

Science Long Term Overview – Broken Down into Small Steps

Year 3

Unit	Learning Objectives	Disciplinary Knowledge	Substantive Knowledge
Animals, including humans	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Asking relevant questions and using different types of scientific enquiries to answer them.	Humans have skeletons which are made up of lots of different bones. An adult human typically has 206 bones that make up the skeleton. The skull, spine (backbone), ribcage, pelvis and femur are bones within the skeleton.
	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Bones have specific functions. The skull protects the brain. The femur helps humans to stand and move. The pelvis helps to support the spine. The spine helps humans to twist and be held upright. The ribcage protects the heart and lungs.
	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Talk about criteria for grouping, sorting and classifying (non-statutory).	Mammals, birds, fish, amphibians and reptiles have skeletons. There are some similarities and differences in skeletons of different animals. Animal skeletons are made up of lots of different bones.
	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Talk about criteria for grouping, sorting and classifying (non-statutory).	Some animals have a spine. Some animals do not have a spine. Some animals have an exoskeleton. An exoskeleton provides support and protection.
	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Animals have different skeletons. All mammals, birds, fish, reptiles and amphibians have a spine. Some animals do not have spines. Skeletons provide support, protection and allow movement.
Movement	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Recognise when and how secondary sources might help them to answer questions that cannot be answered through practical investigations (non-statutory).	A joint is where two or more bones meet. There are different joints in the human body. The knees and elbows are hinge joints. The shoulders and hips are ball and socket joints.
	Identify that humans and some other animals have skeletons and muscles for support, protection and movement.	Communicate their findings in ways that are appropriate for different audiences (non-statutory).	Muscles are attached to bones. Muscles can only pull on bones and cannot push. Muscles work in pairs by contracting and relaxing. Bones, muscles and joints work together to allow movement.
Nutrition & Diet	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.	Talk about criteria for grouping, sorting and classifying (non-statutory).	Humans need the right types and amount of food. Humans get their nutrition from what they eat. Food can be sorted into five food groups – fruit and vegetables, carbohydrates, protein, dairy and alternatives and fats and sugars.
	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.	Using straightforward scientific evidence to answer questions or to support their findings.	Fruit and vegetables provide the body with essential vitamins. Carbohydrates provide the body with energy. Protein helps with muscle growth and repair. Dairy products contain calcium, which is good for teeth and bones. Fats can be grouped into healthy and unhealthy fats.
	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.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Humans need to eat a healthy, balanced diet to maintain good health. Humans should eat a wide variety of foods and consume the right amount to maintain a healthy body weight. The Eatwell Guide shows how much of each food group we should eat to achieve a healthy and balanced diet.
	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.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	All humans need a balanced diet including food from all five food groups. There are a variety of human diets including vegan, vegetarian, pescatarian and omnivorous diets. People who eat a vegan diet get protein from sources that are not animal products.

	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.	Using straightforward scientific evidence to answer questions or to support their findings.	Animals need the right type and amount of nutrition. They cannot make their own food, instead they get their nutrition from what they eat. Some animals are carnivores – they eat other animals. Some animals are herbivores – they only eat plants. Some animals are omnivores – they eat plants and other animals.
Food Waste	N/A	Asking relevant questions and using different types of scientific enquiries to answer them.	Food waste is food that is safe to eat but is thrown away instead. Some food can be turned into compost. A lot of food waste ends up in landfill sites, where it rots and has negative impacts on the planet.
	N/A	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Food waste is food that is safe to eat but is thrown away instead. There are different ways that food waste can be reduced.
Rocks	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Making systematic and careful observations.	Some rocks have grains. Some rocks have crystals. Some rocks have layers. Some rocks are light and some are heavy.
	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Talk about criteria for grouping, sorting and classifying (non-statutory).	Rocks can be sorted in different ways. Some rocks have grains. Some rocks have crystals. Some rocks have layers. Some rocks are light and some are heavy.
	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Making systematic and careful observations.	Some rocks are hard. Some rocks react with acid. Some rocks are brittle. Some rocks float and some sink.
	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	Rocks are used as building materials. Rocks have different textures and appearances. Some rocks change over time.

