

## LESSON

## 1

## Food and Digestion



## Learning Objectives

After completing this chapter, you will be able to :

- ◆ understand the need of food
- ◆ list the nutrients
- ◆ know roughage and water
- ◆ define balanced diet
- ◆ describe the process of digestion
- ◆ know good eating habits and need to cook food
- ◆ list some methods of preserving food

Use Cordova Smart Class Software on the smart board in class to know the components of food and explore the process of digestion.

Have you ever thought why do we feel hungry? Our body makes us feel hungry and tells us that it needs food. Why does it need food? Our body works all the time. It works when we play, eat, walk, breathe or run. Some parts of our body keep working even when we are asleep like our heart. The heart beats all the time to pump blood. **For doing all these works, our body requires a lot of energy.** From where do we get this energy?

**We get energy from the food we eat.**

## WHY WE EAT FOOD

We eat food to **get energy** to study, play and work, **grow** and **keep ourselves fit and healthy.**



Food gives us energy to play.



Food gives us energy to study.



Food gives us energy to work.



Food helps us grow.

## NUTRIENTS

Food contains a variety of nutrients. **The substances that are needed by our body for good health and growth are called nutrients.**

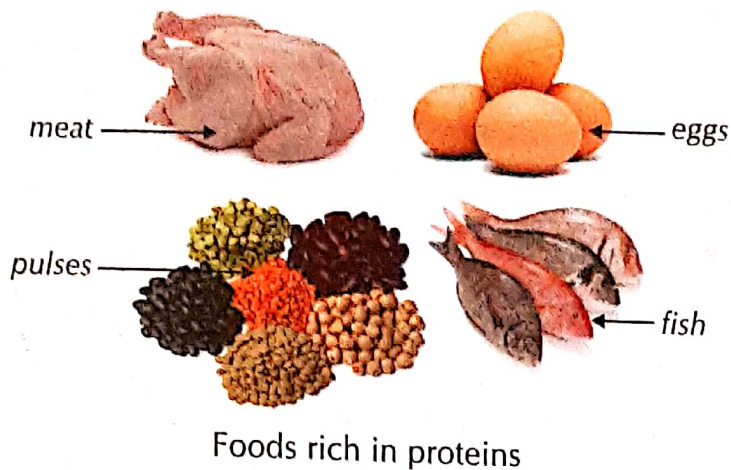
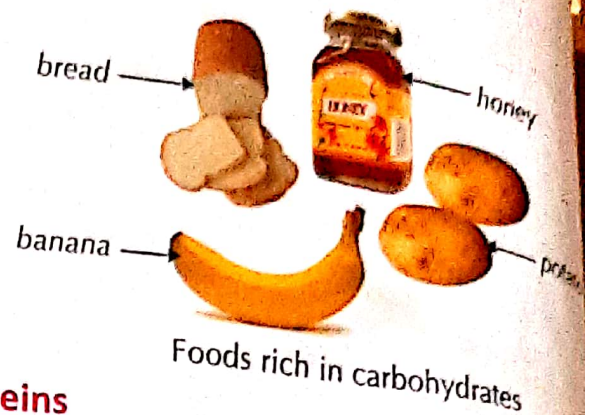
Nutrients present in our food are carbohydrates, proteins, fats, vitamins and minerals.

## Carbohydrates

We get energy from carbohydrates. **Sugar** and **starch** are two types of carbohydrates. A carbohydrate-rich diet is needed for people doing heavy physical work like labourers, farmers, rickshaw pullers and sportspersons.



Foods rich in carbohydrates are called energy-giving foods. Rice, wheat, potatoes, maize, banana and honey are rich in carbohydrates.



### Proteins

Proteins help us grow. Growing children need lot of proteins. Proteins also help to build muscle and repair the damaged tissues of the body.

Foods rich in proteins are called body-building foods. Eggs, fish, meat and pulses are rich proteins.

### Fats

Fats are the richest source of energy in our diet.

They keep us warm. They give us more energy than carbohydrates.

Foods rich in fats are also called energy-giving foods. Butter, ghee, cooking oils and nuts are rich in fats.



**Remember:** Our body needs very little amount of fat. Excess fat is harmful to us. It makes obese and causes many diseases.

