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DARTMOOR MULTI ACADEMY TRUST
SCIENCE CURRICULUM OVERVIEW

EYFS themes	**What makes you unique!**	**Let's celebrate!**	**My world and me!**	**Adventure!**	**Growing!**	**The great outdoors!**
Core knowledge	MYSELF – My SENSES Know how to explore my new environment using my 5 senses Know about healthy diets and how food helps our bodies to grow Know that exercise helps us to stay healthy Can use all of my senses when exploring natural materials	MATERIALS Know about and can explore different types of materials with similar and different properties Can select the best material for a specific task Can talk about the differences between materials and changes that I notice. Know that some materials change irreversibly	SEASONS AND WEATHER Know about and can observe change Know how weather affects our lives Know how to protect myself in the weather Know the weather changes with the seasons	FORCES Can explore and talk about different forces I can feel Can explore how things work Know the difference between push and pull, strength and speed	PLANTS AND LIFE CYCLES Know what a plant and animal needs to grow and thrive. Know about growth, decay and changes over time Can name some parts of a plant Know the basic lifecycle of a butterfly/frog/chick	THE NATURAL WORLD Can explore a range of experiences in nature Know about features in my own environment Know about natural and found objects Know that living things need to be treated with respect and care Know about similarities, differences, patterns and change in nature. Know that some environments are different to the one in which I live.

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	Sound	Materials	Seasons and Weather	Building things	Plants	Animal Kingdom
NC links		Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties	Observe changes across the 4 seasons Observe and describe weather associated with the seasons and how day length varies.	Distinguish between an object and the material from which it is made Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock Describe the simple physical properties of a variety of everyday materials Compare and group together a variety of everyday materials on the basis of their simple physical properties	Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees Identify and describe the basic structure of a variety of common flowering plants, including trees Observe and describe how seeds and bulbs grow into mature plants FInd out and describe how plants need water, light and a suitable temperature to grow and stay healthy.	Identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammal Identify and name a variety of common animals that are carnivores, herbivores and omnivores Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
Core knowledge	Identify the way sound is made through vibration in a range of different musical instruments from around the world; Describe how the pitch and volume of sounds can be changed in a variety of ways.	Identify materials: what they are made from and their properties (Squash, bendy) Use the terms transparent, translucent and opaque to Describe materials and group them accordingly. Group materials according to set criteria and describe them using the appropriate scientific terms Identify objects which float and sink and provide an explanation (Heavy/light/ density) Know the terms: absorb and waterproof	Observe and talk about changes in the weather and the seasons. Conduct seasonal research, such as collecting rain fall data / wind direction. **Note:** Children should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses.	Identify and discuss the uses of different everyday materials Know about the properties of materials that make them suitable or unsuitable for particular purposes Know about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.	Know common names of flowers, examples of deciduous and evergreen trees, and plant structures. Label main parts of plants and trees Describe the basic requirements of plants for germination, growth and survival, as well as to the processes of reproduction and growth in plants. .	

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		Carry out an experiment to identify which materials are waterproof Understand the word magnetic and simple language associated with it. Describe materials that might be magnetic. Identify materials and their suitable use. 'What is the best material for an umbrella? ...for lining a dog basket? ...for curtains? ...for a bookshelf? ...for a gymnast's leotard?'				
Vocabulary	Sound/vibration Medium/ear/pitch Volume/faint(er) source of the sound thickness/insulation	hard/soft/stretchy/stiff shiny/dull/rough/smooth bendy/not bendy waterproof/not waterproof absorbent/not absorbent opaque/transparent brick/paper fabrics/elastic (noun) foil	Year/ season/ Spring Summer/ Autumn Winter/ sunny Cloudy/windy/ dry Temperature/ climate	Wood/metal Plastic/glass Brick/rock Paper/cardboard Solid/liquid Gas/squashing Bending/twisting Stretching/elastic (v) Properties/suitable unsuitable	Plant/deciduous Evergreen\leaves flowers (blossom) petals\fruit\Roots\bulb seed\trunk\bud\branches stem\magnifying glass	characteristics\living non-living\dead habitat\micro-habitat food chain\source environment\food shelter\seashore\sea ocean\woodland forest\rainforest invertebrate vertebrate

