in order.*
- *I can describe plants in different seasons.*
- *I can match some events to their seasons.*
- *I can describe different types of weather.*
- *I can explain what the weather is like in different seasons.*

Investigation types covered: Daylight graph – Observation over time OR research

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant Day	Overcast Describe	Season Spring

Urban Pioneers

Outstanding Science; Year 3: Plants

- Life_Cycle_Of_A_Flowering_Plant
- Plant_Anatomy
- Plant_Functions
- Pollination_Methods
- Room_For_Growth
- Seed_Dispersal_Methods
- The_Needs_Of_Different_Plants
- Water_Transport_In_Plants

Unit Learning Objectives:

- *I can describe the lifecycle of a flowering plant.*
- *I can identify the main parts of different flowering plants.*
- *I can explain the functions of different parts of a flowering plant.*
- *I can explain different methods of pollination in flowering plants.*
- *I can investigate how competition for resources affects plant growth.*
- *I can explain different methods of seed dispersal in flowering plants.*
- *I can investigate the needs of different plants.*
- *I can investigate how water is transported in plants.*

Investigation types covered:

Frozen Kingdom

Outstanding Science; Year 6: Living things and their Habitats

- Carl_Linnaeus
- Evolutionary_Taxonomy
- Identifying_Arthropods_Using_A_Key
- Identifying_Trees_Using_A_Key
- Invertebrates_In_The_Local_Environment
- Trees_In_The_Local_Environment
- Vertebrates_And_Invertebrates (1)

Unit Learning Objectives:

- *I can explain how Linnaeus developed a classification system.*
- *I can use taxonomy to explain how organisms are related to each other.*
- *I can identify familiar arthropods using a classification key.*
- *I can identify some common British trees using a classification key.*
- *I can identify invertebrates in the local environment.*
- *I can identify trees in the local environment.*
- *I can classify animals as vertebrates or invertebrates.*

Investigation types covered:
Unit - Identifying, grouping and classifying.

Additional or Cross-curricular learning opportunities:

Night Light Dark Sun Rain Cloud Lose Leaves Grow Snow Thunder Lightning Hot Cold	Explain	Summer Autumn Winter Pictogram Seasonal Weather Names of months

Golden Nuggets:

Muck, Mess and Mixtures

Muck, Mess and Mixtures

The needs of different plants – Fair/comparative testing
Water transport in plants – Observation over time.
Room for Growth - Fair/comparative testing

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Flower Growth Plant Seed Water Warmth Unchanging Adult Roots Male Female Same Different Trunk Branch Leaf Fruit Bulb	Identify Functions Competition Method Dispersal Transported Moisture Nutrients Reproduce Offspring Variable Predict Observe Evolve Scent	Lifecycle Germination Dormant Ovary Pollen Stamen Stigma Carbon-dioxide Seed dispersal Wind-Dispersal Gravity-Dispersal Water-Dispersal Animal-Dispersal Sap Nectar Tuber Photosynthesis

Golden Nuggets:

Predator

The lessons on identifying trees and invertebrates in the local environment are likely to be more effective in early A1, Su1 or Su2 half terms. If Frozen Kingdom is taught in winter (A2 or Sp1), these lessons could be moved and delivered during the Darwin's Delights topic, and carried out during the rivers geography fieldtrip, as children will pass many trees and habitats on their outing.

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal Vegetable Rock Plant Bird Fish Insect Worm Brain Chestnut Birch Oak Sycamore Hazel Family Legs	Grouping Classifying Identify Kingdom Rank Domain Class Order Species Segmented Moult Ancestor Evolve Reproduce	Linnaen Taxonomy Mineral Binomial Evolve Latin Mammal Amphibian Reptile Mollusc Fossil Arthropod Tetrapod Phylum Arachnid Crustacean Myriapod Exoskeleton Invertebrate Vertebrate Spine Classification key Nervous system Simple leaves Compound leaves Lobed leaves Pinnately lobed Palmately lobed Genus Habitat

Golden Nuggets:

Bloodheart

Outstanding Science; Year 1: Animals including humans

The_Five_Senses
The_Human_Body

Unit Learning Objectives:

- *I can explain what part of the body is to do with which sense.*
- *I can label the main parts of the human body.*

Additional or Cross-curricular learning opportunities:

Senses Investigations ('Catch the penny', 'Do you hear what I hear?', 'Mystery smells' and 'Tasting – with your nose')
https://kidshealth.org/en/kids/experiment-main.html

Investigation types covered:
Senses Experiments:

-Catch the Penny! – Comparative testing

-Do You Hear What I Hear? -

-Mystery Smells -

-Tasting - With Your Nose? – Comparative testing

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sight	Question	Senses
Sound	Answer	
Smell	Observe	
Taste	Predict	
Touch	Identify	
Eyes	Test	
Nose		
Tongue		
Ears		
Body		
Other body parts		

Golden Nuggets:

Outstanding Science; Year 2: Animals including humans

Exercise
Food_Hygiene
Healthy_Eating
Stages_Of_A_Human_Life
What_Do_Humans_Need_To_Survive

Unit Learning Objectives:

- *I can investigate how exercise produces changes in the body*
- *I can explain why it is important to be clean when eating food.*
- *I can explain how the different food groups help us to stay healthy.*
- *I can sequence the different stages of a human life.*
- *I can explain what humans need to survive.*

Additional or Cross-curricular learning opportunities:

Egg Shell/healthy teeth investigation
https://www.science-sparks.com/how-to-keep-teeth-healthy/

Investigation types covered:
-Observation over time (exercise investigation)
-Grouping (what do humans need to survive?)
-Observation over time and comparative testing (egg shell investigation)

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Body	Exercise	Heart
Baby	Predict	Muscle
Child	Diagram	Breathe
Adult	Growing	Sweat
Toddler	Changing	Carbohydrates
Teenager	Healthy	Micro-organisms
Food	Dairy	Acid
Eating	Fats	
Milk	Sugars	
Meat	Hygiene	
Eggs	Mouldy	
Fish	Problem	
Food names	Solution	
Dirty	Record	
Toothpaste	Observe	

Outstanding Science; Year 4: Living things and their Habitats

Creating_A_Classification_Key
Grouping_Animals
Grouping_Organisms
Habitats_Throughout_The_Year
Identifying_Familiar_Organisms
Identifying_Invertebrates
The_Effects_Of_Deforestation
Vertebrates_And_Invertebrates

Unit Learning Objectives:

- *I can create a classification key for a group of organisms from the local environment.*
- *I can group animals according to whether they are fish, birds, amphibians, reptiles or mammals.*
- *I can group organisms in different ways.*
- *I can investigate how a habitat changes throughout the year.*
- *I can use a classification key to identify familiar organisms.*
- *I can use a classification key to identify invertebrates.*
- *I can explain the reasons for deforestation and its negative effects.*
- *I can identify whether an animal is a vertebrate or an invertebrate.*

Investigation types covered:
-Unit – Identifying, grouping and classifying.
-Habitats Throughout the Year – Observation over time.
-The Effects of Deforestation - research

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal	Identify	Classification key
Plant	Group	Dichotomous key
Minibeast	Erode	Organism
Flowering	Erosion	Habitat
Insect		Invertebrates
Season		Vertebrates
Gills		Deforestation
Milk		
Fur		

Outstanding Science; Year 6: Animals including humans

Alcoholic_Drinks
Blood
Diet_And_Exercise
Investigating_Heart_Rate
The_Benefits_Of_Exercise
The_Effects_Of_Smoking
The_Human_Circulatory_System
The_Human_Heart

Unit Learning Objectives:

- *I can calculate how much alcohol is in different alcoholic beverages.*
- *I can describe the functions of blood and blood vessels.*
- *I can explain how diet and exercise affect body weight.*
- *I can investigate the effect of exercise on heart rate.*
- *I can research the preferred forms of exercise in our class.*
- *I can describe the effects of smoking.*
- *I can identify the main parts of the human circulatory system and explain their functions.*
- *I can explain how the human heart works.*

Investigation types covered:
-Investigating heart rate – Observation over time.

