

Mighty Oaks 2026 – 27 as per science LTP.

Mighty Oaks 26-27 & 27-28

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
26-27	Energy: Light and reflection (A)	Energy: Circuits, batteries and switches (B)	Living things: Classifying big and small (B)	Living things: Evolution and inheritance (B)	Animals, including humans: Circulation and health (A)	Making connections: How does light affect the direction of plant growth? (B)

From 27-28, follow standard rolling program starting on Year A.

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 1 Energy: Light and reflection (A)	Lesson 1: The pathway of light Knowledge - To describe the pathway of light. Working scientifically - To use evidence to form conclusions.	Knowledge - I can compare sources of light. - I can describe how light travels. Working scientifically - I can make observations about the properties of light. - I can use my observations as evidence to support conclusions about light.
	Lesson 2: See the light Knowledge - To describe how we see. Working scientifically - To draw scientific diagrams.	Knowledge - I can describe how we see luminous objects. - I can describe how we see non-luminous objects. - I can explain how the eye is protected from light. Working scientifically - I can draw ray diagrams.

	Lesson 3: Measuring shadows Knowledge - To explain how shadows change. Working scientifically - To pose questions.	Knowledge - I can recall factors that affect the size of a shadow. - I can describe how the distance between an object and the surface its shadow is cast on affects the size of the shadow. - I can use ray diagrams to explain why shadows change size. - I can use ray diagrams to explain why the shape of a shadow matches the object that cast it. Working scientifically - I can pose testable questions in response to observations.
	Lesson 4: Reflecting light Knowledge - To investigate what affects the angle of the reflected ray. Working scientifically - To record results as a line graph.	Knowledge - I can recall what happens to light when it reaches a smooth mirror surface. - I can identify the incoming and reflected rays. - I can describe the relationship between the angles of the incoming and reflected rays. Working scientifically - I can record my measurements as a line graph. - I can use my line graph to extrapolate data and make predictions about missing values.
	Lesson 5: Making a periscope Knowledge To explain how a periscope works.	Knowledge - I can use mirrors to make a working periscope. - I can describe the journey light makes through a periscope. - I can use ray diagrams to explain how a periscope works.
	Lesson 6: Using mirrors Knowledge	Knowledge To recall a range of uses of mirrors and reflection.

Mighty Oaks 2026 – 27 as per science LTP.

	• To explain how mirrors are helpful. Science in action • To explore different jobs or inventions that depend on reflection.	2) To describe how a mirror is used to reflect light in different situations. 3) To explain how light is reflected using knowledge of light and reflection. Science in action 1) To recall various jobs or inventions that use mirrors and reflection.
--	---	---

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 2 Energy: Circuits, batteries and switches (B)	Lesson 1: Components and circuits Knowledge To use recognised symbols for electrical components.	Knowledge 1) I can use standard circuit symbols for electrical components. 2) I can describe the function of key electrical components. 3) I can explain how a model represents electrical components.
	Lesson 2: Circuit diagrams Knowledge - To predict and present results for electrical circuits. Working scientifically - To use standardised symbols when drawing diagrams.	Knowledge 1) I can predict if an electrical circuit will work or not. 2) I can explain why an electrical circuit will or will not work. Working scientifically 1) I can use standard circuit symbols when drawing diagrams. 2) I can draw circuit diagrams that have straight lines.
	Lesson 3: Current and resistance Knowledge - To recognise a link between the number of components and resistance. Working scientifically - To explain results using scientific knowledge.	Knowledge 1) I can describe the relationship between the number of bulbs in a circuit and the bulb brightness. 2) I can describe the link between the number of components and the amount of resistance in a circuit. 3) I can explain why the number of bulbs in a circuit affects their brightness. Working scientifically 1) I can use scientific vocabulary when writing a conclusion. 2) I can use scientific knowledge to explain an observation.
	Lesson 4: Batteries and voltage Knowledge	Knowledge 1) I can identify that batteries are a voltage source. 2) I can recall that batteries have different voltages.

