

Chapter 6

Reproduction and Heredity in Animals

She is a new born baby!
How does a baby grow
in a mother's body.



We learnt about the
life cycle of animals.



6.1

Reproduction and Heredity

All animals have life cycles. Different animals have different life cycles, they all are born, grow and die. All living things produce young ones similar to themselves. This process is called **reproduction**.

How do animals reproduce?

Lesson 1 Reproduction in Fish

Fish are animals. They have their own life cycles which begin with eggs.



How does the life of a fish begin with eggs?



Activity : The growth of fish in an egg

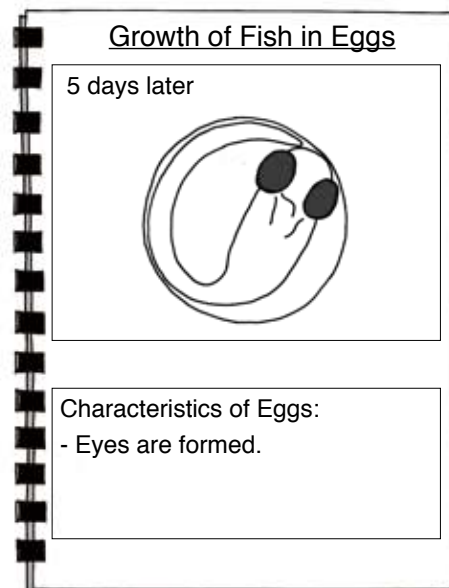
What to Do:

1. Study the pictures on the next page. The pictures show the growth process of a fish in an egg.
2. Observe the inside of the egg in the pictures carefully. Sketch the inside of the egg and write the characteristics in each stage.
3. Based on your observations, summarise the changes in the growth of fish in an egg.
4. Share your ideas with your classmates.
Discuss how a fish grows in an egg.

Can you guess how a fish grows in an egg?



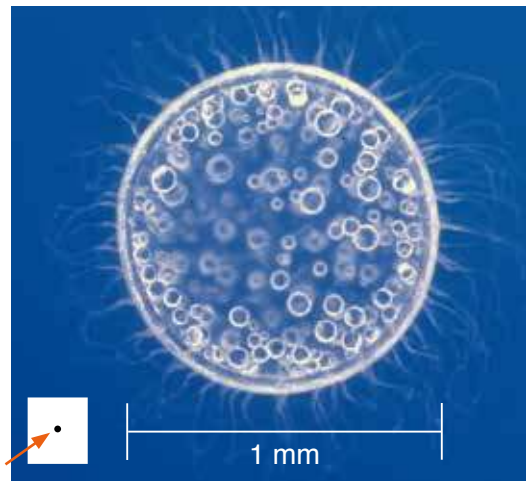
Does an egg also become bigger as the fish grows?



Summary

The life of a fish starts when a sperm meets with an egg and joins with it. This process is called **fertilisation**. The **egg** is made inside a female's body and the **sperm** is made inside a male's body.

After fertilisation, a fish grows in a fertilised egg. The inside of the egg changes its appearance day by day and becomes more like a fish. Young fish hatches from the egg about two weeks after fertilisation.

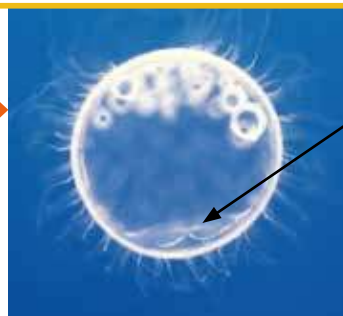


A fertilised fish egg

Shortly after fertilisation



A few hours after fertilisation



A swelled part

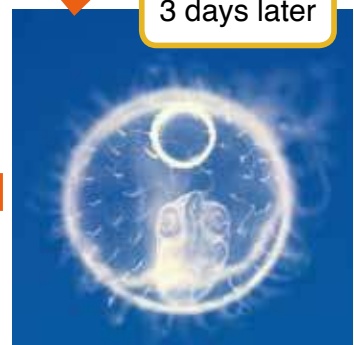
A swelled part is formed.

2 days later



A shape of body is formed.

