

Year 5
(Entry into Year 6)
10 Hour Revision Course
Biology



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Biology

4 Hours

Life Cycle of Mammals and Birds (0.5 hour):

Mammals

Characteristics

- They have hair or fur
- They give birth to live young
- They feed their young using milk
- They have a backbone or spine
- They are warm-blooded

Life Cycle

1. Embryo – This is the stage before birth, when the baby is developing in the mother
2. Child/Young – This is the stage after birth where the mammal is growing from a baby into an adult. During this stage they learn all the skills they will need to stay alive
3. Adult – This takes up most of the life cycle of mammals, they have learnt the skills they need to survive and now have to reproduce to get their own children

Birds

Characteristics

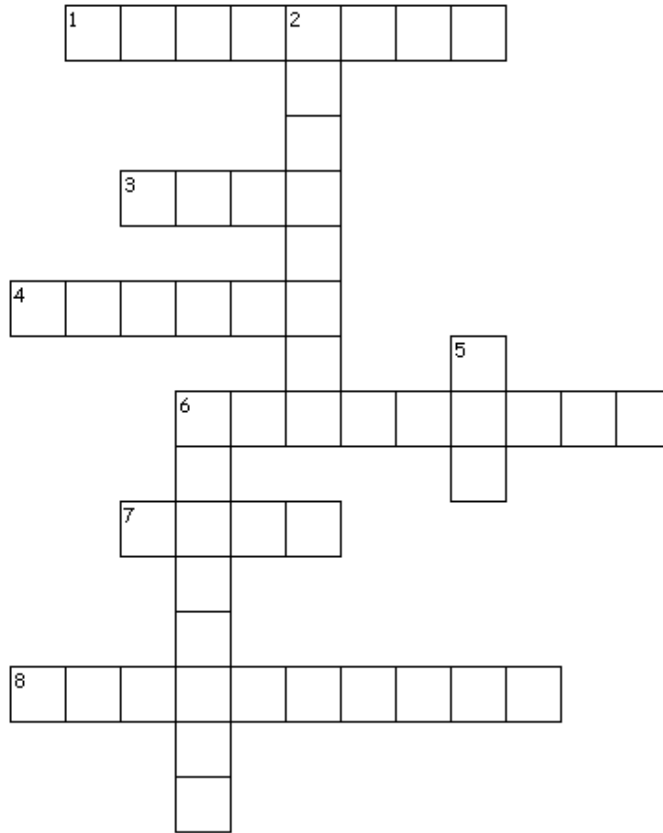
- They have feathers
- They lay eggs with hard, waterproof shells.
- The parents look after and keep the eggs warm (incubate) until the chick hatches
- They have a backbone or spine
- They are warm blooded
- Most of them can fly



Life Cycle

1. Egg – The bird develops in an egg outside of the mother's body, this egg is looked after by the parents in the nest
2. Nestling – After the bird hatches it needs to be fed and looked after until it grows
3. Fledgling – Once the bird has grown to the right size then it starts to learn how to fly
4. Adult – The bird is fully grown, can fly and look after itself

Questions



| Across | Down |
|--|--|
| 1. Keeping eggs warm (8) | 2. Birds and mammals are both vertebrates, |
| 3. How mammals feed their young (4) | which means they have a ... (8) |
| 4. First stage in a mammal's life cycle (6) | 5. Something most birds can do, but most |
| 6. Third stage of the life cycle of a bird (9) | mammals can't (3) |
| 7. Birds and mammals both have ... blood (4) | 6. Mammals have fur, birds have ... (9) |
| 8. Bird shells are hard and ... (10) | |

2) Name 3 kinds of mammals and 3 kinds of birds

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3) Describe the differences between the life cycle of a bird and a mammal

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Life Cycle of Amphibians and Insects (0.5 hour):

Amphibians

Characteristics

- Vertebrates (which means they have a backbone or spine)
- Cold-blooded, they depend on warmth from sunlight to become warm and active. If they get too hot, they have to find shade or a burrow to help them cool down.
- Breathe through their skin.
- Go through metamorphosis. Young amphibians hatch from eggs, but do not look like their parents. As they develop, their body shape changes.



Life Cycle

There are 4 stages to the life cycle of an amphibian

1. Egg – These are fertilised in the water
2. Larva – The larvae hatch out of the eggs and start to grow in the water (eg Tadpoles)
3. Metamorphosis – The larvae grow over time becoming more and more like the fully formed adult
4. Adult – The adult is fully grown and able to reproduce

Insects

Characteristics

- Invertebrates, they do not have a backbone or internal skeleton. They have a hard exoskeleton on the outside of the body instead
- Have a body divided into three parts: the head, the thorax (the middle section), and the abdomen.
- Have two antennae and six legs
- Hatch from eggs

Life Cycle

1. Eggs – these are fertilised and laid by the female
2. Larva – These are the first stage after hatching from the egg (eg Caterpillar)
3. Pupa – The stage where the larvae grow into the adult (eg Caterpillar turning into a butterfly)
4. Adult – The adult is fully grown and able to reproduce

Questions

1) What are the differences between amphibians and reptiles?

