



Food and nutrition

All living things need **nutrients**. Nutrients are the substances a body uses to build, repair and maintain itself. The process of feeding the body with nutrients is called **nutrition**.



Fascinating fact

If you were eaten by a lion, your body would be digested and rebuilt into parts of the lion's body!

After a meal we digest the food we have eaten. Digestion breaks the food down into substances our bodies can use.

Different nutrients

There are five main types of nutrient we need from our food. These are **carbohydrates**, **proteins**, **fats**, **minerals** and **vitamins**. A sixth important part of our diet is roughage or **fibre**.

Fibre

Fibre does not provide nutrition, but it helps bulk up waste so that it passes easily through the body. People who do not consume enough roughage are more likely to suffer from constipation, which can sometimes lead to more serious diseases of the intestines.

Lesson 1

When you have completed this lesson you will be able to:

- explain what is meant by a nutrient, and describe how plants and animals obtain the nutrients they need
- list the five main nutrients the human body needs and explain their role in the diet
- explain the importance of fibre (roughage) in the diet

Plants use sunlight, water and a gas from the air to make the food that gives them energy. They take other nutrients from the soil through their roots. Animals must obtain all the nutrients they need by eating food. Most of our food comes from eating plants, or the bodies of other animals.

Activity 1

Make a list of all the different foods you ate yesterday. Group them in two columns – food from plants and food from animals.

Can you think of any foods that do not come from plants or animals?



Lesson 1: Food and nutrition

Carbohydrates

Carbohydrates are mainly used by the body as fuel. Digestion breaks them into a simple sugar called glucose. This is carried in the blood to provide energy for all our body parts.

Proteins

Proteins perform many important jobs in the body. Your body needs them to grow, and to make repairs when it is damaged.

Fats

The body needs some fat to build its parts and keep them working properly. Fat can also be used as fuel, for energy. Surplus fat is stored under our skin as a reserve fuel supply.

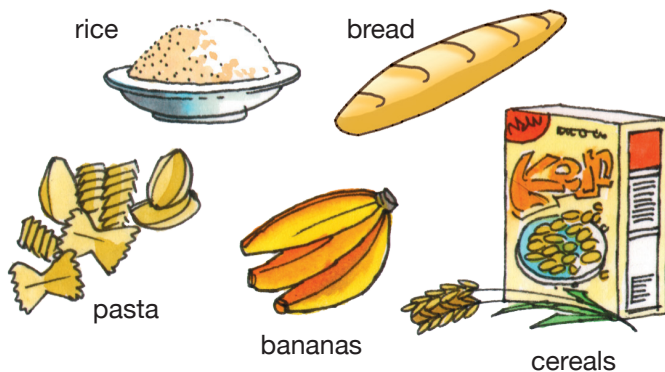
Minerals

Minerals are simple substances such as calcium, iron and salt that the body needs for building bones, carrying oxygen in the blood, and controlling blood pressure. You need to eat a lot of mineral-rich foods when your body is growing.

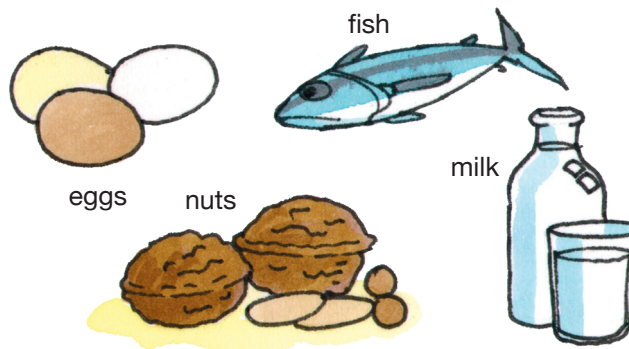
If you lose blood, then the iron it contained must be replaced or you will become weak. Dark green vegetables, treacle and liver are good sources of iron.

Young children need calcium from milk to build strong bones.

