Y3 Science

How can Usain Bolt move so quickly? BIOLOGY

Term: Autumn 1 and 2

Statutory NC Objectives:

- Y3 PoS : **Animals including humans**
- 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.

Key Vocabulary

ANCHOR WORDS

Muscles – are attached to bones in the body and help with movement. healthy.

Balanced diet – a diet that includes a range of foods from all the different food groups.

GOLDILOCKS WORDS

Minerals – help the body to grow, develop and stay healthy.

Fibre – helps the body to digest food that has been eaten.

Fats – fats give energy - there are saturated and non-saturated fats.

Skeleton – the function of a skeleton is a to support the body.

Nutrients – nutrients are found in foods that help the body to grow well.

Carbohydrates – gives the body energy.

Proteins – helps the body to grow and repair itself.

Vitamins – keeps the body

STEP ON WORDS

Vertebrates – animals that have a backbone (spine)

Invertebrates – animals that do not have a backbone (spine)

Knowledge Overview

By the end of this unit, the pupils should know that:

- Animals, unlike plants, need to eat in order to get the nutrients they need.
- Food contains a range of different nutrients that are needed by the body to stay healthy.
- Humans need: carbohydrates including sugars, protein, vitamins, minerals, fibre, fat, sugars and water in order to be healthy.
- Foods high in proteins are: red meat, fish and yogurts.
- Foods high in carbohydrates are: bread, pasta and potatoes.
- Foods high in fats are: nuts, oils and butter.
- Foods high in vitamins are: oranges, carrots and nuts.
- Foods high in minerals are: salt, spinach and sweetcorn.
- Foods high in fibre are: cereals, apples and wholemeal bread.
- Foods are commonly split into 5 food groups.
- It is important to eat a balanced diet.
- A piece of food often contains a range of nutrients.
- Humans and some other animals have skeletons and muscles which help them move and provide protection and support.
- Animals can be sorted in to either vertebrates or invertebrates depending on whether they have a backbone (spine).
- Adults have around 206 bones in their body.
- There are 3 types of joints which connect the bones in the skeleton: ball and socket, hinge and gliding.
- Muscles help us to move by contracting and relaxing.

ESSENTIAL KNOWLEDGE

Y3 Science

"Bridging Back" (previous years/cross-curricular content	**"Bridging Forward"** (future years/cross curricular content)
Y2 PoS : Animals including humans – *What can we do to stay healthy?* • Animals including humans have basic needs of feeding, drinking and breathing. • Basic needs must be met in order to survive. • To grow into healthy adults, humans and animals need the right amounts and types of food and exercise.	**Y4 PoS : Animals including humans – *What happens to the food we eat?*** • In the small intestine, nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. • In the large intestine, the water is removed for use elsewhere in the body. What is left then waits to leave the body as waste. **Y6 PoS : Living things and their habitats – *Could Spiderman really exist?*** • Vertebrates can be divided into 5 small groups- fish, amphibians, reptiles, birds and mammals. Each group has common characteristics. • Invertebrates can be divided into a number of groups including, insects, spiders, snails and worms.

Y3 Science

Are you attractive enough? PHYSICS

Term: Spring 1

Statutory NC Objectives:

- Y3 PoS : **Forces and magnets**
- 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.

Key Vocabulary			Knowledge Overview
ANCHOR WORDS	**GOLDILOCKS WORDS**	**STEP ON WORDS**	<u>By the end of this unit, the pupils should know that:</u>
Surface – the top layer of something.	**Magnet** – an object that produces a magnetic force that pulls certain objects to it. **Force** – a push or a pull. **Friction** – a force that acts between two surfaces or objects that are moving, or trying to move, across each other. **Magnetic** – objects which are attracted to a magnet are magnetic. **Non-magnetic** – a material that is not attracted to magnets. **Poles** – north and south poles are found at the two ends of the magnet.	**Attraction (attract)** – attraction is a force that pulls objects together. **Repulsion (repel)** – repulsion is a force that pushes objects away.	• A force is a push or a pull. • When an object moves on a surface, the texture of the surface and the object affect how it moves. • Some surfaces make objects move slower and some make them move faster. • A magnet attracts magnetic materials. • Metals can be sorted into two groups – magnetic and non-magnetic. • Examples of magnetic metals are iron and nickel. • Examples of non-magnetic metals are aluminium and copper. • The strongest parts of a magnet are the poles. • Magnets have two poles called the north and south poles. • If two like poles are brought together, they will push away from each other (repel). • If two unlike poles are brought together, they will pull together (attract) • For some forces to act, there must be contact, e.g. – a hand opening a door. • Some forces can act at a distance, e.g. – magnetism. **ESSENTIAL KNOWLEDGE**

