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|  | National curriculum | Lesson outline | Key questions | Key vocab | Factual knowledge | Scientific enquiry |
| ½  Animals including humans | • Describe the changes as humans develop to old age. • Working scientifically – Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | Lesson 1- Children learn that both the mass and length of a baby changes drastically within their first year after birth. Children work scientifically by reading and interpreting data about the length and mass of babies. They will also plot a line graph to show how the length of a baby changes in their first months after birth.  Lesson 2- Encourage children to collect simple data from different year groups. For example, they could measure the heights of children in Reception and compare this to the heights of children in Year 6 | • Around what age will most babies start to crawl? • Around what age will most babies start to walk? • Do all babies hit milestones at the same age? • How do babies communicate their needs? • Why does a baby depend on an adult? • When does a foetus become a baby? • How does the length of a baby change as age increases? • How does the mass of a baby change as age increases? | Milestone, baby, toddler, child, womb, | • Babies are dependent on adults for food, warmth and comfort.  • Most babies and toddlers hit certain milestones in their first two years of life, such as crawling and walking.  • Throughout childhood, children grow and develop at a rapid rate in terms of their mass, height and brain development. |  |
| 3  Parents can be informed about this lesson. | • Describe the changes as humans develop to old age. • Working scientifically – Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas (non-statutory). | In this step, children are introduced to the term “hormone” for the first time. At this stage, hormones are described as chemicals released by your body that cause both physical and emotional changes. Children should understand that puberty is controlled by hormones.  Lesson 1- Practical ideas • Provide cards with key changes that happen to both males and females during puberty. Children could sort the cards into a Venn diagram – changes that happen to females only, males only or both | • What is puberty? • On average, what age do girls start puberty? • On average, what age do boys start puberty? • Do girls and boys start puberty at the same time? • What key changes happen to girls during puberty? • What key changes happen to boys during puberty? • What key changes happen to both boys and girls during puberty? • Why is puberty important? • What are hormones? | Adolescent, period, reproduce, puberty, hormone | • Puberty is the process that prepares humans for reproduction.  • Hormones are chemicals that are released by your body during puberty which cause physical and emotional changes.  • Key changes that happen to females during puberty include the start of periods, growth of underarm and pubic hair, mood swings, spots and growth of breasts.  • Key changes that happen to males during puberty include growth of body hair, growth of the penis and testicles, spots, mood swings and deepening of the voice |  |
| 4/5 | • Describe the changes as humans develop to old age. • Working scientifically – Identifying scientific evidence that has been used to support or refute ideas or arguments | Children learn about physical changes that happen to the body over time including loss of skin elasticity causing wrinkles, a reduction in height and the weakening of bones. They learn that humans are categorised as elderly adults from the age of approximately 65 and around this time the body gradually starts to slow down and movement may become more restricted.  Lesson 1-  • Ask children to bring in photographs of their parents/carers and grandparents, with permission. In groups, children should look at the photographs and make a list of the key differences between adults and elderly adults and present this to the class.  Lesson 2-Children to investigate whether there are any links between age and height. | • What age is a human classed as an adult? • What age is a human classed as an elderly adult? • What physical changes occur in adulthood? • What physical changes occur in late adulthood? • In which life stage is a human most likely to reproduce?  • Why is an elderly person more likely to break bones?  • Do all humans have the same life expectancy?  • Why do wrinkles develop in adulthood?  • What advice would you give to an elderly person to help them stay healthy? | Adult, elderly adult, reproduce, life expectance | • A person is classed as an adult from age 18 onwards.  • A person is classed as an elderly adult from approximately 65  • When a person enters adulthood, their rate of growth slows down and their body is fully developed.  • The human body gradually changes with age. For example, skin loses elasticity, resulting in wrinkles, bones may become weaker, and height may decrease. |  |
| 6  Life cycles | • Describe the changes as humans develop to old age. • Working scientifically – recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | In this step, they compare the gestation periods of different mammals such as humans, elephants, domestic cats, domestic dogs, blue whales and wild rabbits. Encourage children to identify any patterns seen in the data, such as “the larger the mammal, the longer the gestation period”. Children begin a pattern seeking enquiry in this small step.  • Provide children with pictures of different mammals. Ask them to order the mammals by size. Give children information about the length of each mammal’s gestation period. Ask children to plot this information in a graph and see if they can identify any patterns between animals and their gestation periods | • What is a mammal? • Why are humans classed as mammals? • What is gestation? • What are offspring? • Approximately how long is the gestation period of a human? • Which mammal has the longest/shortest gestation period? • Can you identify any patterns when comparing the gestation periods of different mammals? | Womb, foetus, gestation, mammal, offspring | • Humans are mammals because they are warm-blooded, give birth to live young and feed their offspring on milk. • Gestation is the period of time that a foetus develops in its mother’s womb.  • Mammals have different gestation periods.  • The gestation period of a human is approximately nine months |  |
