

- 1  Watch. Play a guessing game. Describe an organ for your classmate.

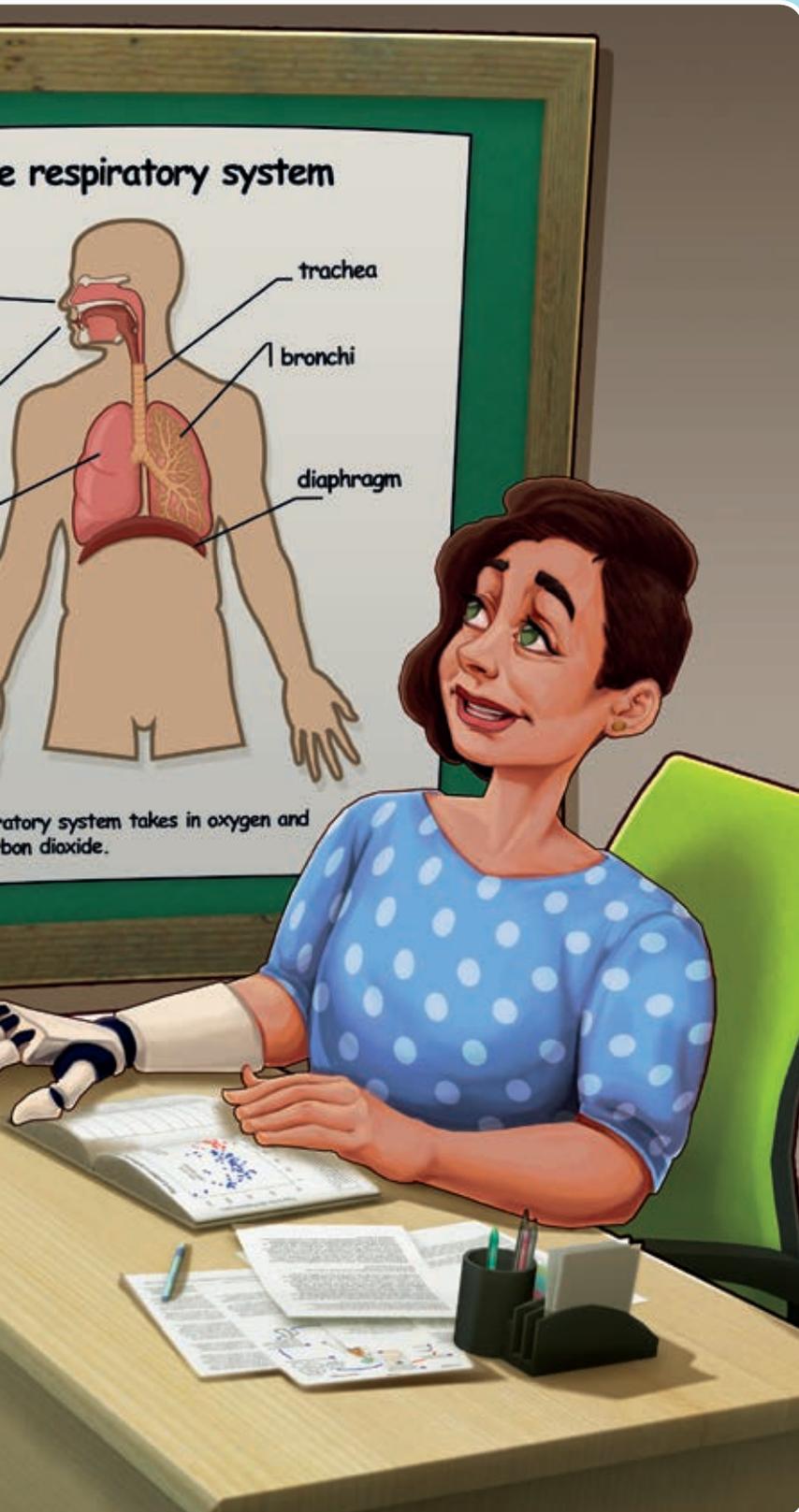


Guess the organ. Win 1 point per organ.

This organ is part of the ... system

This organ looks like a ...

This organ helps us to ...



**2** True or false?

- a. The heart is part of the digestive system.
- b. The circulatory system breaks down food.
- c. The veins are part of the respiratory system.

**3** Look at the posters and say the organs in each system.

**4**  Order the words to make sentences.

a.

The stomach

part

of the digestive system.

is

b.

The heart

the body.

around

pumps blood

c.

