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| **Science: Progression of knowledge and understanding** |
| **Animals including Humans (biology)** **EYFS/ Key stage 1** | **Nursery**  | **Reception**  | **Year 1** | **Year 2** |
| **Reception*** Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices.

**Year 1*** Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
* 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

**Year 2** * 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.
 | * Shows care and concern for living things and the environment
* .
* Understands that some animals have similar features.
* Understands the key features of the life cycle of a plant and an animal.
* Make healthy choices about food, drink, activity and tooth brushing.
* Begin to make sense of their own life story and family history
 | * Know and talk about the different factors that support their overall health and wellbeing:
	+ regular physical activity
	+ healthy eating
	+ toothbrushing
	+ sensible amounts of ‘screen time’
	+ having a good sleep routine

-being a safe pedestrian | * Know how to name and classify a range of animals by amphibian, reptile, mammal, fish and birds.
* Know how to classify animals by what they eat (carnivore, herbivore and omnivore).
* Know how to sort by living and non-living
* Things
* Know how to compare the bodies of different animals
* Know the name of parts of the human body that can be seen and link them to their senses.

Challenge:* Begin to classify animals according to given criteria.
* Point out differences between living and non-living things.
* Name parts of the body that cannot be seen.
* Know why certain animals have certain characteristics.
 | * Know the basic stages in a life cycle for animals including humans (for example chicken)
* Know that animals grow and reproduce
* Know what animals need to survive 9water, food and air) and explain why they need these things.
* Know why exercise, a balanced diet and good hygiene are important for humans.

Challenge:* Explain that animals reproduce in different ways.
 |
| **Vocab:**  | * Living
* Non living
* Environment
* Plants
* Animals
* Natural
* Same
* Different
* Babies
 | * Same
* Different
* Similar
* Animals
* Changes
* Humans
* Baby animals
* Life cycles
* Distinguishing features of some birds and animals
* E.g. wing, feathers, beak, claws/talons
* 5 senses
 | * Amphibian
* Reptile
* Mammal
* Fish
* Birds
* Carnivore
* Herbivore
* Omnivore
* Tame
* Wild
* Nocturnal
* Living/non-living
* senses
 | * Healthy
* Diet
* Off spring
* reproduce
* Exercise
* Proteins
* Carbohydrates
* Fats
* Nutrients
* Survival
* Hygiene
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| **Animals (including humans)** **(biology)****Key stage 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Year 3*** 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
* Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

**Year 4*** 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
* Construct and interpret a variety of food chains, identifying producers, predators and prey.

**Year 5** * Describe the changes as humans develop to old age.

**Year 6** * Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood
* Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
* Describe the ways in which nutrients and water are transported within animals, including humans.
 | * Know about and explain the importance of a nutritious, balanced diet
* Know how nutrients, water and oxygen are transported within animals and humans.
* Know about the skeletal and muscular system of a human

Challenge:* Know that the muscular and skeletal systems work together to create movement?
* Know that certain living things depend on one another to survive
 | * Identify and name the parts of the human digestive system
* Know the functions of the organs in the human digestive system
* Identify and know the different types of human teeth
* Know the functions of different human teeth
* Know how to compare the teeth of herbivores and carnivores.
* Use and construct food chains to identify producers, predators and prey

Challenge:* Explain how certain living things depend on one another to survive.
 | * Create a timeline to indicate stages of growth in humans
* Know what puberty is

Challenge:* Create a timeline to indicate stages of growth in certain animals, such as frogs and butterflies.
 | * Identify and name the main parts of the human circulatory system
* Know the function of the heart, blood vessels and blood
* Know the impact of diet, exercise, drugs and lifestyle on health
* Know the ways in which nutrients and water are transported in animals, including humans

Challenge:* Know the work of medical pioneers, for example William Harvey and recognise how much we have learned about our bodies.
* Compare the organ system of humans and other animals
* Make a diagram of the human body and explain how different parts work and depend of one another.
 |
| **Vocab:**  | * Nutrition
* Skeleton
* Muscles
* Diet
* Joint
* Pelvis
* Cartilage
* Rib cage
* Tendon
* spine
 | * Producers
* Predators
* Prey
* Food chain
* Organ
* Digestive system
* Pancreas
* Oesophagus
* Intestine
* Organ
* Molars
* Canine
* Salivary gland
 | * Puberty
* Teenager
* Adult
* Child
* Toddler
* embryo
 | * Blood vessels
* Drugs
* Atriums
* Cardiovascular
* Ultrasound
* Cardiologists
* Capillaries
* Pulse
* Ventricles
* organ
* William Harvey
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| **All living things and their habitats****(biology)** | **Nursery** | **Reception**  | **Year 2** | **Year 4** | **Year 5** | **Year 6** |
| **Nursery***Explores the natural world around them.* *Recognises some environments that are different to the one in which they live.* *Reception** 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.