Additional or Cross-curricular learning opportunities:

Investigation: Dissecting Sheep's Heart
https://www.instructables.com/id/Heart-Dissection/
Investigation vocabulary: diagram, label, explanation, dissect, valves, ventricles, atrium

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Brain	Long/short term	Alcohol
Water	Indirect	Ethanol
Diet	Dependence	Alcohol by volume (ABV)
Exercise	Percentage	Liver
Fat	Volume	Digestive system
Sugar	Energy	
Gain		

	Protect Damage Test	

Golden Nuggets:

Rio de Vida

Rio de Vida

Scales Soil Spine		Tetrapod Mammal Oviparous Viviparous Aquatic Herbivore Reptile Predator Amphibian Taxonomy Oxygen Antennae Exoskeleton Agriculture Extinct

Golden Nuggets:

Playlist

Lose Weight Food Breathing Cigarette Heart Pump Blood Left/Right	Starving Inhale Addictive Reproductive Conceive Contract Valves	Pregnant Red blood cells White blood cells Plasma Oxygen Carbon Dioxide Carbon Monoxide Haemoglobin Immune system Virus Bacteria Platelet Clot Lungs Pie Chart Calories Obesity Heart rate Radial artery Pulse Line Graph Bar chart Tally Chart Aerobic Nicotine Tar Tobacco Heart attack Stroke Cancer Passive smoking Pulmonary Systemic Circulation Arteries Veins Arterioles Venules Capillaries Atrium Ventricle Aorta

Golden Nuggets:

Darwin's Delights

Outstanding Science; Year 1: Animals including humans

- Animal_Bodies
- Animal_Body_Groups
- Animal_Diet
- Animals_And_Their_Food
- Grouping_Animals
- Identifying_Mammals

Unit Learning Objectives:

- *I can label the main parts of animals' bodies.*
- *I can group animals by their body type.*
- *I can identify carnivores, herbivores and*
- *omnivores.*
- *I can match animals to what they eat.*
- *I can place animals in the fish, amphibian, reptile, bird and mammal groups.*
- *I can identify some mammals.*

Investigation types covered: Identifying, Grouping and Classifying

Tier 1	Tier 2	Tier 3
Wing	Label	Skeleton
Beak	Match	Mammal
Fin	Group	Prey
Paw	Identify	Carnivore
Claw		Herbivore
Tail		Omnivore
Fur		Amphibian
Feathers		Reptile
Eggs		Scales
Meat		Gills
Plants		Mane
Water		Snout
Fly		Hoof
Swim		Live young
Bird		Give birth
Fish		

Additional or Cross-curricular learning opportunities:
Cross-curricular links with geography could be developed by investigating which animals are native to Brazil, and then grouping these animals into the groups used in the Outstanding Science lessons e.g. mammal, bird, amphibian.

Golden Nuggets:

Outstanding Science; Year 2: Animals including humans

- Animals_And_Their_Offspring
- Life_Cycles
- What_Do_Animals_Need_To_Survive

Outstanding Science; Year 2: Living Things and their Habitats

- Adaptations
- Animals_And_Their_Habitats
- Food_Chains
- Food_Sources
- Investigating_Micro-habitats
- Naming_Animals_And_Plants

Unit Learning Objectives:

- *I can match the young of different animals to their adult form.*
- *I can sequence and describe the life cycle of different animals.*
- *I can explain what animals need to survive.*
- *I can explain how some animals are adapted to their habitats.*
- *I can match animals to their habitats.*
- *I can create and describe a food chain.*
- *I can show different sources of food using a food chain.*
- *I can identify and name some animals and plants in local micro-habitats.*
- *I can name common animals and plants.*

Tier 1	Tier 2	Tier 3
Adult	Reproduce	Live young
Egg	Young	Give birth
Chick	Offspring	Lifecycle
Chicken	Change	Spawn
Frog	Research	Pupa
Caterpillar	Diagram	Tadpole
Food	Source	Food chain
Air	Sequence	Habitat
Water	Adaptation	Micro-habitat
Shelter	Adapt	Prey
Warmth	Group	Polar
	Survive	Forest

Outstanding Science; Year 4: Sound

- Distance_And_Volume
- How_We_Hear_Things
- Investigating_Pitch
- Investigating_Volume
- Making_A_String_Instrument
- Pitch_And_Volume
- Sound_And_Distance
- Sound_Insulation

Unit Learning Objectives:

- *I can investigate the realtionship between distance and volume.*
- *I can explain how sounds are made and how we hear things.*
- *I can place different sounds in order of pitch.*
- *I can investigate how to affect the volume of a percussion instrument.*
- *I can make a tuned string instrument.*
- *I can place sounds in order of pitch and volume.*
- *I can investigate how much distance affects how well we can hear a sound*
- *I can investigate how well sounds travel through different materials.*

Investigation types covered:
Distance and Volume – Pattern seeking and comparative/fair testing.
Investigating pitch - Comparative/fair testing
Investigating volume - Comparative/fair testing
Pitch and Volume - Pattern seeking and comparative/fair testing
Sound and distance – Pattern seeking
Sound Insulation – Pattern seeking and comparative/fair testing

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sound	Distance	Line graph
Ear	Volume	Vibration
Wobbling	Relationship	Sound wave
Loud	Fair test	Outer ear
Loudness	Variable	Ear canal
Loudest	Measure	Ear drum
Quiet	Electrical	Middle ear

Outstanding Science; Year 6: Evolution and Inheritance

- Animal_Adaptations
- Charles_Darwin
- Heredity
- Natural_Selection
- Plant_Adaptations
- The_Evolution_Game
- The_Fossil_Record

Unit Learning Objectives:

- *I can explain how some animals are adapted to their environment.*
- *I can explain how Darwin developed the theory of natural selection.*
- *I can identify features that individuals have inherited from their parents.*
- *I can explain the process of evolution by natural selection.*
- *I can explain how some plants are adapted to their environment.*
- *I can model the process of natural selection.*
- *I can explain what the fossil record tells us about the past.*

Additional or Cross-curricular learning opportunities:

Learn about Darwin's Finches and research how other types of birds have adapted to suit their environments.
Resource on One Drive:
Whole School - Documents › Curriculum Planning › Subject Resources and Planning Support Science › Resources › UKS2 Darwin's Delights

Investigation types covered:
Darwin's Finches and Bird Adaptations - Research

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Animal	Survival	Adaptation
Rocks	Advantage	Environment
	Reproduction	Organism
	Population	Evolution
	Offspring	Inheritance
	Inherit	Mutation
	Sexually	Natural-selection
	Traits	

	Protection	Desert Antarctic Coastal City Rainforest Organism Consumer Producer Omnivore Carnivore Herbivore	

Golden Nuggets:

Soft Softest	Signals Pattern Method Accuracy Prediction Observation	Inner Ear Hammer Anvil Stirrup Cochlea Auditory Nerve Brain Pitch (High/Low) Mean Mode Median Average Bar Chart Table	