The respiratory system

oxygen

carbon dioxide.

takes in

and expels

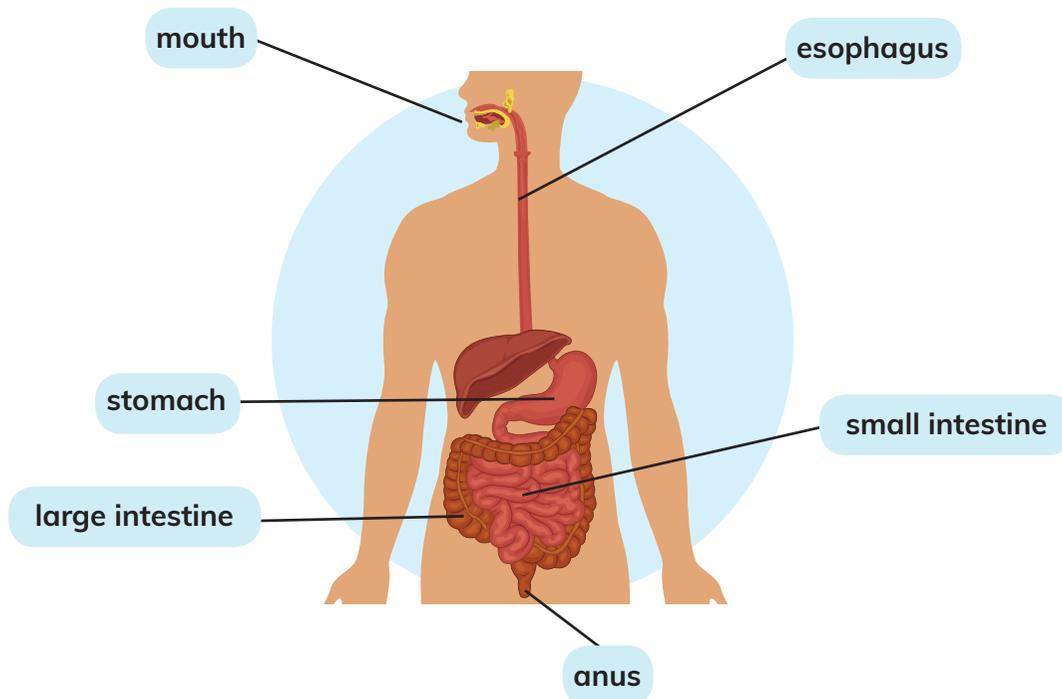
## How do humans get nutrients and eliminate waste?

To obtain **nutrients** we use the **digestive system** and to eliminate **waste** we use 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.



- 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.
  - 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 and out of the body.
- 3  **Read and guess the organ. Use the Internet to check your answers.**
- It can take food two to five seconds to travel down this organ.
  - This organ can stretch to hold over 1.5 kg of food.
  - This organ turns liquid waste into solid waste.

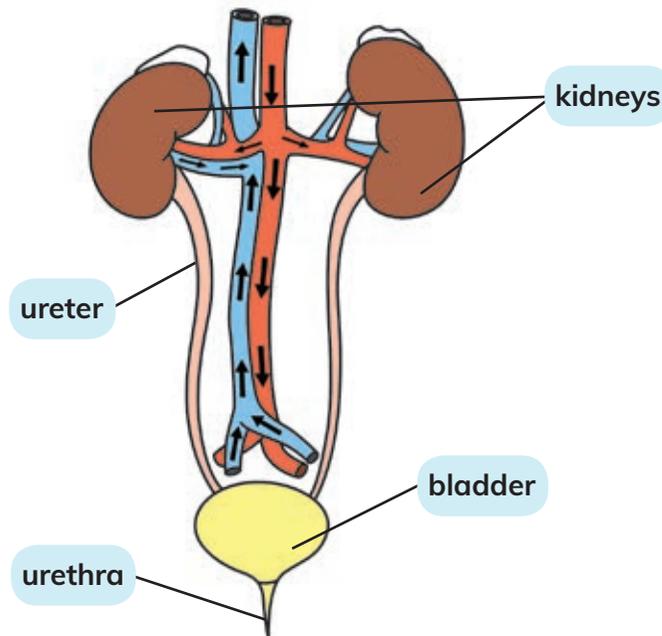
**4** **5** Ask and answer with a classmate.

- a. What happens in your mouth when you smell your favourite food?
- b. What happens inside your stomach?
- c. Is your stomach empty or full when you finish eating?
- d. Does the food go to the small or large intestine next? What happens there?
- e. Where does the food go next? What happens there?