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	Light	Space	Habitats	Human Lifestyle	Changing Materials	Mixing and Making
NC links			Living things and their habitats Explore and compare the differences between things that are living, dead, and things that have never been alive Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other Identify and name a variety of plants and animals in their habitats, including microhabitats 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.	Notice that animals, including humans, have offspring which grow into adults Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. (KS2)
Core knowledge	Know the difference between light and dark Identify different light sources and know why light is important Know the steps that enable us to see Understand how the earth	Demonstrate an understanding of space and know how can we find out about it? Can name and describe planets, (Interesting facts) Know how the earth rotates and orbits and can explain	Identify the difference between living and non-living things Know what a habitat is and describe different habitats and understand the term organism. Identify and describe	Label, describe and understand the function and importance of the main parts of the human body. Explain what germs are and the importance of hygiene Use the results of an investigation to answer	Describe which materials different objects are made from Use appropriate vocabulary to describe materials (opaque, waterproof, translucent) Know how the shape of objects can be changed and	Identify and know the differences between solids, liquids and gases Understand the term 'Change of status' and label some of the ways you can change the state of a substance. Understand the concept of

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	moves Describe the properties of reflective and non-reflective materials Conduct an investigation as to whether a material is reflective Know how a shadow is formed and the effect the sun has on its shape. Can follow instructions to conduct an investigation and write a conclusion	why the earth is tilted Can describe stars and know what a constellation is and draw a constellation Know simple facts about when, how and by whom space was discovered Discuss what the future might hold for space travel.	microhabitats Know how a desert is formed, where they are and animals that live there and why Know how a rainforest is formed, where they are and animals that live there and why Describe an urban habitat and the animals that are suitable to live Can match animals to different habitats and explain why they live there.	questions Name a range of people whose jobs it is to keep us healthy. Describe the contributions of Edward Jenner and Mary Seacole. Describe and explain the use of each food group Design a balanced meal. Describe how humans change as they age. Identify the differences between different points in the human lifecycle and draw a human timeline.	carry out a simple investigation Record findings in a table Understand the term elasticity Know the difference between absorbent and waterproof Know and identify the difference between raw and synthetic materials Identify the best material for performing different functions.	mixing. Explains the terms soluble and insoluble and carry out a simple investigation to identify soluble and insoluble materials Know what happen when you mix a solid and a liquid together Explain how mixtures can be separated Understand the terms reversible and irreversible changes
Vocabulary	Light/dark/shadow reflective/mirror surface/ natural/artificial source of light/block opaque/translucent transparent	Solar system/Sun/star Earth/Moon/orbit Spherical/rotation/day Night/seasons Mercury/ Venus/ Earth, Mars/Jupiter/ Saturn, Uranus/ Neptune/Pluto Sundial /midday Midnight/astronomical	Characteristics/ Living/non-living Dead/habitat micro-habitat food chain source/environment food/shelter seashore/sea/ocean woodland/-+forest rainforest	Animal/human reproduction offspring/baby toddler/child teenager/adult life-cycle/egg,/chick, chicken/egg/caterpillar pupa/butterfly/spawn tadpole/frog/lamb/sheep grow(th)/water/food/air survival/exercise nutrition/diet (eating habits)/hygiene/health(y)	hard/soft/stretchy/stiff shiny/dull/rough/smooth bendy/not bendy waterproof/not waterproof absorbent/not absorbent opaque/transparent brick/paper fabrics/elastic (noun) foil	states of matter/solid liquid/gas/properties particles/evaporation solidification condensation the water cycle/melting
LKS2 units	Practical Skills	Raw and Synthetic Materials	Sound	Forces	Plants	Ecosystems

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NC links	Asking relevant questions and using different types of scientific enquiries to answer them Sc Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identifying differences, similarities or changes related to simple scientific	Children understand the differences in raw and synthetic materials. Children understand the link between raw and synthetic materials and how materials are made. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible Children understand the importance of recycling materials	Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear Find patterns between the pitch of a sound and features of the object that produced it FInd patterns between the volume of a sound and the strength of the vibrations that produced it. Recognise that sounds get fainter as the distance from the sound source increases	Compare how things move on different surfaces S Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having 2 poles Predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers 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 Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal	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 Recognise that living things can be grouped in a variety of ways Recognise that environments can change and that this can sometimes pose dangers to living things. Construct and interpret a variety of food chains, identifying producers, predators and prey