	- To identify ways to change voltage within an electrical circuit. Working scientifically - To design a results table.	3) I can describe how voltage affects bulb brightness. Working scientifically 1) I can choose an appropriate number of columns when designing a results table. 2) I can choose appropriate headings for the columns of a results table. 3) I can put any units in the heading of a results table.
	Lesson 5: Voltage and bulb brightness Knowledge - To investigate how voltage affects bulb brightness. Working scientifically - To plan an enquiry.	Knowledge 1) I can describe how changing the number of cells affects the voltage. 2) I can describe the relationship between voltage and bulb brightness. 3) I can use this relationship to make predictions about other components. Working scientifically 1) I can identify the changed and measured variables. 2) I can suggest control variables to ensure a fair test. 3) I can plan ways to control variables to make it a fair test.
	Lesson 6: Practical circuits Knowledge - To apply knowledge of circuits and components to a practical solution. Science in action - To recognise that scientific knowledge can solve a problem.	Knowledge 1) I can build an electrical circuit with a switch to control its function. 2) I can draw a circuit diagram to show the circuit used. 3) I can explain how the switch and the electrical circuit work to solve the problem. Science in action 1) I can recall different problems solved by a switch in an electrical circuit. 2) I can explain how switches can be used to keep people safe.

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 3 Living things: Classifying big and small (B)	Lesson 1: Carl Linnaeus and classification Knowledge To explain how organisms are classified using the Linnaean system.	Knowledge 1) I can define the term organism. 2) I can describe the work of Carl Linnaeus. 3) I can organise a diagram to show the Linnaean system.
	Lesson 2: Cold-blooded vertebrates Knowledge - To classify the cold-blooded vertebrate groups using their common characteristics. Working scientifically - To use a classification key to classify frog species.	Knowledge 1) I can define the term vertebrate. 2) I can name the vertebrate groups. 3) I can describe the characteristics of fish, amphibians and reptiles. Working scientifically 1) I can use a branching key to identify the cold-blooded vertebrates.
	Lesson 3: Warm-blooded vertebrates Knowledge - To classify the warm-blooded vertebrate groups using their common characteristics. Working scientifically - To use a classification key to classify vertebrates.	Knowledge 1) I can describe the characteristics of birds and mammals. 2) I can compare the characteristics of vertebrate groups. Working scientifically 1) I can use a classification key to identify and classify vertebrates.
	Lesson 4: Invertebrates Knowledge - To classify invertebrates using their characteristics. Working scientifically - To use a classification key to classify invertebrates.	Knowledge 1) I can define the term invertebrate. 2) I can describe the characteristics of worms, snails, spiders and insects. 3) I can compare the characteristics of the invertebrate groups. Working scientifically

		1) I can use a classification key to identify and classify invertebrates.
	Lesson 5: Plants Knowledge - To describe how the plant kingdom is organised (based on shared characteristics). Working scientifically - To produce a working classification key.	Knowledge - I can name the plant groups and describe their characteristics. Working scientifically - I can organise the layout of a classification key. - I can design appropriate questions for classification keys.
	Lesson 6: Micro-organisms Knowledge - To describe and classify micro-organisms. Working scientifically - To use a classification key to classify bacteria.	Knowledge - I can define the term micro-organism. - I can name some micro-organisms. Working scientifically - I can classify micro-organisms using a classification key.

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 4 Living things: Evolution and inheritance (B)	Lesson 1: Variation Knowledge - To explain why there are differences within a species. Working scientifically - To group factors.	Knowledge - I can define variation. - I can identify examples of variation. - I can recall the causes of variation. Working scientifically - I can group the causes of variation.
	Lesson 2: Inheritance Knowledge To recognise the inheritance of characteristics in plants and animals.	Knowledge - I can compare characteristics between individuals from the same species. - I can identify variation that is inherited. - I can recall that living things produce offspring of the same kind. - I can describe patterns of inheritance.
	Lesson 3: Adaptations Knowledge To explain why adaptation is necessary.	Knowledge - I can recall what an adaptation is. - I can recognise that adaptations cannot be chosen. - I can describe key characteristics that would help an organism survive. - I can explain how an adaptation helps the organism to survive.
	Lesson 4: Modelling natural selection Knowledge - To model how natural selection affects population size. Working scientifically - To evaluate the degree of trust and pose new questions for further enquiry.	Knowledge - I can describe variation in a given population. - I can explain how variation may affect survival within that population. - I can recall what is meant by natural selection. Working scientifically - I can recall variables that were effectively kept the same and those harder to control.