### The excretory system

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



**5** Read the sentences and name the organs.

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



**At home**

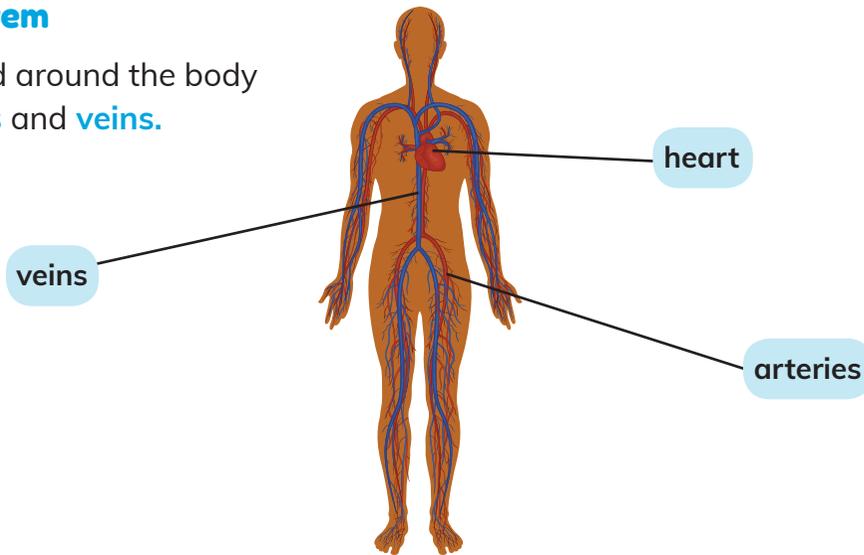
At dinnertime, what happens in your mouth before you eat?

# How does the circulatory system transport nutrients and oxygen to the cells in your body?

The **circulatory system** transports nutrients and oxygen to our **organs, bones, brain** and **muscles**.

## The circulatory system

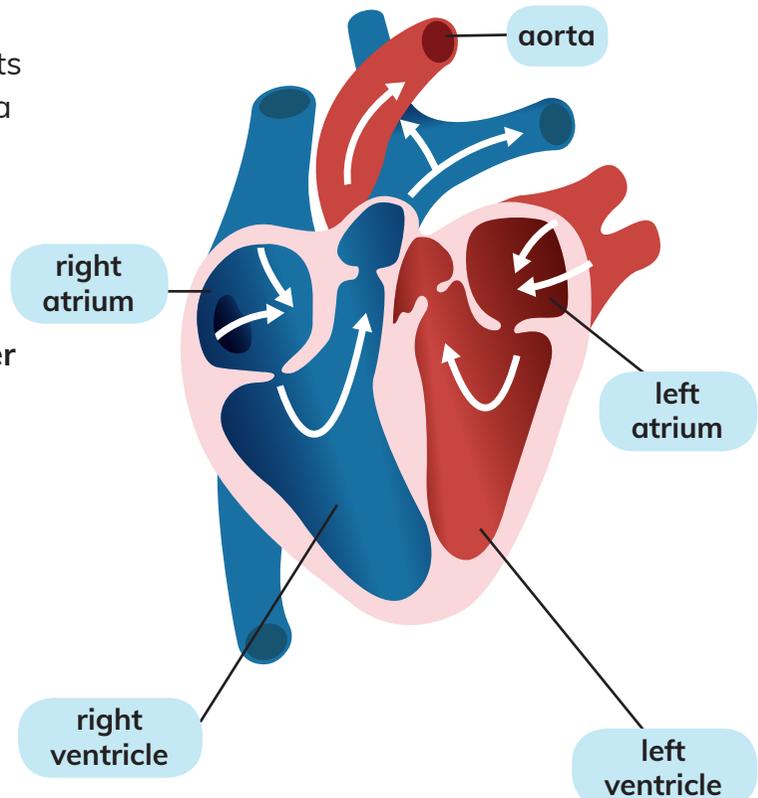
The heart pumps blood around the body in tubes called **arteries** and **veins**.



## The heart

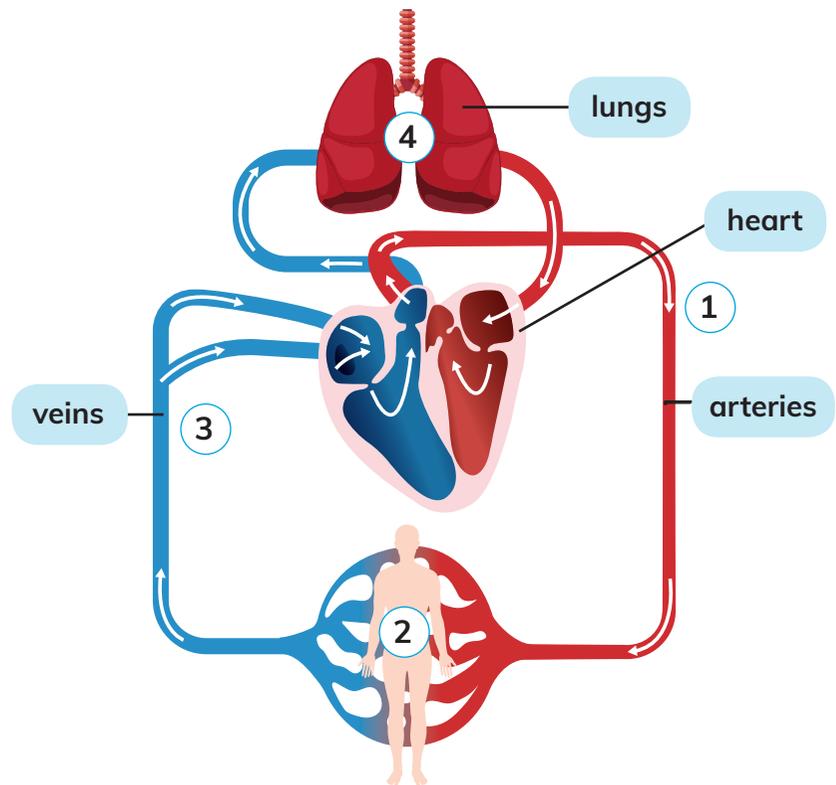
The **heart** is a very strong muscle that contracts and relaxes. It has got four chambers; two atria and two ventricles.