3 days later



The fish body parts are formed.

5 days later



Eyes

Shape of body becomes more like an adult fish. Eyes are observed clearly.

9 days later



Heart

Fish sometimes start to move. The heart is pulsing.

10 - 12 days after fertilisation



Young fish hatch from the egg.

Stages of fish egg development

Lesson 2

Human Reproductive System

Humans use their eyes to see. They breathe air using their nose, but which body parts do humans use to reproduce?



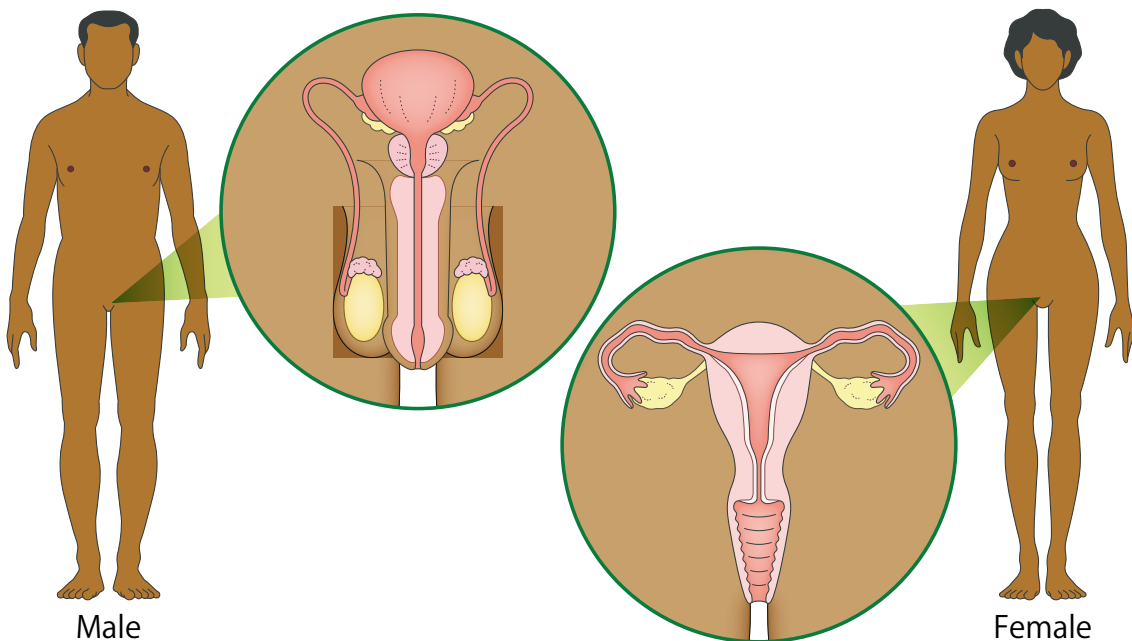
Which body parts are used for human reproduction?



Activity : Comparing reproductive body parts

What to Do:

1. Study the pictures below. These pictures show the reproductive body parts of a male and a female.
2. Observe the pictures carefully and think about the following questions.
 - (1) Name the male and female reproductive parts.
 - (2) How are the reproductive parts of a male and a female different?
 - (3) Can you guess in which body part is an egg and sperm produced?
3. Share your ideas with your classmates. Discuss which body parts humans use to reproduce.

