



Science

Animals Including Humans

Meet Quizby!

Can you spot me in the
Lesson Presentation?

The questions that appear will help you to think about the key learning throughout the lesson.



Animal Offspring



Aim

- To match, sort and group young animals and their adults.

Success Criteria

- I can explain that different animals have different types of offspring.
- I can match a young animal to its adult and sort the animals into different groups.
- I can explain the similarities and differences between these groups.





Remember It

To start off this topic, let's find out what you can remember about animals. Try to answer each of these questions. Click on the **Check** button next to each question if you need a bit of help.

What are animals?

CHECK

Can you name any animal groups and think of some examples of animals in each one?

CHECK

Which animal group do humans belong to?
How do you know?

CHECK



Animals at Home



Now think about the animals that you or somebody you know have at home.

Which type of animal(s) do you or they have?

Is the animal a baby or is it older?

What did the animal look like when you or they first got them?

Have they changed? How?

Tell your friend all about this pet.






Animal Offspring

We are going to find out more about this section of your **Knowledge Organisers**. Click the magnifying glass to look closer.


Animals Including Humans Year 2

Key Vocabulary	
adult	A fully grown animal or plant.
develop	To grow bigger and become stronger.
life cycle	The changes living things go through to become an adult.
offspring	The child of an animal.
young	Offspring that has not reached adulthood.
live young	Offspring that has not hatched from an egg.

Some animals give birth to **live young**.

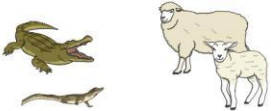


Some animals lay eggs which the **young** hatch from.




Both of these types of **young** then develop into **adults**.

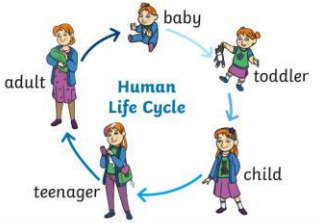
Some **offspring** look like their **adult** when they are born.



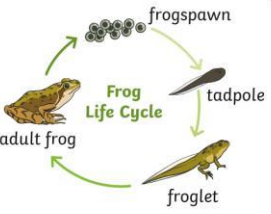
Some **offspring** do not look like their **adult** when they are born.



Human Life Cycle



Frog Life Cycle



All young animals change as they go through the different stages of their life cycle and grow into adults.





Animal Offspring

These are animal **offspring**.

Offspring are baby animals. Do you know what the adults of any of these animals are?

lamb

kitten

tadpoles

x


Do all animal offspring look like their adult when they are born?






Grouping Animals

Can we sort the adult and their offspring into the correct group?
Click on the cards to see the answers.

 Offspring that **do** look like their adult when they are born.

 Offspring that **do not** look like their adult when they are born.

Can we think of a different way we could sort these animals?



Grouping Animals



Where do you think these adults and their offspring should go?
Click on the cards to see the answers.

Bird	Reptile	Mammal	Amphibian	Fish

These birds, reptiles and mammals have offspring that look like their adult when they're born (they may be a different colour to their adult but they do look similar if you look closely), but these amphibians and fish don't.



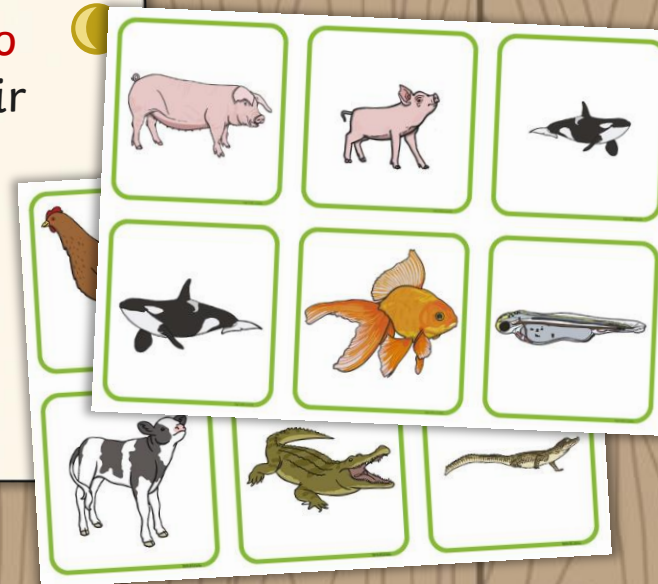


Sorting Animal Offspring

Use the **Animal Offspring Picture Cards** to first match the young with its adult. Then, sort these pairs into two groups:

☉ Offspring that **do** ☉
✓ look like their
adult when they
are born.