- 1 Find your heart. Put your hand on your chest.
- 2 Look at the diagram of the heart. Answer the questions in your notebook.
  - a. What are the names of the upper chambers?
  - b. What are the names of the lower chambers?
- 3 Listen to the podcast. How much does an adult heart weigh?  002
- 4  Work in pairs.
  - a. Your heart beats on average 100 000 times a day. How many times does it beat per minute?
  - b. Find your pulse. Count the beats for 60 seconds.



## The circulatory system at work

1. The blood containing nutrients and oxygen flows away from the **heart** in the **arteries** and goes to the rest of the body.
  2. The **cells** use the oxygen and produce carbon dioxide.
  3. The **deoxygenated** blood carries carbon dioxide and flows back towards the heart in the **veins**.
  4. The **lungs** absorb the carbon dioxide and it leaves the body when you breathe out.
- 5  Work in pairs. What's the difference between veins and arteries.



## The blood's journey

- 6 Order the sentences in your notebook. Start with the following sentence:

*The left ventricle pumps blood with oxygen and it comes out into the largest artery called the aorta.*

- a. Deoxygenated blood in the veins flows back into the right atrium and then into the right ventricle.
  - b. Blood flows through the arteries delivering oxygen and nutrients to the cells. At the same time, blood absorbs carbon dioxide from the cells.
  - c. The right ventricle pumps the deoxygenated blood to the lungs.
  - d. Veins carry the deoxygenated blood to the heart. This blood contains carbon dioxide.
  - e. In the lungs, the blood picks up oxygen and releases carbon dioxide.
  - f. The **oxygenated** blood from the lungs goes into the left atrium and then into the left ventricle. The journey starts again.
  - g. The oxygenated blood in the lungs goes back to the heart through the veins.
- 7 Listen and check your answers to activity 6.  003

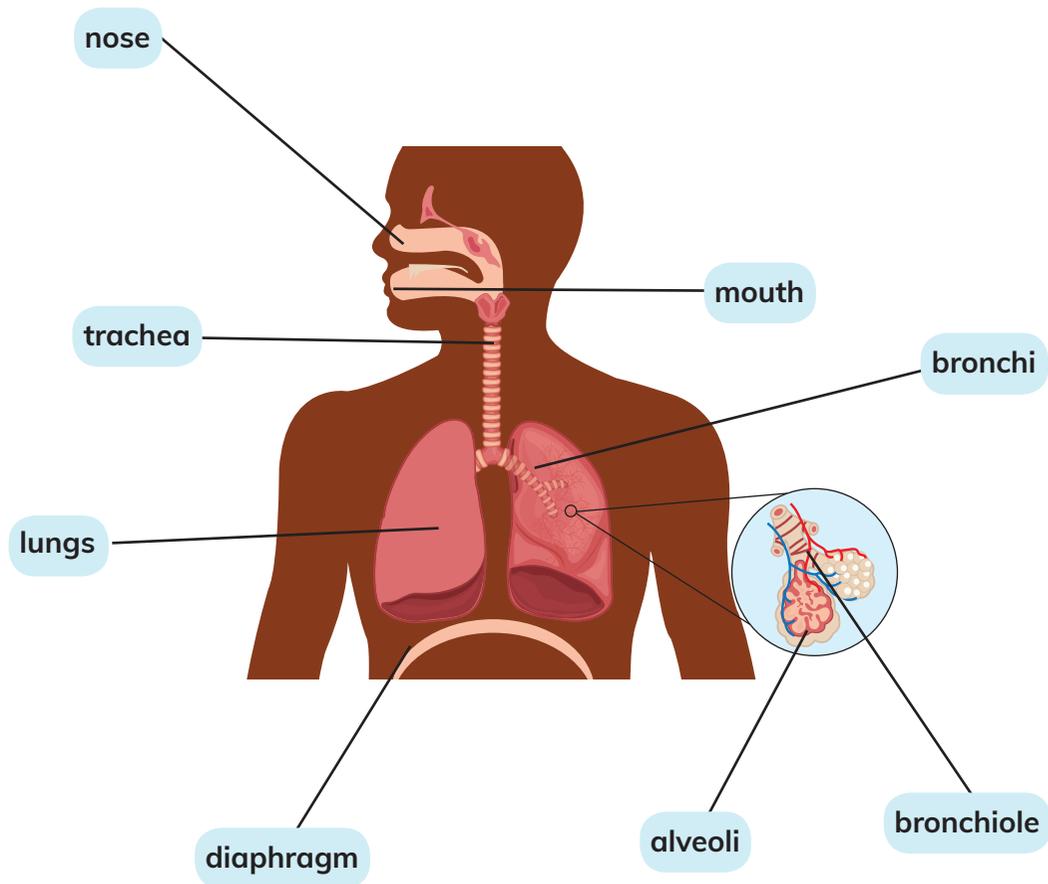


At home

Find out the difference between **red blood cells**, **white blood cells** and **platelets**.