**Age 3 and 4** * Pupils start to explore the environment around them.
* Pupils start to notice when things have changes with support from an adult.
* Pupils start to understand they can influence their environment and make changes to the space around them.

**Year 2*** 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.

**Year 4*** Recognise that living things can be grouped in a variety of ways
* Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment
* Recognise that environments can change and that this can sometimes pose dangers to living things.

**Year 5** * Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird
* Describe the life process of reproduction in some plants and animals

**Year 6*** Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
* Give reasons for classifying plants and animals based on specific characteristics.
 | * Comments and asks questions about aspects of their familiar world such as the place where they live or the natural world
* Talks about why things happen and how things work.
* Begins to understand the effect their behaviour can have on the environment.
* Says what they can hear, see, and feel whilst outside.

.  | * Recognise some environments that are different to the one in which they live.
 | * Classify things by living, dead or never lived
* Know how a specific habitat provides for the basic needs of things living there (plants and animals)
* Match living things to their habitat (including microhabitats)
* Name some different sources of food for animals.
* Know about and explain a simple food chain

Challenge:* Know the characteristics of an animal that helps it to live in a particular habitat.
* Describe what animals need to survive and link this to their habitat.
 | * Know how to name and group variety of living things based on feeding patterns (producer, consumer, predator, prey, herbivore, carnivore or omnivore
* Use classification keys to group, identify and name living things
* Know how changes to an environment could endanger living things

Challenge:* Give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment.
 | * Know the life cycle of different living things e.g mammals, amphibians, insets and birds
* Know the difference between the life cycles of different type of animals
* Know the process of reproduction in plants
* Know the process of reproduction in animals

Challenge:* Observe their local environment and draw conclusions about life cycles (e.g vegetable garden or shrubbery).
* Compare the life cycle of plants and animals in their local environment with the life cycle of those around the world e.g. rainforest.
 | * Classify living things into broad groups according to observable characteristics and based on similarities and differences
* Know how living things have been classified
* Give reasons for classifying plants and animals in specific way.

Challenge:* Know and explain why classification is important.
* Know how to readily group animals into reptiles, fish, amphibians, birds and mammals.
 |
| **Vocab:** | * Local
* Environment
* World
* Live
* Natural
 | * Environment
* Places
* Similarities
* Differences
* Living
* Non living
 | * Rivers
* Woodlands
* Ponds/sea
* Rainforest
* Desert
* Species
* Microhabitats
* Living/dead
* Never lived
* Habitat
* Food chain
* Predator
* prey
 | * Classification
* Living things
* Environment
* Endanger
* Producer
* Prey
* Predator
* Consumer
* Herbivore
* Carnivore
* omnivore
 | * Mammals
* Amphibian
* Insect
* Bird
* Reproduction
* Embryo
* Gestation
* Life cycle
 | * Micro-organism
* Vertebrates
* Invertebrates
* Species
* Fungi
* Moneta
* Bacteria
* Protista
* Algae
* classification
 |

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| **Plants****(biology)** | **Nursery** | **Reception**  | **Year 1** | **Year 2** | **Year 3** |
| **Nursery** *Explores the natural world around them.* **Pupils start to notice when things have changes with support from an adult.** **Year 1** * 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.

**Year 2*** 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

**Year 3*** 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
 | * Begins to understand the need to respect and care for the natural environment and all living things.
* Develops an understanding of growth, decay and changes over time
* Plants seeds and cares for growing plants.
* Understands the key features of the life cycle of a plant and an animal.
 | * Explore the natural world around them, making observations and drawing pictures of animals and plants.
 | * Know and name a variety of common wild and garden plants including deciduous and evergreen trees.
* Know and name the petals, stem, leaves and root of a plant
* Know and name the roots, trunk, branches and leaves of a tree.

Challenge:* Name the main parts of a flowering plant
 | * Know and explain how seeds and bulbs grow into plants.
* Know and describe what plants need in order to grow and stay healthy (water, light and suitable temperature).