☉ Offspring that **do** ☉
✗ **not** look like their
adult when they
are born.



After you have sorted them this way, can you sort them further into their animal groups? Can you think of any other ways to sort them?



Do All Animal Offspring Look like Their Adult When They Are Born?

Let's try to answer this question.

What did you notice about the adults and their offspring in each animal group?

Some animals, such as most amphibians, look completely different to their adult when they are born and go through a big change to become an adult, called **metamorphosis**.



Grouping Animals – Be Careful!



Some animals do not seem to belong in their animal group at first.

Dolphins and whales live in water and have fins and a tail.

They breathe air through a **blowhole**. They have to come to the surface to do this.

They also give birth to live young instead of laying eggs.

So, dolphins and whales are actually **mammals**, not fish!



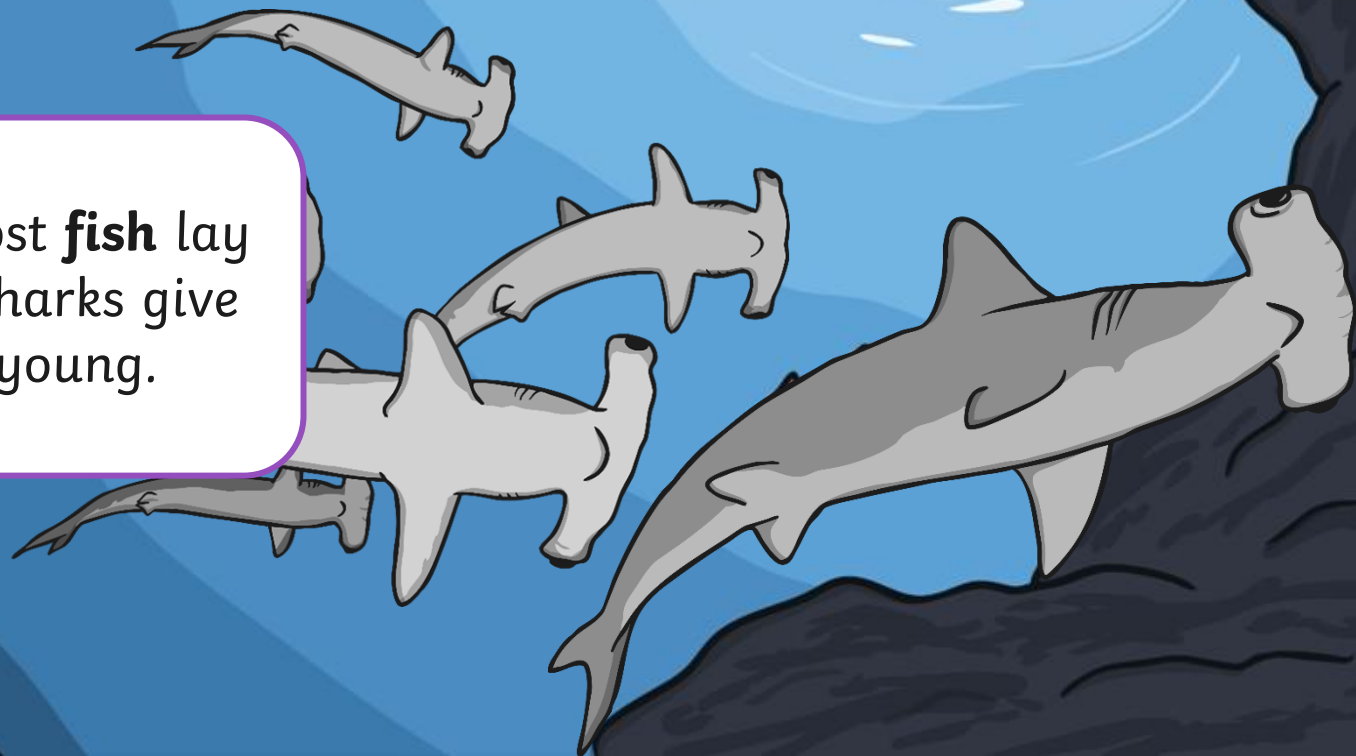
Grouping Animals – Be Careful!