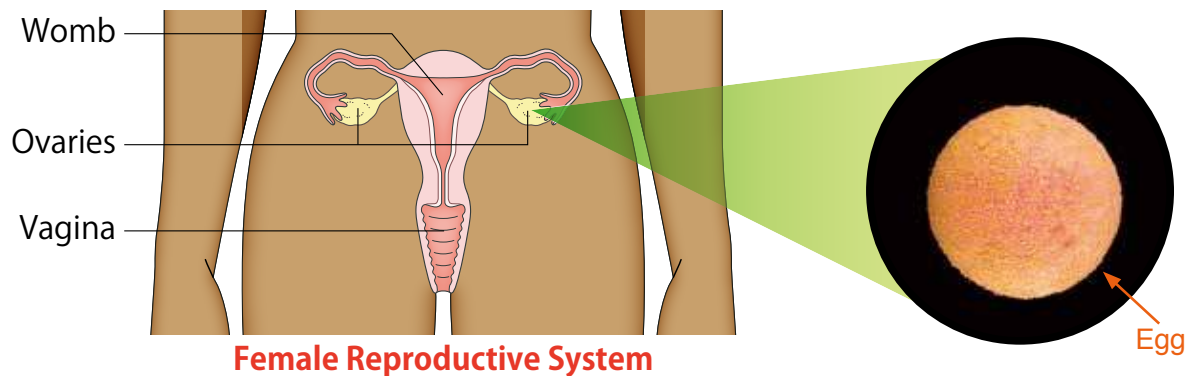


Summary

The **reproductive system** is the group of the body parts that work together for the purpose of reproduction. Males and females have different reproductive systems.

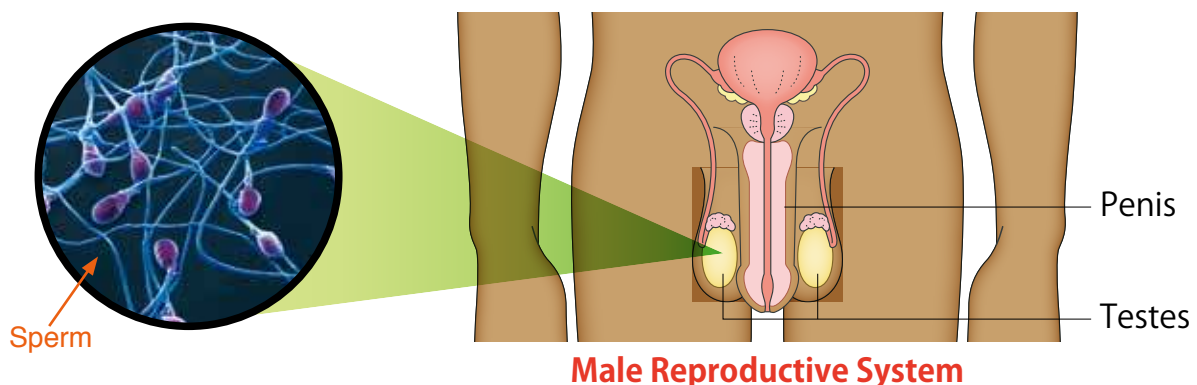
1. Female Reproductive System

The female reproductive system is made up of the ovaries, womb and vagina. The **ovary** is a body part that contains thousands of eggs. Two ovaries are located inside the female body. The **womb** is the place where a baby grows until its birth. The **vagina** is a muscular tube that connects the womb to the outside of the body. It is the opening at the end of the path that the baby takes to leave a female body during birth.



2. Male Reproductive System

The male reproductive system includes the testes and penis. The testes and penis are located outside of the body. The **testes** produce millions of sperms. There are two testes that are contained in a bag of skin. The **penis** is a body part that passes semen out of the man's body. **Semen** is a mixture of sperm and fluids.



Lesson 3

Reproduction in Human

Life cycle of fish begins when fertilisation occurs. How about humans? Is human reproduction similar to or different from fish? How do humans begin their life cycle?



How does human life begin?