2) Is a maggot an insect or an amphibian? And what stage of the life cycle is it?

3) Name 3 kinds of insects and 3 kinds of amphibians

4) Describe life cycles of insects and amphibians and explain the differences

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Life Cycle of Plants (0.5 hour):

Plants are generally split up into 2 groups: Flowering and Non-flowering

They both have slightly different life cycles

Flowering Plants

Life Cycle

- They grow from **seeds** that are underground
- First the **roots** grow out of the bottom
- Then the **stem** emerges out of the ground (the buds, leaves and flowers grow out of this)
- The plant **continues** to grow taller, as more **leaves, buds and flowers** open and grow
- The **fully grown** plant then sets about producing seeds to grow more plants

How seeds are produced

- **Pollen** is carried between plants by **insects** or **the wind**
- The pollen then travels to the ovary of the new plant via its **carpel** where it **fertilises** egg cells (ovules) to make seeds: **Fertilisation**.
- The seeds are scattered by animals or the wind: **Dispersal**

Non Flowering Plants

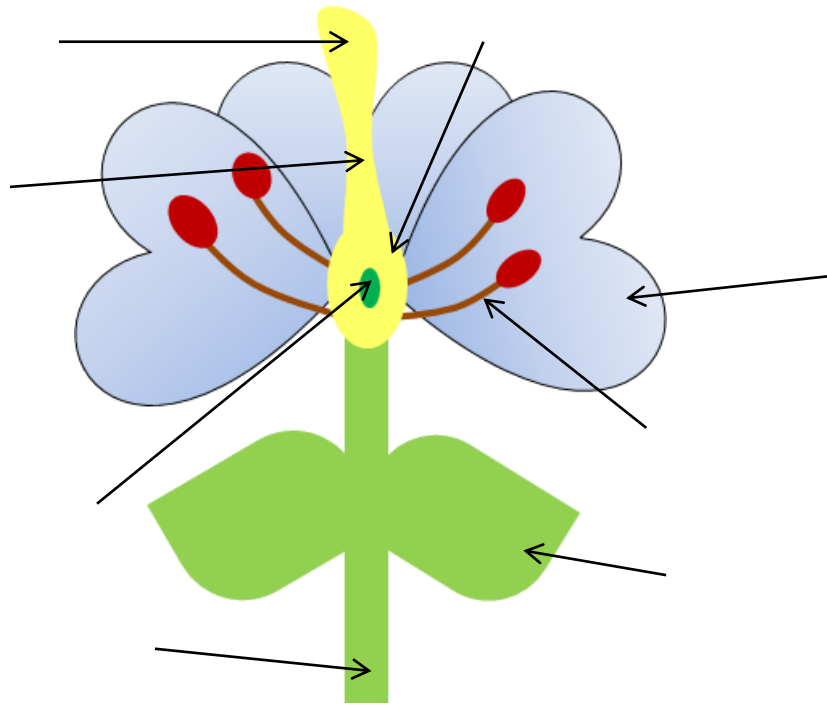
Life Cycle

Similar to flowering plants, except they reproduce using **spores**, not seeds. These are usually dispersed by the **wind**.



Questions

1) Label the plant using the words in the box



Stamen

Stigma

Style

Ovary

Leaf

Petal

Ovule

Stem

2) Is the plant in the picture a flowering or non-flowering plant?

3) What is the name for the part of the plant that contains the stigma, style and ovary?

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4) Explain what the roots, leaves and stem of a plant are used for

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Reproduction in Plants 1 (0.5 hour)

Reproduction

Reproduction is how **organisms** produce new **offspring** (ie babies and children)

Plants use 2 forms of reproduction

Sexual and Asexual

Sexual Reproduction

Sexual Reproduction involves the plant **sex cells** (pollen and ovule) combining to produce a seed.

This is usually between **2 different** plants, but some can also **self-pollinate**.

There are 4 stages to sexual reproduction in plants.