Some animals do not seem to belong in their animal group at first.

All sharks belong to the **fish** group because they breathe through gills.

Although most **fish** lay eggs, some sharks give birth to live young.



Grouping Animals – Be Careful!



Some animals do not seem to belong in their animal group at first.

Echidnas and platypus are found in countries such as New Zealand and Australia.

They are **mammals** but they lay eggs rather than giving birth to live young.



Awesome Animals

What do all animals have in common?

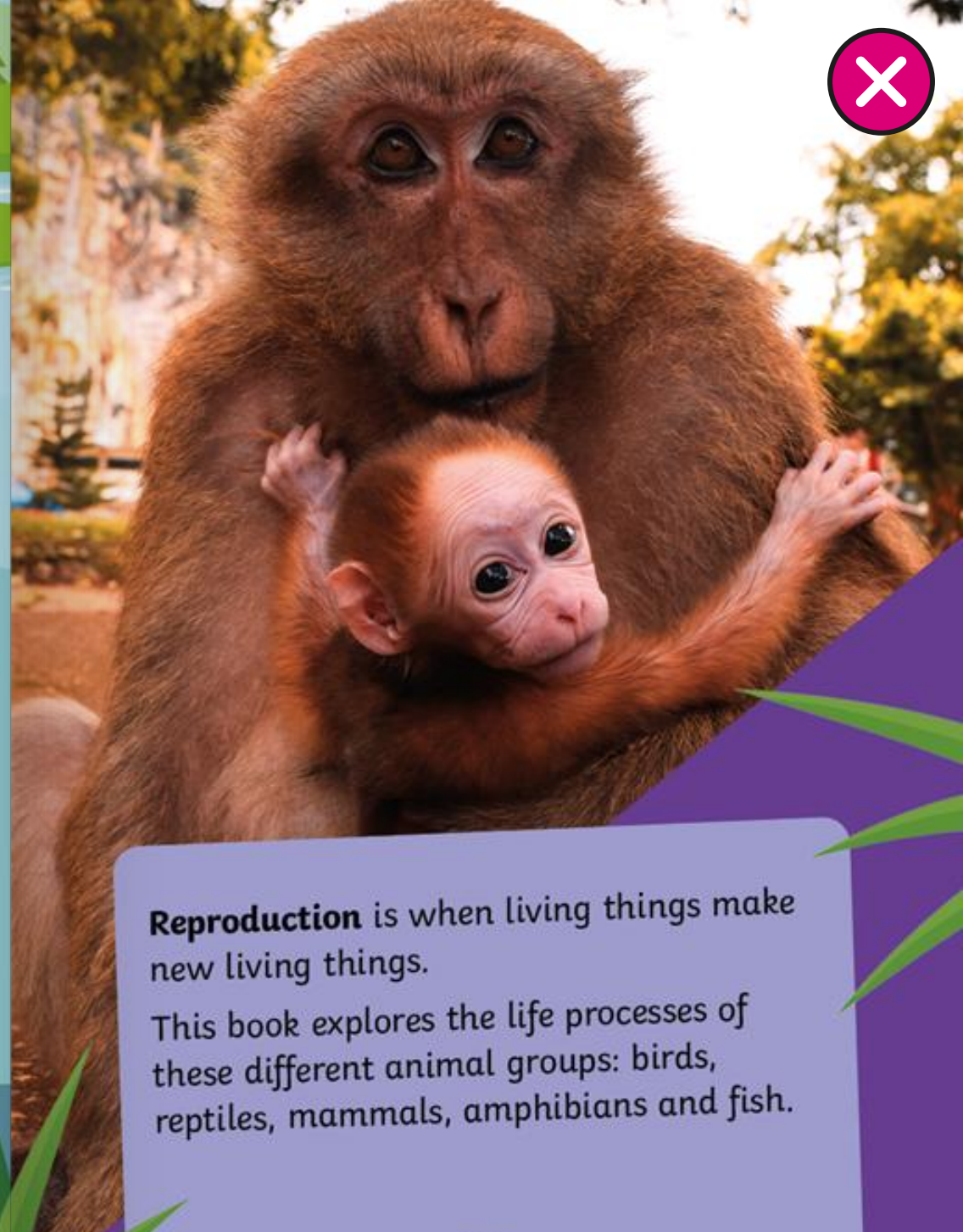
Animals, and all living things, do certain things to stay alive. These are called life processes.

