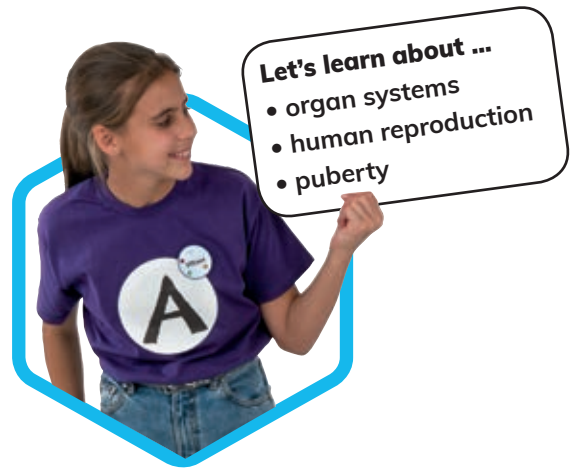
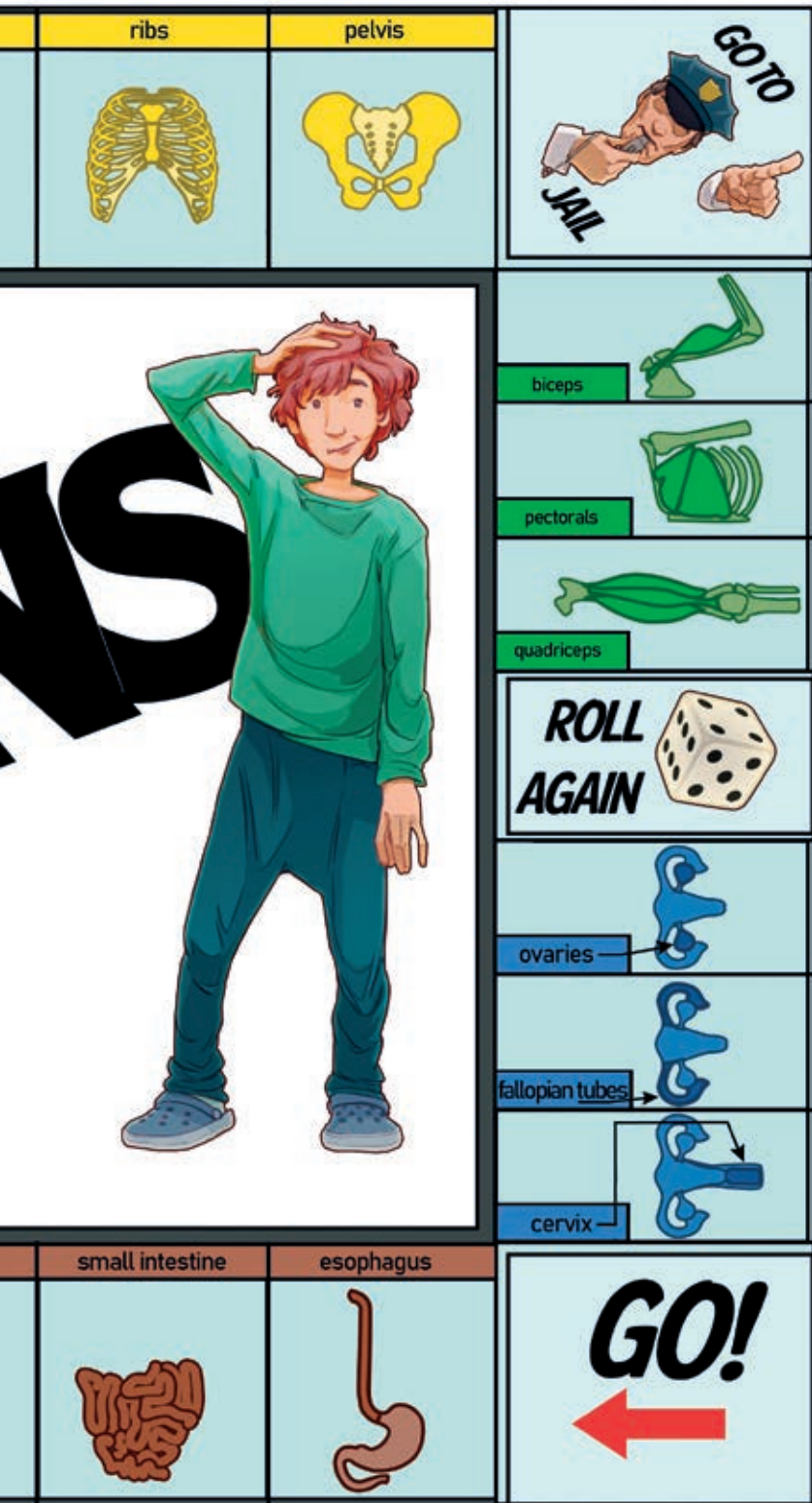


1 Watch. Name an organ system involved in nutrition.

<p><b>FREE</b></p>  <p><b>PARKING</b></p>	<p>prostate</p> 	<p>testicles</p> 	<p>vas deferens</p> 	<p><b>ROLL AGAIN</b></p> 	<p>skull</p> 
 <p>bladder</p>	 <p><b>HUMAN</b></p>				 <p>ureters</p>
 <p>kidneys</p>					 <p><b>ROLL AGAIN</b></p>
 <p>arteries</p>					 <p>veins</p>
 <p>heart</p>					<p><b>IN JAIL</b></p>  <p><b>JUST VISITING</b></p>
<p>lungs</p> 					<p>trachea</p> 



- 2 Play the boardgame in pairs. The winner is the first person to have all three organs from the same set.
- 3 Look at the game. How many organ systems can you name?
- 4 Order the words and write sentences in your notebook.
  - a. Humans / vertebrates / are / and / they / skeleton. / have got / an internal
  - b. Humans / mammals / are / so they / feathers. / haven't / got
  - c. live / on planet / Humans / Earth.

