LENT TERM
SCIENCE – Year 3/4 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 1	LESSON 2	LESSON 3
Recap and Retrieval • Animals are living things. (Y1 recap)	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs.
Working Scientifically – Communicating Results **LEARNING INTENTION:** To know that animals are grouped according to their characteristics. (Recap and build upon KS1 learning) **Disciplinary Knowledge:** **Y3:** • Report on findings from enquiries, including oral and written explanations. **Y4:** Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**Working Scientifically – Recording Data** **LEARNING INTENTION:** To know that humans have a skeleton for movement, support and protection. **Disciplinary Knowledge:** **Y3:** • Record findings using simple scientific language, drawings, labelled diagrams and tables. **Y4:** • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**Working Scientifically – Recording Data** **LEARNING INTENTION:** To know that there are three joint types in the human body. **Disciplinary Knowledge:** **Y3:** • Record findings using simple scientific language, drawings, labelled diagrams and tables. **Y4:** • Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.
Key Vocabulary: group, characteristics, **mammal, fish, amphibian, reptile, bird, invertebrate**	**Key Vocabulary:** **skeleton**, bones, **protection, movement, support,** vertebrae, organs	**Key Vocabulary:** **joint,** bone, connect, skeleton, **hinge, pivot, ball and socket**
Key Knowledge: **Child:** • Animals are living things. (Y1 recap)	**Key Knowledge:** **Child:**	**Key Knowledge:** **Child:**

- They can be grouped by their characteristics.
- The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates.

Teacher:

- All living animals, including humans, need six main things to grow, reproduce and survive: food, water, air, space, sleep and shelter.
- Animals find the six things they need to survive in their habitats. Animals can live in large habitats or small microhabitats.
- All animals can be sorted into three groups based on what they eat – carnivores, herbivores and omnivores.
- Carnivores only eat meat. Herbivores only eat plants. Omnivores eat meat and plants.
- Humans are omnivores because they can eat meat and plants. However, some humans choose not to eat meat and follow a vegetarian diet. They eat plants and foods produced by animals, such as milk and eggs. Some people follow a vegan diet. They only eat plants and plant-based products.
- Human body parts have different functions, and they work together to allow humans to move and survive.
- Some animals have similar body parts to humans, such as eyes, a mouth and a nose. Some have different body parts to humans, such as a tail for balancing, gills for breathing and antennae for sensing.
- Animals have different body parts called limbs that help them to move. Movement allows animals to find food and escape from danger.

- The adult human skeleton is a frame of 206 bones that supports the body and gives it shape.
- The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs.

Teacher:

- The largest is the femur, or thigh bone, and the smallest are inside the ear. Each bone has a different function.
- Every bone in a skeleton has a hard, strong outer shell. Inside this is a honeycomb structure made up of struts and spaces, which makes the bone light and strong.
- The cranium, or skull, surrounds and protects the brain. The cranium joins to the lower jaw called the mandible.
- The spine, or backbone, is a column of 33 separate bones called vertebrae. The spine supports the body, keeping it upright and connects different parts of the skeleton.
- The ribcage is a basket-like structure that is made up of curved bones called ribs. The ribcage provides protection for the heart and lungs.
- Our arms are made up of three bones. The bone in the upper arm is called the humerus. It gives structure to the arm and supports the many muscles needed for movement. There are two bones in the lower arm, or forearm, called the radius and ulna. The radius and ulna allow the forearm, wrist and hand to rotate.
- The pelvis is a bowl-shaped bone that supports the base of the spine and carries the whole weight of the upper body. It allows the legs to move and it also protects the reproductive organs.

- A joint is where two or more bones meet and connect.
- Parts of the human body can bend easily because the skeleton has lots of small bones and joints.
- Three types of joints in the human skeleton include the hinge joint, ball and socket joint and the pivot joint.

Teacher:

- Vertebrate skeletons have many bones connected by joints to move and bend body parts in different directions.
- The hinge joint can open and close in one direction only. The elbow joint is a hinge joint.
- The ball and socket joint allows movement in all directions. The shoulder joint is a ball and socket joint.
- The pivot joint only allows limited rotating movements. The top two spinal vertebrae form a pivot joint.

	• We have three leg bones. The bone in the thigh is called the femur. It is the longest and strongest bone in the human body and supports the weight of the body when standing or moving. The two bones in the lower leg are called the tibia and fibula. The thicker tibia bears weight and the thinner fibula supports the tibia and ankle.	