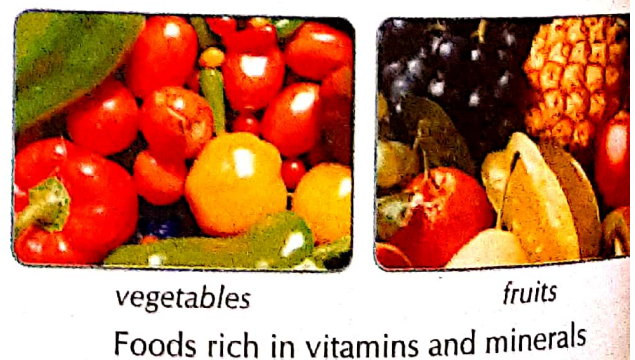
### Vitamins

Vitamins help our body fight against diseases and keep us healthy.

We need vitamins in small quantities. Foods rich in vitamins are called protective foods. Fruits, vegetables, milk, fish, meat, eggs and sprouted grams are rich in vitamins.

### Minerals

Foods rich in minerals are also called protective foods. They keep us healthy and fit. They help our body to form bones, teeth and blood. Calcium, potassium, sodium, iron and iodine are some of the important minerals. Vegetables, milk and cereals are rich in minerals.





Calcium makes our teeth and bones strong. Milk, curd, paneer, etc., are rich in calcium. Iron helps in the formation of blood in our body. Green leafy vegetables, apples, carrots, etc., are rich in iron. In addition to these nutrients, our food must have roughage and water.

### Know More

Lack of iodine in our body causes a disease called goitre.

## ROUGHAGE

Roughage is the fibre present in the food items that we get from plants. Most of the fruits, vegetables and seeds contain fibres. We cannot digest roughage. It is an important part of our diet because it helps to remove undigested food from our body. Salad gives us a lot of roughage.



Fruits and vegetables contain roughage.

## WATER

Three-fourths ( $\frac{3}{4}$ <sup>th</sup>) of our body weight is water. It helps the body to dissolve, digest and absorb the food. It helps in removing our body wastes through sweat and urine. We should drink about 8-10 glasses of water every day.



Balanced diet

## BALANCED DIET

The food we eat daily is called our diet. A diet that contains proper amount of all the nutrients, roughage and water required for good health is called a balanced diet.

**Remember:** We should eat different types of food to get all nutrients.

## Multiple Choice Questions (MCQs)

Tick (✓) the correct answers:

- Which of the following give energy?  
 (a) fats ☐ (b) vitamins ☐ (c) minerals ☐
- Foods rich in vitamins are called \_\_\_\_\_ foods.  
 (a) energy-giving ☐ (b) body-building ☐ (c) protective ☐
- \_\_\_\_\_ helps to remove waste materials from our body.  
 (a) Protein ☐ (b) Fat ☐ (c) Roughage ☐

## DIGESTION

The food that we eat does not give energy directly to our body. It gives energy after digestion. Digestion is a process in which the food we eat is broken down into simple and soluble substances that are absorbed by the body. Let us understand what happens to the food in our body.

### Know More

If whole of the food canal stretched out in a straight line, it would be about metres long.



Food passes through the food pipe to reach the stomach.

### Mouth

Teeth chew and grind the food. This food mixes with saliva (produced by the salivary glands). Saliva breaks the starch of food into simple sugars and also makes the food soft.

### Liver

Liver produces bile that helps to digest fats in small intestine.

### Small intestine

It is like a long, coiled tube that produces some digestive juices. The process of digestion completes here. The walls of small intestine have blood vessels that absorb the digested food and take it to all other body parts.

### Anus

Undigested semi-solid waste is passed out as stool through it.

