Year 1 – Animals Including Humans

National Curriculum Objectives/Knowledge Statements (Substantive):

- identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- identify and name a variety of common animals that are carnivores, herbivores and omnivores
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)
- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Pupils should use the local school environment/local area (if possible) throughout the year to explore and answer questions about animals in their habitat. Pupils should become familiar with the common names of some fish, amphibians, reptiles, birds and mammals, including those that are kept as pets.
Pupils should have plenty of opportunities to learn the names of the main body parts (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth, teeth) through games, actions, story, songs and rhymes. Investigate animal senses: sight, hear, touch, smell and taste.
Pupils might work scientifically by: using their observations to compare and contrast animals at first hand (walk) or through videos, models and photographs, describing how they identify and group them; grouping animals according to a) physical features (mammals, birds, amphibians, reptiles and fish) and also what they eat (herbivore, carnivore and omnivores); and using their senses to compare different textures, sounds and smells.

Key Ideas

a) There are many different animals with different characteristics.
b) Animals have senses to help individuals survive.
c) Human body parts have different jobs to help our body do different jobs.
d) Animals have different diets.
e) Animals have similar and different features (inc within their groups mammals, fish, birds, amphibians and reptiles).

Prior Learning	Breakdown of Lessons:		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?)**. Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
In Early Years: • Children should be able to identify different parts of their body. • Have some understanding of healthy food and the need for variety in their diets. • Be able to show care and concern for living things. • Know the effects exercise has on their bodies. • Have some understanding of growth and change. • Can talk about things they have observed including animals.	**Human Body Parts and their Senses:** Humans have various body parts with different jobs (bend/clasp etc). Big Question: Lessons 1: What are the names of the body parts and what are their functions? (John Hunter).	Knowledge – to know basic body parts and functions (bend/clasp etc.).	Amphibians, birds, fish, mammals, reptiles, carnivores, herbivore, omnivore, sight, hearing, touch, taste, smell, head, neck, ear, mouth, shoulder, hand, fingers, leg, foot, thumb, eye, nose, knee, toes, teeth, elbow.
	Knowing that humans have 5 senses and what they are. Big Question: Lesson 2: Can you use different senses to describe different objects? Prove it. (Aristotle)	Science Enquiry – Identifying & Classifying of objects/food using basic observations from their senses.	
	Observing Animals Using the local environment to observe the animals around school and discuss what would and wouldn't been seen in a home i.e. pet v wild. Big Question: Lesson 3: Are there animals around school and home? Prove it. (Dian Fossey).	Science Enquiry – Identifying & Classifying animals that are around school and using their knowledge to discuss animals at home.	
	Discussing 5 animal groups (mammals, amphibians, reptiles, bird and fish) noting their similarities and differences within their groups (e.g. dog and human – warm blood but 4/2 legs). Big Question: Lesson 4: Animals in the same groups have similarities and differences? Prove it. (Jane Goodall)	Knowledge – know basic definitions of animal groups (mammals, fish, birds, amphibians and reptiles).	
	Animal Grouping Animals are all different and so eat different foods, some eat other animals (carnivores) and others only eat vegetables (herbivores), some eat both (omnivores). Big Questions: Lesson 5: He thought different animals have different diets? Prove it. (Steve Irwin).	Knowledge – know the definitions of carnivore, herbivore and omnivore. Science Enquiry – Identifying & Classifying of these groups using their knowledge to sort given animals into groups and give reasons.	
	Animals have similar features meaning they can be classified into groups. Big Question: Lesson 6: Carl Linnaeus thinks animals can be sorted into groups by looking at their features? Prove it. (Carl Linnaeus). Assessment.	Knowledge – know basic definitions of animal groups (mammals, fish, birds, amphibians and reptiles). Science Enquiry – Identifying & Classifying of these groups using their knowledge to sort given animals into groups of their choice (e.g. mammals/not mammal).	

In Year 2:

- Know that animals, including humans, have offspring which grow into adults
- Know the basic stages in a life cycle for animals, including humans.
- Find out and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Year 2 – Animals Including Humans.