		2) I can comment on the reliability of the results. 3) I can comment on the degree of trust.
	Lesson 5: Evolution Knowledge - To describe the theory of evolution. Working scientifically - To consider evidence used to inform theories.	Knowledge - I can recall what evolution is. - I can identify differences between a living thing and its ancestor. - I can describe key steps in the evolution of a species. Working scientifically - I can describe some of the evidence used for evolution.
	Lesson 6: Evidence for evolution Knowledge - To recognise evidence that can be used for evolution. Working scientifically - To consider the degree of trust in the evidence used.	Knowledge - I can recall different evidence that can be used. - I can describe methods used to make results or conclusions more trustworthy. Working scientifically - I can consider the advantages and disadvantages of evidence used to explain evolution. - I can evaluate the advantages and disadvantages of the evidence used and consider a degree of trust.

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 5 Animals, including humans: Circulation and health (A)	Lesson 1: Factors affecting health Knowledge - To identify factors that affect our health and how to reduce their negative impact. Working scientifically - To evaluate sources of information.	Knowledge - I can recall factors that improve someone's health. - I can recall factors that have a negative effect on someone's health. - I can suggest improvements to someone's health. Working scientifically - I can consider the degree of trust in a secondary source. - I can explain whether a secondary source may be trustworthy or not.
	Lesson 2: The heart and circulatory system Knowledge To summarise the key structures and purpose of the circulatory system.	Knowledge - I can describe the circulatory system as a group of organs that transports blood around the body. - I can recall that the heart is a muscular pump that pushes the blood. - I can describe the pathway of blood around the human circulatory system.
	Lesson 3: Blood Knowledge - To identify the key roles of blood. Working scientifically - To evaluate a model.	Knowledge - I can describe some of the functions of blood. - I can list some of the substances transported by blood. - I can describe links between the digestive and circulatory systems. Working scientifically - I can identify similarities between the model used and real blood. - I can identify the limitations of the model representing blood. - I can suggest improvements and alternatives with justification.
	Lesson 4: Heart rate	Knowledge

	Knowledge - To explore the relationship between animal size and heart rate. Working scientifically - To interpret patterns in data.	- I can recall what is meant by heart rate and the unit used to measure it. - I can research using multiple sources to find reliable animal mass values. - I can identify the pattern between mass and heart rate. Working scientifically - I can independently say how the mass of an animal affects its heart rate. - I can quote values as evidence of the patterns observed. - I can compare class values and recognise when they do not match. - I can use the pattern to predict new values.
	Lesson 5: Investigating exercise and heart rate Knowledge - To investigate the relationship between exercise and heart rate. Working scientifically - To write a method.	Knowledge - I can describe how exercise affects heart rate. - I can describe how different types of exercise affect heart rate. - I can explain why the heart rate changes during exercise. Working scientifically - I can identify the changed, measured and controlled variables. - I can list the equipment required. - I can suggest how many different changed variables to use and how to complete the measured variable.
	Lesson 6: Heart rate and fitness Knowledge - To describe the relationship between heart rate and fitness. Working scientifically - To draw a line graph.	Knowledge - I can describe what happens to heart rate during and after exercise. - I can compare more than one set of heart rate data. - I can identify a link between heart rate and fitness. Working scientifically - I can choose a suitable title for the line graph.

Mighty Oaks 2026 – 27 as per science LTP.