### Stomach

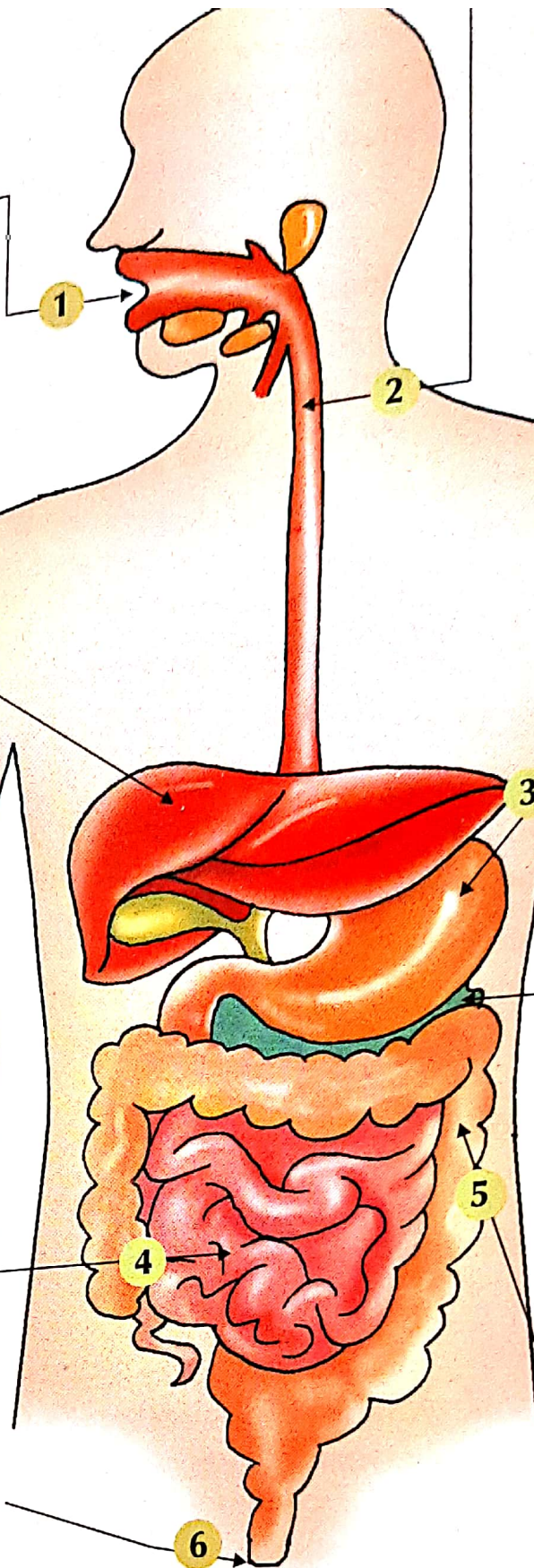
It is like a muscular bag in which food is churned and mixed with digestive juice. Digestive juice breakdown food into simple and soluble food.

### Pancreas

Pancreas produces juices that help to digest carbohydrates, fats and proteins in small intestine.

### Large intestine

It holds the undigested food, absorbs extra water from it and forms faeces (semi-solid waste).



Human digestive system





chips



pizza

Junk foods

## JUNK FOOD

Some food items like French fries, chips, cake and pizza are tasty, but unhealthy for us. They are called **junk foods**. They contain a lot of fat and sugar. So, we should avoid junk foods.

## GOOD EATING HABITS FOR PROPER DIGESTION

- Always take your meals in a pleasant environment.
- Eat a balanced diet.
- Eat at regular intervals.
- Eat fresh and clean food.
- Chew the food well before swallowing.
- Drink 8-10 glasses of water every day.
- Eat a lot of green vegetables and fruits.
- Avoid overeating.



Develop good eating habits

## COOKING FOOD

Other than fruits and some vegetables, most of the food items are cooked before eating. Food can be cooked by boiling, frying, roasting, baking or steaming.

We cook food because it

- makes the food more tasty.
- makes the food soft and easy to digest.
- kills germs present in the food.



Cooking of food

## Multiple Choice Questions (MCQs)

Tick (✓) the correct answers:

- Digestion of food finally completes in
 

(a) small intestine.	<input type="radio"/> (b) large intestine.	<input type="radio"/> (c) stomach.	<input type="radio"/>
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- Junk foods contain a lot of
 

(a) fats.	<input type="radio"/> (b) proteins.	<input type="radio"/> (c) minerals.	<input type="radio"/>
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- Cooking makes our food
 

(a) tasty.	<input type="radio"/> (b) tasteless.	<input type="radio"/> (c) sour.	<input type="radio"/>
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## FOOD PRESERVATION

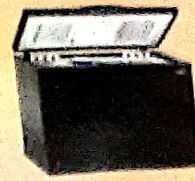
All food items get spoiled at room temperature after some time. Such spoiled food items produce foul smell and are not good for our health. For long use, a food item should be preserved. The process by which we can prevent the food items from getting spoilt for a long time is known as food preservation.



## Ways of Food Preservation

### Refrigeration and deep freezing

Refrigerator cools down the food to a very low temperature and deep freezer freezes the food. Both cooling and freezing preserve the food by slowing down the growth of microbes. Refrigeration preserves food for a shorter time as compared to freezing.



### Bottling and canning

Food is sealed in bottles and cans after killing germs. This does not allow the growth of microbes for a long time till the cans or bottles are opened.



### Drying

Food is dried by removing all water content from it. This prevents the food from spoiling.



### Pickling and jelling

Salt and oil in pickles and sugar in jams and jellies, act as preservatives. They prevent the growth of microbes for a long time.