National Curriculum Objectives/Knowledge Statements (Substantive):

- Know that animals, including humans, have offspring which grow into adults
- Know the basic stages in a life cycle for animals, including humans.
- Find out and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Pupils should be introduced to the basic needs of animals for survival, as well as the importance of exercise and nutrition for humans. They should also be introduced to the processes of reproduction and growth in animals. The focus at this stage should be on questions that help pupils to recognise growth; they should not be expected to understand how reproduction occurs.
The following examples might be used: egg, chick, chicken; egg, caterpillar, pupa, butterfly; spawn, tadpole, frog; lamb, sheep. Growing into adults can include reference to baby, toddler, child, teenager, adult.
Pupils might work scientifically by: observing, through video or first-hand observation and measurement, how different animals, including humans, grow; asking questions about what things animals need for survival and what humans need to stay healthy; and suggesting ways to find answers to their questions

Key Ideas

a) Animals move in order to survive.
b) Different animals move in different ways to help them survive.
c) Exercise keeps animal's bodies in good condition and increases survival chances.
d) All animals eventually die.
e) Animals reproduce new animals when they reach maturity.
f) Animals grow until maturity and then don't grow any larger.
g) Basic needs – e.g. water, food, air, shelter.

Prior Learning	Breakdown of Lessons		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?).** Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
In Year 1: • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. • Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Lesson 1- Damien Aspinall is a conservationist. He breeds gorillas, looks after them when they are young and releases them into the wild when they are old enough. BIG QUESTION – Damien Aspinall has spent lots of time watching gorillas grow and change so he thinks that all animals can have babies and they change as they grow. Do you agree?	Knowledge based learning, new vocabulary – know the scientific animal groups and that animals change as they grow.	Exercise, heart rate, food groups, carbohydrates, protein, dairy, fats and sugars, fruit and vegetables, vitamins and minerals, mammals, reptiles, amphibians, humans, birds, life cycles, elderly, toddler, new born, adult, teenager
	Lesson 2- Professor Susan Standring was the president of the anatomical society and has taught anatomy to students for over 40 years. Anatomy is the scientific study of the structure of living things. BIG QUESTION – Susan Standring would like to know how the human body changes as it grows. She wants to know if animals change too. Can you help her?	Knowledge- how do animals and humans change as they grow? Classification – e.g. mammals from birthing type and food.	
	Lesson 3- Steve Irwin wildlife expert, environmentalist, and conservationist. He also co-owned and operated Australia Zoo where he looked after many different species of animals. BIG QUESTION – Australia Zoo has lots of different animals that all need looking after. Can you help by explaining what all animals need to survive?	Knowledge- basic needs of animals and humans to survive.	
	Lesson 4- Joe Wicks is a famous Fitness coach, who began his career by writing recipe books with healthy meals ideas. BIG QUESTION – Joe Wicks thinks that even though fruit and vegetables are good for you, you can't survive and be healthy if you just ate those alone. Do you agree?	Knowledge- names of food groups and roles of each group to provide a healthy body. Classification- sorting foods into the correct food group e.g. carbohydrate.	
	Lesson 5- Again, this week we are thinking about Joe Wicks. He is a famous fitness coach and personal trainer. He had huge success with his online fitness classes during our National lockdown. He made live PE lessons for schools, as he is very passionate about children and adults keeping active. BIG QUESTION – Joe Wicks thinks that exercise is extremely important for humans. Do you agree?	Knowledge- importance and benefits of exercise. Research- checking the effects of exercise on our heart rate immediately.	
	Lesson 6- Ignaz Semmelweis discovered that keeping hands clean in clinics could save lives. Semmelweis proposed the practice of washing hands with chlorinated lime solutions in 1847. BIG QUESTION – Ignaz Semmelweis thinks that it is vital to wash your hands with soap and water to stay healthy. Do you agree? How has washing our hands helped during this pandemic? Can you think of other ways for humans to be hygienic?	Scientific enquiry- observation of pepper and soap experiment to demonstrate how soap repels germs. Knowledge – impact of soap on hygienic settings.	