		2) I can choose suitable axes labels with units. 3) I can plot points on a line graph.
--	--	--

Term and unit name	Learning Question	Corresponding Success Criteria.
Term 6 Making connections: How does light affect the direction of plant growth? (B)	Lesson 1: Investigating plant growth – Planning Knowledge - To revise the unit <i>Life cycles and reproduction, Circuits, batteries and switches</i> and <i>Unbalanced forces</i>. Working scientifically - To plan a comparative test.	Knowledge - I can describe the plant life cycle. - I can name and draw the components in a simple circuit. Working scientifically - I can form a prediction. - I can identify variables. - I can design a results table.
	Lesson 2: Investigating plant growth – Gathering data Knowledge - To revise the unit <i>Classifying big and small</i> and <i>Evolution and inheritance</i>. Working scientifically - To analyse data.	Knowledge - I can group living things into the vertebrate, invertebrate and plant groups. - I can explain the advantages of phototropism. Working scientifically - I can build a working circuit. - I can follow a method. - I can record data.
	Last Lesson 3: Investigating plant growth – Analysing, concluding and evaluating Knowledge - To revise the units <i>Evolution and inheritance</i> and <i>Unbalanced forces</i>. Working scientifically - To evaluate the investigation and report on my findings.	Knowledge - I can name and describe the forces of gravity, friction and air and water resistance. - I can identify the evolutionary advantages and disadvantages of a specific adaptation. Working scientifically - I can evaluate the trustworthiness of the method. - I can summarise my findings. - I can use the results as evidence of my conclusions.

Mighty Oaks 2026 – 27 as per science LTP.

Kapow Year 5 Knowledge and Skills

Year 5

Knowledge

- To know that some substances will dissolve in a liquid to form a solution.
- To know the factors that affect the rate of dissolving, including temperature and stirring.
- To know that some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes.
- To describe a broader range of materials and their properties, including hardness, solubility, transparency, conductivity and response to magnets.
- To understand that dissolving, mixing and changes of state are reversible changes.
- To understand that some changes result in the formation of new materials and that these are usually irreversible. (e.g. burning, rusting, the action of acid on bicarbonate of soda.)
- To know that the Sun is a star at the centre of our solar system.
- To know that the Sun, Earth and Moon are approximately spherical bodies.
- To know the names, order and relative positions of the planets and other main celestial bodies.
- To know that a moon is a celestial body that orbits a planet and give examples of moons that orbit other planets.
- To know that the Earth and other planets orbit around the Sun.
- To know that the tilt of the Earth and its orbit around the Sun causes the seasons.
- To know that the Moon orbits around the Earth.
- To understand how the Earth's rotation causes day and night and the apparent movement of the Sun across the sky.

Mighty Oaks 2026 – 27 as per science LTP.

- To know that a life cycle shows the changes an animal or plant goes through until the reproduction of a new generation when the cycle starts again.
- To know that all living things must reproduce for the species to survive.
- To know that sexual reproduction requires two parents, whereas asexual reproduction only requires one parent.
- To know that there are different processes plants and animals use to reproduce (asexual and sexual reproduction).
- To know that gravity is a non-contact force that pulls objects together.
- To know that air resistance and water resistance are both types of friction.
- To know that unsupported objects fall towards the Earth because of gravity.
- To know that friction, air resistance and water resistance act in the opposite direction to a moving object.
- To know that when forces are imbalanced, the speed, shape or direction of an object changes.
- To know that when forces are balanced the speed, shape or direction of an object stays the same.
- To know that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.
- To know that rougher surfaces have more friction between them than smoother surfaces and how that may affect movement.
- To know that the larger the surface area of an object the greater the air or water resistance it creates.
- To describe the human life cycle, including the stages of growth and development (baby, toddler, child, teenager, adult, elderly).
- To describe changes that occur during puberty (in boys and girls).
- To know that gestation periods vary across mammals.

Mighty Oaks 2026 – 27 as per science LTP.

Kapow Year 6 Knowledge

Year 6

Knowledge

- To know that ‘organism’ is a term used to refer to an individual living thing.
- To know that micro-organisms are organisms that are incredibly small and cannot usually be seen by the naked eye.
- To know the characteristics of the different groups of vertebrate and commonly found invertebrates.
- To know that light travels in a straight line from a light source.
- To understand that luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye.
- To know that shiny surfaces reflect light uniformly.
- To know that when light is reflected off a surface, its direction changes.
- To know that mirrors and periscopes work using reflection of light on smooth surfaces.
- To understand why shadows have the same shape as the objects that cast them as a result of light travelling in straight lines.
- To understand relationships between light sources, objects and shadows.
- To understand how and why the distance between the object and the screen affects the size of the shadow.
- To understand how the angle of a reflected ray is affected by the angle of the incoming ray, when reflected from a plane surface.
- To know that living things have changed over time.
- To know that fossils provide us with information about living things that inhabited the Earth millions of years ago.