### Be mindful

Listen and do the breathing exercise. 001



## What organ systems do we use for nutrition?

The main systems involved in nutrition are the **digestive system**, the **circulatory system**, the **respiratory system** and the **excretory system**.

1 **Watch.** What's the function of the digestive system?

### The digestive system

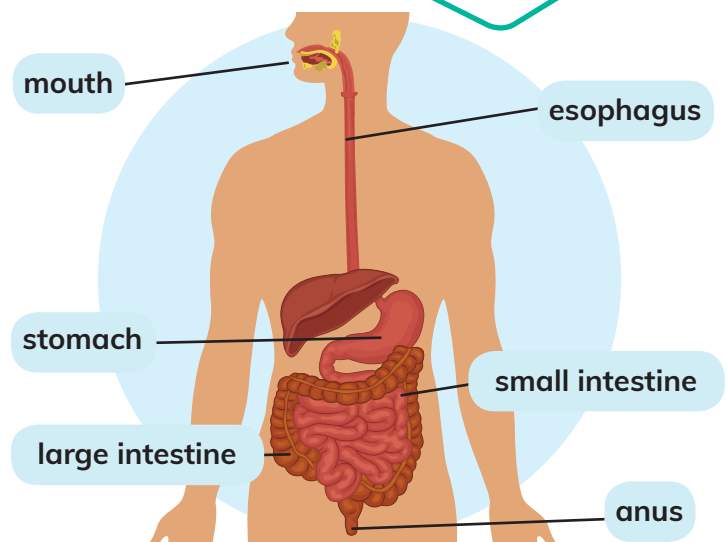
The digestive system breaks down food and releases nutrients into the blood.

**WOW**

The small intestine is 6.5 metres long. That's nearly as long as a bus!

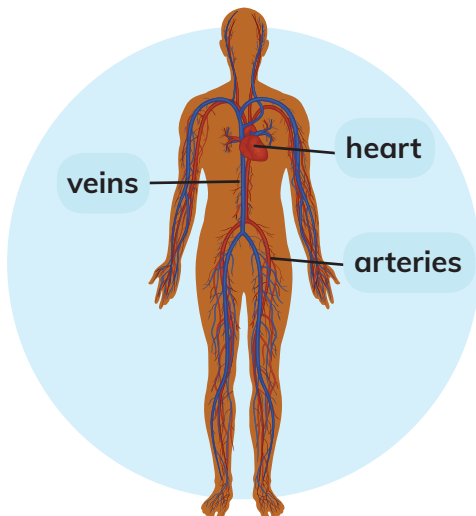
2 **Copy the sentences in the correct order in your notebook.**

- The food goes down the esophagus.
- The gastric juices in the stomach break the food into smaller pieces
- The waste is pushed out of our body.
- Teeth chew the food and it mixes with saliva
- The small intestine absorbs the nutrients from the food and they pass into the blood.
- The large intestine absorbs the water and the waste passes into the colon.



### The circulatory system

The circulatory system transports nutrients and oxygen to the cells in your body.



When you breathe in air, the lungs absorb oxygen and the blood becomes oxygenated.

The heart pumps blood around your body. Blood circulates around the body in tubes called arteries and veins. The blood in the arteries carry nutrients and oxygen away from the heart, to the rest of the body. Your cells use the oxygen and produce carbon dioxide.

The deoxygenated blood in the veins flows back towards the heart, carrying carbon dioxide. The lungs absorb the carbon dioxide and it leaves the body when you breathe out.

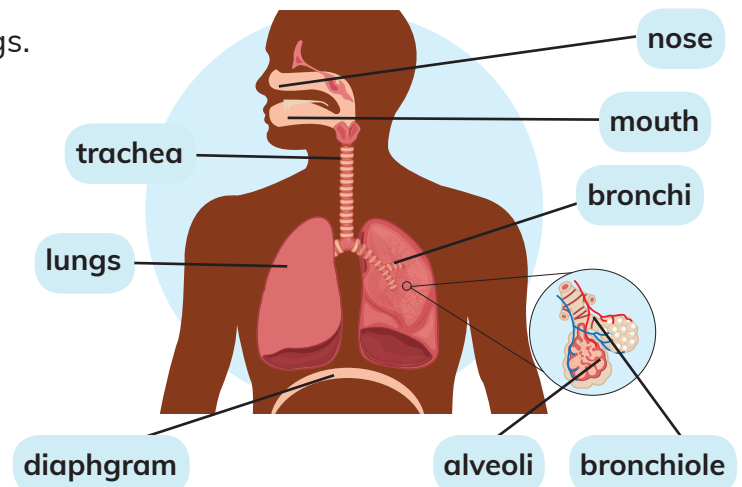
3 **What is the difference between veins and arteries?**

## The respiratory system

Our muscles need oxygen to function. The respiratory system takes in oxygen and expels carbon dioxide.

### 4 Copy and complete the sentences in your notebook.

- Air enters our body through our  and .
- Air flows down the  into the lungs.
- The trachea divides into two  that connect it to the .
- There are lots of small air tubes inside the lungs called .
- At the end of the small tubes there are small air sacs called . This is where the oxygen passes into the blood.

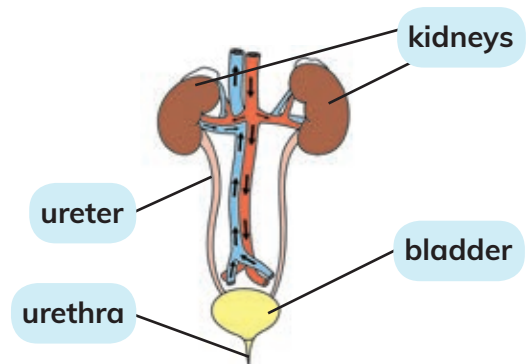


## The excretory system

The excretory system eliminates waste and excess water from the body in the form of urine.