In Year 3:

- Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat.
- Know how nutrients, water and oxygen are transported within animals and humans.
- Know about the importance of a nutritious, balanced diet.

Year 3 – Animals Including Humans

National Curriculum Objectives/Knowledge Statements (Substantive):

- 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

Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions.
Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy and design meals based on what they find out.

Key Ideas:

a) Different animals are adapted to eat different foods.
b) Many animals have skeletons to support their bodies and protect vital organs.
c) Muscles are connected to bones and move them when they contract.
d) Movable joints connect bones.

Prior Learning

In Year 2:

- Know that animals, including humans, have offspring which grow into adults
- Know the basic stages in a life cycle for animals, including humans.
- Find out and describe the basic needs of animals, including humans, for survival (water, food and air).
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Breakdown of Lessons

Lesson and Big Question	Knowledge (Progression of substantive knowledge – what?). Or Science Enquiry/Skill Based Lesson (Disciplinary/National Curriculum Working Scientifically Statements – why/how?). These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.
Lesson 1 - The Department for Health in the UK used work based on many scientists' research about how the different types of foods we eat do different jobs. **BIG QUESTION** – Can foods be grouped according to how they help the body function? What are the nutrients called and what jobs do they do?	Knowledge – know the seven different nutrients and their jobs. Science Enquiry – Identifying & Classifying foods by their nutritional values and grouping them into nutritional groups.
Lesson 2 - Doctor Richard Patton is an animal nutritionist who has observed animals in their habitats and watched them eating varied diets. **BIG QUESTION** – Richard Patton thinks animals get different nutrients from their diet. Prove it.	Knowledge – know the definitions of carnivore, herbivore and omnivore. Science Enquiry – Identifying & Classifying animals according to their diet making observations about the nutrients they need and their lifestyles.
Lesson 3 - John Hunter was an English anatomist surgeon who studied the human body. **BIG QUESTION** – John Hunter said that the human skeleton had three functions (jobs). To protect, to support and to help with movement. Prove it.	Science Enquiry – Identifying & Classifying different types of skeletons and comparing animals with or without a skeleton and draw conclusions.
Lesson 4/5 - Marie Curie was a Polish scientist who discovered that we could use x-rays to help view bones inside the body. They were used during the war to find broken bones in soldiers. **BIG QUESTION** – Do all bones look the same? How can they be identified?	Scientific Enquiry – Research – find out about the names of the human body. Science Enquiry – Identifying & Classifying bones in the human body.
Lesson 6 - John Hunter was an English anatomist surgeon who studied the human body. **BIG QUESTION** – John Hunter said that the human skeleton had three functions (jobs). To protect, to support and to help with movement. Prove it.	Knowledge – know the different functions of the human skeleton.

Vocabulary

Nutrients, nutrition, carbohydrates, protein, fats, vitamins, minerals, water, fibre, skeleton, bones, joints, endoskeleton, exoskeleton, hydrostatic skeleton, vertebrates, invertebrates, muscles, contract, relax,

In Year 4:

- 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

Year 4 – Animals Including Humans

National Curriculum Objectives/Knowledge Statements (Substantive):

- 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.

Pupils should be introduced to the main body parts associated with the digestive system, for example, mouth, tongue, teeth, oesophagus, stomach and small and large intestine and explore questions that help them to understand their special functions.
Pupils might work scientifically by: comparing the teeth of carnivores and herbivores, and suggesting reasons for differences; finding out what damages teeth and how to look after them. They might draw and discuss their ideas about the digestive system and compare them with models or images.

Key Ideas

a) Animals have teeth to help them eat. Different types of teeth do different jobs.
b) Food is broken down by the teeth and further in the stomach and intestines where nutrients go into the blood. The blood takes nutrients around the body.
c) Nutrients produced by plants move to primary consumers then to secondary consumers through food chains.