## What's the main function of the respiratory system?

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



**1**  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.

**2**  Read and guess the organ. Use the Internet to check your answers.

- These are the only organs that can float on water.
- This part of your body contains little hairs to stop dust from entering your lungs.
- Hiccups are caused by involuntary contractions of this organ.

### 3 Do the breathing exercises.

a. Put your hands below your ribs. Breathe in and out. What happens to your hand?



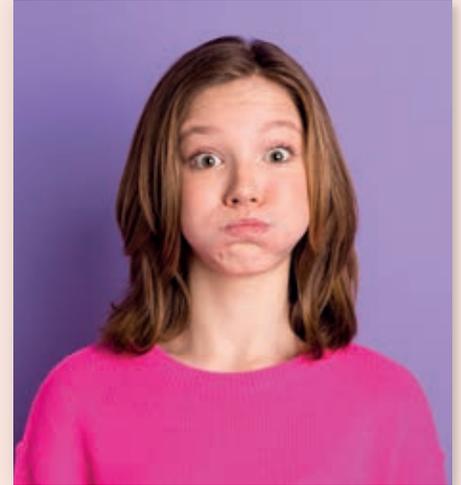
The **diaphragm** is a muscle that **contracts** when you breathe in to help the lungs expand. When you breathe out the diaphragm **relaxes**.

b. Put your hands on your chest and breathe in and out. What happens to your hand?



When you breathe in, the lungs **expand** like balloons.

c. Take a deep breath in and hold the air. Try to talk. What happens?



The respiratory system pushes air through the **vocal cords** and helps them **vibrate**. The **voice box** is at the top of the trachea.

When we exercise, we breathe faster and deeper. We do this because our muscles work harder and they need more oxygen.

### 4 Do the breathing experiment.

#### Step 1.

Relax. Count the number of breaths you take in one minute when your body is at rest.



#### Step 2.

Do star jumps and then jog on the spot for one minute each.



#### Step 3.

Count the number of breaths you take in one minute. What do you notice?



At home

How long does it take for your breath to get back to normal after you do exercise?

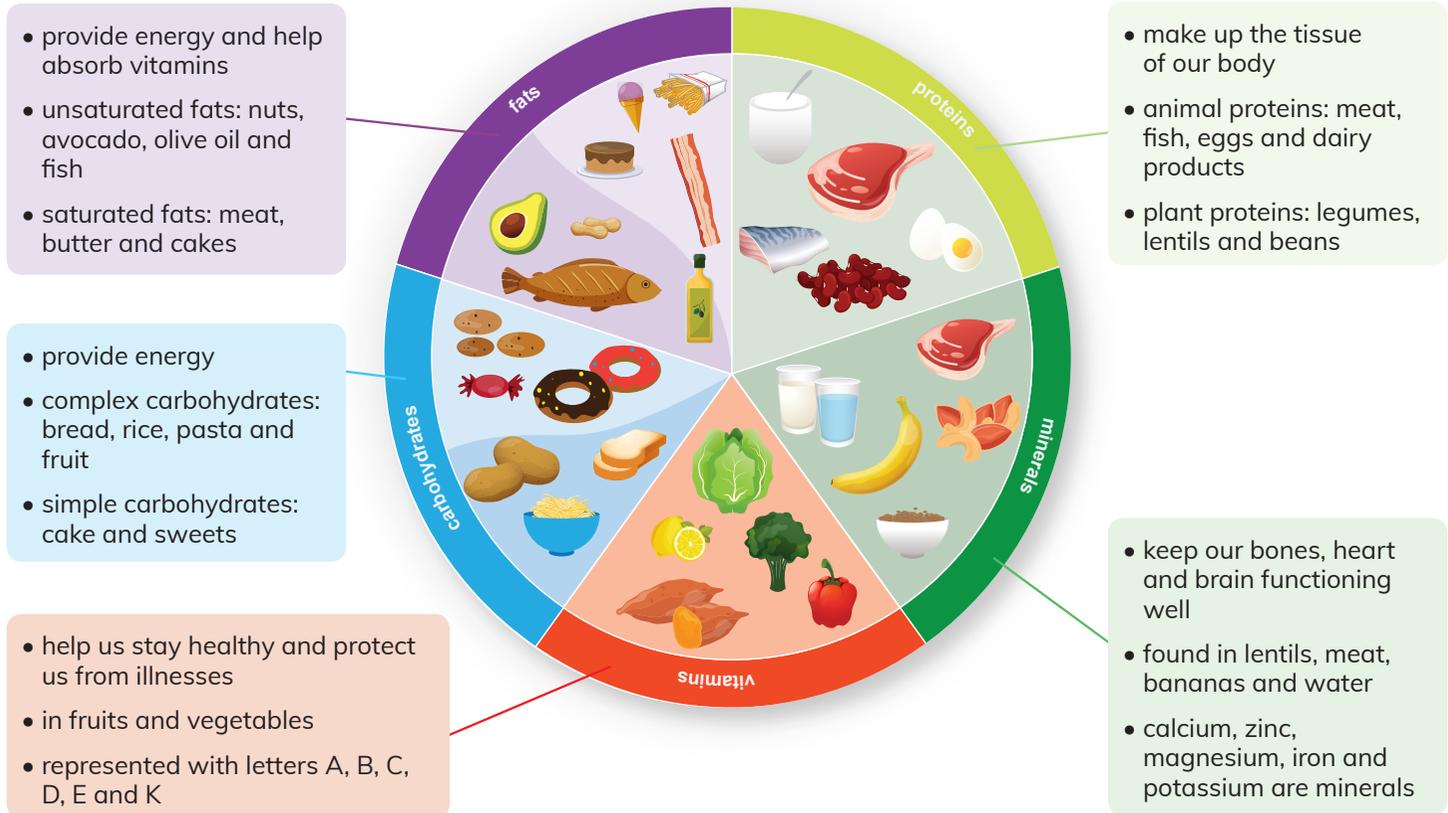
# What should we do to have a balanced diet?