Golden Nuggets:

			Fossils Sedimentary Palaeontologist Heredity Extinction Ancestry Hybrid

Golden Nuggets:

Street Detective

Outstanding Science; Year 1: Plants

- Labelling_A_Plant
- Labelling_Different_Plants
- Parts_Of_A_Plant
- Plants_In_Our_Local_Area

Unit Learning Objectives:

- *I can label the main parts of a flowering plant.*
- *I can label the main parts of different plants.*
- *I can explain what the different parts of a flowering plant do.*
- *I can identify plants in our local area.*

Investigation types covered: Identifying, Grouping and Classifying

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Match	Bulb
Garden	Group	Seed
Leaves	Wild	Plant names
Fruit	Reproduce	Tree names
Flower	Attracts	Autumn
Food		Root
Sunlight		Stem
Insects		Trunk
Water		Petals

Street Detective

Outstanding Science; Year 2: Plants

- What_Do_Bulbs_Need_To_Start_Growing
- What_Do_Plants_Need_To_Grow_Well
- What_Do_Seeds_Need_To_Germinate

Unit Learning Objectives:

- *I can investigate what bulbs need to start growing again.*
- *I can investigate what plants need to grow well*
- *I can investigate what seeds need to germinate*

Investigation types covered:

- What do bulbs/plants/seeds need..? - Comparative and Fair testing

Tier 1	Tier 2	Tier 3
Soil	Compare	Bulb
Water	Fair	Roots
Light	Test	Nutrients
Plant	Variable	Seed
Water	Measure	Dormant
Warmth	Growth	
Grow	Energy	
	Conclusion	

Golden Nuggets:

Tribal Tales

Outstanding Science; Year 3: Light

- Forming_Shadows
- Investigating_Shadow_Size
- Light_Sources
- Light_Sources_And_Reflectors
- Light_Sources_In_Our_School
- Making_A_Sundial
- Sun_Safety
- Transparent_Translucent_Opaque

Unit Learning Objectives:

- *I can explain how shadows are formed.*
- *I can investigate how moving a light source changes the size of an object's shadow*
- *I can identify light sources.*
- *I can identify whether an object is a light source or a reflector.*
- *I can identify light sources in our school.*
- *I can make a sundial and explain how it works.*
- *I can explain how the sun can be dangerous and ways we can protect ourselves.*

Investigation types covered:

		Branch Soil

Golden Nuggets:

Investigating Shadow Size – Pattern seeking
Light sources – Identifying, grouping and classifying
Light Sources and Reflectors - Identifying, grouping and classifying
Light Sources in Our School - Identifying, grouping and classifying
Transparent, Translucent, Opaque - - Identifying, grouping and classifying

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Shadow Light Block Eyes Sun Star Sunburn Clothing Shade Sun screen/cream Skin	Investigate Prediction Measurement Surface Reflect Reflector Rotation Damage	Light source Light rays Opaque Bar chart Venn diagram Tally Chart Bar Chart Sundial Earth Orbit Hydrogen Helium Translucent Transparent Skin cancer

Golden Nuggets:

Land Ahoy

Outstanding Science; Year 1: Everyday Materials

- Choosing_Materials
- Floating_And_Sinking
- Grouping_Materials
- Identifying_Materials
- Investigating_The_Best_Material
- Naming_Materials
- Objects_And_Materials
- Objects_And_Their_Properties

Unit Learning Objectives:

Land Ahoy

Outstanding Science; Year 2: Uses of Everyday Materials

- Changing_Shape
- Choosing_The_Right_Material
- Grouping_Objects_By_Material
- Identifying_Materials
- Inventors_Of_New_Materials
- Materials_And_Their_Uses
- Properties_Of_Materials
- Properties_Of_Metals

Unit Learning Objectives:

- *I can choose a good material for a purpose.*
- *I can investigate whether an object floats or sinks.*
- *I can group objects and materials by their properties.*
- *I can identify the materials that some objects are made from.*
- *I can investigate the best material for a purpose.*
- *I can name some everyday materials.*
- *I can tell the difference between an object and a material.*
- *I can explain some properties of objects and materials.*

Investigation types covered:
Unit - Identifying, Grouping and Classifying
Floating and Sinking – Fair testing and pattern seeking
Investigating the Best Material - Fair testing

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Same	Test	transparent
Different	Compare	Opaque
Float	Fair	
Sink	Group	
metal	Properties	
plastic	Object	
rubber	Material	
fabric	Purpose	
stone	Waterproof	
brick	Absorb	
paper	Absorbent	
glass	Ceramic	
wood	Leather	
soft	Flexible	
hard		
light		
heavy		
bendy		
stiff		
rough smooth		
warm		
cold		
stretchy shiny		
dull		
pretty		

Golden Nuggets:

- *I can investigate how I can change the shape of different objects.*
- *I can suggest suitable materials for new situations.*
- *I can group objects by the material they are made from.*
- *I can identify the materials from which different objects are made.*
- *I can explain how inventors have made new materials.*
- *I can explain how materials are useful in different situations.*
- *I can investigate the properties of different materials.*
- *I can investigate and compare the properties of different metal objects.*

Investigation types covered:
Unit - Identifying, Grouping and Classifying
Changing Shape – Pattern finding
Properties of Materials – Pattern finding
Properties of Metals – Pattern finding

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Predict	Transparent
Bend	Test	Opaque
Twist	Deform	Insulating
Stretch	Material	Reflective
Rubber	Properties	Inventor
Change	Flexible	Magnet
leather	Rigid	
plastic	Waterproof	
metal	Absorbent	
rubber	Fragile	
paper	Brittle	
card	Suitable	
wood	Rot	
glass	Rust	
stone		
fabric		
Tough		
Light		
Heavy		
Strong		
Smooth		
Rough		
Float		

Sink		

Golden Nuggets:

Year 1 Cycle B

Bright Lights. Big City

Outstanding Science; Year 1: Everyday Materials
(split unit) This must be taught first

- Identifying_Materials
- Naming_Materials
- Objects_And_Materials
- Objects_And_Their_Properties

Unit Learning Objectives:

- *I can name some everyday materials.*
- *I can tell the difference between an object and a material.*
- *I can explain some properties of objects and materials.*
- *I can identify the materials that some objects are made from.*

Investigation types covered: Classifying

- *To group and classify everyday materials that objects are made from*

Scientists within the Curriculum:

Year 2 Cycle B

Bright Lights. Big City

Outstanding Science; Year 2: Uses of Everyday Materials
(split unit) This must be Taught First

- Changing_Shape
- Choosing_The_Right_Material
- Grouping_Objects_By_Material
- Identifying_Materials
- Inventors_Of_New_Materials
- Materials_And_Their_Uses
- Properties_Of_Materials
- Properties_Of_Metals

Unit Learning Objectives:

- *I can investigate the properties of different materials.*
- *I can group objects by the material they are made from.*
- *I can investigate and compare the properties of different metal objects.*
- *I can identify the materials from which different objects are made.*

Investigation types covered: Classifying

- *To group and classify objects based on an object's property*

Scientists within the Curriculum:

Charles Goodyear (inventor of new material), Charles Macintosh,

LKS2 Cycle B

Heroes and Villains

Electricity
(Cross-curricular – DT)

Initial Lessons:

- *I can identify appliances that use electricity and say whether they are powered by mains electricity or batteries.*
- *To construct a simple series electrical circuit.*
- *Recognise that a switch opens and closes a circuit.*

It would be recommended to explicitly cover these objectives first to introduce Year 3 to circuits before beginning the project – these may be practical WCTB lessons. This would be recap lessons for Y4.

https://www.stem.org.uk/resources/elibrary/resource/30647/things-use-electricity

Children watch video clip and make a note of any appliances in the video which use electricity. They then create/complete a Venn Diagram to show whether the appliances are mains or battery-operated. Are there any items which can be both (e.g. radio). Can children think of any other household appliances to go in their Venn diagram?