Y3 Science

"Bridging Back" (previous years/cross-curricular content	**"Bridging Forward"** (future years/cross curricular content)
Y2 PoS : Use of everyday materials – ***Are all materials the same?*** • Properties of materials include things like being: hard, shiny, stretchy, soft, absorbent, transparent etc.	**Y5 PoS: Forces** – ***Is the force with you?*** • Different materials offer different levels of friction. • Smooth, shiny materials usually produce less friction than rough, rugged materials. • A force causes an object to start moving, stop moving, speed up, slow down or change direction.

Y3 Science

What do rocks tell us about the way the Earth was formed? CHEMISTRY

Term: Spring 2

Statutory NC Objectives:

- Y3 PoS : **Rocks**
- 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.

Key Vocabulary			Knowledge Overview
ANCHOR WORDS	**GOLDILOCKS WORDS**	**STEP ON WORDS**	<u>By the end of this unit, the pupils should know that:</u> • Rock is a naturally occurring material. • There are 3 types of naturally occurring rocks – igneous, sedimentary and metamorphic. • There are different types of rock, such as – sandstone, limestone and slate. • Different types of rock have different properties. • Rocks can be sorted according to their properties. • Rocks can be hard or soft. • Some rocks can absorb water or allow water to pass through them. • Rocks that are durable are more resistant to weathering. • Fossils are the remains of dead organisms. • The process of creating a fossil takes a very long time (millions of years ago). • When plants and animals died, they fell to the seabed, they became covered and squashed by other materials • Mary Anning is remembered as being one of the greatest fossil hunters to have ever lived. • Mary Anning was able to help other scientists learn more about fossils and animal life. • Soil is a mixture of air, water, mineral and organic matter. **ESSENTIAL KNOWLEDGE**
	Metamorphic rock – rocks that change because of being exposed to lots of heat and pressure. **Fossil** – the preserved remains or traces of a dead organism. **Molten rock** – rock which is far underground where the temperature is hot enough to melt it into liquid. **Igneous rock** – formed through the cooling and hardening of molten rock. **Sedimentary rock** – forms under the sea as layers of rock, sand, mud and pebbles are pushed together. Over time they are squashed and become one.	**Permeable** – allows water to pass through it. **Impermeable** – does not allow water to pass through it. **Density** – measures how 'bulky' the rock is and can link to heaviness.	

Y3 Science

"Bridging Back" (previous years/cross-curricular content	**"Bridging Forward"** (future years/cross curricular content)
Y2 PoS : Use of everyday materials – *Are all materials the same?* • Compare and group together a variety of everyday materials on the basis of their simple physical properties. **Year 3 Geography – *What makes the Earth angry? (Volcanoes)*** • The Earth is made up of tectonic plates. • The Earth is made up of an inner core, outer core, mantle and crust. • Molton rock in the Earth's mantle is called magma.	**N/A**

Y3 Science

How did that blossom become an apple? BIOLOGY

Term: Summer 1

Statutory NC Objectives:

- Y3 PoS : **Plants**
- 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.

Key Vocabulary

ANCHOR WORDS

Nutrition – the process by which living things get or make their food to give them energy.

Movement – some living things move a lot and some move a tiny bit.

Growth – all living things grow as they get older. Some change in size and get bigger while others change in appearance.

GOLDILOCKS WORDS

Pollination – where pollen is transferred between plants in order to produce more.

Fertilisation – when pollen creates seeds.

Seed dispersal – when the seeds move away from the parent plant. They can be moved by wind or animals.

Life processes – these are the things that all living things do – they tell us that something is alive.

Respiration – when living things get energy, this can be done using oxygen.

Photosynthesis – the process in which green plants use sunlight to make their food.

STEP ON WORDS

Reproduction – when a living thing makes another copy of itself, e.g. – a cat may birth a kitten.

Excretion – when plants and animals get rid of their waste.

Sensitivity – when living things sense things in their environment, e.g. – sounds, smells.