| 7/8 | • Describe the changes as humans develop to old age. • Working scientifically – Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. | In this small step, children work scientifically by reporting and presenting findings from their enquiry and forming a conclusion as to whether there is a relationship between the gestation period of an animal and its lifespan.  Lesson 1 Provide children with pictures of different animals and their gestation periods. Ask them to predict the lifespans of the animals using their gestation periods. Then they can put the animals in order from shortest to longest lifespan. Give children the correct lifespans of the animals and ask them to compare these with their answers  Lesson 2  Encourage children to use secondary sources to research the gestation period and lifespan of other mammals. | • What does lifespan mean?  • What is the gestation period of this animal? • What is the lifespan of this animal? • Is there a relationship between the gestation period of an animal and its lifespan? • What is an anomaly? • What conclusions can you draw from the data? | Gestation, lifespan, correlation | • The lifespan of an animal is how long the animal is alive.  • Usually, the longer the gestation period of an animal, the longer the lifespan.  • Humans have a relatively short gestation period compared to their lifespan. |  |
| 9 | • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Working scientifically − Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas’ (non-statutory). | In the previous block, children learnt about the life cycle of humans. In this block, they will build on this knowledge by exploring the life cycles of different animal groups, starting with mammals. Children have learnt that humans are classed as mammals and that mammals are warm-blooded vertebrates, have fur or hair on their bodies, give birth to live young and produce milk to feed their young. By the end of this small step, they will understand that a mammal has a similar life cycle to a human, which begins as a foetus in the mother’s womb. Children should explore the four main stages of the life cycle of a mammal – foetus, young, adolescent and adult. In this block, children complete a research enquiry. Encourage children to start thinking about the enquiry question by discussing similarities and differences between the life cycles of humans and other mammals. Highlight to children that some mammals, called “monotremes”, lay eggs instead of giving birth to live young.  Enquiry question • **How are the life cycles of animals similar and how are they different?**  • Give children cards with stages of the life cycles of different mammals. Children could work in groups to put the stages of the life cycles into the correct order. | • What are some key characteristics of mammals? • Why is a classed as a mammal? • What are the main stages of the life cycle of a mammal? • Why is a human classed as a mammal? • Which mammals do not give birth to live young? • In which stage of the life cycle do mammals reproduce? • How is the life cycle of a similar to/different from the human life cycle? | Offspring, mammary gland,, mammal, life cycle | • The life cycle of a mammal has four main stages: foetus, young, adolescent and adult.  • Most mammals give birth to live young.  • Most mammals have mammary glands that produce milk to feed their young.  • When mammals become adults, they are able to reproduce |  |
| 10 | • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Working scientifically − recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. | Children should explore the metamorphosis of a frog, looking at frogspawn, tadpoles, froglets and adult frogs. Continue to encourage children to think about the enquiry question by discussing similarities and differences between the life cycles of mammals and amphibians.  • In groups, give children pictures of different stages of the life cycle of a frog. They should order the pictures correctly and describe what happens at each stage. | • What are some key characteristics of amphibians? • What is metamorphosis? • What are the main stages of the life cycle of a frog? • What is frogspawn/a tadpole? • How is a froglet different from a frog? • In which stage of the life cycle do amphibians reproduce? • How is the life cycle of an amphibian similar to/different from the life cycle of a mammal? | Amphibian, frogspawn, tadpole, froglet, metamorphasis | • Amphibians are small vertebrates that need water or a moist environment to survive.  • The life cycle of a frog has four main stages: frogspawn, tadpole, froglet and adult frog.  • Tadpoles have gills to help them to breathe under water, a tail to help them to swim and a mouth to feed.  • Tadpoles take around 14 weeks to transform into frogs.  • An adult frog has no tail and is fully equipped to live both on land and in water |  |
| 11 | • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Working scientifically − Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs | Children should explore the complete metamorphosis of different insects, such as a butterfly, honeybee and ladybird. Mention to children that some insects only go through three life stages (egg, nymph and adult) and this is called “incomplete metamorphosis”. Continue to encourage children to think about the enquiry question by discussing similarities and differences between the life cycles of mammals, amphibians and insects.  • In groups, give children pictures of different stages of the life cycles of a butterfly, honeybee or ladybird. They put the pictures in the correct order and describe to the rest of the class what happens at each stage. | • What are some key characteristics of insects? • Why is this animal classed as an insect? • What is metamorphosis? • What is incomplete metamorphosis? • What are the main stages of the life cycle of an insect? • What is the life cycle of a butterfly/honeybee/ladybird? | Metamorphosis, larva, pupa, chrysalis, insects | Factual knowledge  • The lifespan of an animal is how long the animal is alive.  • Usually, the longer the gestation period of an animal, the longer the lifespan.  • Humans have a relatively short gestation period compared to their lifespan. |  |
| 12 | • Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. • Working scientifically − Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations. | . At the end of this small step, children should have all the necessary knowledge to be able to answer the enquiry question. They will work scientifically by identifying similarities and differences between the life cycles of mammals, amphibians, insects and birds  Explain to the children that we will be having duck eggs in the spring.  Discuss the lifecycle of a bird especially a duck or a chicken,  Discuss what you have learnt throughout the topic, children can now discus the enquiry question  How are the life cycles of animals similar and how are they different?  Use the information from this discussion to plan the consolidation lesson. | • What are some key characteristics of birds? • What is an egg/hatchling/nestling/fledgling? • What are the main stages of the life cycle of a bird? • How is the life cycle of a bird different from that of a mammal/ amphibian/insect? | Adult bird, fledgling, nestling, hatchling, birds egg | • Birds are vertebrates with wings, feathers and a beak.  • The life cycle of birds includes five stages: egg, hatchling, nestling, fledgling and adult bird.  • Birds reproduce by laying eggs.  • Eggs are incubated by parents until they hatch.  • An adult bird is able to reproduce and will have all its feathers |  |
| 13 |  | Consolidation lesson to address gaps that have been identified. |  |  |  |  |
| 14 |  | End of unit assessment, complete and send scored to ND for monitoring, |  |  |  |  |