Challenge:* Describe what plants need in order to survive and link it to where they are found
* Explain that plants grow and reproduce in different ways.
 | * Know the function of different parts of flowering plants and trees. (flowers, leaves, stem and trunk)
* Know the what plants need to live and grow (air, light, water, nutrients) and how they vary from plant to plant
* Know how water is transported within plants
* Know the plant life cycle, especially the importance of flowers. (pollination, seed formation and seed dispersal)

Challenge:* Classify a range of common plants according to many criteria. (e.g. environment, size, climate etc)
* Explain the role of flowers in the life cycle of flowering plants. Including pollination, seed formation and seed dispersal.
 |
| **Vocab:** | * Plants
* Flowers
* Tree
* Living
* Care
* Environment
* water
 | * Living
* Non living
* Plants
* Change
* Water
* Petal, stem, root, leaves, flower, trunk,
 | * Petal,
* Stem
* Leaves
* Root
* Trunk
* Branches
* Deciduous
* Evergreen
 | * Seeds
* Bulb
* Healthy
* Water
* Light
* Temperature
* Reproduce
 | * roots
* stem
* nutrients
* pollination
* seed dispersal
* fertiliser
* seed formation
* stigma
* anther
* soil
* climate
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| **Evolution and inheritance** **(biology)** | **Year 6** |
| **Year 6*** 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.
 | * Know how the Earth and living things have changed over time
* Know how fossils can be used to find out about the past
* Know about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents).
* Know that animals and plants are adapted to suit their environment.
* Link adaptation over time to evolution
* Know about evolution and can explain what it is.

Challenge:* Explain how living things adapt to survive in extreme conditions.
* Analyse the advantages and disadvantages of specific adaptation, such as being on two rather than 4 feet.
* Begin to understand what is meant by DNA
 |
| **Vocab** | * Off spring
* Adaptation
* Evolution
* Inheritance
* Palaeontologist
* Charles Darwin
* Genes
* Chromosomes
* Syndrome
* Genotype
* Environment
* inhabited
* Fossils
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| **Everyday materials** **(Chemistry)** | **Nursery** | **Reception**  | **Year 1** | **Year 2** |
| **Year 1*** 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.

**Year 2*** Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses
* Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
 | * Explores collections of materials with similar and/or different properties.
* Talks about the differences between materials and changes they notice.
 | Knows about similarities and differences in relation to places, objects, materials and living things. | * Know how to distinguish between an object and what it is made from.
* Know the names of everyday materials (wood, plastic, glass, metal, water and rock)
* Know about the properties of everyday materials.
* Compare and group everyday materials based on their properties

Challenge:* Describe that things are similar and different between materials
* Explain what happens to certain materials when they are heated and e.g. bread, ice or chocolate.
* Explain what happens to certain materials when they are cooled, E.g. jelly
 | * Know how materials can be changed by squashing, bending, twisting and stretching
* Know why a material might or might not be used for a specific job and compare the suitability of different materials.

Challenge:* Describe the properties of different materials using words like transparent, opaque or flexible.
* Sort materials into groups and say why they have sorted them.
* Know which materials are natural and which are man made
* Explain how materials are changed by heating and cooling?
* Know how to tell which materials cannot be changed back after being heated, cooled, bent, stretched or twisted.
* Explain how materials are changed by bending, twisting and stretching.
 |
| **Vocab** | * Shiny
* Floats
* Sinks
* same
* Different
* Material
* Hard
* Soft
 | * Shiny
* Magnetic
* Floats
* Sinks Similar/same
* Different
* Material
* Hard
* Soft
* Smooth
 | * Materials
* Wood
* Plastic
* Glass
* Metal
* Water
* Rock
* Stretch
* Stiff
* Bend
* Waterproof
* Shiny
* Heated
* cooled
 | * Metal
* Plastic
* Wood
* Glass
* Brick
* Rock
* Paper
* Cardboard
* Squashing
* Bending
* Twisting
* Stretching
* Transparent
* Opaque
* Flexible
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| **Properties and changes in materials** **(Chemistry)** | **Year 5** |
| **Year 5*** 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
* 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, 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
 | * Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, electrical and thermal and respond to magnets.
* Know and explain how a material dissolves to form a solution.
* Know and show how to recover a substance from a solution.
* Know and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating).
* Know the uses of materials and give reasons for this
* Know and demonstrate that some changes are reversible and some are not.
* Know how some changes result in the formation of a new material and that this is usually irreversible.