We should eat different types of healthy food to get the **nutrients** our bodies need.

**1** **Watch.** Say a food that is high in iron.

## Nutrients

It's important to have a balanced diet. Our bodies need nutrients to grow and stay healthy. These nutrients are: **carbohydrates**, **fats**, **proteins**, **vitamins** and **minerals**.



**2** Which food doesn't belong in each group? Answer the questions.

carbohydrates





**a.** Which food is unhealthy?

proteins





**b.** Which food is an animal product?

**3** Work in pairs. Plan a balanced meal and share it with your classmates.



- 4 Look at the shopping trolley. Find:
- a carbohydrate
  - an animal protein
  - a food or drink that contains a lot of minerals
  - a food that contains a lot of vitamins

- 5 Which nutrient is missing from the trolley?

## Nutrition labels

**Nutrition labels** list the nutrients in the food. This information can help us to make healthy choices. The number of **calories** indicates the amount of **energy** your body gets when you eat a serving of that product. Children who are 11 years old need between 1 600 and 1 800 calories a day. Unhealthy food is high in **sugar**, **fat** and **salt** (sodium).



- 6 Look and compare the nutrition labels. Say which product is the healthiest.

Nutrition Facts	
Serving Size 100 g	
Servings Per Container	
Amount Per Serving	
<b>Calories</b> 190	Calories from Fat 90
% Daily Value*	
<b>Total Fat</b> 11 g	<b>17 %</b>
Saturated Fat 4.5 g	<b>24 %</b>
Trans Fat 0 g	
<b>Cholesterol</b> 5 mg	<b>1 %</b>
<b>Sodium</b> 90 mg	<b>4 %</b>
<b>Total Carbohydrate</b> 21 g	<b>7 %</b>
Dietary Fiber less than 1 g	<b>2 %</b>
Sugars 10 g	
<b>Protein</b> 2 g	
Vitamin A	<b>0 %</b>
Vitamin C	<b>2 %</b>
Calcium	<b>6 %</b>
Iron	<b>4 %</b>
*Percent Daily Values are based on a 2 000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	

Nutrition Facts	
Serving Size 100 g	
Servings Per Container	
Amount Per Serving	
<b>Calories</b> 70	Calories from Fat 20
% Daily Value*	
<b>Total Fat</b> 2 g	<b>3 %</b>
Saturated Fat 0.5 g	<b>3 %</b>
Trans Fat 0 g	
<b>Cholesterol</b> 0 mg	<b>0 %</b>
<b>Sodium</b> 10 mg	<b>0 %</b>
<b>Total Carbohydrate</b> 13 g	<b>4 %</b>
Dietary Fiber 3 g	<b>12 %</b>
Sugars 7 g	
<b>Protein</b> 2 g	
Vitamin A	<b>4 %</b>
Vitamin C	<b>90 %</b>
Calcium	<b>4 %</b>
Iron	<b>6 %</b>
*Percent Daily Values are based on a 2 000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs.	