### 5 Read the sentences and write the names of the organs in your notebook.

- People have a pair of organs. They filter and remove waste products from the blood.
- Urine travels down these two tubes.
- Urine is stored here until you need to go to the toilet.
- Urine leaves your body through this organ.



### 6 Work in pairs. Read the sentences and name the organ system.

- This system absorbs oxygen and expels carbon dioxide.
- This system filters waste materials from the blood and produces urine.
- This system pumps blood around your body.
- This system breaks down food and absorbs nutrients.





## How do you interact with the world around you?

Humans interact with their environment using their **nervous system** and **locomotor system**.

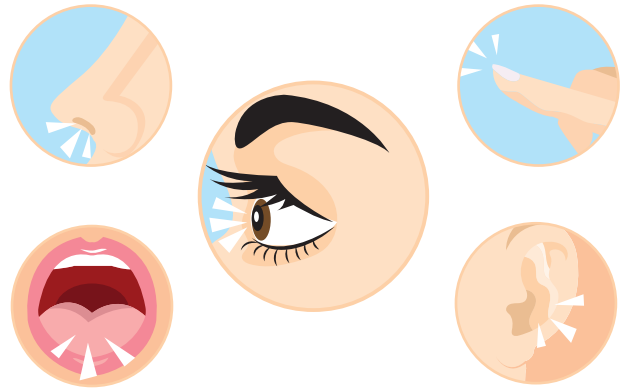
- 1  **Watch.** Name the five senses.

### Interaction

Humans need to obtain information from around them and respond to it.

Our **senses** tell us what is happening around us. The senses are part of the **nervous system**.

The information from the senses travels along the **nerves** to the **brain**. The brain receives and processes the information then it sends an order to the **locomotor system**. The locomotor system is made up of the **muscular system** and **skeletal system**. The muscles and skeleton allow us to move.



- 2 Copy and complete the sentences in your notebook with the words from the boxes.

brain

locomotor

nerves

world

- The senses get information about the  around us.
- The  are part of the nervous system; they transmit this information to the .
- The brain sends a command to the  system. We use our muscles to move a part of the body.

### Steps in the interaction process

**Step 1.** The five senses: **touch, hearing, sight, smell** and **taste** receive information.

- 3 Read and write the name of each sense in your notebook.

- You can see with your eyes and detect light.
- You can detect sound with your ears.
- You can feel textures with your skin and also detect temperature and pain.
- You can detect odours with your nose.
- You can detect flavours with your mouth.



**Step 2.** The sensory nerves send information from the five senses to the brain.

- 4 Which system sends information to the brain?

**Step 3.** The brain receives the information, processes it and decides how to respond. The brain sends a **message** along the nerves to the **muscles** or **glands**. The muscles or glands respond to the message in different ways:

- A muscle can contract to move a leg.
- A sweat gland can produce sweat to cool the body down.
- A saliva gland can produce saliva to help digest food.

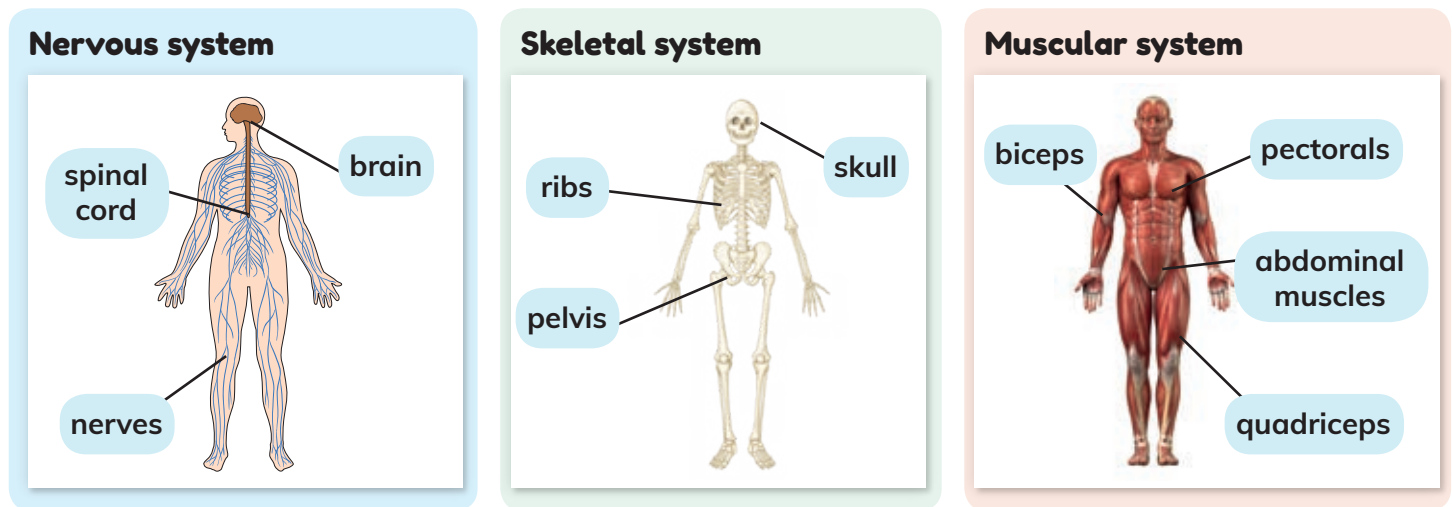
**5**  **Draw a cartoon with three frames.**

**Frame 1:** One of the senses gets information.

**Frame 2:** The sensory nerve in charge sends the information to the brain and the brain sends a message to a muscle or gland.

**Frame 3:** A muscle or gland responds to the message.

**The nervous and locomotor systems**



**6** **Order the letters and say the correct organs. Which system does each organ belong to?**

- a. ibrs      b. labamindo sclemus      c. riban      d. plinas dorc

**7**  **Work in pairs.**

- Read the clues and say the body part.
  - It's inside the skull. It receives and processes information.
  - These bones protect the heart and lungs.
- Now think of a body part from the nervous or locomotor systems and write clues for a classmate to guess.
- Listen to your classmates' clues and guess the organ.