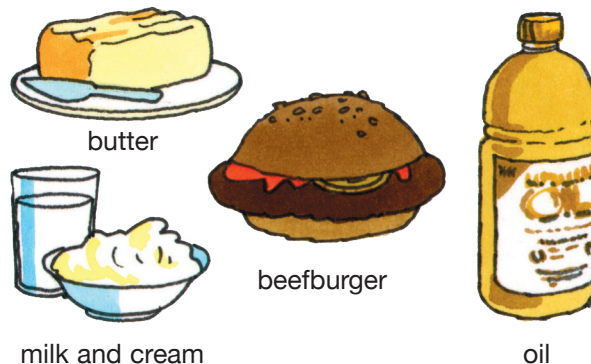
We need some salt in our diet to replace the sodium we lose by sweating, but too much salt can raise our blood pressure.



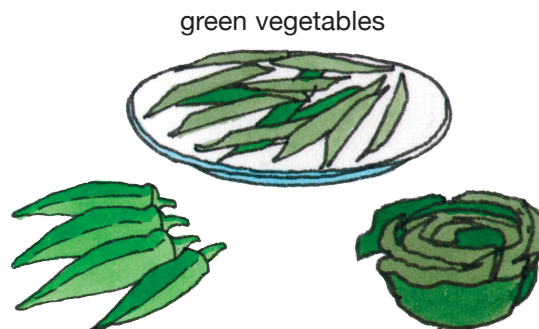
Carbohydrate-rich foods. An athlete must eat plenty of carbohydrate before a race to provide the energy needed.



Protein-rich foods. Children need protein if their bodies are to grow healthy and strong.



Take care! Eating too much fat can make you gain weight or become obese. As you get older too much fat can damage your heart.

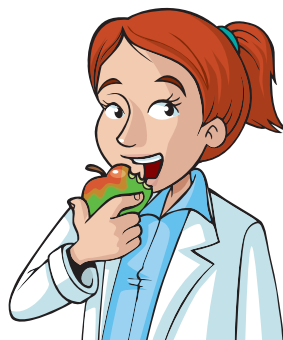


Mineral-rich foods. We need a variety of minerals for different purposes.



Vitamins

Vitamins are special substances that your body needs in tiny amounts but cannot make itself.



Activity 2

Copy and complete this table with a description of the importance of each **food group**.

Nutrient	Importance in the diet
1. carbohydrates	provide energy
2. proteins	
3. fats	
4. vitamins	
5. minerals	
6. fibre	

What you have learnt

Our food gives us the different ____ our bodies need to stay healthy and grow. We need ____ for energy, and ____ for growth and repair. We need some ____ for making and maintaining body parts, but not too many. To stay healthy we also need ____ and ____ in small quantities. These substances perform special tasks in the body. ____ does not give us nutrition, but it helps waste pass easily through the body.

Key words

carbohydrates	fats
fibre	minerals
nutrients	nutrition
proteins	vitamins

Check your progress

- ① What is a nutrient? List five nutrients we need from our food.
- ② Explain why fibre is important in the diet.
- ③ Name the nutrients that:
 - an athlete eats for energy
 - help build and maintain the body
 - are special substances the body needs in small amounts but cannot make itself.



Food groups

Different foods contain different amounts of the important **nutrients** we need. This is why we must eat a mixture of different foods – not just one type of food all the time. Foods may be grouped as sources of carbohydrate, protein or fat.

Carbohydrates are contained in **starchy** foods such as roots, cereals, bread and rice, and in **sweet** foods in the form of sugars.

Proteins are contained in **meat**, dairy products, fish, beans, seeds and nuts.

Fat-rich foods are **butter**, margarine, groundnuts, animal and plant oils and fatty meat.