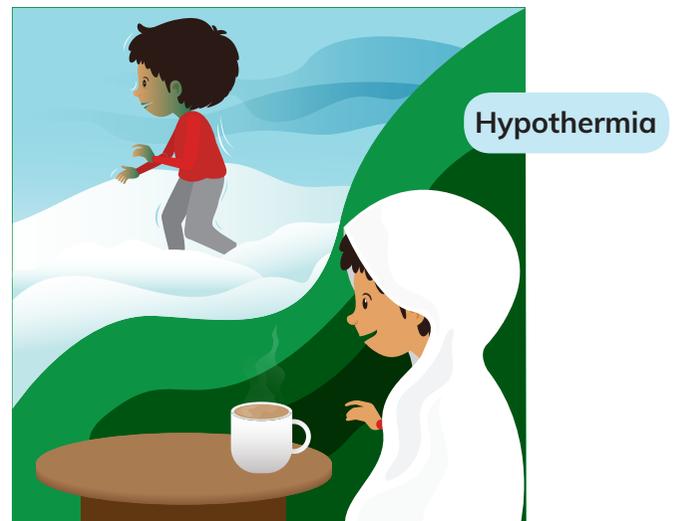
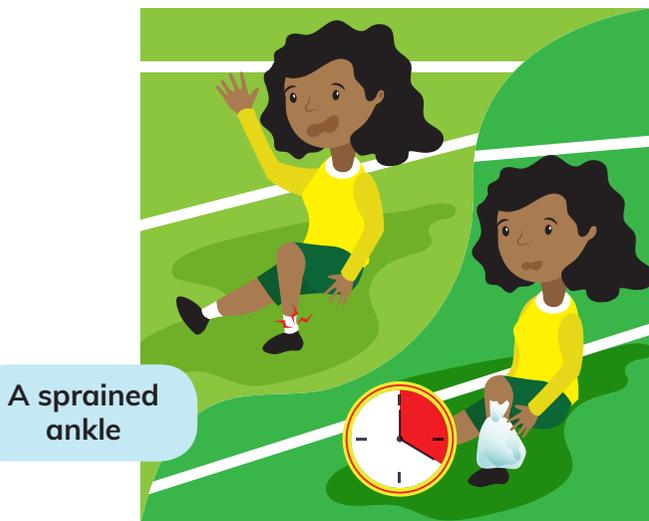
# What should you do if someone has an accident?

When someone has a major **accident**, ask an adult for help or phone 112.

## 1 How can you tell if someone is choking?

### First aid

When someone has a minor accident, your help is important. This is called **first aid**.



## 2 Match the sentences to the correct picture.

- The skin is damaged by fire or heat. You should cool it and then wrap it in cling film.
- You should cool your friend with a wet towel and give them a cold drink.
- You should keep your friend warm with a blanket and a hot drink.
- You should put ice inside a bag or use frozen vegetables.

## Nosebleed

Look at the images showing what to do if you have got a **nosebleed**.

Step 1



Step 2



Step 3



Step 4



3  Read. Order the sentences in your notebook.

- You should breathe through your mouth.
- You should put your head forwards and never backwards.
- You should gently pinch your nose for at least 20 minutes.
- You should sit down.

## Choking

When someone **chokes** you should give five back blows followed by five abdominal thrusts. To do this in a real situation, ask an adult for help.

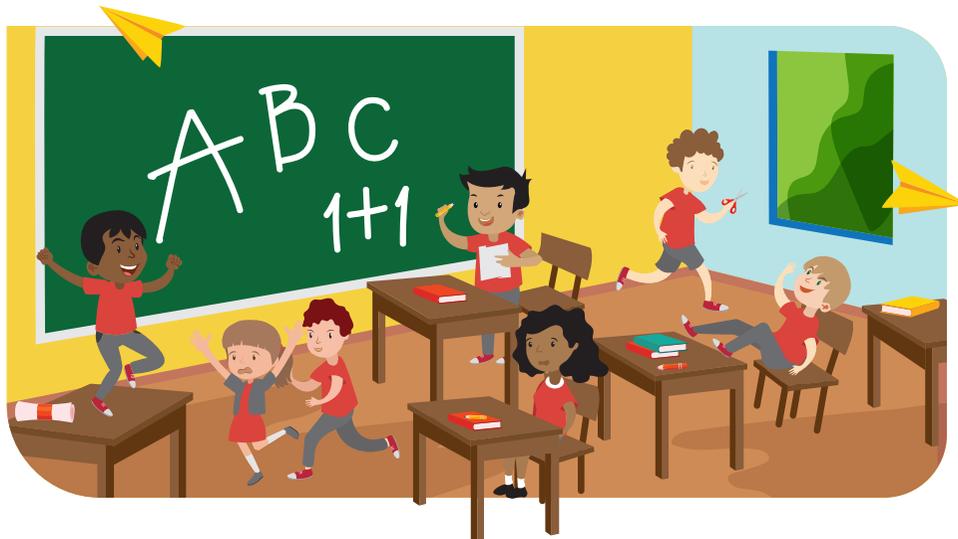
4 Work in pairs. Act out first aid for your class.