Think of three examples of how you use your nervous and locomotor systems when you wake up.

# What are the stages in human reproduction?

Living things **reproduce**. Humans reproduce sexually and give birth after nine months of pregnancy.

## Animal reproduction

Some animals **reproduce asexually**: the organism produces an identical copy of itself.

Most animals **reproduce sexually**: Two individuals produce a new organism with a mixture of each parent's genes.

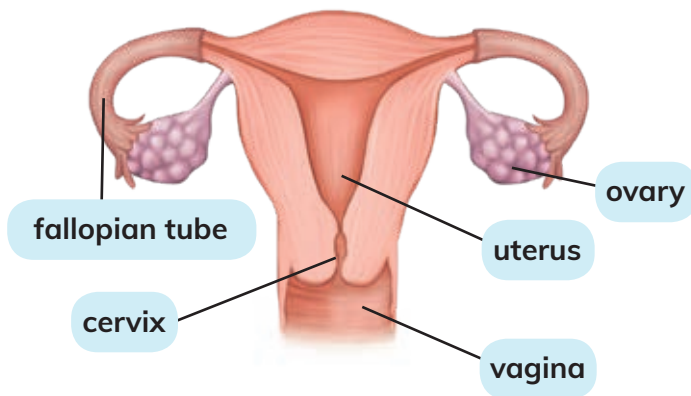
- **Oviparous** animals reproduce by laying eggs.
- **Viviparous** animals grow inside the mother's body.
- **Ovoviviparous** animals hatch from eggs inside the mother's body.

**1** Which type of sexual reproduction do these animals have?

- a. a turtle      b. a white shark      c. a dolphin

## The female reproductive system

The **female reproductive system** produces **egg** cells in the ovaries called **ova**.



**2** Read and say the organs.

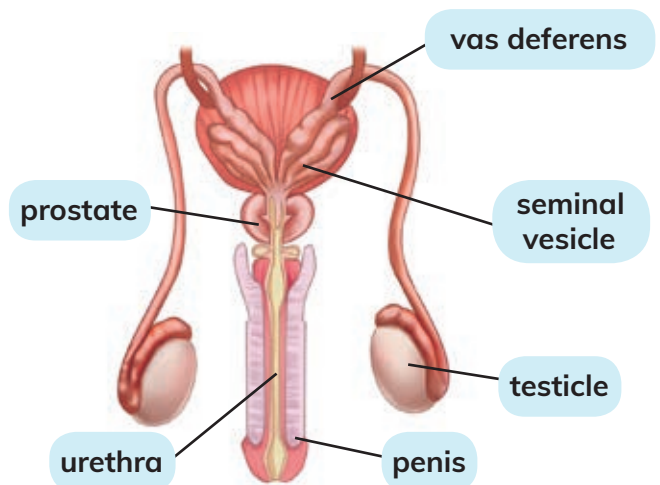
- They connect the ovaries to the uterus.
- There's one on each side of the uterus. They produce egg cells.
- This connects the vagina to the uterus.
- The canal that connects the uterus and cervix to the outside of the body.
- The organ where the fertilised egg develops into a fetus.

## The male reproductive system

The **male reproductive system** produces **sperm** cells.

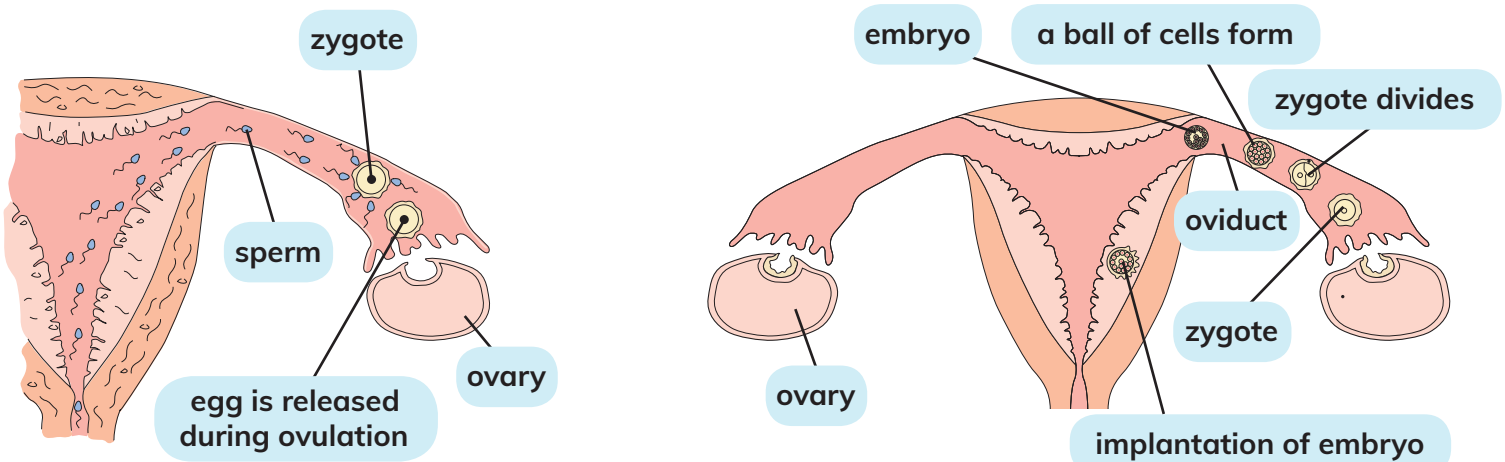
**3** Write the sentences in the correct order in your notebook.

- Sperm cells travel through the vas deferens to the seminal vesicles and the prostate.
- The urethra carries semen out of the body.
- The testicles produce sperm cells.
- The prostate and the seminal vesicles produce semen.