Some examples of life processes include:

having
offspring

taking in
nutrients

growing



Reproduction is when living things make new living things.

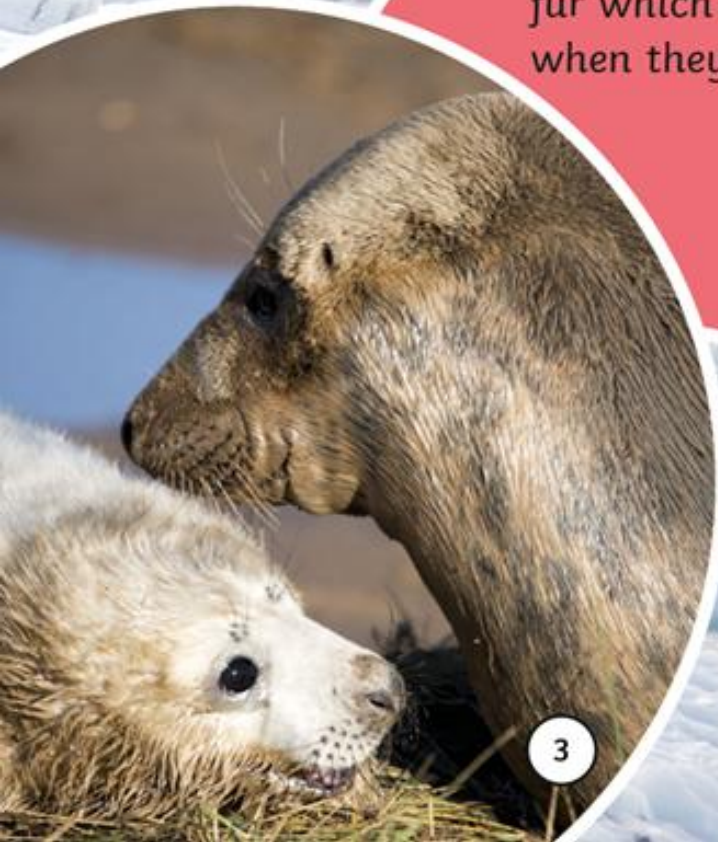
This book explores the life processes of these different animal groups: birds, reptiles, mammals, amphibians and fish.

Beautiful Babies

Do all animal offspring look like their adult when they are born?

Some **offspring** look like their parent when they are born, but some look very different.

Grey seals have a brown-grey coat of fur which is white when they are born.



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When tapirs are born, they have unusual markings which they lose as they grow up.



Live Young

Some animals give birth to **live young**. These babies are much smaller than the parent.

Although they may be a different colour, or have a different **body covering** when they are first born, often **live young** do look like the **adult** animal.



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Some animals lay eggs which hatch into **offspring**. Some of these babies look like their **adult** when they hatch but some look very different.



Tiny bog turtle **young** are only about 2.5cm long when they hatch from their eggs. **Adults** can grow to about 10cm long.



Swans are white but baby swans (cygnets) are a greyish colour when they are born.