Mighty Oaks 2026 – 27 as per science LTP.

- To know that characteristics are passed from parents to their offspring, but that all offspring vary from their parents.
- To know that over time, variation in offspring can affect animals' chances of survival in particular environments.
- To know that animals and plants have adapted to suit their environment over many millions of years and that this process can be called evolution.
- To know a wider variety of components in a series circuit (including buzzer and motor).
- To know the conventions used to draw circuit diagrams, including the recognised symbols for common components and using straight lines.
- To know that the voltage of a circuit can be changed and how this affects bulb brightness (or buzzer volume).
- To know the main parts of the human circulatory system (heart, blood vessels and blood).
- To know that the heart pumps blood around the body.
- To know that the blood vessels transport blood around the body.
- To know that the blood transports vital substances around the body, including oxygen and nutrients.
- To understand the relationships between different organ systems.
- To understand the impact of diet, exercise, drugs and lifestyle on the way a body functions.
- To know that the heart rate is the number of beats per minute.
- To know that exercise increases heart rate.

Mighty Oaks 2026 – 27 as per science LTP.

National Curriculum UKS2 Knowledge

National curriculum — end of KS2

- asking relevant questions and using different types of scientific enquiries to answer them
- 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 ideas and processes
- using 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

Mighty Oaks 2026 – 27 as per science LTP.

- 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
- predict whether two magnets will attract or repel each other, depending on which poles are facing.
- 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

Mighty Oaks 2026 – 27 as per science LTP.

- 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

Mighty Oaks 2026 – 27 as per science LTP.

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

Mighty Oaks 2026 – 27 as per science LTP.

- 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.
- 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.

Mighty Oaks 2026 – 27 as per science LTP.

- 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

Mighty Oaks 2026 – 27 as per science LTP.

Kapow Working Scientifically Year 5

Year 5

Skills

Posing questions

- Raising questions throughout the enquiry process.
- Identifying testable questions.
- Selecting the most appropriate enquiry method to answer questions and give justification.

Planning

- Suggesting which variables will be changed, measured and controlled.
- Making and explaining decisions about what observations to make and how long to make them for.
- Writing a method including detail about how to ensure control variables are kept the same.
- Writing a method that considers reliability by planning repeated readings.
- Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.

Predicting

- Making increasingly scientific predictions by: ● Using previous scientific knowledge and evidence to inform their predictions. ● Using scientific language to describe a potential outcome or explain why they think something will happen. ● Making links between topics to evidence a prediction.

Observing (qualitative data)

- Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed.

Mighty Oaks 2026 – 27 as per science LTP.

Measuring (quantitative data)

- Using standard units to measure and compare with increasing precision (decimals).
- Reading a wider variety of scales with unmarked intervals between numbers.

Researching

- Gathering answers to open-ended questions from a variety of sources.

Recording (diagrams)

- Drawing scientific diagrams by: ● Using a wider range of standard symbols. ● Drawing with increasing accuracy. ● Labelling with a broader range of scientific vocabulary. ● Annotating diagrams to explain concepts and convey opinions.

Recording (tables)

- Using tables with columns that allow for repeat readings.
- Suggesting headings to tables, including units.
- Designing results tables with increasing independence with consideration of variables where applicable.
- Calculating the mean average.

Graphing

- Representing data by using line graphs and scatter graphs.
- Plotting points with greater accuracy
- Reading the value of plotted points with greater accuracy.

Analysing and drawing conclusions

Mighty Oaks 2026 – 27 as per science LTP.

