

National Curriculum Science - Knowledge

- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

Non-statutory

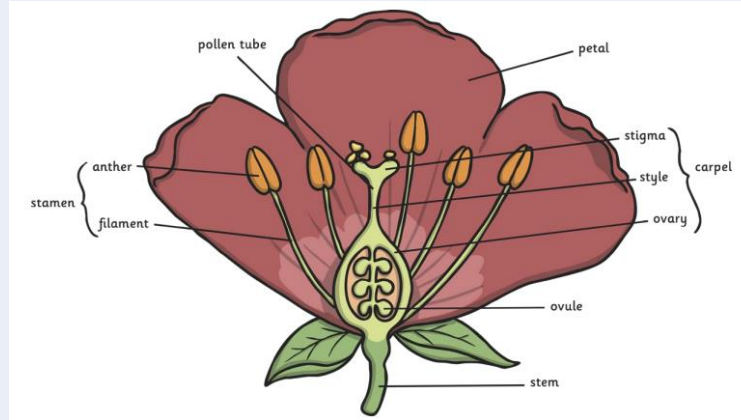
- Find out about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.

Key Learning

As part of their life cycle, plants and animals reproduce.

Plants will reproduce both sexually and asexually. Sexual reproduction occurs through pollination, usually involving wind or insects.

Gardeners may force plants to reproduce asexually by taking cuttings.



Bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent.



Potato plant tubers



Strawberry plants send out runners with small plantlets on.



Daffodil bulbs store energy underground



Spider plants send out branches with baby plantlets on.

Vocabulary

Species: a group of animals that can reproduce to produce fertile offspring.

Life cycle: a group

Reproduction: the process by which new living things are made.

Sexual reproduction: requires two parents to make an offspring which is similar but not identical to its parents.

Asexual reproduction: needs only one parent which creates an offspring that is an exact copy (a clone) of itself.

Clone: genetically identical.

Gamete: the sex cells of living things; can be male (e.g. sperm, pollen) or female (e.g. ovule, egg).

Fertilise: when a male gamete and a female gamete join.

Pollination: the transfer of pollen to a stigma, ovule, flower, or plant to allow fertilisation (e.g. by wind or insect).

Germination: when a plant emerges/grows from a seed or spore.

Offspring: the young of a living thing produced via reproduction; animal or plant.

Animalia classification: the grouping of animals into different categories based on their characteristics; includes mammals, amphibians, insects and birds amongst others.

Metamorphosis: a process by which animals undergo an abrupt and obvious change in the structure of their body and their behaviour; may be complete (total transformation) or incomplete (occurring in several stages, each bigger than the last).

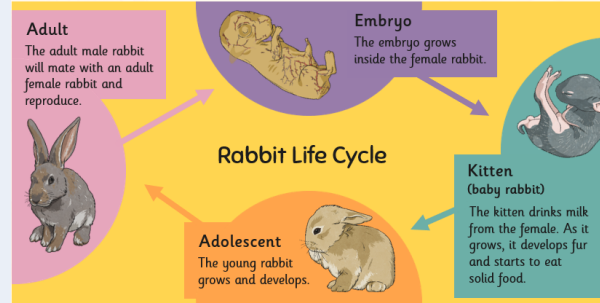
National Curriculum Science – working scientifically

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Use test results to make predictions to set up further comparative and fair tests.
- Report and present findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
- Identify scientific evidence that has been used to support or refute ideas or arguments.

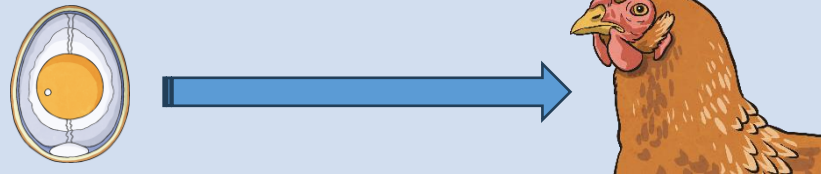
Key Learning continued...

Most animals reproduce sexually. This involves two parents where the gamete from the male (sperm) fertilises the female gamete (egg).

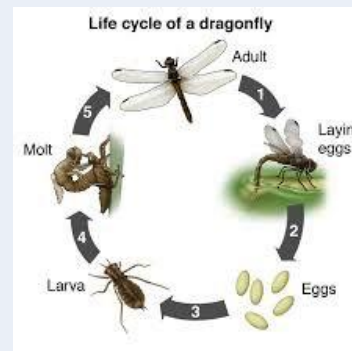
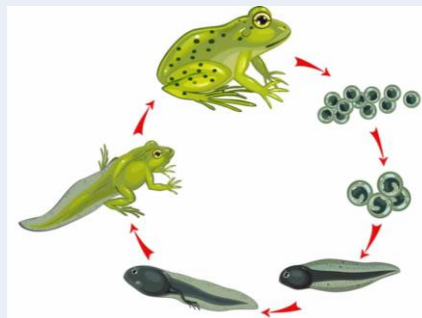
Animals, including humans, have offspring which grow into adults. In mammals, these offspring are (usually) born live and then grow into adults.



In other animals, such as birds or reptiles, eggs may be laid that hatch to young which then grow to adults.



After hatching from an egg, some young (including insects and amphibians) undergo a further change before becoming adults. This is called metamorphosis.



Scientific investigations

How do plants reproduce asexually?

- Work scientifically to follow instructions to take a suitable cutting from a plant.
- Record and present observations (over time) in table and annotate photographic data.
- Conclude on findings, explaining them using knowledge of living things and commenting on reliability of results.

Use a range of secondary sources to find out about the life cycle of mammals, insects, amphibians and birds. *[Observe the life cycle of a chicken when chicks are hatched in KS1 class.]*

Use a range of secondary sources to find out about pollination and label scientific diagrams of plants.

Key Learning: Know how living things reproduce, and describe and compare their life cycles.

- | | |
|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | How do plants reproduce sexually?
Explain the difference between sexual and asexual reproduction. Recap and identify the function of parts of a flower and describe ways that plants are pollinated in order to reproduce sexually. |
| 2 | How do plants reproduce asexually?
Identify the advantages and disadvantages of sexual and asexual reproduction in plants. Conduct a practical experiment to demonstrate different ways to make new plants (asexual reproduction) by taking cuttings. Make scientific observations and conclude on findings.
<i>[Check progress of plant cutting and make scientific observations about growth and progress throughout unit.]</i> |
| 3 | What is the lifecycle of a mammal?
Describe the process of reproduction in mammals and compare the life cycles of different mammals (e.g. a monotreme, a marsupial and a placental) giving similarities and differences. |
| 4 | How do the lifecycles of insects and amphibians compare?
Explain complete and incomplete metamorphosis and give examples. Describe the life cycles of amphibians (e.g. frog and newt) and insects (e.g. butterfly and dragonfly), giving similarities and differences between the two. |
| 5 | How do the lifecycles of different organisms (animals and plants) compare?
Working in teams, write, direct and produce a 'Wildlife Video' to compare the life cycles of plants, mammals, amphibians, insects and birds, explaining their similarities and differences. |