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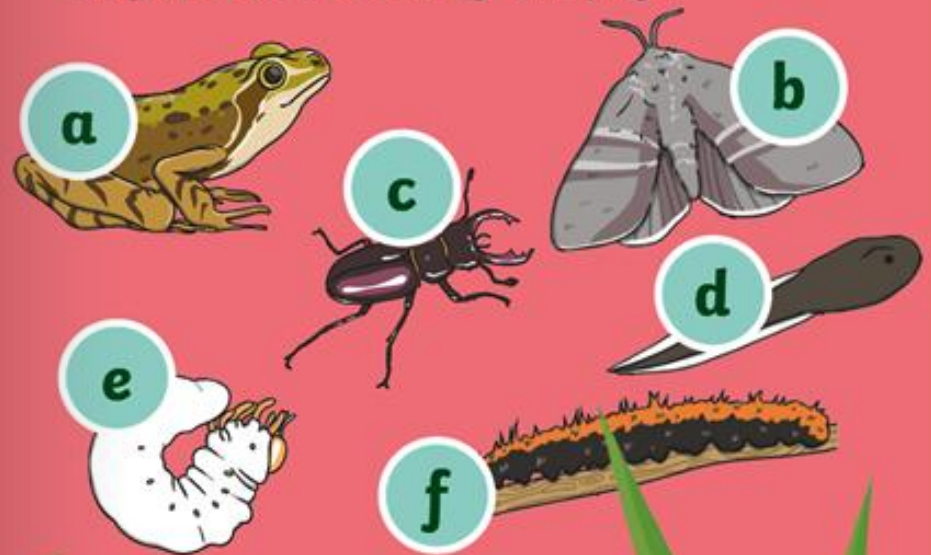
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Offspring That Do Not Look Like Their Adult

Some animals look totally different to their **adult** when they are born and must go through many big changes to finally look like the grown-up animal. This process is called **metamorphosis**.

Find out more about this in the section called 'Life Cycles'.

Here are the **adults** and **offspring** of a frog, a moth and a stag beetle. Can you match the **adults** to the correct **offspring**? The answers are found at the side of this page.



Answers: a and d - adult frog and tadpole; b and f - adult moth and moth larvae; c and e - adult stag beetle and stag beetle larvae.

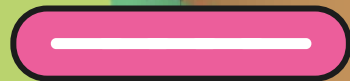
Excellent Egg Facts

The African driver ant can lay between three and four million eggs every 25 days! This little insect is thought to lay more eggs than any other animal in the world.



Research It!

Use the internet and non-fiction books to discover more excellent egg facts for yourself. Can you find out which animal lays the world's smallest egg or how many eggs a rattlesnake lays? What else can you discover?



Did you
know
?

The world's biggest egg was laid by an ostrich in Sweden in 2008. It weighed 2.5kg. This is the same weight as about 50 chicken eggs!

Aim



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Success Criteria

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Animals Including Humans Scientific Knowledge

Introduction

As part of the new framework, OFSTED inspectors will evaluate the extent to which “Teachers have a good knowledge of the subject(s) and courses they teach”. This guidance has been provided to help you develop a broader knowledge of the concepts in this area of science and not just of the content taught in year 2. This will help you to anticipate and answer questions the children may pose. Alongside this, we have also provided some examples of the possible misconceptions you may find the children have.

Lesson	Scientific Knowledge	Possible Child Misconceptions
Lesson 1 Animal Offspring	<p>Animals that are viviparous give birth to live young. This is very common in mammals but also in other groups.</p> <p>Oviparous animals produce eggs that develop and hatch outside of the body. Examples include birds.</p> <p>Ovoviviparous animals produce eggs that hatch within the body. Examples include some fish and certain reptiles.</p> <p>Patterns within groups:</p> <p>Birds All birds lay eggs.</p> <p>Amphibians Most amphibians lay eggs but there are a few that do not in this group. For example, many caecilians (a wormlike and limbless amphibian) give birth to live young.</p> <p>Mammals All mammals give birth to live young with the exception of monotremes (which includes the duck-billed platypus and echidnas) who lay eggs.</p> <p>Fish Most fish lay eggs but some do give birth to live young. For example, different species of shark can be oviparous, ovoviviparous or viviparous. The hammerhead example given in this lesson is viviparous.</p> <p>Reptiles Most reptiles lay eggs but some, such as some lizards and snakes, give birth to live young.</p>	<p>Animals quite often either do not seem to fit into their group or do not follow the patterns generally seen in their group. For example, dolphins and whales seem like fish but are actually mammals.</p> <p>Throughout the lessons and eBook these irregularities are addressed (look out for the ‘Be Careful!’ slides in some Lesson Presentations throughout the unit).</p> <p>Children should be encouraged to spot patterns within the different animal groups but should also be aware that biology doesn’t always follow these patterns and there are often exceptions.</p> <p>In this lesson, children sort animals into those offspring that do look like their adult when they are born and those that do not. Children may have the misconception that because an animal’s young is a different colour or size, they do look different to their adult. However, when looking closely they should see that they do look similar to the adult. The aim of this activity is to identify the young that look drastically different to their adults (such as tadpoles) and to form the basis for understanding processes such as metamorphosis.</p>