LENT TERM
SCIENCE – Year 3/4 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 4	LESSON 5	LESSON 6
Recap and Retrieval • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements.
Working Scientifically – Setting up tests **LEARNING INTENTION:** To know that there are three main types of muscles in the human body. **Disciplinary Knowledge:** **Y3:** • Set up simple practical enquiries, comparative and fair tests, with support. **Y4:** • Set up simple practical enquiries, comparative and fair tests. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**Working Scientifically – Setting up tests** **LEARNING INTENTION:** To know that bones and muscles work together. **Disciplinary Knowledge:** **Y3:** • Set up simple practical enquiries, comparative and fair tests, with support. **Y4:** • Set up simple practical enquiries, comparative and fair tests. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	**Working Scientifically – Communicating Results** **LEARNING INTENTION:** To know that skeletons vary between different animals. **Disciplinary Knowledge:** **Y3:** • Report on findings from enquiries, including oral and written explanations. **Y4:** • Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.
Key Vocabulary: **muscle**, muscle groups, **skeletal, cardiac, smooth,** tendon, ligament	**Key Vocabulary:** **bone**, **muscle**, joint, tendon, ligament**, contract, relax, pairs**	**Key Vocabulary:** skeleton, **exoskeleton, endoskeleton**, bones, **vertebrate, invertebrate**, spine

Key Knowledge: **Child:** • Muscles are soft tissue made up of many stretchy fibres. • Muscles allow us to move, breathe and digest food. • The three main types of muscle in the human body are skeletal, cardiac and smooth. **Teacher:** • There are three main types of muscle in the human body: smooth muscle in the intestines, skeletal muscle attached to the skeleton and cardiac muscle in the heart. • Our skeletal muscles work with our skeleton to create the wide variety of movements that we need to survive. • Skeletal muscles are attached to the skeleton by flexible cords called tendons and work together in pairs, one contracting and one relaxing, to create specific movements.	**Key Knowledge:** **Child:** • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. **Teacher:** • The biceps muscle contracts and the triceps muscle relaxes to bend the arm. • The triceps muscle contracts and the biceps muscle relaxes to straighten the arm. • The hamstrings contract and the quadriceps relax to bend the leg. • The quadriceps contract and the hamstrings relax to straighten the leg. • The gastrocnemius contracts and the tibialis anterior relaxes to lower the foot. • The gastrocnemius relaxes and the tibialis anterior contracts to raise the foot. • The pectorals contract and the latissimus dorsi relax to raise the arm. • The latissimus dorsi contract and the pectorals relax to lower the arm. • The gluteus maximus contracts and the hip flexors relax when the leg moves backwards. • The hip flexors contract and the gluteus maximus relaxes when the leg moves forwards.	**Key Knowledge:** **Child:** • Vertebrates are animals with a spine. • Invertebrates are animals without a spine. • An endoskeleton is found inside all vertebrates. • An exoskeleton is found outside the body of invertebrates. **Teacher:** • An endoskeleton grows with the body and offers support but no protection to the outside of the body. • An exoskeleton offers protection for soft body parts but does not grow with the animal and does not support a large body size. • Some invertebrates have no skeleton. They can squeeze into small spaces, but have no protection from injury.

LENT TERM
SCIENCE – Year 3/4 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 7	LESSON 8	LESSON 9
Recap and Retrieval • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine • Nutrition is a life process by which living things make or eat food and absorb its nutrients.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine. • Nutrition is a life process by which living things make or eat food and absorb its nutrients. • A balanced diet contains foods from different food groups in the right proportions.
Working Scientifically – Asking enquiry questions, Communicating Results **LEARNING INTENTION:** To know that nutrition is important to keep animals and humans healthy. **Disciplinary Knowledge:** **Y3:** • Ask simple, relevant questions and use scientific enquiries to answer them. • Report on findings from enquiries, including oral and written explanations. **Y4:** • Ask relevant questions and use different types of scientific enquiries to answer them.	**Working Scientifically – Asking enquiry questions, Communicating Results** **LEARNING INTENTION:** To know that nutrition is obtained through eating different food groups. **Disciplinary Knowledge:** **Y3:** • Ask simple, relevant questions and use scientific enquiries to answer them. • Report on findings from enquiries, including oral and written explanations. **Y4:** • Ask relevant questions and use different types of scientific enquiries to answer them.	**Working Scientifically – Asking enquiry questions, Communicating Results** **LEARNING INTENTION:** To know that different animals get the nutrition they need in different ways. **Disciplinary Knowledge:** **Y3:** • Ask simple, relevant questions and use scientific enquiries to answer them. • Report on findings from enquiries, including oral and written explanations. **Y4:** • Ask relevant questions and use different types of scientific enquiries to answer them.

• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Aims:** Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.	• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Aims:** Develop scientific knowledge and conceptual understanding through the specific disciplines of biology.	• Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. **Aims:** Are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.
Key Vocabulary: carnivore, herbivore, **omnivore**, malnutrition, mineral, vitamin, absorb, **nutrition, nutrient**	**Key Vocabulary:** carbohydrates, dairy, alternatives, **balanced diet,** fibre, fruit, vegetables, oils, spreads, proteins, **nutrient, energy, healthy**	**Key Vocabulary:** **nutrient**, nutrition, **seasonal,** diet, change, diurnal, nocturnal, **carnivore, herbivore, omnivore**, prey, predator
Key Knowledge: **Child:** • Nutrition is a life process by which living things make or eat food and absorb its nutrients. • Humans get nutrition from what they eat. • The food we eat is important because it provides us with the energy and nutrients, including vitamins and minerals, that our bodies need to grow and stay healthy. **Teacher:** • Humans stay hydrated by drinking water. • Humans are omnivores, so they can eat both plant parts and animals. • Scientists know that humans are omnivores because of their teeth. Humans have sharp teeth for cutting and tearing meat and flat teeth for grinding plants. • Some people eat a vegetarian diet. Vegetarians eat plant parts, food made from plants and animal products, like eggs and milk. They do not eat meat from animals. • Some people choose to eat a vegan diet. Vegans only eat plant parts and foods made from plants. A vegan diet needs careful	**Key Knowledge:** **Child:** • All humans need a balanced diet. • A balanced diet contains foods from different food groups in the right proportions. • It provides the human body with the energy and nutrients it needs to grow and stay healthy. **Teacher:** • There are five main food groups • Fruit and vegetables Foods in this group contain vitamins and minerals that help the body to fight off diseases. They also contain fibre that is important for the health of our digestive system. • Carbohydrates Foods in this group contain important nutrients and are the body's main source of energy. They also contain fibre. • Proteins Foods in this group contain a nutrient called protein that helps the body build muscle and allows it to grow and repair. • Dairy and alternatives Foods in this group contain a nutrient called calcium, an important mineral for healthy bones, nails and teeth.	**Key Knowledge:** **Child:** • In the wild, animals' diets change over the year as the seasons change due to certain foods becoming available or unavailable. **Teacher:** • In the wild in the United Kingdom, animals' diets change over the year depending on the season. • This is because certain foods become available and unavailable due to the weather and events that happen during spring, summer, autumn and winter. • The barn swallow eats flying invertebrates in the United Kingdom in spring and summer but migrates to South Africa in the autumn, spending winter there because the weather is warmer and there are more flying invertebrates to eat in South Africa. • Barn swallows are diurnal, which means they are most active during the day. They hunt 'on the wing', meaning they eat while flying. • They have slender bodies with long, pointed wings and a forked tail, which helps them to

planning to provide all the essential nutrients humans need, especially vitamins and minerals. • Some people eat too much food, too little food, or not enough of the right food. This can lead to malnutrition, meaning poor nutrition, which can cause health problems.	• <u>Oils and spreads</u> Foods in this group contain fat, which helps the body absorb certain vitamins and provides essential nutrients. However, oils and spreads should only be eaten in small amounts. • The Eatwell guide shows the proportions of foods from the five main food groups that humans should eat for a healthy, balanced diet. • Sugary, salty and fatty foods are outside the Eatwell plate because they are not part of a balanced diet.	fly fast and change direction easily to catch food. • Common frogs are carnivores. They are predators. • Common frogs are nocturnal, and they hunt at night. They have two eyes on the front of their heads, which helps them to see their prey clearly and judge distances. • They have long, sticky tongues, which they use to catch their prey. They eat their prey whole. • Wood ants are omnivores, so they eat plant parts and animals. They are predators. • Wood ants are active during the day and night. They produce acid that they spray to defend themselves or to attack prey. • They have powerful mouthparts called mandibles, which they use to grab, hold and bite through their prey. • Grey squirrels are omnivores with a varied diet. They eat mostly plant parts, including tree bark, nuts, seeds and fruit, but they also eat invertebrates, eggs, small mammals and birds. • Grey squirrels are diurnal, which means they are most active during the day. They use their claws to defend themselves from predators and to catch their prey. • Grass snakes are carnivores. They are predators. • Grass snakes are diurnal, which means they are most active during the day. They have eyes on the side of their heads, which allows them to look for food in all directions. • They also have streamlined bodies with strong muscles to quickly move on land and in water to catch prey. • Their flexible jaws can open very wide to eat prey whole.