Prior Learning	Breakdown of Lessons		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?)**. Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
In Year 3: ● Identify that animals, including humans, need the right types and amount of nutrition, and they cannot make their own food; they get their nutrition from what they eat. ● Know how nutrients, water and oxygen are transported within animals and humans. ● Know about the importance of a nutritious, balanced diet. ● Identify that humans and some other animals have skeletons and muscles for support, protection and movement: Know about the skeletal and muscular system of a human.	Lesson 1 Learn the names and functions of the teeth. Big Question: Dr Pierre Fauchard thinks that all teeth have different jobs and functions. Do you agree?	Scientific knowledge- identify the different types of teeth in humans and their simple functions.	Herbivore, Carnivore, Digestive system, tongue, mouth, teeth, oesophagus, stomach, gall bladder, small intestine, pancreas, large intestine, liver, tooth, canine, incisor, molar, premolar, producer, consumer.
	Lesson 2 Egg experiment- compare the effects of different liquids on egg shell. Big Question: Is drinking coke really bad for my teeth?	Observation over time/ comparison experiment: Children will observe the effects of different drinks on egg shell and think about how this relates to our own teeth.	
	Lesson 3 The digestive system. Find out the names of different parts of the digestive system and label on a diagram. Big Question: Dr William Beaumont believes the digestive system has only one function. Prove or disprove his theory.	Scientific Knowledge – describe the simple functions of the basic parts of the digestive system in humans	
	Lesson 4 Make a model digestive system Big Question: Dr William Beaumont believes the digestive system has only one function. Prove or disprove his theory.	Scientific enquiry (identifying and classifying)- How does each part of the digestive system work? Can each part work by itself? Children will work in groups to make a working model of the digestive system and they will explain the function of the different parts.	
	Lesson 5/6 Find out what a food chain is, interpret and construct simple food chains. Big Question: Charles Elton Popularised food chains and introduced food webs. How is a food chain constructed?	Scientific knowledge- construct and interpret a variety of food chains identifying producers, predators and prey.	

In Year 5:

- Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.
- Know the differences between different life cycles.
- Know the process of reproduction in plants.
- Know the process of reproduction in animals. (N.B. sexual reproduction will notbe covered and will be completed in Year 6).

Year 5 – Animals Including Humans

National Curriculum Objectives/Knowledge Statements (Substantive):

- Describe the changes as humans develop to old age.
- Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird.
- Know the differences between different life cycles.

Pupils should draw a timeline to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.

Pupils could work scientifically by researching the gestation periods of other animals and comparing them with humans; by finding out and recording the length and mass of a baby as it grows.

Key Ideas

a) Different animals mature at different rates and live to different ages.

Note: Often combined with the sex education programme but this will NOT be completed in Year 5 at CTK

Prior Learning	Breakdown of Lessons		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?)**. Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
In Year 4: ● 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	Charles Darwin was a great British scientist who was famous for the theory of evolution – in animals, including humans. He would like to know if animals have different gestation periods – prove it.	Knowledge enquiry: select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (Pattern Seeking/Research)	Foetus, Embryo, Womb, Gestation, Baby, Toddler, Teenager, Elderly, Growth, Development, Puberty
	Karl Ernst von Baer was a great Estonian biologist (scientist who studies the natural world) who discovered embryos. Embryos are the very beginning of the human life cycle. He would like you to classify the rest of the human life cycle.	Knowledge enquiry: select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (Pattern Seeking/Research)	
	Anne McLaren was a famous British biologist (scientist who studies the natural world). Due to her discoveries, many more babies have been born! She doesn't think that boys and girls grow at the same rate – prove it.	Knowledge enquiry: select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (Pattern Seeking/Research)	
	Giorgio Bavestrello (an Italian zoologist (biologist who studies animals)) discovered an immortal jellyfish that doesn't age: Turritopsis Dohrnii. Do human bodies behave in the same way? Prove it!	Knowledge enquiry: select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information. (Pattern Seeking/Research)	

In Year 6:

- 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.