Lesson 2 Life Cycles

This lesson examines how animal offspring grow into adults through the use of life cycle diagrams.

Metamorphosis describes the process in which there are major changes in the form or structure between the young and adult forms of an animal.

Metamorphosis is commonly found in the insect and amphibian groups but is also seen in some fish. Common examples of animals that undergo metamorphosis include frogs and butterflies.

We tend to call the pupa of a butterfly a 'chrysalis'.

See below (lesson 3) for further information about the human life cycle.

Children may assume that there is a sudden leap between each of the stages given in a life cycle diagram and nothing in between. Using the example of our own human life cycle is a good way to show how there are still changes in between each stage given.

Children can access the lesson content without using the term 'metamorphosis' (although this is used in the content and may be appropriate depending on your class) but should instead identify that some animals (such as frogs) have big changes across their life cycles.

The term 'cocoon' is often misused but may be one children have heard. It tends to be used when talking about the life cycle of moths. A cocoon is a silky protective covering that forms around the pupa of certain insects such as moths.

Lesson 3

Growing Up

The stages in the human life cycle used in this lesson match those suggested in the non-statutory notes and guidance of the science national curriculum: baby, toddler, child, teenager and adult.

Pupils return to the human life cycle in year 5 where they will describe more stages and learn about adolescence and puberty.

Human growth can be separated into the following stages (some content here would not be appropriate for year 2 but is provided for your scientific knowledge):

- **Fertilisation:** The male and female sex cells fuse together.
- **Prenatal:** The cells develop and grow into a foetus inside the mother's uterus. After around nine months, the baby is born.
- **Infancy:** Rapid growth and development. Children may learn to walk and talk.
- **Childhood:** Children learn new skills and become more independent.
- **Adolescence:** The body starts to change over a few years. The changes occur to enable reproduction during adulthood.
- **Early adulthood:** The human body is at its peak of fitness and strength.
- **Middle adulthood:** Ability to reproduce decreases. There may be hair loss or hair may turn grey.
- **Late adulthood:** Leading a healthy lifestyle can help to slow down the decline in fitness and health which occurs during this stage.

This lesson focuses on different activities that humans can do at different stages in their life cycles. As people are all different and may do these activities at different times or not do them at all (including things like walking and talking), this lesson has been worded carefully to acknowledge this. This can also be addressed through further discussions with children. For example, some may think that everyone goes to university after school and it is important to discuss the fact that although many people do, there are also lots of other career paths and life choices that can be made at this stage.

Children may bring up elements of puberty in discussions (perhaps voice changes or changes in skin). However, puberty isn't referenced in the science curriculum until year 5 and the lesson does not cover this topic. Any comments regarding puberty from children should be handled in line with your school's policies on this topic.

Lesson 4

Survival

All animals need oxygen (although the term 'oxygen' is used in this unit, it is not essential for covering the curriculum aims). Animals use this oxygen in their cells for a process called respiration (specifically aerobic respiration).

Respiration is a chemical reaction that provides energy for an organism. In aerobic respiration, energy is released from glucose (which comes from food) by reacting with oxygen.

Note that breathing and respiration are not the same thing. Breathing is generally described as the process of getting air in and out of the lungs. However, different animals have different ways of breathing that may not involve lungs. Fish have gills to remove oxygen from the water. The amphibian group can use multiple different ways of breathing including gills, lungs and breathing through their skin.