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	ideas and processes Using straightforward scientific evidence to answer questions or to support their findings.					
Core knowledge	Identify the variables in a range of experiments Define a dependent, independent and control variable Follow the instructions in a method Write a method for an investigation Draw a range of scientific diagrams Use scientific diagrams to identify an organism or object Describe how to collect results Draw a results table Write a conclusion Draft an investigation report Redraft an investigation report	Explain and sort and describe the uses of raw materials based on where they come from. Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, Explain and describe the uses of some synthetic materials sort materials into synthetic and raw materials Explain that the raw materials change properties when made into synthetic material Describe how the glass is made from sand and how the properties of sand change to the properties of glass Describe how paper is made from wood and its uses Explain why it is a good thing to recycle paper, the process and the benefits. Explain making synthetic materials takes energy Explain the negative impact of using raw materials State what sustainably	Describe what sounds waves are and how we hear sounds and stop sound Describe how sounds are produced and ways that different sounds can be made. Make your own instrument to create a sound Describe what the pitch of a sound is and how to change it and give example of objects that produce high and low pitch sounds Describe what we mean by the amplitude of sound and how to change it. Give examples of high amplitude and low amplitude sound Explain what the science of acoustics involves and describe how scientists dampen noise that is not wanted. Describe how engineers build venues to improve sound quality	Define a force and the effect forces can have on an object Can name the forces acting on a range of objects. Describe what Newton discovered about forces Explain the use of a Newton meter. Describe how to measure the size of a range of forces Define contact forces and what causes a range of contact forces Describe ways of changing the size of a frictional force Define non-contact forces Describe the cause and effect of gravitational forces Describe how a magnetic force may lead to attraction or repulsion Describe the forces acting on an object that floats in water Explain why forces may lead to it floating or sinking Describe what gears, levers and pulleys are and why they are helpful. Describe applications of gears, levers and pulley	Describe what a plant needs to survive State what the three main types of variables are Can plan an investigation into the factors that affect plant growth Describe the main parts and functions of a plant Know how to draw a scientific diagram and to write a conclusion for an investigation Name the main parts of a flower and describe the functions of each Know how to identify the parts on a real flower Describe the parts of a flowering plants lifecycle State the conditions required for germination Describe three ways in which seed dispersal takes place Describe what transpiration is Give the three main steps of water transport in plants Describe how to prove that water moves up a plants stem Describe what a plant adaptation is, and how they adapt to extreme hot and	Define a habitat and ecosystem To identify the components of a given ecosystem. Define and name some animals that are carnivores, omnivores and herbivores Define and identify a producer in a given ecosystem and explain how plants make their own food. Construct and label a food chain and explain how it works. Draw a scientific sketch. To construct show the energy transfer between organisms on a food web. Make predictions about removing organisms from food webs. name causes of disruption to food webs

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		means Describe ways to live sustainably Explain some difficulties with living sustainably .	Explain how a string telephone works Describe how loudspeakers and microphones work Explain how animals and submarines use echo-location		extreme cold Describe how plants adapt to attract animals or keep them away	
Vocabulary	Test/Diagrams Results/Conclusion Investigation/Variable Experiment/Method Organism/report	properties of materials hardness, solubility, transparency, conductivity (electrical and thermal) dissolve/solution mixture/separation solids, liquids and gases filtering, sieving and evaporating/changes of state//reversible irreversible/acid burning/bicarbonate of soda/chemical reaction rusting/evaporation filtering/sieving melting	Sound/vibration Medium/ear/pitch Volume/faint(er) source of the sound thickness/insulation	Forces/push/pull Attract/repel/friction magnet(ic)/bar magnet/ring magnet button magnet horseshoe magnet contact/poles/polarity	Roots/stem/trunk/leaves Flowers/fruits flowering plants grow(th)/light/water nutrients/nutrition/fertiliser transportation life cycle/pollination seed formation seed dispersal factors/variables	living organisms classification environment/habitat ecosystem/flowering/non flowering plants vertebrate/invertebrate fish/amphibian reptile/bird/mammal snails/slugs worms/spiders/arachnids insects/human impact environmental impact nature reserve/pollution /litter/deforestation
	Rocks	Phases of matter	Light	Space	Adaptation	
NC Links	Compare and group together different kinds	Compare and group materials together,	Recognise that they need light in order to see	Describe the movement of the Earth, and other planets,	Identify how animals and plants are adapted to suit their	Identify that animals, including humans, need the right types