Challenge:* Describe methods for separating mixtures (filtration or distillation)
* Know how to work out which materials are most effective for keeping us warm or for keeping something cold.
 |
| **Vocab** | * Hardness
* Solubility
* Transparency
* Conductivity
* Electrical
* Thermal
* Magnets
* Liquid
* Solution
* Substance
* Filtering
* Sieving
* Evaporating
* Dissolving
* Mixing
* Changes of state
* Reversible/ non reversible
* Burning
* Filtration
* distillation
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| **Rocks****(chemistry)** | **Year 3** |
| **Year 3*** Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
* Describe in simple terms how fossils are formed when things that have lived are trapped within rock
* Recognise that soils are made from rocks and organic matter
 | * Compare and group rocks based on their appearance and physical properties
* Know and describe how soil is made and how fossils are formed
* Know about and explain the difference between sedimentary, metamorphic and igneous rock

Challenge:* Classify igneous and sedimentary rocks.
* Begin to relate the properties of rocks with their uses.
 |
| **Vocab** | * Fossil
* Soil
* Crystals
* Sedimentary
* Igneous
* Metamorphic
 |

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| **States of matter****(chemistry)** | **Year 4** |
| * 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.
 | * Compare and group materials together according to whether they are solids, liquids or gases.
* Know the temperature at which materials change state
* Know about and explore how some materials can change state when they are heated or cooled
* Know the part played by evaporation and condensation in the water cycle.

Challenge:* Group and classify a variety of materials according to the impact of temperature on them.
* Explain what happens over time to materials such as puddles on the playground or washing hanging on a line
* Relate temperature to change of state of materials
 |
| **Vocab** | * Water vapour
* Condensation
* Precipitation
* Evaporation
* Substance
* Matter
* Lava
* Water cycle
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| **Seasonal Change****(Physics)** | **Nursery** | **Reception**  | **Year 1** |
| **Age 3 and 4** * Beginning to recognise the effect of changing seasons on the natural world around them*.*

*Reception*Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.**Year 1*** Observe changes across the four seasons
* Observe and describe weather associated with the seasons and how day length varies.
 | * Develops an understanding of growth, decay and changes over time
 | * Understand the effect of changing seasons on the natural world around them.
 | * Name the seasons and describe the weather in each season and how the day length varies.
* Know how the weather changes between the 4 seasons
 |
| **Vocab** | * Wind
* Snow
* Sun
* Rain
* Hot
* Cold
* Wet
* Dry
 | * Spring
* Summer
* Autumn
* Winter
* Seasons
* Change
* Wind
* Snow
* Sun
* Rain
* Clouds
* Frost
* Fog
 | * Autumn
* Spring
* Summer
* Winter
* Weather
* Temperature
* Thermometer
* Weather symbol
* Deciduous
* Coniferous
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| **Forces** **(Physics)** | **Nursery** | **Year 3** | **Year 5** |
| **Year 3*** Compare how things move on different surfaces
* Notice that some forces 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.

**Year 5*** Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
* Identify the effects of air resistance, water resistance and friction, that act between moving surfaces
* Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
 | * Explore and talk about different forces they can feel.
 | * Know about and describe how objects move on different surfaces
* Know how a simple pulley works and use to lift an object
* Know how some forces require contact and some do not, giving examples
* Know about and explain how magnets attract and repel.
* Predict whether magnets will attract or repel and give a reason
* Know that magnets have 2 poles
* Compare and group materials based on whether they attract or repel a magnet

Challenge:* Investigate the strength of different magnets and find fair ways to compare them.
* Explain why an object will move faster if it is rolling down a hill or a slope.
 | * Know what gravity is and its impact on our lives
* Identify and know the effect of air and water resistance
* Identify and know the effects of friction
* Explain how levers, pulleys and gears allow a smaller force to have a greater effect.

Challenge:* Describe and explain how motion is affected by forces (including gravitational attraction, magnetic attraction and friction)
* Design very effective parachutes.
* Know how to work out how water can cause resistance to floating objects
 |
| **Vocab** | * Push
* pull
 | * Magnetic poles
* Organic matter
* Attract
* Repel
* Surface
* Pulley
* Contract
* Forces
* Magnets
* Magnetic forces
 | * Gravity
* Air resistance
* Water resistance
* Friction
* Levers
* Pulley
* Gears
* Parachute
* Newton
* Gravitational attraction
* Magnetic attraction
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| **Light****(Physics)** | **Year 3** | **Year 6** |
| **Year 3*** Recognise that they need light in order to see things and that dark is the absence of light
* Notice that light is reflected from 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 an opaque object
* Find patterns in the way that the size of shadows change.