- Writing a conclusion to summarise findings using increasingly complex scientific vocabulary.
- Suggesting with increasing independence how one variable may have affected another.
- Quoting relevant data as evidence of relationships.
- Identifying anomalies in repeat data and excluding results where appropriate.
- Comparing individual, class and/or model data to the prediction and recognising when they do not match.
- Using identified patterns to predict new values or trends.

Evaluating

- Identifying steps in the method that need changing and suggesting improvements.
- Identifying which variables were difficult to control and suggesting how to better control them.
- Commenting on the degree of trust by also reflecting on: ● Accuracy (human error with equipment). ● Reliability (repeating results). ● Sources of information (e.g. websites, books).
- Deciding what data to collect to further test direct relationships.

Mighty Oaks 2026 – 27 as per science LTP.

Kapow Working Scientifically Year 6

Skills

Posing questions

- Raising questions throughout the enquiry process.
- Identifying testable questions.
- Selecting the most appropriate enquiry method to answer questions and give justification.

Planning

- Suggesting which variables will be changed, measured and controlled.
- Making and explaining decisions about what observations to make and how long to make them for.
- Writing a method including detail about how to ensure control variables are kept the same.
- Writing a method that considers reliability by planning repeated readings.
- Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.

Predicting

- Making increasingly scientific predictions by: ● Using previous scientific knowledge and evidence to inform their predictions. ● Using scientific language to describe a potential outcome or explain why they think something will happen. ● Making links between topics to evidence a prediction.

Observing (qualitative data)

- Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed.

Measuring (quantitative data)

Mighty Oaks 2026 – 27 as per science LTP.

- Using standard units to measure and compare with increasing precision (decimals).
- Reading a wider variety of scales with unmarked intervals between numbers.

Researching

- Gathering answers to open-ended questions from a variety of sources.

Recording (diagrams)

- Drawing scientific diagrams by: ● Using a wider range of standard symbols. ● Drawing with increasing accuracy. ● Labelling with a broader range of scientific vocabulary. ● Annotating diagrams to explain concepts and convey opinions.

Recording (tables)

- Using tables with columns that allow for repeat readings.
- Suggesting headings to tables, including units.
- Designing results tables with increasing independence with consideration of variables where applicable.
- Calculating the mean average.

Grouping and classifying

- Grouping in a broader range of contexts.
- Organising the layout of number and branching keys.
- Formulating appropriate questions for classification keys.

Graphing

- Representing data by using line graphs and scatter graphs.

Mighty Oaks 2026 – 27 as per science LTP.

- Plotting points with greater accuracy.
- Reading the value of plotted points with greater accuracy.

Analysing and drawing conclusions.

- Recognise the following across a broader range of contexts and in more complexity: ● Naturally occurring patterns and relationships. ● Making comparisons to group and classify. ● Changes over time. ● Relevant secondary data.
- Writing a conclusion to summarise findings using increasingly complex scientific vocabulary.
- Suggesting with increasing independence how one variable may have affected another.
- Quoting relevant data as evidence of relationships.
- Identifying anomalies in repeat data and excluding results where appropriate.
- Comparing individual, class and/or model data to the prediction and recognising when they do not match.
- Using identified patterns to predict new values or trends.

Evaluating

- Identifying steps in the method that need changing and suggesting improvements.
- Identifying which variables were difficult to control and suggesting how to better control them.
- Commenting on the degree of trust by also reflecting on: ● Accuracy (human error with equipment). ● Reliability (repeating results). ● Sources of information (e.g. websites, books).
- Deciding what data to collect to further test direct relationships.

Mighty Oaks 2026 – 27 as per science LTP.

National curriculum — end of KS2 Working Scientifically

- asking relevant questions and using different types of scientific enquiries to answer them
- 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 ideas and processes
- using 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.

Mighty Oaks 2026 – 27 as per science LTP.

- 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
- predict whether two magnets will attract or repel each other, depending on which poles are facing.
- 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.

Mighty Oaks 2026 – 27 as per science LTP.

- 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

Mighty Oaks 2026 – 27 as per science LTP.

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

Mighty Oaks 2026 – 27 as per science LTP.

- 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.
- 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.

Mighty Oaks 2026 – 27 as per science LTP.

- 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