## KEY WORDS

- Balanced diet** : a diet that contains proper amount of all the nutrients, roughage and water needed for good health
- Digestion** : a process in which the food we eat is broken down into simple and soluble substances that are absorbed by the body



## Points to Remember

- ▶ We eat food to get energy, grow and keep ourselves fit and healthy.
- ▶ Carbohydrates, proteins, fats, vitamins and minerals are nutrients present in our food.
- ▶ Our food must also have roughage and water.
- ▶ We should take a balanced diet.
- ▶ Digestion of food is necessary to get energy from food.
- ▶ We should avoid junk foods and eat a balanced diet.
- ▶ Food can be preserved by refrigeration, deep freezing, bottling, canning, drying, pickling and jelling.



# Exercises

(Use Cordova Smart Class Software on the smart board in class to do these exercises.)

## SECTION - A

### Class Response

#### A Oral Questions:

1. Why do we eat food?
2. Why should we drink 8-10 glasses of water every day?
3. Why should we chew the food well?

#### B Science Quiz:

1. Name four food items rich in carbohydrates.
2. Name the organ in our body that grinds the food.
3. Name two junk foods.

### Worksheet

#### A Multiple Choice Questions (MCQs):

1. Salad gives us a lot of \_\_\_\_\_.  
(a) proteins ☐ (b) roughage ☐ (c) fats ☐
2. Digested food is absorbed in \_\_\_\_\_.  
(a) stomach ☐ (b) large intestine ☐ (c) small intestine ☐
3. Eggs are rich in \_\_\_\_\_.  
(a) vitamins ☐ (b) proteins ☐ (c) fats ☐
4. \_\_\_\_\_ are protective nutrients.  
(a) Minerals ☐ (b) Carbohydrates ☐ (c) Proteins ☐

#### B Circle the odd ones. Give reason for your choice:

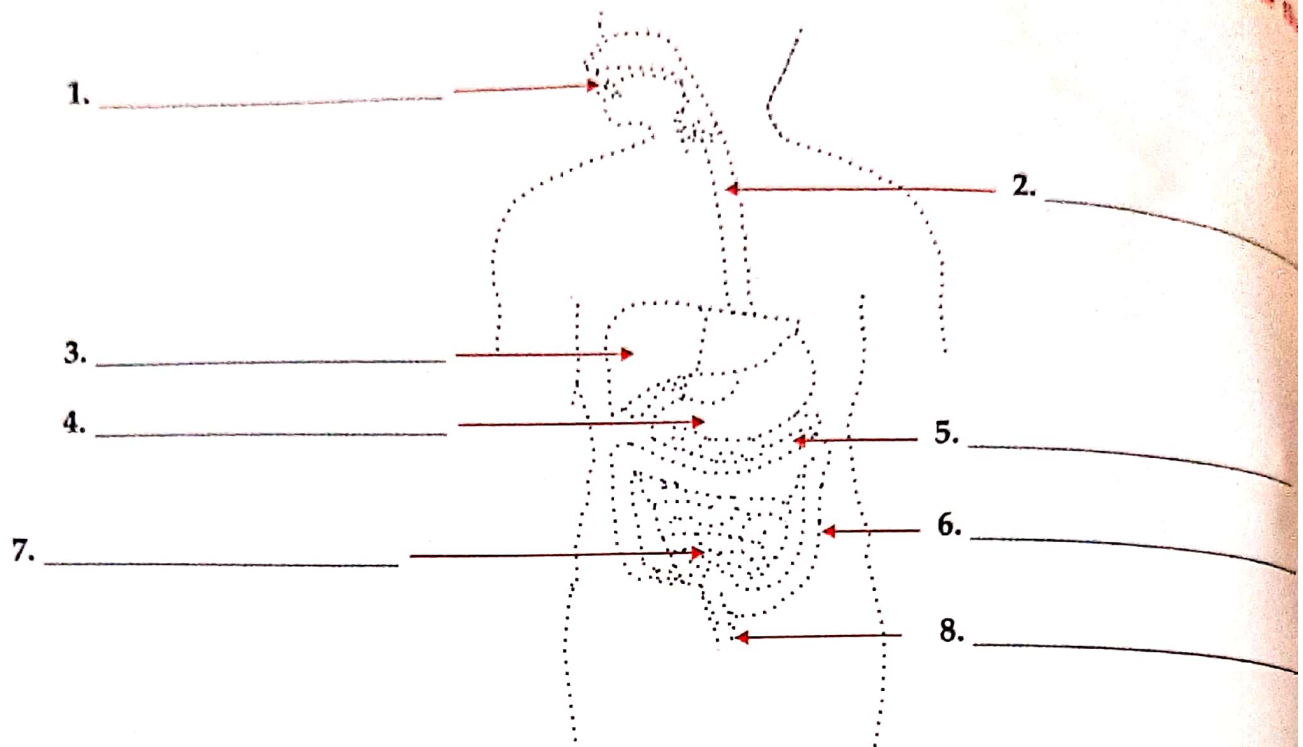
- |                 |        |          |
|-----------------|--------|----------|
| 1. French fries | chips  | apple    |
| 2. ghee         | pulses | oil      |
| 3. eyes         | liver  | pancreas |