1. Pollination – this is where the **pollen** from one plant lands on another, after being carried there by **insects** or the **wind**
2. Fertilisation – this takes place after pollination, when the **pollen** and **ovule** combine to make a seed
3. Seed Dispersal – the **fruit** grows around the **seed**, its job is to carry the seed as far away as possible.
 - a. Animals can either eat the fruit and pass the seed out later (eg Apples) or the fruit gets hooked on the fur of a passing animal (eg Burdock)
 - b. The wind can also be used to make the seed travel large distances (eg Sycamore Trees)
 - c. Another method is used by beans and pea plants, the pod splits open and shoots out the beans (seeds)
4. Germination – This is where the seed starts to **grow**, producing roots and a shoot. It needs very specific conditions for this to happen: **Warmth, Water and Oxygen**. The **germination period** is the time between planting and germination – the better the conditions the quicker it will be

Questions

- 1) Give one example of an insect that plants use to carry pollen

- 2) Plants need to spread their seeds as far away as possible to avoid competition, give 3 examples of what they might be competing for

- 3) You place 3 identical seeds in pots and put each in a different location (one on a warm, brightly lit windowsill; one in a closed refrigerator; and one in a warm, dark cupboard)

- a. Describe the differences between the environment each seed is in (remember to look at the conditions needed to germinate)

- b. Predict in which order they will germinate

Experiment

Take 3 seeds (broad beans should work) and put them on some wet cotton wool and put them in the locations described in question 3. Water them a little every day and see if your prediction was correct.

Does it make a difference whether or not the seed is exposed to light?

Reproduction in Plants 2 (0.5 hour)

Asexual Reproduction

Plants are also capable of reproducing **asexually** (without flowers or fertilisation)

This means that there are no **sex cells** involved

The plant reproduces by making **exact copies** of itself (basically cloning)

There are several methods plants use to reproduce asexually:

Runners (e.g., Strawberries, Spider Plants)

Tubers (e.g., Potatoes)

Spores (e.g., certain types of Fungus)

Uses

Humans often use asexual reproduction in plants to their own advantage

Gardeners and Farmers use **cuttings** to grow identical copies of plants

Cuttings are bits of the plant that are removed and planted themselves

Advantages of Asexual Reproduction

Only **one parent plant** is required

Young plants are **identical** to the parent, so that good features will always be passed on

Advantages of Sexual Reproduction

Characteristics are inherited from **both parents** - this produces **variation**

So there is good chance of at least a few surviving diseases, changes of climate, etc.

Questions

1) Rearrange the letters to make words that relate to asexual reproduction

a) NERNRU

b) TINTGUTC

c) OLNEC

d) RETUB

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2) Some plants can reproduce both Sexually and Asexually, give an example

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3) Why do Gardeners use tubers and cuttings to grow plants in their gardens?

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4) Why might a plant want to be able to switch between sexual and asexual reproduction?

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5) Can other organisms reproduce asexually? If so, give an example

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Animal Reproduction (0.5 hour)

The vast majority of animals only reproduce sexually

Sexual Reproduction

Sexual reproduction in animals requires male (**sperm**) and female (**egg**) sex cells to combine (**fertilisation**)

How this happens depends on the type of animal

Mammals

The sperm fertilises the egg **inside** the female (also known as conception)

The fertilised egg stays in the female's **womb**, and starts to grow into an **embryo**

After a period of time (**gestation period**) the baby is born

There are some exceptions to this that lay eggs (Duck Billed Platypus and Echinda)

Birds and Reptiles

The sperm fertilises the egg **inside** the female

The female then **lays the egg** (or eggs depending on the species)

The eggs are looked after by the parents until they hatch

Some reptiles do give birth to live young

Fish and Amphibians

The female lays **hundreds/thousands** of eggs

The male fertilises them **in the water**

The eggs hatch and the fish/amphibians swim away



Questions

1) Where do the Duck Billed Platypus and Echidna come from?

2) Put these steps in order and say which type of animal(s) they are talking about

a.

Female gives birth to live young

Embryo starts to grow

Sperm fertilizes the egg

b.

Sperm fertilizes the egg

The egg hatches

Female lays egg

Parents look after the egg

3) Why do fish and amphibians have to lay so many more eggs than reptiles and birds?

Humans and Ageing (0.5 hour)

There are 6 stages to the human life cycle

Embryo

Humans are conceived in the same way as the majority of mammals (see previous page)

The **average gestation period** is **9 months** (36 weeks)

Baby (0-2)

After 9 months developing in the womb, a baby is born

Babies need to be **looked after** by their parents, otherwise they **won't survive** on their own

Childhood (2-12)

During childhood humans **grow rapidly**

They still need to be looked after but start to **develop skills** that will allow them to survive on their own

Adolescence (12-18)

The body **continues to grow** and goes through **puberty**

Around this age humans start to become **sexually mature** (they could have babies of their own)

However they may not yet have developed the life skills that will allow them to look after themselves

Adulthood (18-70)

This is the **main phase** of any animal's life (including humans)

We should be capable of looking after ourselves by this point

Adults are ready to have **children of their own**

Old Age (70+)

Our bodies start to **deteriorate** after a lifetime of hard work

We look forward to some well-deserved rest and relaxation (and playing with grandchildren!)