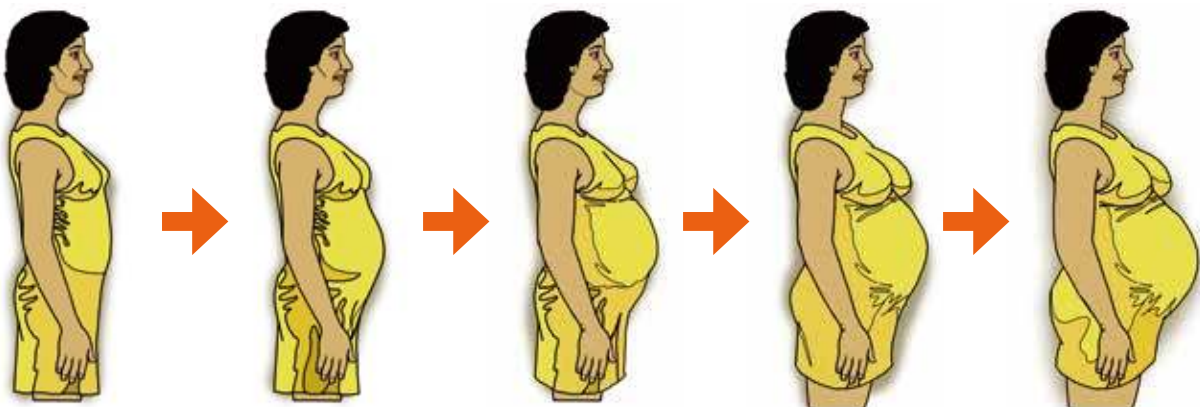


Activity : Growing baby in a mother's body

What to Do:

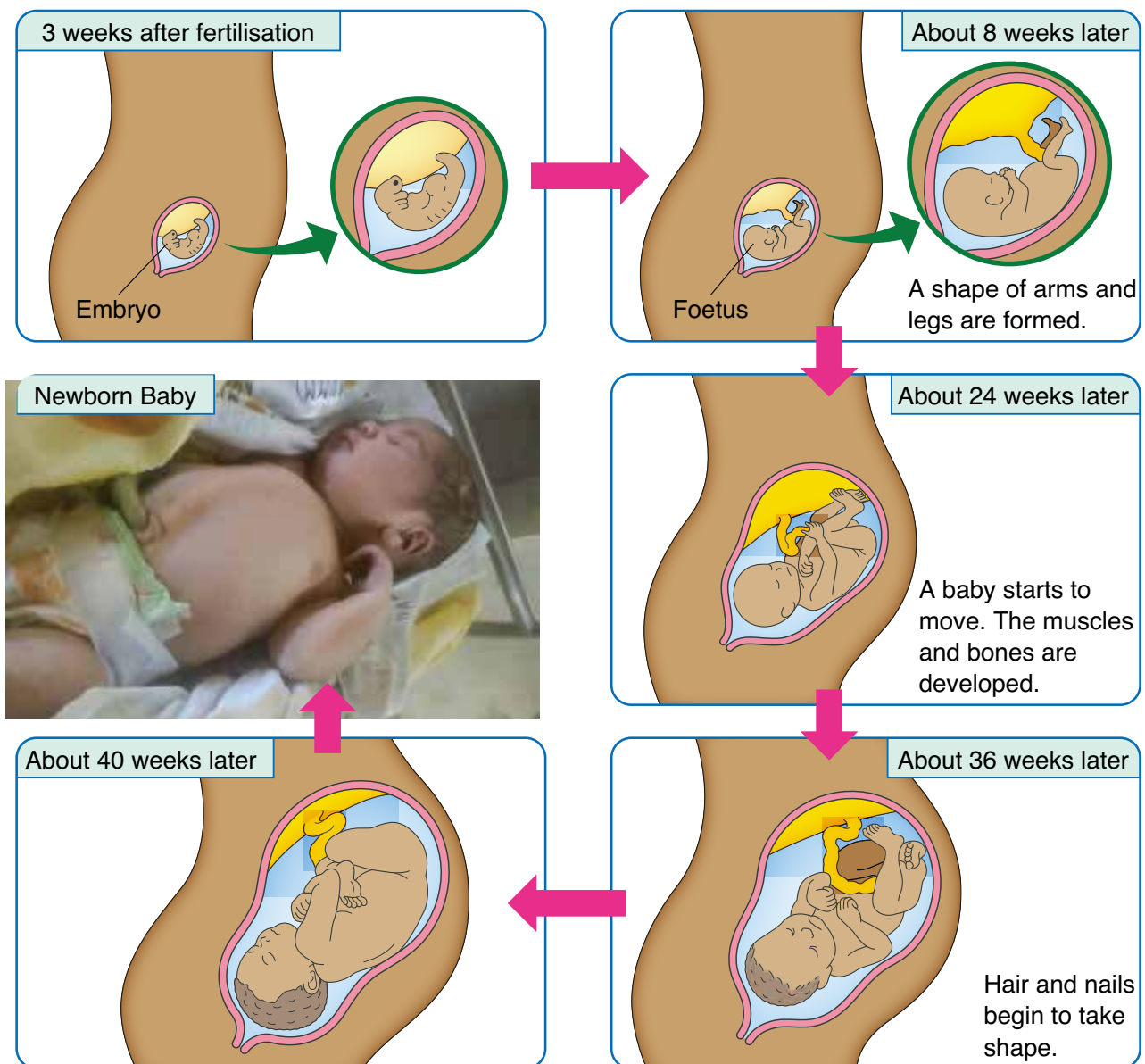
1. Study the pictures on the next page. The pictures show the stages of baby growth in the mother's womb.
2. Observe the pictures carefully and think about the following questions.
 - (1) How does a baby change its size and shape?
 - (2) How long does a baby grow in the mother's womb?
 - (3) How similar or different is reproduction between humans and fish?
3. Share your ideas with your classmates. Discuss how human life begins and how a baby grows.