#### C Fill in the blanks with the help of the given words:

1. Food passes through the \_\_\_\_\_ to reach the stomach. (pancreas/food pipe)
2. Growing children need more \_\_\_\_\_ in their food. (fats/proteins)
3. \_\_\_\_\_ give us more energy than carbohydrates. (Minerals/Fats)
4. Salt and \_\_\_\_\_ in pickles act as preservatives. (oil/mango)
5. All cooked foods get \_\_\_\_\_ at room temperature after some time. (spoiled/tasty)



- D** Join the dots. Identify the organs labelled in the following picture and write the names in the spaces provided. Also, colour them.



### SECTION - B

**A** Multiple Choice Questions (MCQs) Scientific/Practical skills:

1. A person becomes fatty after eating too much of  
(a) carbohydrates. ☐ (b) roughage. ☐ (c) junk foods.
2. Germs present in the food can be killed by  
(a) cooking. ☐ (b) digestion. ☐ (c) exercise.

**B** Very Short Answer Questions:

1. Where do we get energy from?
2. Name a method of food preservation.
3. Which organ produces bile?

**C** Short Answer Questions:

1. How does saliva help in digestion of food?
2. What is digestion?
3. What is food preservation?
4. Why do we cook food?
5. During dinner, Manisha always serves water to everybody in the family.  
(a) How many glasses of water should we drink daily?



(b) What value do we learn from Manisha?

**D Long Answer Questions:**

1. What is a balanced diet? Why should we have a balanced diet?
2. Briefly describe the process of digestion.

**E Think And Answer:**

1. Rahul is suffering from constipation. His grandmother suggests him to eat a lot of salad and fruits. How will that be helpful?
2. Pinki's mother always keeps the vessel with milk in the refrigerator. One day, she forgot to do so. Pinki observed that the milk became like curd next day. Why?



## Activity

**Group Activity/Project**

Collect the labels from jars containing pickle, sauce, ketchup, etc. Read the names of preservatives written on them. Stick these labels in your scrapbook.

**Group Discussion**

Discuss in the class: 'Nutritional value of different types of Indian foods'



## Little Scientist

Plan a weekly balanced diet chart for yourself.

## Life Skill

Every packed food item has its manufacturing date printed on its label. It also has a date ('best before') which tells till when it can be consumed.

Next time, you go to buy any food item, check the date and do not buy if the 'best before' date has been passed away.



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## LESSON

# 2

# Teeth and Microbes



## Learning Objectives

After completing this chapter, you will be able to:

- know the uses of teeth
- identify and label parts of a tooth
- know about microbes and their types
- know sets of teeth
- know tooth decay
- list harmful and useful effects of microbes
- name different kinds of teeth
- know how to take care of teeth



Use Cordova Smart Class Software on the smart board in class to identify the different kinds of teeth, and focus on tooth decay and care of teeth. Also, to know about useful and harmful microbes.

Teeth are very important part of our body.

### Teeth

- give shape to our face.
- help us bite and chew food.
- help us speak clearly.



Teeth give shape to our face.



Temporary teeth

### SETS OF TEETH

By the age of three, a child has a set of 20 teeth. This set of teeth is called **milk teeth** or **temporary teeth**.



Permanent teeth

By the age of six, a child starts losing the milk teeth one by one. As the milk teeth fall, new teeth grow in their places from the gums. This new set of teeth is called **permanent teeth**.

Every adult usually has a set of 32 teeth—16 in the upper jaw and 16 in the lower jaw. The upper and lower jaws have identical kinds of teeth. If you lose any tooth from the set of permanent teeth, you will not get a new one in its place.

### KINDS OF TEETH

There are four kinds of permanent teeth—incisors, canines, premolars and molars.

1. **Incisors:** The four front teeth in each jaw are incisors. They have sharp straight edges and are used for cutting and biting food. They are also called **cutting teeth**.