Water, food and air are essential for us to stay alive but through discussion children should also be made aware of other things that we do need beyond these three absolute essentials (for example, education, appropriate shelter and exercise).

A misconception about fish not needing air and water is addressed in the [Lesson Presentation](#).

Lesson 5 Exercise

Information in this lesson is matched to NHS guidance on physical activity.

The NHS recommends that children and young people aged 5-18 should aim to do an average of at least 60 minutes of moderate intensity physical activity a day across the week.

Please see the NHS website for more detailed guidance on exercise requirements for children and young people aged 5-18 years, including the different types it should include.

See the [Awesome Offspring to Healthy Adults eBook](#) for detail on what happens to our bodies when we exercise.

Children may think that exercise (or physical activity) only involves team sports (like football) or organised activities (like PE lessons) but actually the NHS also recommends everyday activities such as walking to school and skipping with a rope.

Lesson 6 Healthy Living


Information in this lesson matches the government and NHS Eatwell Guide guidance. Please see the NHS and government Eatwell Guide webpages for more detailed information on this.

Nutrients are substances that living things need to stay alive and healthy. Children learn more about specific nutrients in our year 3 'Animals Including Humans' unit. Briefly, each group does the following:

- **Carbohydrates:** provide energy
- **Protein:** helps growth and repair
- **Fibre:** helps us digest the food that we have eaten
- **Fats:** provide energy
- **Vitamins and minerals:** keep us healthy (for example: help us grow, keep our bones strong, boost the immune system)
- **Water:** moves nutrients around our bodies and helps us to get rid of waste.









Food can be a sensitive issue and the lessons and eBook are worded carefully to reflect this. Adapt discussions as needed for your specific class and see the Eatwell Guide information for more detail on the current government/NHS guidance.






Animals Including Humans: Animal Offspring

Aim Notice that animals, including humans, have offspring which grow into adults. Identifying and classifying. To match, sort and group young animals and their adults.		It is estimated that this lesson will take approximately one and a half hours.	
Success Criteria I can explain that different animals have different types of offspring. I can match a young animal to its adult and sort the animals into different groups. I can explain the similarities and differences between these groups.			
Standard School Equipment Glue sticks Scissors Sticky notes		Preparation Animal Offspring Picture Cards - cut up, per small group Look Like Adult - Do Not Look Like Adult Labels' - cut up, per small group Animal Offspring Word Mat - * only, as required Animal Group Word Cards - cut up, as required for ** and *** Animal Offspring Challenge - ** and ***, per child Reasoning Cards: Animal Offspring - as required Optional resources: Knowledge Organiser - per child Sorting Animals Question Prompts - *** only, as required What Are... Animal Group Display Posters - to be added to a display/working wall - as required	
Key Vocabulary Adult, develop, young, offspring, live young, hatchling, hatch, larvae, eggs, carnivore, herbivore, omnivore, mammal, reptile, amphibian, fish, bird.			

Prior Learning: In year 1, children will have learnt to identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. They will have identified common features in those groups.

Learning Sequence

	Remember It: Using the questions on the Lesson Presentation, recap the different animal groups studied in year 1. You may wish to also use the What Are... Animal Group Display Posters.	
	Animals at Home: Children use the questions on the Lesson Presentation to discuss the animals (pets) they or someone they know have at home. Then, take feedback from the whole class and focus on how the pet changed/did not change as it grew up. Can children identify how familiar animals change as those animals grow up?	
	Animal Offspring: Introduce the Knowledge Organiser and the sections to be used during the lesson. Use it alongside the Lesson Presentation to help children discuss their initial ideas for the question 'Do all animal offspring look like their adult when they are born?'. Highlight the meaning of 'live young' to address any misconceptions. Can children explain that different animals have different types of offspring using key scientific vocabulary?	
	Grouping Animals: Children match the adult to the young and then sort into the two groups given on the Lesson Presentation. Prompt children to discuss how animals look when they are born and how they change. Discuss errors and reinforce that a young animal that is a different colour or size to the adult when it is born (e.g. a cygnet and a swan), would still be put it in the 'look like their adult' section. Then, discuss other ways in which the animals can be sorted, for example into different animal groups. Encourage children to pick out similarities and differences about the offspring types within these groups. Can children match a young animal to its adult and explain why they decided this? Can children group the animals and explain why they have classified them in this way?	