## Fertilisation

Sperm cells enter the vagina, swim into the uterus and along the fallopian tubes, where one of them may fertilise the female egg cell. A **fertilised egg** is called a **zygote**. As the zygote moves towards the uterus, its cells divide and it becomes an **embryo**. At about eight weeks, the embryo has most of its organs and is now a **fetus**.



## Pregnancy

**Pregnancy** is the period of time between the **fertilisation** of an egg cell and the **birth** of a baby.

**4** Copy and complete the sentences in your notebook.

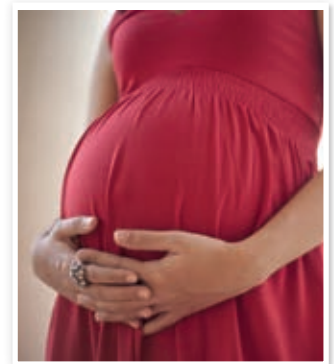
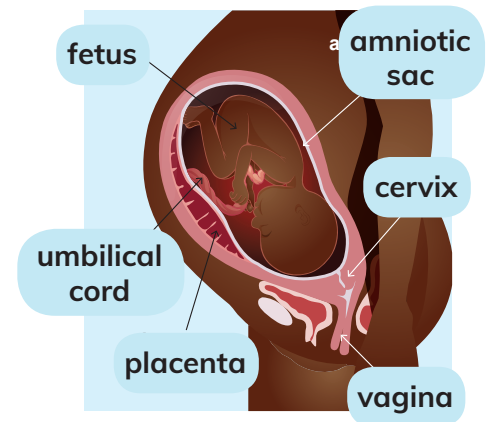
- The  provides the fetus with nutrients and oxygen.
- The  is a thin membrane that contains the amniotic fluid.
- The  connects the fetus to the placenta.

## Birth

During birth, the mother goes into **labour**, which causes the **amniotic sac** to break and the walls of the uterus to **contract**. Then, the cervix **dilates** to enable the baby to come out of the uterus. The mother slowly pushes the baby into the **birth canal** and out of her body.

The baby then starts to breathe and the doctor cuts the **umbilical cord**. Finally, the amniotic sac, the placenta and umbilical cord come out the mother's body.

Sometimes doctors perform a **cesarean section** because a vaginal birth is not possible for health or medical reasons. During a cesarean section, a doctor cuts the mother's abdomen and uterus to deliver the newborn baby.



**5** What is a cesarean section?





# What changes happen during puberty and adolescence?

**Puberty** is when your body begins to develop and change.  
**Adolescence** is when you develop from a **child** into an **adult**.

## Puberty and adolescence

Puberty usually starts between the ages of 8 and 13 in girls. In boys, puberty usually starts between the ages of 9 and 15.

The World Health Organization, defines an adolescent as any person between the ages of 10 and 19. Remember that all the changes you see in your body are normal signs of health.

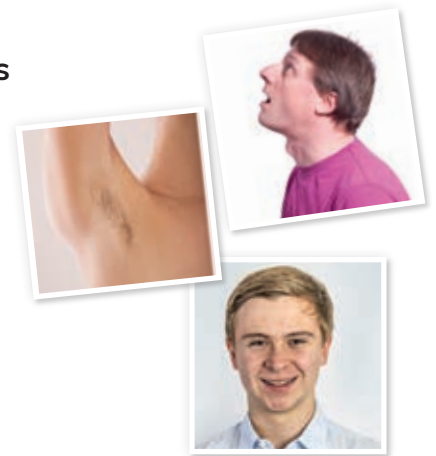
**1**  **Read and say True or False. Correct the false sentences in your notebook.**


- The word 'puberty' refers to emotional changes.
- The word 'adolescence' describes when you develop from a baby into a child.
- Adolescence begins at about the age of 8.

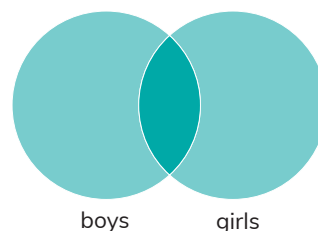
## Physical changes in puberty

Your body changes during puberty. There are some **physical changes** that only happen to boys and some that only happen to girls. Boys' **facial hair** begins to grow and their voices become deeper. A girls' **chest** grows during puberty.

Some changes happen to both boys and girls, such as **hormones** cause sweat glands and oil glands to become more active, which can cause acne. Another change experienced by both boys and girls is the growth of hair under the arms and in the pubic area.

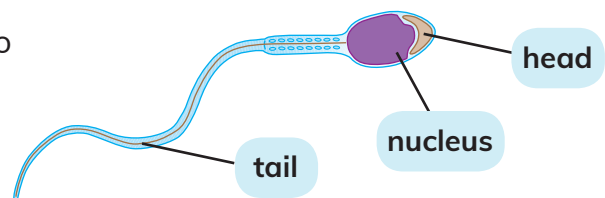


**2**  **Make a Venn diagram to show the physical changes in puberty.**



## Puberty and the reproductive organs

During puberty, the male reproductive system starts to produce sperm cells and the female reproductive system begins to release egg cells from the ovaries.