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	of rocks on the basis of their appearance and simple physical properties. Describe in simple terms how fossils are formed when thingsthat have lived are trapped within rock. Recognise that soils are made from rocks and organic matter.	according to whetherthey are solids, liquids or gases. Observe that some materials change state when they are heated or cooled, and measureor research the temperature atwhich this happens in degrees Celsius (°C). Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	things and that dark is the absence of light. Notice that light is reflectedfrom surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. Recognise that shadows are formed when the light from a light source is blocked by a solid object. Find patterns in the way that thesize of shadows change	relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.	environment in different ways and that adaptation Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment	and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat Identify that humans and some other animals have skeletons and muscles for support, protection and movement. Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Describe the changes as humans develop to old age.
Core Knowledge	Describe how igneous rock are created and know how to classify them Explain what intrusive and extrusive igneous rocks are Describe how sedimentary rock is formed and how we can tell the age Know how fossils are formed Describe what metamorphosis is and how metamorphic rocks are formed Give the properties and uses of different metamorphic rocks Describe what a geologist is	Describe what is meant by the property of a substance and name the properties of solid liquid and gases Explain which state of matter a substance is in based on its properties Describe what a particle is and how they are arranged in solids liquids and gases Explain how we know particles in liquids and gases are moving Describe what happens to particles when a substance is heated or cooled Predict what happens to a solid, liquid or gas when it is	Describe what light is and where it comes from and how we can measure levels of light Describe what reflection is and what happens to the direction of light when it reflects Describe what refraction is and what happens to the direction of light when it refracts State the parts of the eye and how we sea Describe ways in which people can be partially sighted Know how white light can	Describe how the Moon, Earth and Sun move around each other Describe what happens during a lunar eclipse and solar eclipse Describe what happens during a solar eclipse Name and explain what the solar system is Explain the difference between comets. meteors and meteorites Can name the planets of the solar system in order Describe the difference between the inner and outer planets	Define ecosystem and identify its components Define and describe a range of environments Define an adaptation and understand that adaptations are not a 'choice' Learn a range of common adaptations e.g. camouflage Describe the conditions of hot and dry environments (desert animals, plants) Describe the conditions of cold environments and common adaptations of animals to cold environments e.g., insulation Make comparisons between organisms from different cold	Label and describe the functions of the major organs in human body Explain why organ donation is so important Can label and describe the functions of the human skeleton Describe the difference between endoskeletons and exoskeletons Describe variation within the animal kingdom and compare the human skeleton to other animals Compare the teeth of different animals Identify and describe the functions of different types of