**Year 6*** Recognise that light appears to travel in straight lines
* Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye
* Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes
* Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.
 | * Know that dark is the absence of light
* Know that light is needed in order to see and is reflected from a surface
* Know and demonstrate how a shadow is formed and explain how a shadow changes shape
* Know about the danger of direct sunlight and describe how to keep protected.

Challenge:* Explain why lights need to be bright or dimmer according to need.
* Know how to make a bulb go on and off.
* Know how to say what happens to the electricity when more batteries are added.
* Explain why their shadow changes when the light source is moved closer or further from the object
 | * Know how light travels
* Know that because light travels in a straight line objects are seen because they give out or reflect light in the eye.
* Know and demonstrate how we see objects
* Know why shadows have the same shape as the object that casts them
* Know how simple optical instruments work (e.g periscope, telescope, binoculars, mirror and magnifying glass).

Challenge:* Know how to use the ray model to explain the size of shadows
 |
| **Vocab** | * Reflection
* Shadows
* Light source
* Opaque
* Refraction
* Periscope
* Nocturnal
* Orbits
* Convex
* Concave
* Bright
* Dim
 | * Light wave
* Light source
* Concave
* Convex
* Filters
* Lens
* Reina
* Cornea
* Iris
* Pupil
* Periscope
* Telescope
* Binoculars
* Magnifying glass
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| **Sound****(Physics)** | **Year 4** |
| **Year 4*** 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.
 | * Know how sound is made, associating some of them with vibrations
* Know how sound travels from a source to our ears
* Know the correlation between pitch and the object producing a sound
* Know the correlation between the volume of a sound and the strength of the vibrations that produce it.
* Know what happens to a sound as it travels away from its source. (it gets fainter)

Challenge:* Explain why sound gets fainter or louder according to distance
* Explain how pitch and volume can be changed in a variety of ways
* Work out which materials give the best insulation for sound
 |
| **Vocab** | * Vibrating
* Pitch
* Volume
* Insulating
* Outer, middle and inner ear
* Cochlea
* Auditory
* Frequency
* Hammer
 |

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| **Electricity** **(Physics)** | **Year 4** | **Year 6** |
| **Year 4*** Identify common appliances that run on electricity
* Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
* 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.

**Year 6** * 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 how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches
* Use recognised symbols when representing a simple circuit in a diagram.
 | * Identify and name appliances that require electricity to function.
* Construct a series circuit
* Identify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)
* Predict and test whether a lamp will light within a circuit
* Know the function of a switch
* Know the difference between a conductor and an insulator- giving examples of each.

Challenge:* Know how to explain how a bulb might get dimmer
* Recognise if all materials are conductors of electricity.
* Work out which metals can be used to connect across a gap in a circuit.
 | * Compare and give reasons for why components work and do not work in a circuit.
* Draw circuit diagrams using correct symbols
* Know how the number and voltage of cells in a circuit links to the brightness of a lamp or the brightness of a buzzer

Challenge:* Make their own traffic light system or something similar
* Explain the danger of short circuits
* Explain what a fuse is
 |
| **Vocab** | * Circuit
* Buzzers
* Conductor
* Battery
* Cells
* Switch
* Socket
* Appliance
* Appliance series circuit
* Insulator
 | * Conductor
* Insulator
* Socket
* Series circuits
* Cells
* Volts
* Generator
* Turbine
* Fuses
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| **Earth and Space****(Physics)** | **Year 5** |
| **Year 5*** Describe the movement of the Earth, and other planets, 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.
 | * Know about and explain the movement of the Earth and other planets relative to the sun.
* Know about and explain the movement of the Moon relative to the Earth
* Know and demonstrate how night and day are created.
* Describe the Sun, Earth and Moon (using term spherical)

Challenge:* Compare the time of day at different places on the earth.
* Know how to create a shadow clock
* Begin to understand how older civilizations used the sun to create astronomical clocks
* Explore the work of some space pioneers (Neil Armstrong, Galileo or Copernicus)
 |
| **Vocab** | * Orbit
* Solar system
* Astronomical
* Planet
* Rotation
* Spherical
* Crescent moon
* Gibbous moon
* Eclipse
* Lunar
* Astronomical clocks
* Galileo
* Copernicus
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