The mother's abdomen gets bigger and bigger. Can you guess how a baby grows in the mother's womb?



Summary

When a sperm meets with an egg, the egg becomes a fertilised egg. Human life begins with a fertilised egg. In humans, fertilisation takes place inside the body of the female, unlike fish. The fertilised egg develops and grows in the mother's **womb** (uterus) and becomes an **embryo**. The embryo gradually turns into the shape of a human being eight weeks after fertilisation. This is called the **foetus**. As the foetus grows into a baby, organs such as the spine and heart, hair and nails begin to take shape. After about thirty-seven to forty weeks in the mother's womb, the baby is born.



Growth of a baby in a mother's womb

Lesson 4

From Parents to Young

Most animals look like their parents. Humans also look like their parents.



Why do young animals look like their parents?

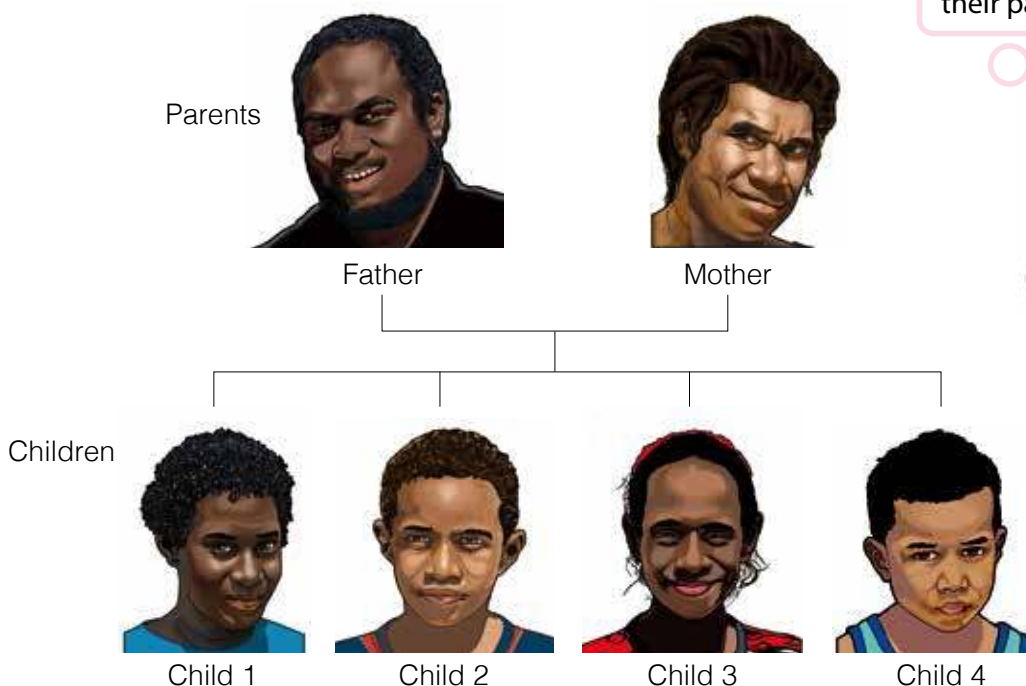


Activity : Similarities and Differences

What to Do:

1. Study the picture below. The picture shows the members of a family.
2. Observe the picture and think about the following questions.
 - (1) Which children have curly hair? From which parent did the children inherit curly hair?
 - (2) Which children inherit skin colour from their father?
 - (3) Which children inherit the dimple from their mother?
3. Share your ideas with your classmates. Discuss what features or characteristics children inherit from parents and why they look similar to their parents.