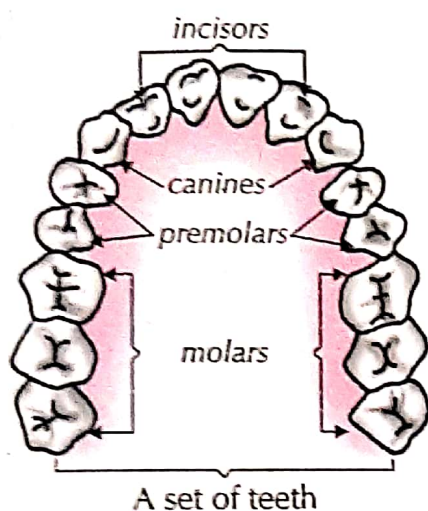
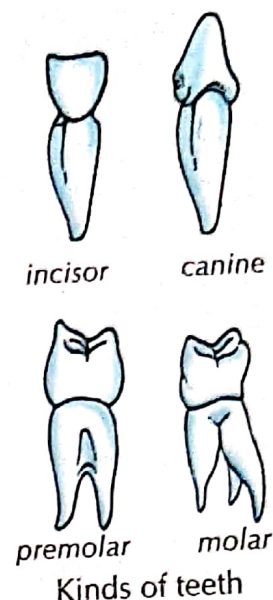


**2. Canines:** There are **two canines** in each jaw. They are present on either side of the incisors in each jaw. They are very sharp and pointed. They help tear the food. For this reason, they are called **tearing teeth**. They are sharper and bigger in flesh-eating animals.

**3. Premolars:** There are **four premolars** in each jaw. They are next to the canines. They are broad and flat. These teeth help us crack and crush the food like nuts. They are also called **cracking teeth**.

**4. Molars:** There are **six molars** in each jaw. They are next to the premolars. They are bigger and broader than premolars. They help grind the food. They are also called **grinding teeth**.

Premolars and molars are well developed in plant-eating animals and help them chew and grind their food well.



So, in an adult, out of 32 teeth, there are 8 incisors, 4 canines, 8 premolars and 12 molars.

### Know More

Out of total twelve molars, eight grow first (two on each side of premolars) and four grow later. These last molars are also known as 'wisdom teeth'.

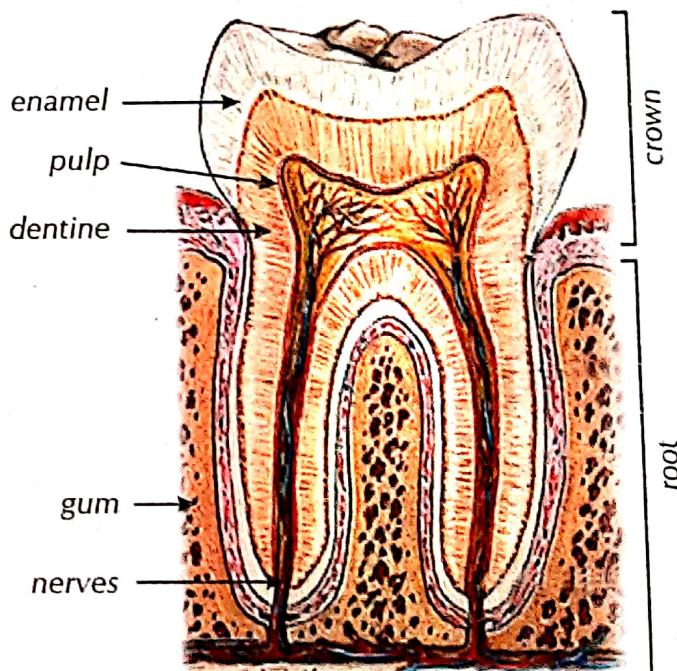
## STRUCTURE OF A TOOTH

When we open our mouth and look in the mirror, we can see our teeth. The soft gums hold our teeth tightly at their place.

Each tooth has two parts—**crown** and **root**. The part of the tooth that we see is crown and the part inside the gum (which we cannot see) is root.

The outer white covering of the tooth is called **enamel**. This is the **hardest material** in the human body.

The layer inside the enamel that forms the main **hard part** of the tooth is called **dentine**. The centre of a tooth is called **pulp**. It lies inside the dentine. This is **soft** and has blood vessels and nerves.



