

# Reproduction

National curriculum Objectives:

- describe the life process of reproduction in some plants and animals

# Science in the news today

FISH THAT MATE OUT OF THE WATER!

Mudskippers are a type of fish that live on the mudflats of Kuwait. When it's time for them to breed they do so in a burrow. The burrow they build is half filled with water, half with air and the female lays her eggs out of the water, on the ceiling. The male then fertilizes them and looks after the eggs for the next few days. To maintain the oxygen the eggs need, the male constantly swims out, gulps air, brings it back, and breaths out, over and over again. In fact, a male might take 100 mouthfuls to create the air bubble! At exactly the right moment, the tide comes in, water pours in, and this triggers the larvae to hatch. They swim up from the burrow and away.

How do we know all this? Well, it is all thanks to an endoscope (a tube only a few millimeters thick which lights up and has a camera on it) and a team at Japan's Nagasaki University, who have pieced together a vision of how mudskippers reproduce.

# Here are pictures of mudskippers



These are mudskippers, the only fish that mate out of the water, in mud burrows, where they adjust water levels to help their eggs hatch.



When it's time for the mudskippers to breed, the males try to attract females by flaring their impressive fins and leaping dramatically into the air to catch the attention of potential mates.

# Reproduction

All living things need to make copies of themselves or they wouldn't exist anymore. Reproduction is the process of making offspring. All living things need to reproduce to survive. Plants animals and bacteria, will all reproduce to make more of themselves. There are two forms of reproduction: asexual and sexual.



# Asexual reproduction

In **asexual reproduction**, a living thing can reproduce without the involvement of another organism. This can be thought of as 'cloning' because the offspring that is produced is identical to the parent that made it.

This type of reproduction occurs in some plants (more on this later!) and some very simple organisms, like bacteria.



A plant cutting that is growing into a new plant, genetically identical to the plant it was cut from.



A single cell dividing in two via asexual reproduction.

# Asexual reproduction

Again, this can be thought of like cloning. When you take a cutting from a plant and place it in soil or water to grow roots, this is asexual reproduction. The plant that forms is genetically identical to the original plant.



Plants like strawberries reproduce asexually. 'Runners' grow from the main stem of the parent plant, and grow roots in nearby soil, producing a new, genetically identical plant.

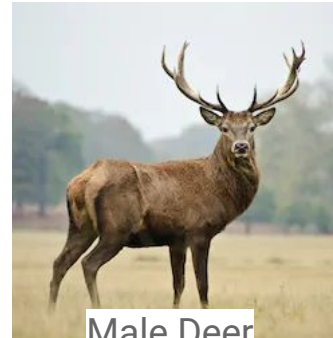
# Sexual reproduction

Sexual reproduction is the process of producing offspring from two opposite sexes, male and female.

The male fertilises the female and the female grows the new offspring.

The offspring that is produced is then a mixture of both parents, and is therefore **not** genetically identical to either parent.

This type of reproduction occurs for animals, including humans, and some plants.

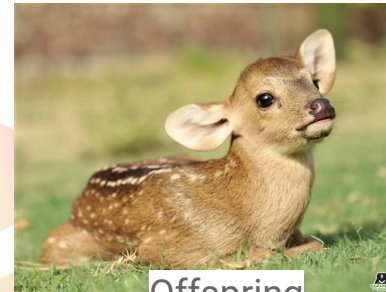


Male Deer

+



Female Deer



Offspring

# Sexual reproduction in animals



A lizard protects eggs containing her offspring

Baby fish growing inside eggs



A pregnant cat



Different animals produce new offspring in different ways, after the male part of one animal has fertilised the female part of another:

In mammals (including humans), babies grow inside the female bodies until they have developed enough to be born and survive in the world. There are tiny kittens inside the pregnant cat (in the photo on the left).

For reptiles, insects, amphibians and birds, the female lays eggs. Some of these eggs are fertilised before they have been laid, and some after.



# Sexual reproduction in plants

Each plant contains both male and female parts.

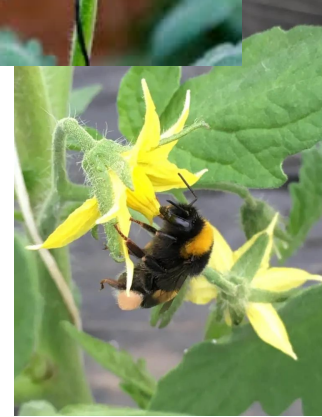
1. All flowering plants sexually reproduce. The female and male parts of the plant are inside the flower. The male part produces pollen.
2. Pollen is transferred from the male part of one plant, to the female part of another by insects and bees, this is called pollination.
3. Once pollination has happened, the plant is fertilised and produces a seed.
4. The seed is scattered around by animals and the wind, and grows into new plants.



1. A tomato plant flower



2. A bee pollinating the flower



3. Tomatoes are grown which contain seeds for new plants!

# Onion asexual reproduction!

What do you need?

- A small pot or jar
- An onion, spring onion or leek
- Compost or soil

Instructions:

1. First, fill a small pot with compost
  2. Next, ask an adult to cut the roots off an onion, spring onion or leek (see photo below, left).
  3. After that, gently place your onion roots, with the roots facing down, into your pot of moist soil (see photo, right).
  4. Then, place your pot on a windowsill that gets some sun.
  5. Finally, keep an eye on your onion. It should start sprouting in the first couple of days!
- Top tip - don't buy spring onions from the supermarket again! Simply use the green part, keep the roots and keep regrowing - for free!



# Avocado sexual reproduction!

## What do you need?

- A small pot or jar
- An avocado
- Cocktail sticks

## Instructions:

1. After you have eaten the avocado, remove the stone inside - this is the avocado seed!
2. Next, make sure the seed is facing upright - the smaller side up.
3. After that, gently place the cocktail stick close to the top of the seed, so that they will balance the seed on top of your jar.
4. Then, place your avocado seed in the jar, so the sticks are holding it off the bottom, and fill the jar with water so the bottom of the seed is underwater and the top is in the air.
5. Now, just wait, keeping an eye on your seed each day. After a couple of weeks a crack will appear on top of the stone. Then, roots will grow, and finally a stem will shoot out of it! If you planted this outside and kept waiting you would have your very own avocado tree! This will produce flowers that need pollinating as avocado plants sexually reproduce.



It's a good idea to try more than one seed at a time, to be sure one of them grows!

**This lesson has been about the science of reproduction. Of course, when it comes to families, humans are very varied!**