Year 6 – Animals Including Humans

National Curriculum Objectives/Knowledge Statements (Substantive):

- 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.
- **Know the process of reproduction in animals.**
  (N.B. sexual reproduction will not be covered and will be completed in Year 6 in RHE programme).

Pupils should build on their learning from years 3 and 4 about the main body parts and internal organs (skeletal, muscular and digestive system) to explore and answer questions that help them to understand how the circulatory system enables the body to function.
Pupils should learn how to keep their bodies healthy and how their bodies might be damaged – including how some drugs and other substances can be harmful to the human body. Pupils might work scientifically by: exploring the work of scientists and scientific research about the relationship between diet, exercise, drugs, lifestyle and health.

Key Ideas

a) The heart pumps blood around the body.
b) Oxygen is breathed into the lungs where it is absorbed by the blood.
c) Muscles need oxygen to release energy from food to do work. (Oxygen is taken into the blood in the lungs; the heart pumps the blood through blood vessels to the muscles; the muscles take oxygen and nutrients from the blood.)
d) Reproduction will be taught as part of Year 6 Ten:Ten programme and NOT in Year 5). Parental consent will be sort.

Prior Learning	Lesson Breakdown		Vocabulary
	Lesson and Big Question	Knowledge **(Progression of substantive knowledge – what?)**. Or Science Enquiry/Skill Based Lesson **(Disciplinary/National Curriculum Working Scientifically Statements – why/how?).** These inc: Fair Testing (Asking Scientific Questions, Planning and Enquiry, Observing closely, Drawing Conclusions, Making Predictions, Evaluating an Enquiry), Identifying & Classifying, Observation Over Time (Observing closely), Pattern Seeking/Research.	
In Year 5: • Know the life cycle of different living things, e.g. Mammal, amphibian, insect bird. • Know the differences between different life cycles. • Know the process of reproduction in plants. • Know the process of reproduction in animals.	Let's Recap: Recapping on previous systems studied before beginning on circulatory system. Required for lesson 5.	Recap on the previous systems studied – Identifying the skeletal, digestive, and muscular systems and their functions/purpose.	Oxygenated, Deoxygenated, Valve, Exercise, Respiration Circulatory system, heart, lungs, blood vessels, blood, artery, vein, pulmonary, alveoli, capillary, digestive, transport, gas exchange, villi, nutrients, water, oxygen, alcohol, drugs, tobacco.
	Big Question: William Harvey thought the blood was pumped around the body (systematic circulation) – prove he was right.	Knowledge – to know the different types of blood vessels which carry oxygen/deoxygenated blood in your body.)(arteries/capillaries/veins)	
	Let's Investigate: What makes up our blood and what job does each part do? Knowledge/Scientific Enquiry – Identify and Classify the different parts of the blood/What does each part do? Make their own blood by collecting the ingredients based on knowledge/explanation of what each part. →		
	Let's Investigate: Look at the pig's heart and compare it to the picture of a human heart. Label the left and right ventricle and atrium, the aorta and explain what their job is.	Science Enquiry – Identify and observe the structure of the pig's heart and compare to the human heart. Study at the pig's heart and see what parts can be seen on the surface and then side – can they identify the different parts using the diagram of the human heart? Explain how the blood flows between the heart and the lungs.	
	Let's Research: Identify which organs are in each system. Research the nutrients needed for the different systems (skeletal, muscular, circulatory and digestive) in the body and how the benefit that particular system.	Identify and Classify – The parts of the body/organs that belong in each system Research - Look at the diagram of each system, what nutrients are required for that system to function well. What foods can we find those nutrients in?	
	Let's Investigate: Plan a day's meals (breakfast, lunch and dinner) using the ASDA website and thinking about the Eatwell Plate. Remember to think about a balanced diet. Scientific Enquiry/Research – Demonstrate a balanced diet thinking about the nutrients required for the various systems studied to function well. Create three meals - →		

	breakfast, lunch and dinner.		
In KS3: **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335174/SECONDARY_national_curriculum_-_Science_220714.pdf**			