Investigation types covered: Classifying

- *To classify using a Venn diagram based on set criteria*

Lessons 2 to 6:
See 'Focused Tasks' from Design and Technology Progression and Coverage Document: 'Simple Circuits and Switches'.

The following online resources could be used as an introduction/recap to creating circuits:
https://www.andythelwell.com/blobz/guide.html

There is also an example lesson plan on 'Making Switches' on the One Drive:

Subject Resources and Planning Support › Science › Resources › Heroes and Villains

Note: This unit is designed to recap the teaching on electricity in Cycle A for current Year 4 pupils, and is also to ensure that Year 3 pupils have enough understanding about electrical circuits to effectively complete the Design and Technology task for the topic; making a torch with a switch.

UKS2 Cycle B

Off with her Head

Outstanding Science; Year 6: Light

- How_We_See_Things
- Investigating_Shadows
- Making_A_Periscope
- Objects_And_Their_Shadows
- Positioning_A_Rear-view_Mirror
- Reflecting_Light
- The_Human_Eye
- The_Light_Spectrum

Unit Learning Objectives:

- *I can explain how we see light sources and non-light sources.*
- *I can label the main parts of the human eye and explain their functions.*
- *I can explain how white light is made up of a spectrum of colours (link to Isaac Newton)*
- *I can explain how the shape of an object is determined and the size based on movement of an object/ light source*
- *I can use my knowledge of reflection to place mirrors to make light follow a path.*
- *I can make a periscope and explain how it works. (optional extra)*
- *I can calculate the best position for a rear-view mirror. (optional extra)*

Investigation types covered: Comparative and fair test

- *To predict how shadows can move and change size (comparative and Fair test)*

-Positioning a rear-view mirror – Problem solving
-Reflecting Light – Problem Solving

Scientists within the Curriculum:

Ali Javan (gas light), Isaac Newton, Willebrord Snell (refraction), Lewis Latimer (covered in DT) Patricia Bath (laser eye),

Thomas Edison/ Lewis Latimer (covered in Year 5/6 DT) , Garrett Morgan (inventor of traffic light), Alhazen,

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Same	Test	Absorbent
Different	Compare	transparent
Float	Fair	Opaque
Sink	Group	Flexible
metal	Properties	
plastic	Object	
rubber	Material	
fabric	Purpose	
stone	Waterproof	
brick	Absorb	
paper	Ceramic	
glass	Leather	
wood		
soft		
hard		
light		
heavy		
bendy		
stiff		
rough smooth		
warm		
cold		
stretchy shiny		
dull		
pretty		

Golden Nuggets:

- Distinguish between an object and a material it is made from
- Name a variety of materials (wood, plastic, glass, metal, water and rock)
- Describe simple, physical properties
- Compare and group materials based on their properties

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Predict	Transparent
Bend	Test	Opaque
Twist	Deform	Insulating
Stretch	Material	Reflective
Rubber	Properties	
Change	Flexible	
leather	Rigid	
plastic	Waterproof	
metal	Absorbent	
rubber	Fragile	
paper	Brittle	
card	Suitable	
wood	Rot	
glass	Rust	
stone		
fabric		
Tough		
Light		
Heavy		
Strong		
Smooth		
Rough		

Golden Nuggets:

- Compare the properties of different materials to find the most and least suitable
- Identify materials that can be squashed, bent, twisted and stretched
- Identify the suitability of different materials
- Compare the properties of different materials to find the most and least suitable

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Machine	Symbol	Conductor
Electricity	Components	Insulator
Switch	Chemicals	Circuit
Dangerous	Generate	Cell
Wires	Appliance	Circuit-diagram
Bulb	Break	Filament
Light	Complete	Power station
Buzzer	Prediction	Substation
Ring	Observation	Mains-electricity
On	Conduct	Short-circuit
Off	Socket	
Buzz		
Metal		
Water		
Battery		
Cable		

Golden Nuggets:

- Identify appliances that use electricity

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Light	Source	Protractor
Darkness	Reflect	Cornea
Eyes	Predict	Iris
Brain	Measure	Lens
Mirror	Angle	Retina
Torch	Surface	Optic nerve
Shadow	Fair	Pupil
White	Test	Spectrum
Colours	Obstacles	Incident ray
		Reflected ray
		Opaque
		Line graph
		Periscope

Golden Nuggets:

- Understand light appears to travel in straight lines
- Understand objects are seen because they give out or reflect light into the eye
- Explain how we see things (light source, to eyes or light sources to object to eyes)
- Explain why shadows have the same shape as the object (travelling of light in a straight line)

Further guidance and Cross-curricular links:

Superheroes

Outstanding Science; Year 1: Animals including humans

Short unit (split across 2 topics)

- The_Five_Senses
- The_Human_Body

Unit Learning Objectives:

- *I can label the main parts of the human body.*
- *I can explain which part of the body is linked to which sense.*
- *I can research why Linda Brown Book was an important person*

Investigation types covered: Comparative and fair test

-Catch the Penny! – Comparative testing

-Do You Hear What I Hear? - Research

-Mystery Smells - - Research

-Tasting – With Your Nose? – Comparative testing

Scientists within the Curriculum:

Linda Brown Buck

Superheroes

Outstanding Science; Year 2: Animals including humans

- Exercise
- Food_Hygiene
- Healthy_Eating
- Stages_Of_A_Human_Life
- What_Do_Humans_Need_To_Survive

Unit Learning Objectives:

- *I can explain what humans need to survive.*
- *I can explain why it is important to be clean when eating food.*
- *I can investigate how exercise produces changes in the body*
- *I can explain how the different food groups help us to stay healthy.*
- *I can sequence the different stages of a human life.*

Investigation types covered: Observation over time

- To observe what happens when you exercise (obs over time)
- To observe what happens to an egg shell over time (obs over time)

Scientists within the Curriculum:

Marie Maynard Daly, Joan Beauchamp Procter

Tremors

Outstanding Science; Year 3: Rocks

- Animals_And_Their_Fossils
- How_Fossils_Are_Formed
- Investigating_Rocks
- Investigating_Soils
- Observing_Rocks
- Rocks_And_Their_Properties
- Soil_Composition
- Testing_Rock_Hardness

Unit Learning Objectives:

- *I can investigate and describe the properties of rocks*
- *I can match rocks to their properties and suggest uses for them (links to Florence Bascom)*
- *I can test and compare rocks based on their hardness.*
- *I can examine what a soil sample is made from.*
- *I can investigate what soils are made from.*
- *I can make predictions how fossils were formed, then describe the process in which they were formed (links to Mary Anning)*
- *I can explain why Mary Anning/ Florence Bascom was a significant scientist*

Investigation types covered: Comparative and fair test

Testing rock hardness

- To identify which rock is harder by observing and measuring

Additional

Observing rocks / investigating rocks

- To group and classify a range of rocks based on different properties

Investigating soils

- To group and classify a range of soils based on different properties

Soil composition

- To observe what changes there are to soil over a period of time (obs over time)

Scientists within the Curriculum:

Mary Anning (palaeontologist), Florence Bascom, Inge Lehmann (geologist),

Stargazers

Outstanding Science; Year 5: Earth and Space

- Comparing_The_Planets
- Day_And_Night
- Earth_Sun_And_Moon
- Making_A_Sundial
- Planet_Facts
- The_Formation_Of_The_Solar_System
- The_Lunar_Cycle
- The_Solar_System

Unit Learning Objectives:

- *I can research and compare the different planets in the solar system.*
- *I can explain how the solar system was formed. (reference to Henrietta Swan Leavitt)*
- *I can explain how the Earth and other planets in the solar system move. (reference to Nicolaus Copernicus)*
- *I can explain how day and night are caused.*
- *I can explain how the moon moves.*
- *I can identify the different phases of the moon.*

Investigation types covered: Research

- To create a model of the solar system using research (using a range of sources)

Scientists within the Curriculum:

Mae Jemison, Nicolaus Copernicus, Katherine Johnson, Galileo Galilei, Mary Somerville, Valentina Tereshkova, Maggie Aderin-Pocock, Johannes Kepler, Henrietta Swan Leavitt, Edwin Hubble, Vera Rubin, Wang Zhenyi, Cecila Payne Gaposchkin, Annie Easley

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Sight	Question	Senses
Sound	Answer	
Smell	Observe	
Taste	Predict	
Touch	Identify	
Eyes	Test	
Nose		
Tongue		
Ears		
Body		
Other body parts		

Golden Nuggets:

- Identify which part of the body is linked to which sense (5 senses)
- Identify, name and draw parts of the body

Further guidance and Cross-curricular links:

Senses Investigations ('Catch the penny', 'Do you hear what I hear?', 'Mystery smells' and 'Tasting – with your nose')
https://kidshealth.org/en/kids/experiment-main.html

PTC strips (phenylthiocarbamide) can be used for a taste testing experiment – a strip of paper that tastes different to everyone (sweet, bitter neutral depending on your taste buds)

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Body	Exercise	Heart
Baby	Predict	Muscle
Child	Diagram	Breathe
Adult	Growing	Sweat
Toddler	Changing	Carbohydrates
Teenager	Healthy	Micro-organisms
Food	Dairy	Acid
Eating	Fats	
Milk	Sugars	
Meat	Hygiene	
Eggs	Mouldy	
Fish	Problem	
Food names	Solution	
Dirty	Record	
Toothpaste	Observe	
	Protect	
	Damage	
	Test	

Golden Nuggets:

- Notice animals inc humans have offspring
- Understand the basic needs of animals inc humans for survival (water, food and air)
- Describe the importance of exercise, right type of food and hygiene

Further guidance and Cross-curricular links:

Egg Shell/healthy teeth investigation
https://www.science-sparks.com/how-to-keep-teeth-healthy/

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Alive	Purpose	Organism
Dead	Crystals	Paleontologist
Living	Grain	Extinct
Rock	Regular	Extant
Stone	Irregular	Fossil
Smooth	Habitat	Sedimentary
Rough	Sample	Sediment
Shiny	Observe	Metamorphic
Dull	Predict	Igneous
Heavy	Fair	Chalk
Light	Test	Slate
Sharp	Compressed	Granite
Flat	Decay	Diamond
Round	Porous	Sandstone
Jagged	Absorb	Humus
Dark		Venn diagram
Light		
Soil		
Minibeast		
Water		
Float		
Sink		

Golden Nuggets:

- Understand there are different type of rocks
- Compare and group rocks based on appearance/ simple properties
- Explain how fossils are formed
- Understand soils are made from rocks/organic matter

Further guidance and Cross-curricular links:

Book: 100 scientists who made history

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Planet	Orbit	Terrestrial planet
Sun	Diameter	Gas Giant
Moon	Rotate	Ice Giant
Day	Axis	Dwarf planet
Night	Origin	Mercury
Gas	Energy	Venus
Full	Reaction	Earth
Half	Spherical	Mars
	Cycle	Jupiter
		Saturn
		Uranus
		Neptune
		Solar System
		Sundial
		Gnomon
		Hydrogen
		Helium
		Gravity
		Waxing
		Waning
		Lunar
		Crescent
		Gibbous
		Geocentric
		Heliocentric
		Astronomer

Golden Nuggets:

- Describe the movement of Earth, and other planets relative to the sun
- Describe the movement of the moon
- Understand the Sun, Earth and moon are approximately spherical bodies
- Explain night and day (Earth's rotation)

Further guidance and Cross-curricular links:

Book: 100 scientists who made history
Mae Jemison – comprehension
https://www.famousscientists.org/
https://scientificwomen.net/field/astronomy-1

Paws, Claws and Whiskers

Outstanding Science; Year 1: Animals including humans

Longer unit (split across 2 topics)

- Animal_Bodies
- Animal_Body_Groups
- Animal_Diet
- Animals_And_Their_Food
- Grouping_Animals
- Identifying_Mammals

Unit Learning Objectives:

- *I can label the main parts of animals' bodies.*
- *I can group animals by their body type.*
- *I can identify carnivores, herbivores and omnivores.*
- *I can match animals to what they eat.*
- *I can place animals in the fish, amphibian, reptile, bird and mammal groups.*
- *I can identify some mammals.*

Investigation types covered: Classifying

- To group and classify animals based on a criteria

Scientists within the Curriculum:

Paws, Claws and Whiskers

Outstanding Science; Year 2: Animals including humans

- Animals_And_Their_Offspring
- Life_Cycles
- What_Do_Animals_Need_To_Survive

Outstanding Science; Year 2: Living Things and their Habitats

- Adaptations
- Animals_And_Their_Habitats
- Food_Chains
- Food_Sources
- Investigating_Micro-habitats
- Naming_Animals_And_Plants

Unit Learning Objectives:

- *I can explain what animals need to survive.*
- *I can match the young of different animals to their adult form.*
- *I can sequence and describe the life cycle of different animals.*
- *I can create and describe a food chain showing different sources of food*
- *I can identify and name some animals and plants in local micro-habitats.*
- *I can explain how some animals are adapted to their habitats.*

Investigation types covered: Classifying

- I can research which offspring links to which animal and observe what features they have

Scientists within the Curriculum:

Burps, Bottoms and Bile

Outstanding Science; Year 4: Animals including humans

(Double Unit)

- Digestive_System_Organs
- Looking_After_Our_Teeth
- The_Human_Digestive_System
- Tooth_Structure
- Types_Of_Teeth

Outstanding Science: Year 3: Animals including humans

- Food_Groups
- Muscles_For_Moving
- The_Human_Skeleton

Unit Learning Objectives:

- *I can identify the different types of human teeth and explain their functions.*
- *I can explain how we can look after our teeth.*
- *I can explain how many portions of food from different food groups we should eat in a day.*
- *I can identify and locate the main organs of the human digestive system.*
- *I can explain how the human digestive system works.*
- *I can explain how muscles work.*
- *I can explain the function of the human skeleton and identify its bones.*

Investigation types covered: Research

Practical digestive system investigation

- To research the main organs of the digestive system

Additional

- To classify and group items into different food groups

Scientists within the Curriculum:

Alchemy Island

Outstanding Science; Year 5: Properties and Changes of Materials

- Investigating_Hardness
- New_Materials
- Properties_Of_Materials
- Reversible_And_Irreversible_Changes
- Separating_Mixtures
- Separating_Solutions
- Soluble_Materials
- Uses_Of_Materials

Unit Learning Objectives:

- *I can investigate the hardness of materials and place them in order of hardness.*
- *I can group materials according to their properties.*
- *I can explain why materials are used for different purposes.*
- *I can identify if a change is easily reversible and how to reverse it.*
- *I can investigate which materials are soluble in water.*
- *I can suggest ways in which different mixtures can be separated.*
- *I can explain how to recover a substance from a solution.*

Investigation types covered: Observation over Time

--Separating solutions

- To observe what happens over time when different items are used to separate different mixtures

Additional

-New materials – practical or research based

-Properties of Materials

- To classify materials based on a range of properties

-Reversible and Irreversible Changes – practical

- To group and classify which reactions can be reversed and those that are irreversible

-Separating mixtures – Problem solving

Investigating hardness

- To measure how hard an object is (comp and fair test)

Scientists within the Curriculum:

Joseph Priestley (discovered gases inc oxygen), Joseph Black (heat),

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Wing	Label	Skeleton
Beak	Match	Mammal
Fin	Group	Prey
Paw	Identify	Carnivore
Claw		Herbivore
Tail		Omnivore
Fur		Amphibian
Feathers		Reptile
Eggs		Scales
Meat		Gills
Plants		Mane
Water		Snout
Fly		Hoof
Swim		Live young
Bird		Give birth
Fish		

Golden Nuggets:

- Name a variety of common animals
- Understand the term fish, amphibian, reptile, bird and mammal (identify these from a selection)
- Identify animals that are carnivores, herbivores and omnivores
- Explain what carnivore, herbivore and omnivore means
- Compare different animals by grouping/ classifying them based on their structure/characteristics

Further guidance and Cross-curricular links:

Children could research the diets of some of the big cats studied in the geography unit – what is their prey?

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Adult	Reproduce	Live young
Egg	Young	Give birth
Chick	Offspring	Lifecycle
Chicken	Change	Spawn
Frog	Research	Pupa
Caterpillar	Diagram	Tadpole
Food	Source	Food chain
Air	Sequence	Habitat
Water	Adaptation	Micro-habitat
Shelter	Adapt	Prey
Warmth	Group	Polar
	Survive	Forest
	Protection	Desert
		Antarctic
		Coastal
		City
		Rainforest
		Organism
		Consumer
		Producer
		Omnivore
		Carnivore
		Herbivore

Golden Nuggets:

- Notice animals inc humans have offspring
- Understand the basic needs of animals inc humans for survival (water, food and air)
- Identify that most living things live in habitats
- Understand habitats provide basic needs
- Identify a range of plants and animals in different habitats (include micro-habitats)
- Understand how animals obtain food – simple food chain

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Eat	Digestion	Digestive system
Mouth	Oral	Oesophagus
Tongue	Acid	Small intestine
Teeth	Expel	Large intestine
Stomach	Permane	Bacteria
Sugar	nt	Micro-organisms
Toothache	Contract	Starch
Dentist	Relax	Cavity
Toothbrush	Protect	Nerves
Toothpaste	Support	Pulp
Speak	Energy	Dentine
Grind	Portions	Enamel
Chew		Incisor
Rip		Molar
Cut		Canines
Bone		Saliva
Bend		Bolus
Elbow		Chyme
Move		Faeces
Skull		Rectum
Jaw		Colon
Bones		Deciduous
Bread		Milk teeth
Cereal		Muscles
Potatoes		Joint
Fruit		Biceps
Vegetables		Triceps
Meat		Endoskeleton
Fish		Spine
Milk		Vertebrae
Cheese		Radius
Dairy		Ulna
Fat		Tibia
Sugar		Fibula
		Pelvis
		Femur
		Humerus
		Carbohydrates
		Vitamins
		Minerals
		Calcium
		Protein
		Pictogram
		Vegetarian
		Vegan

Golden Nuggets:

- Identify animals inc humans need the right type of nutrition which comes from food
- Know that humans/ some animals have skeletons
- Know that skeletons and muscles are used for support, protection and movement
- Identify parts of the digestive system
- Describe simple functions of the digestive system
- Identify different types of teeth and their functions

Further guidance and Cross-curricular links:

Practical digestive system investigation *– resource on One Drive:*

Curriculum Planning › Subject Resources and Planning Support › Science ›

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Compress	Evaporate
Hard/ness	Prediction	Condense
Change	Observation	Magnet
Shape	Mixture	Magnetism
Material	Decant	Electrical
Inventor	Sieve	Thermal
Battery	Filter	Conductivity
Bulb	Advantage	Insulator
Wires	Disadvantage	Solution
Change	Transparency	Solvent
Mix	Reversible	Solute
Dissolve	Irreversible	Variable
Burn	Dissolve	Line graph
Freeze	Fair	
Boil	Measure	
Bake	Flexible	
Melt	Waterproof	
Soft		
Hard		

Golden Nuggets:

- Compare everyday materials based on properties (hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets)
- Know some materials will dissolve in liquid (forming a solution)
- Describe how to recover a substance from a solution
- Understand solids, liquids and gasses and how they can be separated
- Give reasons for uses of materials
- Understand and demonstrate dissolving, mixing and changes of state are reversible changes
- Understand some changes form new materials (not usually reversible)

Further guidance and Cross-curricular links:

Scented Garden

Outstanding Science; Year 1: Plants

- Identifying_Bulbs_And_Seeds
- Identifying_Garden_Plants
- Identifying_Trees
- Identifying_Wild_Plants
- Labelling_A_Plant
- Labelling_Different_Plants
- Parts_Of_A_Plant
- Plants_In_Our_Local_Area

Unit Learning Objectives:

- *I can identify some common deciduous and evergreen trees from their shapes, leaves and seeds.*
- *I can identify some common wild plants.*
- *I can identify plants in our local area.*
- *I can label the main parts of a flowering plant.*
- *I can label the main parts of different plants.*
- *I can explain what the basic parts of a flowering plant do.*
- *I can match bulbs and seeds to fully-grown plants. (optional extension)*
- *I can identify some common garden plants. (optional extension)*

Investigation types covered: Observation over time

- To observe how parts of the plant grow over time

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Geography fieldwork visit to local park to observe seasonal changes to plants and trees in the local area.

Observe – simply draw images of how the flower grows – identifying the key parts of a flower as it grows

Scented Garden

Outstanding Science; Year 2: Plants

- Comparing_Plants
- Growing_Plants
- Parts_Of_A_Plant
- Plant_Life_Cycles
- Plant_Reproduction
- What_Do_Bulbs_Need_To_Start_Growing
- What_Do_Plants_Need_To_Grow_Well
- What_Do_Seeds_Need_To_Germinate

Unit Learning Objectives:

- *I can investigate the needs of different plants.*
- *I can investigate what seeds need to germinate*
- *I can investigate what bulbs need to start growing again.*
- *I can label the main parts of a plant and explain their function.*
- *I can sequence the different stages in a plant's life.*
- *I can record how the height of a plant changes over time.*

Investigation types covered: Comparative and fair test

Comparing plants

- To guess what happens when a plant doesn't have something it needs to grow (comparative and fair test)

Additional

Growing plants

- To observe how plants change over time

What do bulbs/plants/seeds need

- To compare colours/measurements of plants placed in different locations (Pattern Seeking)

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Mighty Metals

Outstanding Science; Year 3: Forces and Magnets

- Magnetic_Materials
- Magnetic_Metals
- Magnetic_Poles
- Magnetism_At_A_Distance
- Magnetism_Through_Materials
- Magnets_On_Different_Surfaces
- Using_Magnets

Unit Learning Objectives:

- *I can predict and investigate how magnets interact with each other.*
- *I can investigate how magnetic forces act at a distance using North and South poles.*
- *I can investigate how magnetic forces act through different materials.*
- *I can investigate how magnets can make things move on different surfaces.*
- *I can investigate/or compare and group which materials are magnetic.*
- *I can describe the functions of magnets in different situations.*

Investigation types covered: Pattern Seeking

Magnetic Poles

- To identify basic patterns when using the different poles on a magnet (pattern seeking)

Additional

Magnetism at a distance

- To measure how far a magnet can be away from an object while using different materials (Comparative and fair testing)

Magnets on different surfaces

- To predict what will happen to a magnet on different surfaces (comparative and fair testing)

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Pharaohs

Outstanding Science; Year 6: Electricity

- Comparing_Circuits
- Electrical_Cells
- Electrical_Components
- Electrical_Symbols
- Functioning_Circuits
- Making_A_Burglar_Alarm
- Making_A_Wire_Loop_Game
- Making_Traffic_Lights

Unit Learning Objectives:

- *I can investigate the effect of changing the number of bulbs and the voltage of cells in a circuit.*
- *I can use symbols to create circuit diagrams to represent electrical circuits.*
- *I can predict whether an electrical circuit will function and suggest ways of improving it.*
- *I can create an electrical burglar alarm and explain how it functions.*
- *I can create a wire loop game and explain how it works.*
- *I can create a set of electrical traffic lights and explain how they function.*

Investigation types covered: Pattern Seeking

- Functioning Circuits – Problem solving To identify patterns when the voltage is kept the same and more components are added. (pattern seeking)
- To identify patterns when the components are kept the same and the voltage is increased/decreased (pattern seeking)

Additional

Comparing Circuits / Electrical Cells – Comparative/ fair test

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Plant	Match	Bulb
Garden	Group	Seed
Leaves	Wild	Plant names
Fruit	Reproduce	Tree names
Flower	Attracts	Autumn
Food		Root
Sunlight		Stem
Insects		Trunk
Water		Petals
		Branch
		Soil

Golden Nuggets:

- Name common wild/garden plants
- Identify deciduous and evergreen trees
- Identify basic parts of a flower/tree
- Describe what the basic structure of a plant/tree does e.g. roots/stem/petal etc

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Soil	Compare	Bulb
Water	Fair	Roots
Light	Test	Nutrients
Plant	Variable	Stem
Water	Measure	Seed
Leaves	Anchor	Pollen
Flower	Support	Germination
Food	Growth	Reproduce
Fruit	Flowering	Pollination
Insect	Scent	Pollinating
Warmth	Energy	Lifecycle
	Conclusion	Nectar
		Dormant

Golden Nuggets:

- Observe how seeds/bulbs grow into mature plants
- Understand and describe why plants need; water, light and a suitable temperature

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Metal	Fair	Magnet
Move	Test	Magnetic
	Predict	Carroll
	Measure	Diagram
	Label	Venn
	Diagram	Diagram
	Set	Iron
	Attract	Nickel
	Repel	Cobalt
	Effect	North pole
	Force	South pole
	Distance	Particles
	Surface	Magnetic repulsion
		Electromag net

Golden Nuggets:

- Compare how things move on different surfaces
- Some forces need contact – magnets work from a distance
- Know magnets attract and repel (using knowledge of the two poles - N and S)
- Know magnets attract some objects
- Compare and group materials that attract to magnets
- Predictions based on magnets attracting and repelling

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Bulb	Circuit	Circuit
Bright/ Brightness	Predicted	diagram
Battery	Observed	Cells
Wire	Component	Voltage
Heat	Resistance	Kinetic energy
Light	Function	Electromagnet
Sound	Energy	Insulator
Switch	Horizontal	Conductor
Buzzer	Vertical	Electrons
Picture	Symbol	Current
Traffic light	Advantage	Filament
Accident	Contacts	Chemical
		Right-angle
		Crocodile clip
		Mains electricity
		LED
		Generator
		Incandescent bulb

Golden Nuggets:

- Associate the brightness of a lamp/volume of buzzer with voltage
- Compare and reason for components and how they function e.g. brightness of bulb
- Use circuit symbols in a diagram

Dinosaurs – Year 1 and Year 2 to complete:

Outstanding Science; Year 2: Living Things and their Habitats

Alive_Dead_And_Never_Alive

Living_And_Non-living

Unit Learning Objectives:

- *I can identify and describe the difference between; alive, dead, and things that have never been alive.*
- *I can group things according to whether they are alive, dead, or have never been alive.*
- *I understand dinosaurs live in an environment that meets it's needs*

Investigation type: Research

- To research what a dinosaur needs to survive

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

- Children should research dinosaurs to find the answer to the question – Did all dinosaurs have the same body parts?
- Children should investigate what types of fossil can be found in Britain (sketching and labelling different types) https://www.nhm.ac.uk/discover/fantastic-fossils.html
- Links should be made to learning in history – which types of fossil did Mary Anning discover?

Blue Abyss

Outstanding Science: Year 4: States of Matter

The_Water_Cycle

Outstanding Science; Year 3: Animals including humans

Animals_And_Their_Food

Animals_And_Their_Skeletons

Food_Chains

Food_Webs

Types_Of_Skeleton

Unit Learning Objectives:

- *To explain evaporation and condensation as part of the water cycle.*
- *To demonstrate and explain what solids, liquids and gases look like*
- *To observe some materials can change state*
- *To understand when and why some materials change state.*

- *I can create a food web and explain what it shows// I can create a food chain and explain what it shows.*
- *I can match animals to their skeletons and explained what they are used for.*
- *I can identify which type of skeleton an animal has.*

Investigation types covered: Observation over time

- To observe how materials change state

Additional

- I can group animals and decide which skeleton belongs to which animal

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

See Geography Progression and Coverage document for links to learning about the Water Cycle and associated fieldtrip. Make a mini water cycle model - https://www.science-sparks.com/make-a-mini-water-cycle/

In order to benefit from cross-curricular links teachers are advised to adapt the lessons on food chains, webs and animal skeletons to include aquatic animals. More information on aquatic food chains can be found at:

- https://www.timeforkids.com/k1/ocean-food-chain/
- https://kids.britannica.com/students/assembly/view/90131
- https://education.nationalgeographic.org/resource/marine-food-chain

There is also a lesson plan and resources for teaching about marine food chains on the One Drive:

Time Traveler

Outstanding Science; Year 5: Animals including humans (Double Unit)

Child_Development

Child_Responsibility

Foetal_Development

Gestation_Periods

Men_And_Women

Old_Age

Puberty

Timeline_Of_A_Human_Life

Outstanding Science; Year 5: Living things and their Habitats

Amphibian_Life_Cycles

Animal_Reproduction

Bird_Life_Cycles

Comparing_Animal_Life_Cycles

Flowering_Plant_Reproduction

Insect_Life_Cycles

Investigating_Vegetative_Reproduction

Mammal_Life_Cycles

Unit Learning Objectives:

- *I can create a timeline showing and describing the development of a child into an adult*
- *I can discuss when a child should be allowed to perform different activities.*

Investigation types covered: Classifying

- *I can compare the gestation periods of different mammals.*

- *I can explain how animals reproduce sexually and identify the life cycle of an animal*
- *I can compare the lifecycles of mammals, amphibians, insects and birds.*
- *I can describe how flowering plants reproduce.*
- *I can investigate whether a new plant will grow from cuttings. (investigation)*

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Covered as Part of Sexual education (PSHE)