Knowledge Overview

By the end of this unit, the pupils should know that:

- Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom.
- The roots absorb water and nutrients from the soil and anchor the plant in place.
- The stem transports water and nutrients/minerals around the plant and holds the leaves and flowers up in the air to enhance photosynthesis, pollination and seed dispersal.
- The leaves use sunlight and water to produce the plant's food.
- Some plants produce flowers which enable the plant to reproduce.
- The flowers are brightly coloured and attract insects which carry pollen to other flowers – flowers then use this pollen to make new seeds.
- Plants have male and female parts.
- Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination).
- Seeds can be dispersed (moved) in different ways.
- Different plants require different conditions for germination and growth.
- There are 7 life processes that tell us if something is alive.
- The 7 processes are: movement, respiration, growth, reproduction, excretion, nutrition and sensitivity
- Water transportation is the way water moves through a plant.
- Flowers have different parts which all do different jobs.
- The life cycle of a flowering plant shows the changes that happen to the plant over the course of its lifetime.

ESSENTIAL KNOWLEDGE

Y3 Science

"Bridging Back" (previous years/cross-curricular content)	**"Bridging Forward"** (future years/cross curricular content)
Y2 PoS : Plants – *How can we grow our own plants?* • Some plants grow better in full sunlight whereas others are more suited to shade or partial light. • Plants need water and space to grow and stay healthy. • Some seeds and bulbs grow better in warmer seasons, others needs damp conditions	**Y6 Pos: Living things and their habitats – *Could Spiderman really exist?*** • Plants can be divided broadly into 2 main groups- flowering plants and non-flowering plants. • Plants and animals can be sorted into 2 main groups but there are other living things that do not fit into these groups e.g. microorganisms such as bacteria and yeast and toadstools and mushrooms. • Plants can make their own food whereas animals cannot

Y3 Science

How far can you throw your shadow? PHYSICS

Term: Summer 2

Statutory NC Objectives:

- Y3 PoS : **Light**
- 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 a solid object;
- Find patterns in the way that the size of shadows change.

Key Vocabulary

Anchor words

Light – a form of energy that travels in a wave from a source.

Dark – dark is the absence of light.

Shadow – an area of darkness where light has been blocked.

Goldilocks words

Reflection – the process where light hits the surface of an object and bounces back into our eyes.

Reflective – a word to describe something that reflects light well.

Ray – waves of light are called light rays (or light beams).

Light source – an object that makes its own light, e.g. – the sun.

Reflect – to bounce off. Light reflects off surfaces.

Step-on words

Opaque – objects that do not let any light pass through them. The area behind these objects then causes a shadow to form.

Translucent – objects that let some light through them, but scatter the light so we cannot see through them properly.

Transparent – objects that let light travel through them easily so we can see through them.

Key Knowledge

By the end of this unit, the pupils should know that:

- We see objects because our eyes can sense light.
- Dark is the absence of light – we cannot see anything in complete darkness.
- Sources of light include – the sun, light bulbs and candles.
- Light travels in straight lines.
- When light hits an object, it is reflected – if it hits our eyes, we can see it.
- Reflective surfaces can be very useful, e.g. – reflective strips on coats, bicycles and bags help us to be seen at night.
- Surfaces that reflect light the best are smooth, shiny and flat.
- The light from the sun can damage our eyes and therefore, we should not look directly at the Sun.
- Some objects/materials don't let any light through – these are opaque. They block light rays.
- Opaque or translucent objects create shadows because the light is blocked.
- The size of a shadow depends on the position of the source, object and surface.

ESSENTIAL KNOWLEDGE

"Bridging Back" (previous years/cross-curricular content

Y2 PoS : Use of everyday materials – *Are all materials the same?*

- All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task.
- Properties of materials include things like being: hard, shiny, stretchy, soft, absorbent, transparent etc.

"Bridging Forward" (future years/cross curricular content)

Yr 6 PoS: Light – *How can you light up your life?*

- We see objects when light from a light source is reflected from the object into our eyes.
- Natural light sources include the sun, stars and fire.
- Objects that block light (are not fully transparent) will cause shadows.

Y3 Science

▪ Compare and group together a variety of everyday materials on the basis of their simple physical properties.	▪ The opaqueness of an object will affect the quality (darkness) of the shadow formed.