Structure of a tooth



## TOOTH DECAY

When we eat, small bits of food may stick between our teeth. When we do not brush our teeth properly, this stuck food rots and our teeth get covered with a **thin sticky layer of germs called plaque**. This plaque reacts with the sugar present in the food to produce acid which affects the tooth enamel and starts decaying it. This is called **tooth decay**. It causes **holes or cavities in the enamel and dentine**. As a result, the nerves and the blood vessels in the pulp get exposed. When any cold or hot thing comes in contact with these exposed nerves, we get a toothache. Thus, tooth decay causes the following:

- Toothache
- Foul smell from the mouth
- Stomach disorders
- Holes or cavities in the teeth
- Loss of teeth
- Bleeding gums

## Multiple Choice Questions (MCQs)

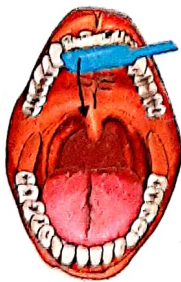
Tick (✓) the correct answers:

1. Tooth decay causes  
(a) toothache. ☐ (b) holes in the teeth. ☐ (c) both of these
2. Molars are also called  
(a) tearing teeth. ☐ (b) cutting teeth. ☐ (c) grinding teeth.
3. The centre of each tooth is called  
(a) dentine. ☐ (b) pulp. ☐ (c) crown.

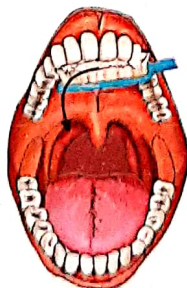
## CARE OF TEETH

Teeth are a very important part of our body. We must take care of our teeth to prevent tooth decay.

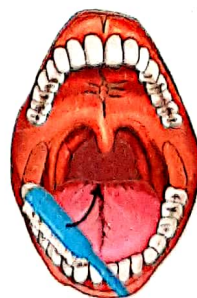
1. We must brush our teeth at least twice a day – in the morning and at night before going to bed.
2. We should brush our teeth correctly as shown below:



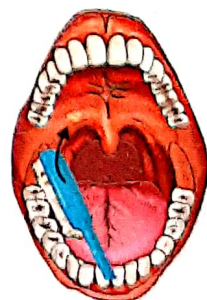
(i) Outside surface of upper teeth; Use a downward sweeping motion.



(ii) Inside surface of upper teeth; Use a downward sweeping motion.



(iii) Outside surface of lower teeth; Use an upward sweeping motion.



(iv) Inside surface of lower teeth; Use an upward sweeping motion.



(v) Surface of premolars and molars; Use a back and forth motion.

Correct method of brushing teeth



3. We should eat raw vegetables and fruits like carrots and apples. They make our gums and teeth strong.
4. We should avoid too many sweets and chocolates. They spoil our teeth.
5. We should rinse our mouth properly with water after every meal.
6. We should have milk and milk products daily. They have calcium that makes our teeth strong.
7. We must floss our teeth every day.
8. Teeth that are not kept clean get covered with a yellow substance called **tartar**. This can be removed by a dentist.
9. We should visit a dentist at least twice a year.



Flossing

### Multiple Choice Questions (MCQs)

Tick (✓) the correct answers:



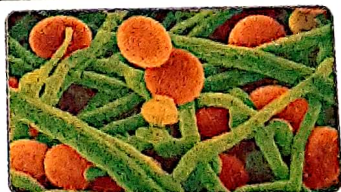
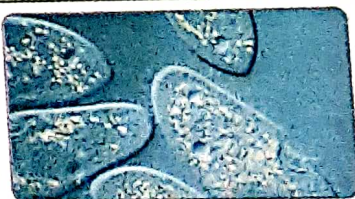
1. Yellow substance that covers the teeth, if they are not kept clean, is called  
 (a) dentine. ☐ (b) tartar. ☐ (c) plaque. ☐
2. We must floss our teeth \_\_\_\_\_.  
 (a) every month ☐ (b) every day ☐ (c) every week ☐
3. Sweets and chocolates \_\_\_\_\_ our teeth.  
 (a) spoil ☐ (b) make ☐ (c) clean ☐

### MICROBES

Microbes are very small living organisms. They cannot be seen with naked eyes. They can be seen only through a microscope. Microbes are found everywhere. They can be found in air, water, soil, food and also inside and outside the bodies of plants, animals and humans. Microorganisms grow rapidly when they get warmth, air, moisture and food. Some microbes are useful to us and some are harmful.

#### Kinds of Microbes

There are mainly **four** types of microbes— bacteria, viruses, fungi and protozoa.