Lesson 2

When you have completed this lesson you will be able to:

- identify the main food groups provided by common foods
- name foods that provide vitamins and minerals in the diet
- know how to test for two food types

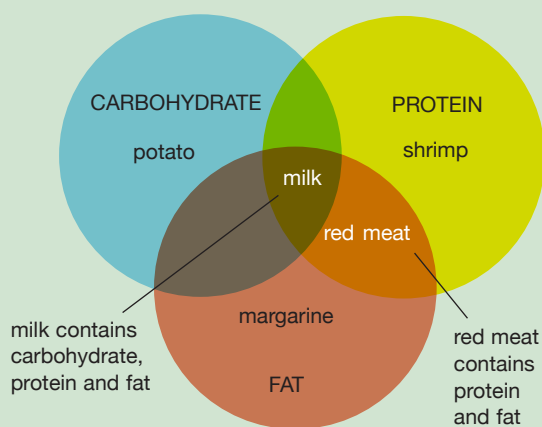
Activity 1

We are going to group foods. Look at the foods in the picture. Discuss which nutrients each food contains.

Copy the nutrients diagram onto a large sheet of paper. Write the name of each food in the correct circle.

Some foods contain more than one nutrient: red meat, for example, contains protein and fat. These foods can go in the spaces where the circles overlap.

Fill the circles with as many foods as you can think of.



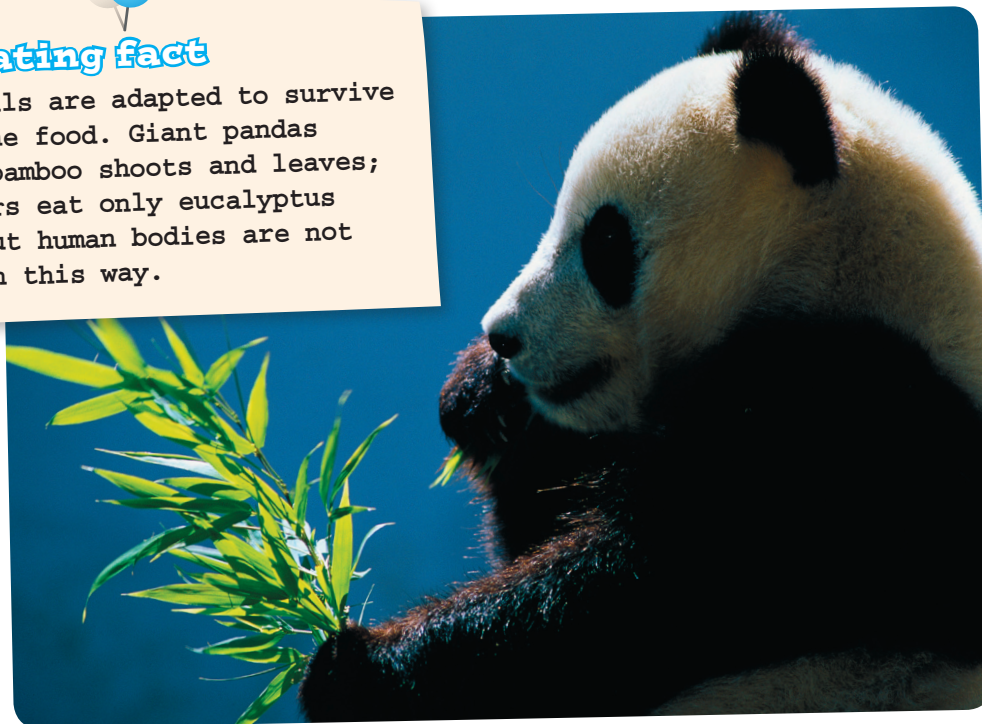
Nutrients diagram





Fascinating fact

Some animals are adapted to survive on just one food. Giant pandas eat only bamboo shoots and leaves; koala bears eat only eucalyptus leaves. But human bodies are not adapted in this way.



Sources of minerals and vitamins

This table lists some different vitamins and their importance in the body.