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	Describe how geologists identify rocks and draw an identification key Know the effect water can have on rocks Understand the term chemical weathering Explain how large earth movements can cause rocks to change	heated or cooled Describe what happens to the arrangement of particles when a substance changes state and name and give an example of each change of state Describe what is meant by melting point and boiling point and how it is measured Give examples of substances that do not show typical properties of any state of matter and w Describe what a non-Newtonian fluid is	be used to make colours and how base colours can make new colours Explain how rainbows are created Describe how light is used in shadow puppetry Explain how a periscope works	Describe some types of stars and what star constellations are Know what we mean by the universe, galaxy and milky way is Describe what the work of an astronomer is Name famous astronomers and what they discovered Describe what astronomers and currently trying to find out about the universe	environments Describe the conditions of night-time environments and compare the eyes of nocturnal and diurnal animals How echolocation works Describe the conditions of underwater environments and common adaptations of fish Common adaptations of marine mammals	teeth Explain why we need oxygen and explain the components of the circulatory system and how it works. Can label the major components of the digestive system and describe the function of the different parts. Describe the journey food takes through our digestive system
Vocabulary	Rock/appearance physical properties/fossil soil/organic matter inorganic matter/erosion weathering magnifying glass/hand lens microscope/grains/crystals igneous/sedimentary metamorphic/volcano petrified	states of matter/solid liquid/gas/properties particles/evaporation solidification/condensation the water cycle/melting	Light/reflect(ion) Eye/light source rear-view mirror periscope/shadow prism/rainbow	Solar system/Sun/star Earth/Moon/orbit Spherical/rotation/day Night/seasons Mercury/ Venus/ Earth, Mars/Jupiter/ Saturn, Uranus/ Neptune/Pluto Sundial /midday Midnight/astronomical	Fossils/offspring/characteristics breed of animal/evolution inheritance/adapt(ion) environment/palaeontologist	digestive system mouth/ tongue/ teeth, oesophagus/stomach and small and large intestine/incisor canine/molar teeth/ food chain/producer predator/prey carnivore/herbivore omnivore
	Separating Mixtures	**Physical and Chemical Changes**	**Magnets**	**Electrical Circuits**	**Animals and Humans over time**	**Reproductive cycles**
NC Links	Know that some materials will dissolve in liquid to form a solution, and describe how	Know that some materials will dissolve in liquid to form a solution, and describe how	Compare how things move on different surfaces Notice that some forces	Identify common appliances that run on electricity Construct a simple series	Describe in simple terms how fossils are formed when things that have lived are trapped	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird

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	to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating	to recover a substance from a solution Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Demonstrate that dissolving, mixing and changes of state are reversible changes 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	need contact between two objects, but magnetic forces can act at a distance Observe how magnets attract or repel each other and attract some materials and not others Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials Describe magnets as having two poles Predict whether two magnets will attract or repel each other, depending on which poles are facing.	electrical circuit, identifying and naming its basic parts, Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit Recognise some common conductors and insulators, and associate metals with being good conductors. Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit Compare and give reasons for variations in howcomponents 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	within rock 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. 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	Describe the life process of reproduction in some plants and animals. 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.
Core Knowledge	Describe what a pure substance and give examples of some pure substances Explain how we can tell if something is pure or not	Describe how are particles arranged in solids, liquids and gases Explain what happens to particles in a change of state	Name contact and non-contact forces Compare how things move on different surfaces Know what magnets are	Describe what static charge is and how to create a build-up of static charge Explain how lightning occurs. Describe the parts of an	Describe how random changes in characteristics lead to an advantage in an organism and how the survival of these organisms leads to evolution	Describe stages of the life cycle of a flower plant Describe different methods of pollination and seed dispersal Know how new plants can be