	<p>Sorting Animal Offspring: All groups: In small groups, children match the adult animal to its young using the Animal Offspring Picture Cards and sort into two groups – ‘offspring looks like its adult’ or ‘offspring does not look like its adult’, using the Look Like Adult - Do Not Look Like Adult Labels.</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="245 219 592 495"> <p> After sorting, explain to a friend or an adult how some of these animals have their young. Use the Animal Offspring Word Mat to scaffold their answers. Encourage children to use the correct language.</p> </div> <div data-bbox="627 219 973 528"> <p> Challenge children to sort the pairs of animals further according to their animal group. Children use the Animal Group Word Cards to label each group. They can then individually complete the Animal Offspring Challenge.</p> </div> <div data-bbox="1008 219 1366 947"> <p> Sort the pairs of animals further according to their animal group. Children use the Animal Group Word Cards to label each group.</p> <p>Can children then discuss their own criteria for sorting animals? They can use sticky notes to write their own labels and then sort the animal cards differently. You may wish to use the Sorting Animals Question Prompts to help children to generate new criteria for sorting.</p> <p>Children can then individually complete the Animal Offspring Challenge.</p> </div> </div>	<p>40 mins Approx.</p>
	<p>Do All Animal Offspring Look like Their Adult When They Are Born? Use the questions on the Lesson Presentation to gather children’s findings from the sorting activity and ultimately answer this question. Use the sections titled ‘Be Careful!’ to discuss times when animals do not seem to fit with their animal group. The relevant pages of the Awesome Offspring to Healthy Adults eBook are included at the end of the presentation to consolidate and extend learning.</p> <p>Can children identify and explain similarities and differences between the offspring within an animal group?</p>	<p>10 mins Approx.</p>

Explore it

Research it: Use the **Awesome Offspring to Healthy Adults eBook** and suitable secondary resources to research eggs from different creatures. Children could find out which animal lays the largest egg and which animal lays the most eggs.

Reason it

Children discuss **Reasoning Cards: Animal Offspring**. Children apply their knowledge of animal offspring to help them group animals.

Assessment

Science Content	
<p>Working Towards the Expected Level</p> <p>Children can identify and match some animal offspring and their adult forms. With support, they can describe how the adults have their young.</p>	<p>Children:</p>
<p>Working At the Expected Level</p> <p>Children can identify and match several animal offspring and their adult forms. They can describe the main characteristics of the offspring found in different animal groups.</p>	<p>Children:</p>
<p>Working At Greater Depth</p> <p>Children can identify and match a wide range of animal offspring and their adult forms. They can describe, in detail, the key characteristics of the offspring found in different animal groups.</p>	<p>Children:</p>

Working Scientifically	
Working Towards the Expected Level	Children:
Children can sort and classify objects (animals) into simple groups with support. With guidance, they start to use scientific language to talk about their findings.	
Working At the Expected Level	Children:
Children can sort and classify objects (animals) into simple groups. They use scientific language to talk about their findings. They start, with support, to notice patterns and relationships between the groups.	
Working At Greater Depth	Children:
Children can sort and classify objects (animals) into simple groups. They confidently use scientific language to talk about their findings. They can independently notice patterns and relationships between the groups.	

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				Delivered By:			Support:		
Success Criteria	Me	Friend	Teacher	T	PPA	S	I	AL	GP
I can explain that different animals have different types of offspring.				Notes/Evidence					
I can match a young animal to its adult and sort the animals into different groups.									
I can explain the similarities and differences between these groups.									
Next Steps									
<ul style="list-style-type: none"> _____ _____ 									

T	Teacher	I	Independent
PPA	Planning, Preparation and Assessment	AL	Adult Led
S	Supply	GP	Guided Practice

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