Questions

1) Find the 6 stages of life in the wordsearch

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|---|---|---|---|---|---|---|---|---|---|---|
| A | L | E | C | K | A | G | G | F | A | T |
| O | D | S | H | Q | E | J | O | D | P | R |
| J | B | O | I | S | X | G | U | F | M | Z |
| S | F | F | L | Q | L | L | A | K | Y | Y |
| F | A | J | D | E | T | E | M | D | S | C |
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2) Some mammals become sexually mature after only 1-2 years, why do you think humans take so much longer?

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3) Describe the differences between a baby, a child and an old person

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Puberty and Gestation Periods (0.5 hour)

Puberty

Puberty is the general name for the **changes** that take place at the end of childhood and the beginning of adolescence

It is **not exclusive** to humans, but human puberty is what we are most interested in

The main result of puberty is **sexual maturity**

It also involves **general body development** in both males and females, leading to extra hair growth, deeper voices, and more adult like features

Puberty turns **boys into men** and **girls into women**

Gestation Periods

As mentioned before, the gestation period is the **amount of time an embryo is developing** inside a mammal before it is born

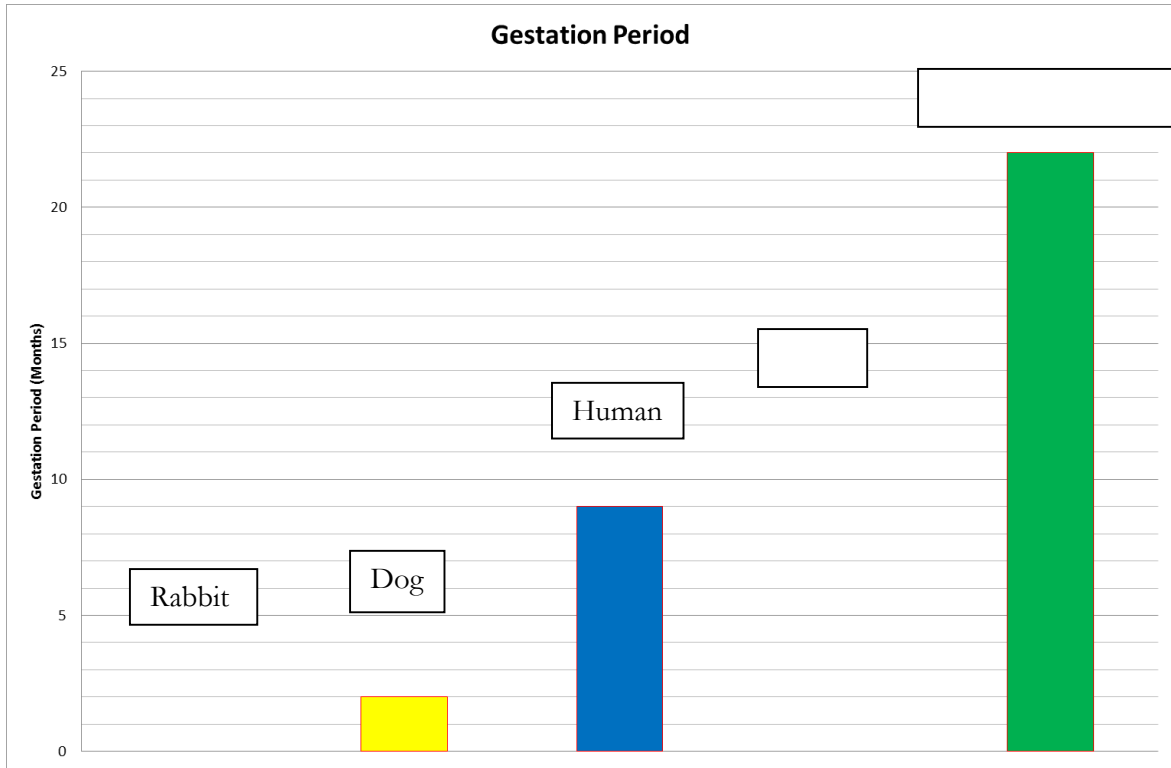
Every individual is **different**, but each species will have an average length of time that gestation takes

These can be wildly different, even between similar species

| Species | Gestation Period (Months) |
|----------|---------------------------|
| Rabbit | 1 |
| Dog | 2 |
| Human | 9 |
| Cow | 10 |
| Elephant | 22 |

Questions

1) Label the chart with the right animals and fill in the missing columns



2) What happens to the gestation period as animals as they get bigger? Why?

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3) Why do humans (and other animals) have to grow before they reach sexual maturity?

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