- *I can explain how a human fetus develops.*
- *I can describe differences between the bodies of men and women.*
- *I can describe the changes involved with puberty.*

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Living	Classify	Frill
Dead	Group	Plates
Alive	Sort	Fossil
Never alive	Identify	
Horns	Classify	
Wings	Group	
Nose	Sort	
Claws	Research	
Tail		

Golden Nuggets:

- Group objects based on characteristics
- Understand the difference between 'dead, living and never alive'
- *Identify that most living things live in habitats*
- *Understand habitats provide basic needs*

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Food	Diet	Producers
Plants	Energy	Consumers
Sunlight	Protect	Herbivores
Move	Support	Carnivores
Bony	Temperature	Omnivores
Snow		Organism
Rain		Food chain
Hail		Food web
Ocean		Ecosystem
River		Photosynthesis
Water		Skeleton
Cools		Endoskeleton
Warms		Exoskeleton
Rises		Hydroskeleton
Falls		Evaporation
Clouds		Condensation
		Transpiration
		Precipitation
		Water cycle
		Vapour

Golden Nuggets:

- Compare and group solids, liquids and gases
- Observe some materials change state)e.g. heated and cooled
- Know when these change state (e.g. boiling point 100 degrees Celsius, when does a choc bar/ ice cube melt etc)
- Understand evaporation and condensation in the water cycle

- identify that we need the right types and amount of nutrition, which is obtained from what we eat
- muscles used for support, protection and movement

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Baby	Development	Foetus
Child	Odour	Embryo
Adult	Reproduction	Zygote
Teenager	Moody	Gestation
Human	Self-conscious	Premature
Old	Aggressive	Line Graph
Age	Responsibility	Puberty
Months	Aquatic	Muscles
Years	Juvenile	Acne
Weeks	Metamorphosis	Genitals
Weight	Regenerate	Penis
Male	Social	Erection
Female	Colony	Semen
Changes	Solitary	Sperm
Hair	Organism	Nipples
Smell	Clone	Breasts
Fat	Fair test	Pelvis
Thoughts	Inherit	Menstruate
Feelings	Survive	Vagina
Men	Individual	Period
Women	Nurse (verb)	Cycle
Frog		Viviparous
Salamander		Egg cell
Tail		Sperm cell
Limbs		Womb
Insect		Mammal
Flower		Amphibian
Seed		Fertilise
Leaves		Frogspawn
Stem		Tadpoles
Roots		Embryo
Flowers		Larvae
Tubers		Gills
Bulbs		Herbivore
Milk		Drone (bee)
Gender		Worker (bee)
Egg		Queen (bee)
		Royal jelly
		Pupate
		Sexual
		Asexual
		Placental
		Placenta
		Oviparous
		Brood
		Egg tooth
		Incubate
		Clutch
		Host
		Parasite
		Pollen
		Stigma
		Styles
		Ovary
		Carpel
		Ovule
		Eusocial
		Sterile

Golden Nuggets:

- Describe the changes as humans develop to old age
- Understand the different life cycles of mammals,. Amphibians, insects and birds
- Describe the differences between the life cycles
- Describe the reproduction process in some plants/animals

Towers, Tunnels and Turrets

Outstanding Science; Year 1: Everyday Materials
(split unit) This must be Taught second

- Investigating_The_Best_Material
- Choosing_Materials
- Floating_And_Sinking
- Grouping_Materials

Unit Learning Objectives:

- *I can investigate whether an object floats or sinks.*
- *I can group objects and materials by their properties.*
- *I can choose a good material for a purpose.*
- *I can investigate the best material for a purpose.*

Investigation types covered: Comparative and fair test

- To record which items sink and float the quickest (fair test)

Additional

- To group materials based on a characteristic
- To observe which item is the best for a purpose (Fair testing)

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Towers, Tunnels and Turrets

Outstanding Science; Year 2: Uses of Everyday Materials
(split unit) This must be Taught second

- Inventors_Of_New_Materials
- Materials_And_Their_Uses
- Properties_Of_Materials
- Properties_Of_Metals
- Changing_Shape
- Choosing_The_Right_Material
- Grouping_Objects_By_Material
- Identifying_Materials

Unit Learning Objectives:

- *I can explain how inventors have made new materials.*
- *I can explain how materials are useful in different situations.*
- *I can suggest suitable materials for new situations.*
- *I can investigate how I can change the shape of different objects.*

Investigation types covered: Pattern Seeking

Properties of Materials / Properties in metals

- To find patterns using the material's properties (Pattern finding)

Additional

- To group objects by the material they are made from

Scientists within the Curriculum:

Further guidance and Cross-curricular links:

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Same	Test	Absorbent
Different	Compare	transparent
Float	Fair	Opaque
Sink	Group	Flexible
metal	Properties	
plastic	Object	
rubber	Material	
fabric	Purpose	
stone	Waterproof	
brick	Absorb	
paper	Ceramic	
glass	Leather	
wood		
soft		
hard		
light		
heavy		
bendy		
stiff		
rough smooth		
warm		
cold		
stretchy shiny		
dull		
pretty		

Golden Nuggets:

- Distinguish between an object and a material it is made from
- Name a variety of materials (wood, plastic, glass, metal, water and rock)
- Describe simple, physical properties
- Compare and group materials based on their properties

Key Vocabulary:

Tier 1	Tier 2	Tier 3
Squash	Predict	Transparent
Bend	Test	Opaque
Twist	Deform	Insulating
Stretch	Material	Reflective
Rubber	Properties	Inventor
Change	Flexible	Magnet
leather	Rigid	
plastic	Waterproof	
metal	Absorbent	
rubber	Fragile	
paper	Brittle	
card	Suitable	
wood	Rot	
glass	Rust	
stone		
fabric		
Tough		
Light		
Heavy		
Strong		
Smooth		
Rough		
Float		
Sink		

Golden Nuggets:

- Compare the properties of different materials to find the most and least suitable
- Identify materials that can be squashed, bent, twisted and stretched
- Identify the suitability of different materials
- Compare the properties of different materials to find the most and least suitable

Ongoing Scientific skills for Key Stage 1	Ongoing Scientific skills for Lower Key Stage 2	Ongoing Scientific skills for Upper Key Stage 2
▪ Ask simple questions ▪ Observe closely and make statements about what they can see ▪ Perform simple tests ▪ Identify and classify ▪ Gather and record answers and begin to answer simple questions	▪ asking relevant questions to find answers ▪ setting up simple practical enquiries, comparative and fair tests ▪ making systematic and careful observations ▪ Take accurate measurements using standard units, using a range of equipment ▪ gathering, recording, classifying and presenting data in a variety of ways ▪ recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables ▪ simple conclusions, make predictions for new values ▪ Suggest improvements and raise further questions ▪ identifying differences, similarities or changes ▪ using straightforward scientific evidence to answer questions	▪ planning different types of scientific enquiries ▪ recognising and controlling variables ▪ taking measurements, using a range of scientific equipment, with increasing ▪ accuracy and precision, taking repeat readings ▪ 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 ▪ Identify relationships and explanations of and degree of trust in results ▪ identifying scientific evidence that has been used to support or refute ideas or arguments.

Year 1	Year 2	Year 3/4	Year 5/6
Classifying	Classifying	Classifying	Comparative and fair test
Comparative and fair test	Observation over time	Observation over time	Research
Classifying	Classifying	Research	Observation over time
Observation over time	Comparative and fair test	Pattern Seeking	Pattern Seeking
Research	Research	Comparative and fair test	Classifying
Comparative and fair test	Pattern Seeking		