Which body parts of children are similar to or different from their parents?



Summary

Young animals look like their parents because parents pass traits to their children when they reproduce. This process is called **heredity**. A **trait** is a feature or characteristic of a living thing. The eye colour, hair colour, blood type and the shape of the nose and ears are examples of the traits of humans that are inherited by the children from their parents. Traits of animals include the colour of fur and the shape of their ears or beaks.

Examples of Human Traits



Curly hair



Straight hair



Dimples



No Dimples



Cross right thumb over left



Cross left thumb over right



Widow's peak hairline



Straight hairline



Can roll tongue



Cannot roll tongue



Detached earlobe



Attached earlobe

Young animals inherit many traits from both parents. For example, a child with curly hair has a parent or parents with curly hair. A child may have long nose if their father or mother has long nose. A kitten with striped pattern of fur usually has a parent with striped fur. If puppies have floppy ears, their parents may also have floppy ears.



A puppy and its parent have floppy ears.



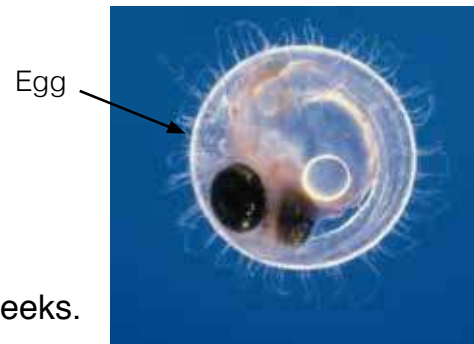
Children have traits similar to their mother or father.

Reproduction

- ☒ Reproduction is the process by which living things produce young ones similar to themselves.
- ☒ Fertilisation is the process by which joins a sperm with an egg.
- ☒ An egg is produced inside a female's body and the sperm is produced inside the male's body.

Reproduction in Fish

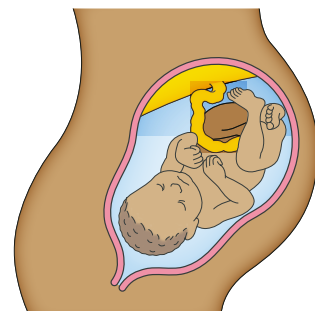
- ☒ After fertilisation, fish grows in the fertilised egg.
- ☒ The inside of the egg becomes more like a fish.
- ☒ Young fish hatch from the egg after about a few weeks.



Shape of body becomes more like adult fish in the egg.

Reproduction in Humans

- ☒ Sexual reproduction takes place in humans between a male and a female.
- ☒ Male reproductive organs are the testes and penis.
- ☒ Female reproductive organs are the ovaries, womb and vagina.
- ☒ A fertilised egg develops and grows in the mother's womb and becomes an embryo.
- ☒ The embryo turns into the shape of the human body eight weeks after fertilisation and becomes a foetus.
- ☒ A foetus grows into a baby and after about thirty-seven to forty weeks the baby is born.



The fertilised egg develops and grows in the mother's womb and becomes a foetus.

From Parents to Young

- ☒ Heredity is the process of parents passing traits to their children.
- ☒ A trait is a feature or characteristic of a living thing.
- ☒ Some examples of human traits are; eye colour, hair colour, blood type, the shape of the nose and ears.
- ☒ Young animals also inherit many traits from both parents.

Q1. Complete each sentence with the correct word.

- (1) The process that all living things produce young ones similar to themselves is called _____.
- (2) The process of sperm joining with the eggs is _____.
- (3) In human, a fertilised egg develops in the mother's _____.
- (4) The passing of traits from parents to young is called _____.

Q2. Choose the letter with the correct answer.

- (1) The picture shows a stage in the reproduction of a fish, where the egg starts to swell up. When does the swelling part of the egg form?