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	Know what a mixture is Give examples of mixtures of substances from the same state and different states Describe what a formulation is, give examples and explain why they are useful Describe how to remove large solid particles from a mixture Describe how to remove insoluble and soluble substances from a mixture Describe the substances that are present in river water Suggest how pure substances can be removed from river water and write a method to explain Carry out separation of substances in river water Evaluate the method for separating substances in river water Suggest how an environmental scientist could check the water quality in a river	Identify phase changes present in a range of examples. Know what a physical change is and describe signs that a physical change has taken place Know what a chemical change and describe signs that a chemical change has taken place Give examples of chemical changes Describe and identify the similarities and differences between physical and chemical changes and suggest when a physical or chemical change may be useful Explain how to tell which reaction is larger Identify variables Give a method for investigating a reaction between acids and metals Complete an investigation into acid and metal reactions and use evidence to make a conclusion Know how to compare your results with other sets of results	and describe when magnets attract and repel Describe how to test the strength of a magnet Explain what a compass is and how to make one Describe how field lines help us to understand the effect of an invisible force Describe how field lines around a magnet can be mapped out Use a diagram of field lines to see where the force will be strongest and where it will be weakest Describe how to find out if a material is magnetic or not and state the differences between permanent and temporary magnets Name examples of magnetic and non-magnetic materials State what an electromagnetic is Describe how to make an electromagnet and give examples of uses of magnets and electromagnet	electrical circuit Explain how electricity in a circuit is different to static electricity State the conditions for electricity to flow in a circuit Explain what a circuit diagram is Identify the component from the circuit symbols provided Build a basic circuit from the circuit diagram provided Describe what electrical insulators and conductors are and give examples Test whether a material is an insulator or a conductor Write a prediction for changing the components in a circuit and carry out an investigation to test your prediction Evaluate whether your prediction was correct using your results Create a circuit with a buzzer and a switch Design a game that uses the buzzer	Know how Charles Darwin came up with the theory of evolution Know what a fossil is and how it is made and what it shows us about changes in species over time Know fossils do not give us a complete record of past organisms Describe the key traits of each animal kingdom and know how the evolutionary tree shows us how animal kingdoms are related Know the names of the main periods of time and which groups of organisms existed in each period and the reasons why some organisms became extinct Know the key stages in the development of homo sapiens and describe the impact of homo sapiens on plants and animals Describe the decline in numbers of species over the last 200 years Describe the impact of homo sapiens hunting animals and cutting down forest Know what the role of a conservationist is	grown from cuttings and bulbs. Compare sexual and asexual reproduction in plants and talk about the advantages and disadvantages of both. Describe and compare the main stages of the life cycle of an insect and an amphibian. Describe the process of sexual reproduction Describe and compare the life cycles of different types of mammal Identify the stages of a bird's life cycle Can label the parts of an egg Describe how some birds attract a mate Describe the differences in the life cycles of different animals Explain the differences between the life cycles of animals Know how to report and present scientific finding
Vocabulary	properties of materials	states of matter/solid	Forces/push/pull	Brightness/volume	Fossils/offspring/characteristics	life cycle/plant/animal

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	hardness/ solubility, transparency, conductivity (electrical and thermal) dissolve/solution mixture/separation solids, liquids and gases filtering, sieving and evaporating changes of state reversible/irreversible acid/burning bicarbonate of soda chemical reaction rusting/evaporation filtering/sieving melting	liquid/gas/properties particles/evaporation solidification/condensation the water cycle/melting	Attract/repel/friction magnet(ic)/bar magnet ring magnet/button magnet horseshoe magnet/contact poles/polarity	Cell/battery/series circuit parallel circuit/component symbol/switches/buzzers lamps	breed of animal/evolution inheritance/adapt(ion) environment/palaeontologist Mary Anning/Charles Darwin Alfred Wallace/Mutation	mammal/insect/amphibian fish/reptile/sexual reproduction/asexual reproduction/habitat ecosystem/environment rainforest/oceans desert /Metamorphosis
	Particles in physical and chemical changes	**Sustainability**	**Heat**	**Energy**	**Cells**	**Diet and lifestyle**
NC Links	Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution Use knowledge of solids,	Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic			Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood	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,

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	liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic Demonstrate that dissolving, mixing and changes of state are reversible changes 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	Explain that some changes result in the formation of new materials				exercise, drugs and lifestyle on the way their bodies function Describe the ways in which nutrients and water are transported within animals, including humans. Describe the changes as humans develop to old age
Core Knowledge	Draw particle diagrams to represent states of matter Name the physical changes that convert substances between states of matter Describe the physical properties of solids, liquids and gases. Define pure, impure and mixture and draw particle diagrams to represent pure and impure materials Give examples of useful mixtures Define solvent, solute and	Describe the properties of glass, ceramics and plastics and how they are made Explain what happens to glass, ceramics and plastics at landfill. Describe how to identify plastics that can and can't be recycled Explain why recycling plastic is important for the environment Give the definition of a life cycle assessment and know	Describe how particles behave in solids, liquids and gases and what happens to particles when they are heated and change state Describe what happens to a substance when it is heated Predict whether an object will expand or contract and suggest some engineering applications of this knowledge	Describe what an energy store is Give the names of different energy stores and identify the energy stores present in a range of objects Describe what initial and final energy stores and Identify them in a range of scenarios Describe the energy transformations that take place during a bungee jump Describe what useful, wasted and input energy stores are	Describe similarities and differences between plants and animals and compare the living conditions Describe what an organ system and give examples of organ systems in animals and plants. Describe how organ systems are made from organs and explain how organs are made from tissues which are made from cells Describe how cells build tissues and organs of the circulatory	Describe the key parts of a healthy diet and the effect of each food group Give examples of nutritional deficiencies Describe what is meant by different lifestyles and why different people may need different diets Design a diet for two people with different lifestyles Describe how muscles enable movement and what happens to muscles during exercise