Vitamin	Some foods that contain it	What it does in the body
A	egg yolk, green vegetables, carrots, liver, milk	keeps eyes healthy
B1	rice, beans, meat, egg yolk, green vegetables, nuts, pineapples, apricots	keeps nerves healthy
B2	beans, meat, egg yolk, green vegetables	keeps the skin healthy
C	fruit, vegetables	keeps the skin, gums and blood vessels healthy
D	fish, fat, egg yolk, also made in the skin by sunlight	helps the bones to grow properly
K	green vegetables, egg yolk	needed for blood clotting

Activity 2

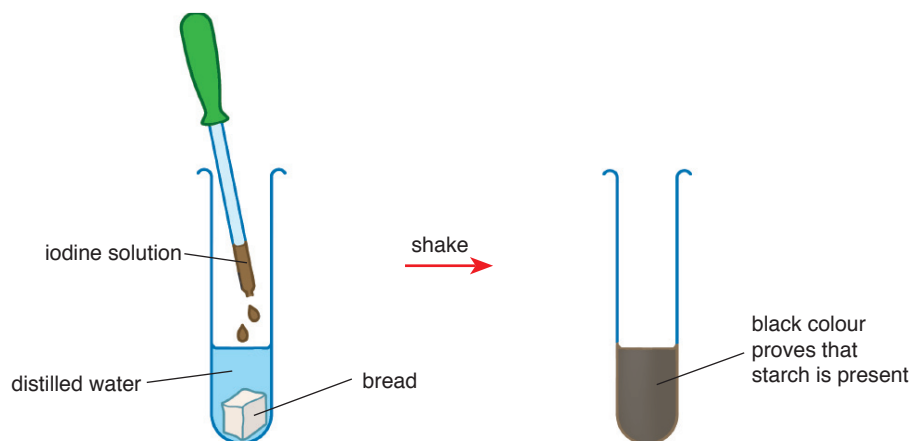
Use the table to say which vitamins each of the foods illustrated above contains.



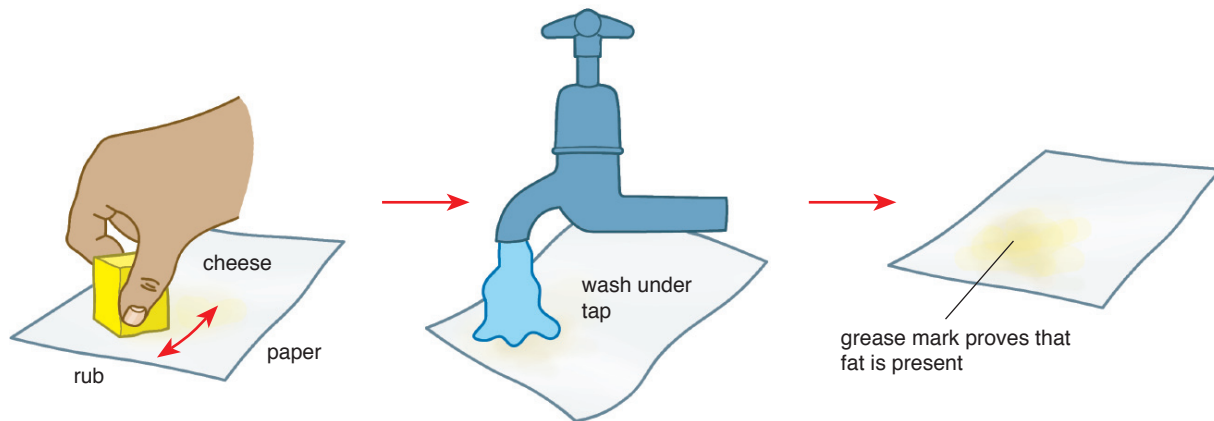
Lesson 2: Food groups

Food tests

How do we know which foods contain which nutrients? Scientists have invented chemical tests for proteins, starch, fats and other nutrients. These pictures show two **food tests**.



Foods that contain starch turn an iodine solution black.



Foods that contain fats leave a greasy mark on paper that water does not wash out.

What you have learnt

Foods contain different _____. ____ and ____ foods are rich in carbohydrates. Dairy foods, nuts, beans, fish and ____ are good sources of protein. Oil, margarine and ____ are fatty foods. We can use _____ to identify the different nutrients that a food contains.

Key words

butter	nutrients	food tests
meat	starchy	sweet

Check your progress

- ① Give three examples each of foods that are rich in:
 - a carbohydrates
 - b proteins
 - c fats
- ② Name an important vitamin that you obtain from eating fresh fruit and vegetables. Why is this vitamin important for health?