Fossils	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	Asking relevant questions and using different types of scientific enquiries to answer them.	A fossil is the remains or trace of a living thing that lived a long time ago. Both animals and plants can become fossils. Older fossils are found deeper underground. Fossils are usually formed from the shells or bones of living things. Animal footprints and tracks can also form fossils.
	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Fossilisation is the process that explains how a fossil is formed. Fossilisation is a rare process that only occurs under certain conditions. When an animal dies, the soft parts of its body break down, leaving behind the hard parts such as the skeleton. The process of fossilisation takes thousands of years.
Soils	Recognise that soils are made from rocks and organic matter.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables	Organic matter is the remains of dead plants and animals. Soils are made from rocks, organic matter and water. There are different types of soil including sandy, chalk, clay and peat soil. These soils have different properties.
	Recognise that soils are made from rocks and organic matter.	Using straightforward scientific evidence to answer questions or to support their findings.	Many living things need soil to survive. Soils can act as a habitat for many small animals. Soils provide nutrients for plants. Soils can also prevent flooding, as they absorb water.
	Recognise that soils are made from rocks and organic matter.	Setting up simple practical enquiries, comparative and fair tests.	N/A
	Recognise that soils are made from rocks and organic matter.	Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.	N/A
Light	Recognise that they need light in order to see things and that dark is the absence of light.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	Humans and other animals need light to see. Natural light sources are objects in nature that give out light, such as the Sun. Artificial light sources are made by humans.
	Recognise that light from the Sun can be dangerous and that there are ways to protect their eyes.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.	The Sun is a light source. Without the Sun, living things would not be able to live and grow on planet Earth. Light from the Sun can be dangerous. There are ways to protect your eyes from the Sun.
	Notice that light is reflected from surfaces.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	Humans need light to see. Darkness is the absence of light. Light travels from a light source to an object. The light is then reflected from the object into our eyes. Reflection is the return of light from a material or surface.
	Recognise that shadows are formed when the light from a light source is blocked by an opaque object.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	Humans need light to see objects. Light travels from a light source to an object. The light is then reflected into our eyes. Shadows are formed when the light from a light source is blocked by an object.
	Recognise that shadows are formed when the light from a light source is blocked by an opaque object.	Asking relevant questions and using different types of scientific enquiries to answer them.	Opaque materials do not let light rays pass through. Translucent materials allow some light to pass through but do not form clear, defined shadows. Transparent materials allow light to pass through. Shadows are formed when the light from a light source is blocked by an object.
	Find patterns in the way that the size of shadows change.	Setting up simple practical enquiries, comparative and fair tests.	N/A
	Find patterns in the way that the size of shadows change.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	N/A
	Find patterns in the way that the size of shadows change.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	N/A

Plants (A)	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Using straightforward scientific evidence to answer questions or to support their findings.	Plants are made up of different parts, which have different functions. The roots absorb water from the soil and hold the plant in place. The stem carries water to different parts of the plant. The leaves absorb sunlight to make food for the plant. The flowers help the plant to reproduce and create new life.
	Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers.	Talk about criteria for grouping, sorting and classifying (non-statutory).	A dissection is the method of separating something into its parts. The roots absorb water from the soil and hold the plant in place. The stem carries water to different parts of the plant. The leaves absorb sunlight to make food for the plant. The flowers help the plant to reproduce and create new life.
	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.	Asking relevant questions and using different types of scientific enquiries to answer them.	N/A
	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.	Setting up simple practical enquiries, comparative and fair tests.	N/A
	Investigate the way in which water is transported within plants.	Setting up simple practical enquiries, comparative and fair tests.	The roots absorb water from the soil. The stem carries water to different parts of a plant. There are small tubes inside the stem that transport the water to different parts of a plant, such as to the leaves and flowers.
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	Germination is the process of a seed breaking its coating and sending out its first leaves and roots. Seeds need water to germinate. As a seed absorbs water, the seed coating swells and breaks. The correct temperature is important for the growth of seedlings.
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.	The stamen is the male parts of a plant. The stamen produces pollen. The pistil is the female parts of a plant. The pistil receives the pollen in the fertilisation process.
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Use relevant scientific language to discuss their ideas and communicate their findings in ways that are appropriate for different audiences (non-statutory).	Pollination is the transfer of pollen from the male part of a flowering plant to the female part of a plant, so that the plant can reproduce. The pollen and the egg join to make a seed. The aim of pollination is to create offspring. The stamen is the male parts of a flowering plant. The pistil is the female parts of a flowering plan
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	Seed dispersal is the movement of seeds away from the parent plant for the life-cycle process to begin again. The most common methods of seed dispersal are by wind, water, animals and explosion.
	Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions	The stages in a plant's life are called its life cycle. Some plants start as a seed, which germinates under the right conditions. A germinated seed grows roots and shoots, which then grow leaves. As plants grow, they produce flowers and can reproduce through pollination. Once a seed is produced it can be dispersed to start the life cycle again.
Forces	Compare how things move on different surfaces.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	Forces are pushes or pulls. A contact force is a push or a pull that affects objects which are touching.
	Compare how things move on different surfaces.	Using straightforward scientific evidence to answer questions or to support their findings.	Friction is a contact force that is caused by one object being pushed across the surface of another. Friction can stop or slow down a moving object. Smooth surfaces, such as ice, wood, and plastic, have lower levels of friction. Rough surfaces, such as concrete, sand and carpet, have higher levels of friction.
	Compare how things move on different surfaces.	Setting up simple practical enquiries, comparative and fair tests.	N/A

	Compare how things move on different surfaces.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	N/A
Magnets	Notice that some forces need contact between 2 objects, but magnetic forces can act at a distance.	Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions.	A magnetic force is a non-contact force. Magnets have two poles – a north and south pole. Magnets can have different shapes, such as a bar magnet or a horseshoe magnet.
	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.	Identifying differences, similarities or changes related to simple scientific ideas and processes.	A magnetic force is a non-contact force. Some materials are magnetic and some are not. Plastic is not a magnetic material. Wood is not a magnetic material. Paper is not a magnetic material. Some metals are magnetic materials.
	Observe how magnets attract or repel each other and attract some materials and not others.	Setting up simple practical enquiries, comparative and fair tests.	Magnets are objects that can attract some other metals. Some metals are magnetic. Some metals are not magnetic. Magnetic metals include iron and steel. Non-magnetic metals include aluminium.
	Describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing.	Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.	Magnets are objects that can attract some other metals. All magnets have two poles – a north pole and a south pole. The opposite poles on two magnets will attract each other. The same poles on two magnets will repel each other.
Plants (B)	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.	Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.	Plants need the right conditions to grow healthily. Plants need air, light, water, nutrients from soil and room to grow. Plant growth may be affected by the number of seeds within a certain area.