## Safety rules at school

We must make sure that we keep **safe** when we're at school.

5  Look at the picture and find the unsafe activities.



**At home**

Find out what first aid supplies you have got at home.

# Why has the stomach got gastric juices?

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

### Hypothesis

Is there a difference between how an apple breaks down in vinegar and in 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. What happened to the apple in each liquid?

### 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

### Prepositions

A preposition is a word before a noun that tells you where or when something is in relation to something else.

- 2 Read the sentences and choose the correct word.
  - a. The food goes  the esophagus and into the stomach. (up / down / across)
  - b.  dinnertime, your mouth starts to produce saliva. (At / In / On)
  - c. Find your pulse and count the number of beats  60 seconds. (on, as, in)
  - d. Your heart is  your lungs. (near, across, inside)
  - e. Put your hand just  your ribs. (below, where, there)
  - f. Blood flows  the arteries. (over, under, through)

## Tip 3

### Using diagrams

Diagrams help us organise information. Write simple, direct words or sentences.

- 3 Copy and complete the diagram in your notebook about three of the systems involved in nutrition.



## Christiaan Barnard (1922-2001)



Christiaan Barnard was a South African heart surgeon. 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.

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



Christiaan was a pioneer of organ transplants. In this medical intervention, the doctor replaces an unhealthy organ 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. It was a success.

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

**1** Are the sentences true or false? Correct the false sentences in your notebook.

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

### WebQuest



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

- a. Who was Helen Brooke Taussig?
- b. Where was she born?
- c. What medical treatment did she develop?
- d. 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
- plasticine
- 2 straws
- scissors
- a plastic bottle cut in half
- sticky tape



### Planning

- 2 Tie one of the balloons and cut off the top.
- 3 Stretch the balloon around the bottom of the plastic bottle and attach it with sticky tape. This will be the diaphragm.
- 4 Cut one of straws in half. 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.



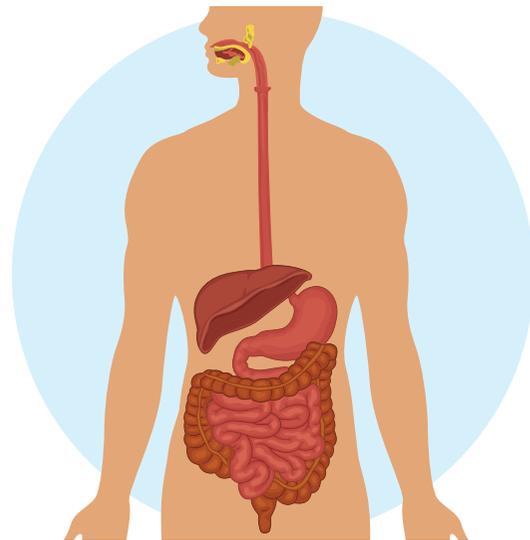
## 1 Answer the questions in pairs.

- a. What does the circulatory system transport?
- b. What's the function of the heart?
- c. What do our muscles need to function?
- d. What's the function of the excretory system?

## 2 Are the sentences true or false? Correct the false sentences in your notebook.

Digestion is important for breaking down nutrients, which the body uses for energy, growth and cell repair. In the stomach, gastric juices break down food. The small intestine absorbs the nutrients which pass into the blood. Digestion is a long journey that is very important to keep us alive.

- a. The gastric juices aren't acidic.
- b. The stomach absorbs the nutrients.
- c. Nutrients pass into the blood.
- d. Our bodies need nutrients to grow.



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

mouth

heart

lungs

digestive

esophagus

excretory

- a. The kidneys are part of the  system.
- b. The  system breaks down food.
- c. The  are part of the respiratory system.
- d. Food uses the  to go from the mouth to the stomach.
- e. The  is part of the circulatory system.
- f. The air enters our body through our  and nose.

## 4 Play the quiz!

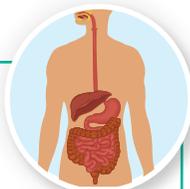


## Reflect

**1** Read the unit objectives and say what you have learned.

- Write one objective you can do.
- Write one objective you need more practice with.

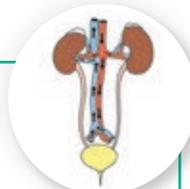
I can ...



read and write about the digestive system.



I can ...



read and write about the excretory system.



I can ...



read and write about the circulatory system.



I can ...



read and write about the respiratory system.



I can ...



explain what a balanced diet is.



I can ...



do an experiment to see how gastric juices work.



I can ...



describe who Christiaan Barnard was.



I can ...



research about Helen Brooke Taussig on the Internet.



I can ...



make a model lung.



**Key:**

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

**2** Make a poster to show one of the systems involved in nutrition.

circulatory system

digestive system

respiratory system

excretory system