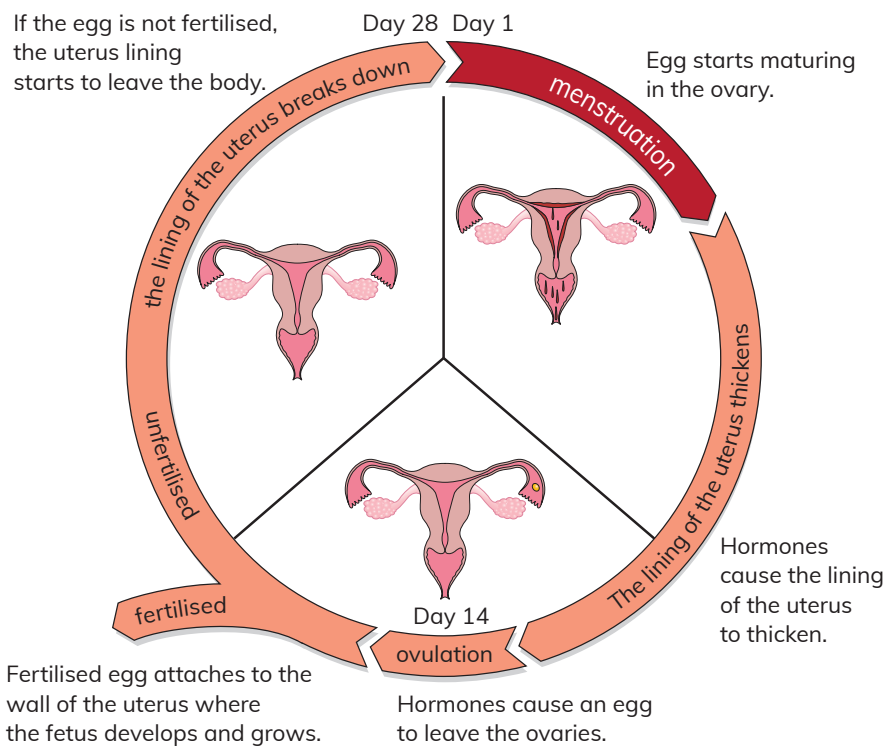


**3** **Read and answer the questions.**

- Which part of the male reproductive system produces the sperm cells?
- Where do the egg cells travel when they are released?



The **menstrual cycle** is another important physical change during puberty in girls.

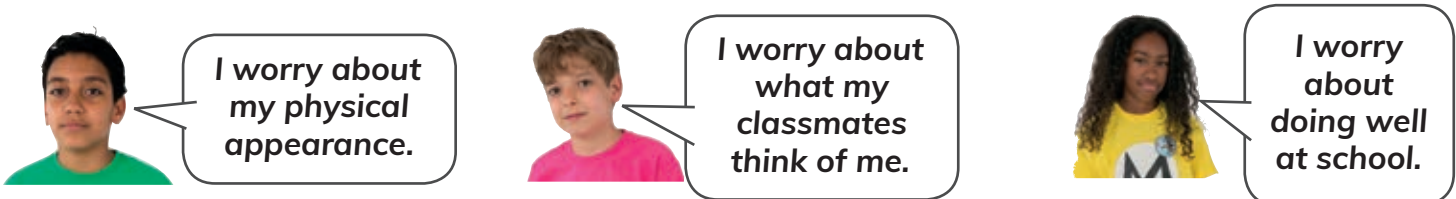


**4** Look at the diagram and answer.

- How long is a menstrual cycle?
- What causes an egg to leave the ovaries?
- How many eggs do the ovaries release in each menstrual cycle?
- When is ovulation?

## Emotional and social changes in adolescence

The physical changes that young people experience can create fears, doubts and insecurities. One moment you can feel happy, then suddenly you can start to feel very sad, scared or angry.



**5** Listen to the podcast and answer the questions. **002**

- How is Sara feeling?
- Why is she feeling that way?
- What advice does Tomás give her?

Adolescence also brings a lot of positive emotional changes. You start to find your identity and think about your role in society and you develop stronger values. You also start to take more responsibility at home, in school and in the community, and become more independent.

**6** Listen to the children saying what they can do to be more responsible. How can you be more responsible? Copy and complete the table in your notebook. **003**

I'm going to ...		
at home	at school	in the community

# Why does the stomach have gastric juices?

Gastric juices are acidic. Acids can be dangerous so the stomach has a protective layer. Why does the stomach need acid? What would happen if there was water in your stomach instead of gastric juices?

### Hypotheses

Is there a difference between how an apple breaks down in vinegar and water? Which liquid breaks down the food best? Write your hypothesis.

### Materials

- 2 labels
- 2 bags
- a grater
- an apple
- goggles
- vinegar
- water



### Step 1

Write and stick the labels on the bags:

1. Vinegar
2. Water



### Step 2

Grate the apple and put a handful in each bag.



### Step 3


Add vinegar to the first bag and water to the second bag.



### Step 4

Leave the bags for a few hours and then check them.

### Results

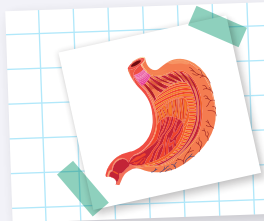
**▶ Watch.** Compare your results with a classmate. Fill in the worksheet. 

## Tip 1

### Using picture dictionaries

Picture dictionaries are useful to organise the important words you want to remember.

- 1 Choose five words in this unit. Write the definition of each word and draw a picture.




#### My science picture dictionary

*Stomach: An organ which is part of the digestive system. Gastric juices break down food here.*

## Tip 2

### Using key words

Read the questions and write down the key words to help you answer them in your notebook.

- 2  Use the Internet to find the answers to the questions.

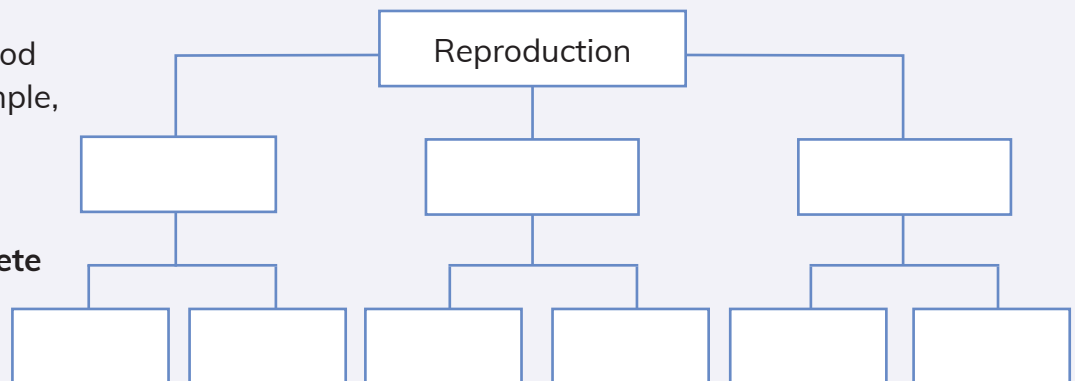
- |   |  |
|---|--|
| a. What are smells made of?                             | e. Where are the taste buds?                         |
| b. What is the function of the olfactory cells?         | f. What does smoking do to the tongue?               |
| c. Where do the olfactory nerves transmit the impulses? | g. How can you treat a burn on the tongue?           |
| d. What does the hair inside your nostrils do?          | h. How many times a day should you brush your teeth? |

## Tip 3

### Using diagrams

Diagrams are very good for learning. Write simple, direct sentences or words.