- A. Before the egg is about to hatch.
- B. After the egg is already fertilised.
- C. Before the egg is ready to be fertilised.
- D. When the egg is in the male fish body.



- (2) In the life cycle of a fish, where does fertilisation take place?

- A. In the female fish body.
- B. In the male fish body.
- C. Outside in the water.
- D. On the land.

Q3. Answer the following questions.

- (1) What makes children look like their parents?
- (2) Write any two examples of human traits.

Q4. In humans, how does fertilisation occur?

How do Birds of Paradise reproduce

It is believed that Birds of Paradise are independent birds and some species defend territories. Female birds of paradise reach sexual maturity at around one year old and males at around two to three years old. Females enter the males' territories when they are interested to breed and choose the most suitable mate. After the female chooses her mate, she will lay between one depending on the species she admires.

Males build large, elaborate displays for females, perform acrobatic dances or sing long and complicated songs. The males take part in various dance rituals where they will display their additional coloured feathers. They may do this type of dance for many hours before they give up if a female isn't responsive to them. If a female does respond they will mate and then the male quickly runs off. He will try to find several other females he can mate with before the season ends.

Once mating has occurred the female will lay 2-3 eggs. They are small and brownish orange in colour. She will do her best to hide them from predators. She will only fly away from them when she has to get food. They will hatch after about 20 days of development.

Most eggs will hatch within two to four weeks. The newly hatched chicks develop quickly and will begin to learn to fly at around one month old.



6. Reproduction and Heredity in Animals

Q1

Complete each sentence with the correct word.

- (1) The womb, ovaries and vagina are organs found in the _____ reproductive system.
- (2) Young fish hatch from the egg about two weeks after _____.
- (3) Eye colour, hair colour, blood type and the shape of the nose are some examples of the _____ of human that are inherited.
- (4) The female body part that contains thousands of eggs is called _____.

Q2

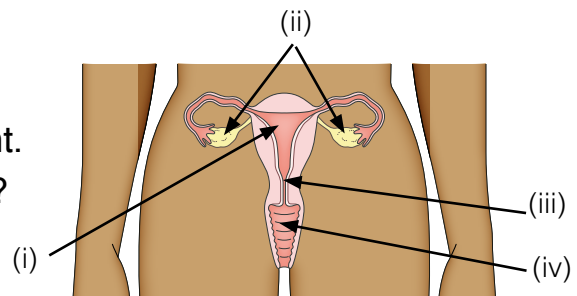
Choose the letter with the correct answer.

- (1) Which of the following is not part of a male reproductive system?

- A. Testes
- B. Uterus
- C. Penis
- D. Sperm

- (2) Study the picture of the female reproductive organs on the right. Where are the eggs produced?

- A. (i) B. (ii)
- C. (iii) D. (iv)

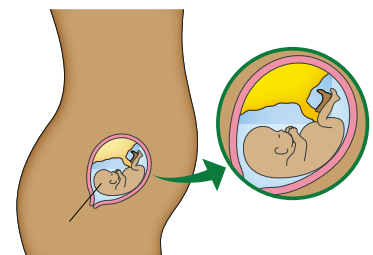


- (3) Which of the following is not a trait inherited from parents?

- A. Scratches
- B. Spots on fur
- C. Shape of beak
- D. Eye colour

- (4) Study the picture of a foetus in a female's body. The foetus's arms and legs have been formed. How old is the baby?

- A. 3 days
- B. 1 week
- C. 8 weeks
- D. 36 weeks

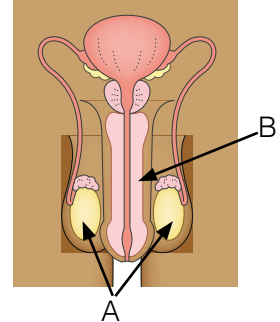


Q3

(1) Explain the work of the parts labeled A and B of the male reproductive system?

A. _____

B. _____



(2) What is the difference between the ovary and the testes?

(3) Where are the testes located?

(4) What is the name of the process in which a sperm joins with an egg?

Q4

(1) Explain the process of heredity.

(2) Study the two pictures on the right. Explain how the growths of fertilised eggs are different between fish and human.



Fertilised eggs of fish



Foetus of human