

Science

End of Year Expectations



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This document aims to explain what each child should broadly be able to do by the time they reach the end of the academic year for the age group they are in. Whilst we understand that some children may not have reached ARE by the time they finish that year group, we aim to have as many children as to close to ARE as possible.

By the end of EYFS children will be able to:

Children know about similarities and differences in relation to places, objects, materials and living things. They talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes

By the end of Year 1 children will be able to:

Ask simple questions and recognising that they can be answered in different ways
Observe closely, using simple equipment
Perform simple tests
Identify and classify
Use their observations and ideas to suggest answers to questions
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.
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
Distinguish between an object and the material from which it is made
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 four seasons
Observe and describe weather associated with the seasons and how day length varies

By the end of Year 2 children will be able to:

Ask simple questions and recognising that they can be answered in different ways
Observe closely, using simple equipment
Perform simple tests
Identify and classify
Use their observations and ideas to suggest answers to questions
Ask simple questions and recognising that they can be answered in different ways
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.
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
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 particular uses
Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching

By the end of Year 3 children will be able to:

Ask relevant questions and using different types of scientific enquiries to answer them
Set up simple practical enquiries, comparative and fair tests
Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
Gather, record, classify and present data in a variety of ways to help in answering questions
Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
Identify differences, similarities or changes related to simple scientific ideas and processes
Use straightforward scientific evidence to answer questions or to support their findings.
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
Identify that humans and some other animals have skeletons and muscles for support, protection and movement
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
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.
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

By the end of Year 4 children will be able to:

Ask relevant questions and using different types of scientific enquiries to answer them
Set up simple practical enquiries, comparative and fair tests
Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
Gather, record, classify and present data in a variety of ways to help in answering questions
Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables
Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions
Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions
Identify differences, similarities or changes related to simple scientific ideas and processes
Use straightforward scientific evidence to answer questions or to support their findings
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
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
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
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
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

By the end of Year 5 children will be able to:

Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary

Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate

Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs

Use test results to make predictions to set up further comparative and fair tests

Report and presenting 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

Identify scientific evidence that has been used to support or refute ideas or arguments

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.

Describe the changes as humans develop to old age

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

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

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

By the end of Year 6 children will be able to:

Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
Use test results to make predictions to set up further comparative and fair tests
Report and presenting 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
Identify scientific evidence that has been used to support or refute ideas or arguments
Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
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
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
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
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
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.