- 3 Copy and complete the diagram in your notebook.





## Story

1 Read and listen.  004

2 Find the words in the story.

systems

gastric juices

heart

kidneys

lungs

### A fascinating trip

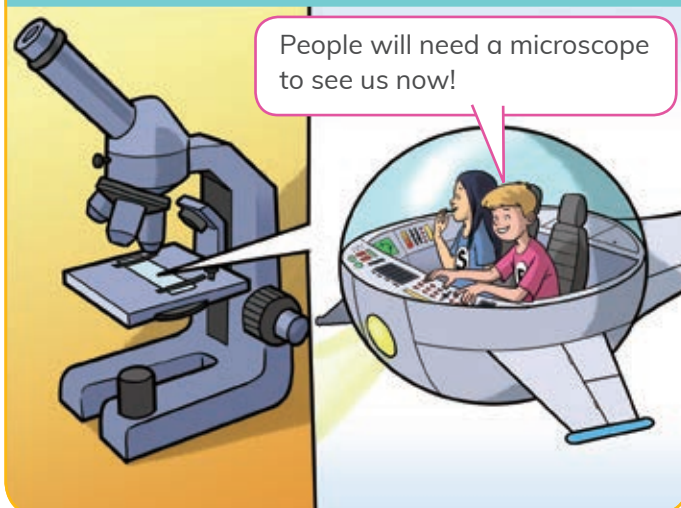
Shui's learning about the different organ systems.



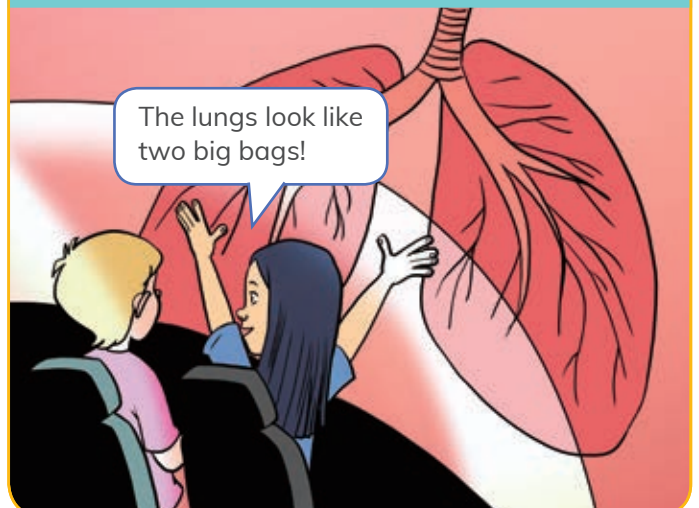
Eric wants to help Shui learn about the different organ systems.



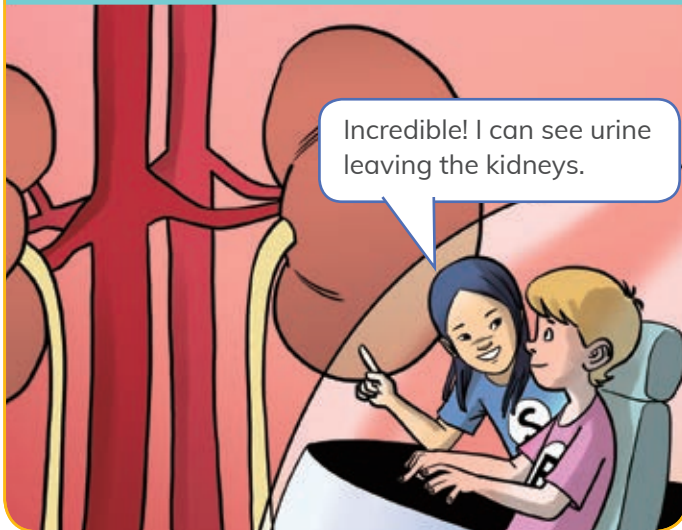
Eric presses a button on the machine and it becomes really small.



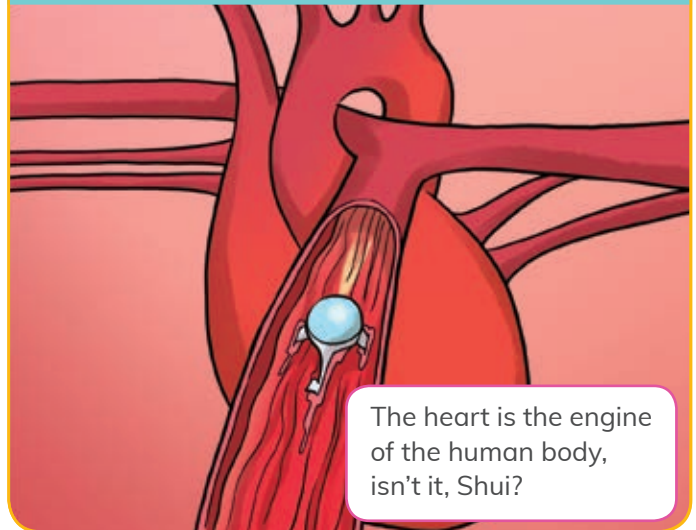
The lungs are part of the respiratory system. The respiratory system takes in oxygen from the air we breathe.