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	solution Draw particle diagrams to represent a solution Describe what happens to particles during dissolving State three methods of separating mixtures and select an appropriate separation technique for a given mixture Plan an experiment to isolate components of a mixture Define chemical reaction, physical process State the 5 indicators of a chemical reactions Identify examples of chemical reaction and physical changes Define the word combustion, fuel, reactant and product Write a word equation for the combustion of common fuels Compare different fuels using experimental data	now how to use data to make a life cycle assessment Compare reusable and one use plastic bags over their lifetime Describe the gas emissions caused by human activity Describe the impact of each type of gas emission on the Earth and actions we can take to reduce gas emissions Describe what global warming is, the evidence for global warming and what scientists think are the causes of global warming Describe what climate change is and the effects of climate giving case study examples	Define what we mean by a thermal equilibrium and how it can be reached Suggest ways that thermal equilibrium is reached more quickly Describe how heat is transferred by particles through conduction Describe a method to demonstrate the speed of conduction through metal Explain why it is hard to conduct heat directly through a liquid or gas Describe what a thermal conductor and insulator is is Sort materials based on whether they are insulators or conductors Create a design to keep an ice frozen for as long as possible Explain why your design will help the ice cube to stay frozen Evaluate your design and suggest improvements	Describe what efficiency is Calculate efficiency of a given machine Define power Give the equation for power Compare the power ratings of a range of appliances Describe what we mean by speed Describe the method for calculating an object's speed Describe where kinetic energy may be found Describe how the kinetic energy of an object can be changed Calculate the kinetic energy of a number of objects.	system Name and label the parts of an animal Describe what each part of an animal cell does Name and label the parts of a plant cell Describe what each part of a plant cell does Describe what a specialised cell is and give examples of specialised cells Explain how root cells and sperm cells are specially adapted	Explain how muscles may change over time due to exercise Describe the parts of the circulatory system and the changes that will occur during exercise Describe how an athlete's body will respond differently to exercise Describe what is meant by medicinal drugs and give some examples Describe how medicinal drugs may affect the body Describe what nicotine and alcohol are and explain how nicotine and alcohol came to be used by humans Describe some effects of using nicotine and alcohol to excess
Vocabulary	properties of materials hardness, solubility, transparency, conductivity (electrical and thermal) dissolve/solution mixture/separation	properties of materials hardness, solubility, transparency, conductivity (electrical and thermal) dissolve/solution mixture/separation	properties of materials hardness, solubility, transparency, conductivity (electrical and thermal) dissolve/solution mixture/separation	Efficient/Power Kinetic/Energy Potential Gravitational/Chemical Elastic/Heat	circulatory system/heart blood vessels/artery vein oxygenated deoxygenated blood cells/white blood cells Red blood cells plasma	circulatory system/heart blood vessels/artery vein oxygenated deoxygenated blood cells/white blood cells Red blood cells plasma

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	solids, liquids and gases filtering, sieving and evaporating/changes of state reversible/irreversible acid/burning bicarbonate of soda chemical reaction rusting/evaporation filtering/sieving melting	solids, liquids and gases filtering, sieving and evaporating/changes of state reversible/irreversible acid/burning bicarbonate of soda chemical reaction/rusting evaporation/filtering sieving/melting	solids, liquids and gases filtering, sieving and evaporating changes of state/ reversible/irreversible acid/burning bicarbonate of soda chemical reaction/rusting evaporation/filtering sieving/melting		Platelets/diet Exercise/drugs/medicines Lifestyle/health(y)	Plateletsa/diet Exercise/drugs Medicines/lifestyle/health(y)