LENT TERM
SCIENCE – Year 3/4 - Medium Term Planning – BIOLOGY: ANIMALS, INCLUDING HUMANS

LESSON 10	LESSON 11	Lesson 12
Recap and Retrieval • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine. • Nutrition is a life process by which living things make or eat food and absorb its nutrients. • A balanced diet contains foods from different food groups in the right proportions. • In the wild, animals' diets change over the year as the seasons change due to certain foods becoming available or unavailable.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine. • Nutrition is a life process by which living things make or eat food and absorb its nutrients. • A balanced diet contains foods from different food groups in the right proportions. • In the wild, animals' diets change over the year as the seasons change due to certain foods becoming available or unavailable. • Some fats can be good for the body.	**Recap and Retrieval** • The 6 main groups are mammals, fish, amphibians, reptiles, birds and invertebrates • The skeleton allows the body to move and protects soft, internal organs like the brain, heart and lungs. • A joint is where two or more bones meet and connect. • The three main types of muscle in the human body are skeletal, cardiac and smooth. • Skeletal muscles work in pairs, one contracting and one relaxing, to create specific movements. • Vertebrates are animals with a spine. • Invertebrates are animals without a spine. • Nutrition is a life process by which living things make or eat food and absorb its nutrients. • A balanced diet contains foods from different food groups in the right proportions. • In the wild, animals' diets change over the year as the seasons change due to certain foods becoming available or unavailable. • Some fats can be good for the body.
Working Scientifically – Setting up tests **Observing and Measuring** **Interpreting Results** **LEARNING INTENTION:** To know that food contains different amounts of fat. **Disciplinary Knowledge:** **Y3:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make careful observations and, where appropriate, take measurements using standard units, using a range of equipment.	**Working Scientifically – Setting up tests** **Observing and Measuring** **Interpreting Results** **LEARNING INTENTION:** To know that drinks contain different amounts of sugar. **Disciplinary Knowledge:** **Y3:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make careful observations and, where appropriate, take measurements using standard units, using a range of equipment.	**Working Scientifically – Setting up tests** **Observing and Measuring** **Interpreting Results** Children to set up their own investigation based on what they have learnt over the last 5 weeks. **Disciplinary Knowledge:** **Y3:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make careful observations and, where appropriate, take measurements using standard units, using a range of equipment.

• Use results to draw simple conclusions and raise further questions. **Y4:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Aims:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	• Use results to draw simple conclusions and raise further questions. **Y4:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Aims:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.	• Use results to draw simple conclusions and raise further questions. **Y4:** • Set up simple practical enquiries, comparative and fair tests, with support. • Make systematic and careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment, including thermometers and data loggers. • Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. **Aims:** Develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them.
Key Vocabulary: **fats, fatty foods**, amount, plan, enquire, **predict, investigate,** conclude, non-volatile, **absorb,** healthy, unhealthy	**Key Vocabulary:** Sugar, drink, free sugars, intrinsic sugars, natural, tooth decay, calories, amount, plan, **enquire,** predict, investigate, **conclude**	**Key Vocabulary:** Children to produce their own
Key Knowledge: **Child:** • Some fats can be good for the body. • Saturated fat, found mainly in meat and dairy foods, lead to clogged arteries and heart disease. • Monounsaturated and polyunsaturated fats, found in plants and healthful oils, protect your health. **Teacher:**	**Key Knowledge:** **Child:** • Sugars can be divided into 'free' and 'intrinsic' sugars. • Free sugars include all added sugars in foods and drinks and the sugars present in honey, syrups, fruit juices, smoothies, and fruit juice concentrates. • Most people are consuming more free sugars than is recommended. **Teacher:**	

• Fats in the foods produce grease spots because fats are nonvolatile. • Nonvolatile means that fats have a very high boiling point and do not evaporate easily. • In contrast to water, fats that get absorbed by paper cannot get enough heat to evaporate at room temperature. • These fats absorbed by the paper are easily visible and make it easy to identify which foods contain fats. • Not all fats are alike.	• Sugar is a type of carbohydrate. • Intrinsic sugars are those found naturally in dairy foods like milk or yogurt or in fresh, cooked, or dried fruit and vegetables. We do not need to cut down on these kinds of sugars. • Consuming too much free sugars is linked with tooth decay and with consuming more calories than we need, which can lead to weight gain. • The main sources of free sugars in our diet are sweet foods like biscuits, cakes, chocolate and sweets, sugar and preserves and sugary drinks.	
Assessment: Cumulative quiz. Retrieval practice.		