The kidneys are part of the excretory system. The kidneys filter the blood and remove waste.



The heart is part of the circulatory system. This organ pumps the blood.



The stomach is part of the digestive system. It breaks down food with the help of gastric juices.



Eric presses a button in the machine and it becomes bigger again.



**3** Read and write the sentences in order in your notebook.

- Eric invites Shui to go inside a human body.
- The children visit the lungs in the respiratory system.
- Eric presses a button to make the machine smaller.
- The children visit the stomach in the digestive system.
- Eric says 'The heart is the engine of the human body'.
- The children visit the kidneys in the excretory system.

## Christiaan Barnard (1922-2001)



Christiaan Barnard was a famous doctor who was born in South Africa in 1922. He had four brothers, but one of them died young because of a heart problem. Christiaan went to the University of Cape Town to study medicine. After university, he worked in Cape Town as a surgeon.

Christiaan went to the United States where he worked with other surgeons to develop new surgical techniques.



Christiaan was a pioneer of organ transplants. In this medical intervention, the doctor removes a damaged organ from a patient and replaces it with a healthy one from another person. This organ can come from a living person or a dead person.

Dr Barnard returned to South Africa and did a kidney transplant, which was a success.

In December 1967, Barnard and his team of surgeons did the first successful human heart transplant. The recipient of the heart was Louis Washkansky.

Christiaan Barnard retired in 1987 and died in 2001.

### 1 Read and say *True or False*. Correct the false sentences in your notebook.

- |   |   |
|---|---|
| a. Christiaan Barnard was a famous surgeon. | d. He went to the University of Cape Town.    |
| b. He was born in Spain.                    | e. He did the first heart transplant in 1967. |
| c. He studied medicine in London.           | f. He died in 1987.                           |

### WebQuest



### 2 This is Helen Brooke Taussig. When you finish your mini WebQuest, answer the questions in your notebook.

- Who was Helen Brooke Taussig?
- Where was she born?
- What medical treatment did she develop?
- What happened in 1965?







## My model lung

Can you make a model lung?



### Before you start

Lungs are the organs we use for breathing. They're part of the respiratory system.

You are going to make a model lung that will fill with air.


- 1 Put your hand on your abdomen and breathe in. What happens as you breathe in? Explain why you think this happens.

### You need ...

- 3 balloons
- 2 straws
- a plastic bottle
- plasticine
- scissors
- sticky tape



### Planning

- 2 Cut the bottle in half. Be careful!
- 3 Tie one of the balloons and cut off the top. Stretch it around the bottom of the plastic bottle and attach it with sticky tape. This will be the diaphragm.
- 4 Cut one of straws at the bend. Make a hole in the other straw at the bend. Insert the small part of the first straw into the hole and attach it with sticky tape.
- 5 Attach each straw to a balloon with sticky tape. These will be the lungs.
- 6 Put the straws and the balloons into the neck of the bottle. Use the plasticine to make a seal around the bottle.
- 7 Make it work! Pull the diaphragm down and the lungs should inflate.
- 8  Show your model lung to a classmate and explain how it works. Give your classmate constructive feedback on their model lung.





- 1 Answer the questions in pairs.
  - a. What do you use to interact with the world you live in?
  - b. What is the function of the small intestine?
  - c. What is an oviparous animal?
  - d. What is the difference between puberty and adolescence?
  - e. What is the function of the placenta?



- 2 Read and say True or False. Correct the false sentences in your notebook.



### A healthy diet

Eating a balanced diet is one of the most important things you can do to protect your health. In fact, you can prevent many diseases by eating a healthy diet and being physically active.

Your digestive system has organs that work so that your body gets the energy it needs. The stomach breaks down the food with the help of the gastric juices and the small intestine absorbs the nutrients that pass into the blood.

- a. Eating a healthy diet is very important.
- b. A good diet can't prevent diseases.
- c. Your digestive system has got specialised organs.
- d. The stomach absorbs the nutrients.
- e. The nutrients pass to the blood.
- f. The digestive system isn't important.

- 3 Copy and complete the sentences in your notebook. Use the words from the boxes.

nerves    puberty    senses    uterus    digestive    esophagus    excretory    interact


- a. The kidneys are part of the \_\_\_\_\_ system.
- b. The \_\_\_\_\_ system breaks down food.
- c. The reproductive organs change during \_\_\_\_\_.
- d. Food goes down the \_\_\_\_\_ from the mouth to the stomach.
- e. The \_\_\_\_\_ are part of the nervous system.
- f. Human beings use their nervous and locomotor systems to \_\_\_\_\_ with their environment.

- 4 Play the quiz!



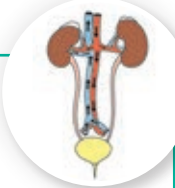
# Reflect

1 Check. Copy the chart and colour the stars.

**I can ...** 


read and write about the **digestive system**.

☆☆☆

**I can ...** 


read and write about the **excretory system**.

☆☆☆

**I can ...** 

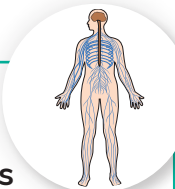
read and write about the human **respiratory system**.

☆☆☆

**I can ...** 

read and write about the **circulatory system**.

☆☆☆

**I can ...** 

read and write about the **senses** and **nervous system**.

☆☆☆

**I can ...** 

read and write about the human **reproductive system**.

☆☆☆

**I can ...** 


read and write about **puberty, adolescence** and **growing up**.

☆☆☆

**I can ...** 

describe who **Christiaan Barnard** was.

☆☆☆

**I can ...** 

make a **model lung**.

☆☆☆

**Key:**

- ★ I'm not sure.
- ★★ I need some practice.
- ★★★ I understand.

2 Work in groups of four. Make a poster to show one of the systems involved in nutrition.

- digestive system
- respiratory system
- circulatory system
- excretory system