Bacteria	Viruses	Fungi	Protozoa
			
<ul style="list-style-type: none"> <li>• Single-celled microbes</li> <li>• Can be of varying shapes like rod-shaped, spherical, comma-shaped or spiral</li> </ul>	<ul style="list-style-type: none"> <li>• Microbes smaller than bacteria</li> </ul>	<ul style="list-style-type: none"> <li>• Microbes that grow on dead and decaying matter</li> </ul>	<ul style="list-style-type: none"> <li>• single-celled microbes</li> </ul>



Some microbes are useful while some are harmful to us.

### Harmful Microbes

Harmful disease-causing microbes are called **germs**.

S.No.	Microbes	Diseases caused
1.	Bacteria	Typhoid, diphtheria, pneumonia, tuberculosis
2.	Viruses	Measles, polio, smallpox, influenza (flu), common cold
3.	Fungi	Ringworm, athlete's foot
4.	Protozoa	Malaria, dysentery

### Useful Microbes

There are some microbes that are useful to us in many ways.

1. A fungus called yeast helps to make soft cakes and bread.
2. *Lactobacillus* bacteria convert milk into curd.
3. Some bacteria help in the decay of dead plants and animals.
4. Some bacteria help to produce vitamins in our body.
5. Some bacteria help in digestion of food in our body.

### KEY WORDS

<b>Enamel</b>	: the outer white covering of the tooth
<b>Dentine</b>	: the layer inside enamel that forms the main hard part of the tooth
<b>Pulp</b>	: the soft centre of the tooth inside dentine that has blood vessels and nerves
<b>Plaque</b>	: thin sticky layer of germs covering the teeth
<b>Germs</b>	: microbes that cause diseases



### Points to Remember

- ▶ Teeth help to chew food and speak clearly.
- ▶ Permanent teeth are of four kinds – incisors, canines, premolars and molars.
- ▶ Different parts of a tooth are – enamel, dentine, gum, nerves and pulp.
- ▶ Tooth decay causes toothache, holes or cavities in teeth, loss of teeth, stomach discomfort and foul smell from the mouth.
- ▶ We must take care of our teeth to prevent tooth decay.
- ▶ There are four types of microbes – bacteria, viruses, fungi and protozoa.
- ▶ Some microbes are harmful while some are useful to us.



# Exercises

(Use Cordova Smart Class Software on the smart board in class to do these exercises.)

## SECTION - A

### Class Response

#### A Oral Questions:

1. Why should we eat raw vegetables and fruits?
2. How do you take care of your teeth?
3. Name two diseases caused by bacteria.

#### B Science Quiz:

1. Name the tearing teeth.
2. Name the microbe that causes malaria.
3. Name the thin sticky layer of germs on the teeth.

### Worksheet

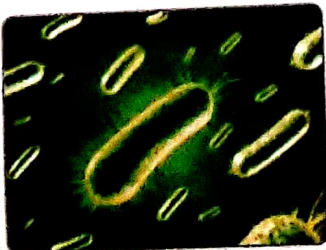
#### A Multiple Choice Questions (MCQs):

1. A newborn baby has  
(a) twenty teeth. ☐ (b) thirty teeth. ☐ (c) no teeth. ☐
2. There are \_\_\_\_\_ molars in each jaw in an adult.  
(a) 3 ☐ (b) 4 ☐ (c) 6 ☐
3. Microbes that cause diseases are called \_\_\_\_\_.  
(a) germs ☐ (b) insects ☐ (c) mosquitoes ☐
4. Polio is caused by \_\_\_\_\_.  
(a) fungus ☐ (b) bacterium ☐ (c) virus ☐

#### B Fill in the blanks with the help of the given words:

1. We must brush our teeth at least \_\_\_\_\_ a day. (thrice/twice)
2. Milk has \_\_\_\_\_ that makes our teeth strong. (vitamins/calcium)
3. We must visit a dentist at least \_\_\_\_\_ a year. (once/twice)
4. Microbes are very \_\_\_\_\_ living organisms. (small/large)

#### C Name the following microbes:



1. \_\_\_\_\_



2. \_\_\_\_\_



3. \_\_\_\_\_



## SECTION - B

### A Multiple Choice Questions (MCQs) Scientific/Practical skills:

1. The outer white covering of the tooth is  
(a) cavity. ☐ (b) dentine. ☐ (c) enamel.
2. \_\_\_\_\_ is used to make soft cakes and bread.  
(a) Bacteria ☐ (b) Yeast ☐ (c) Virus

### B Very Short Answer Questions:

1. Name the instrument which is used to see microbes.
2. Name the microbe that causes ringworm.
3. How many kinds of teeth do we have?

### C Short Answer Questions:

1. How are teeth important to us?
2. How are holes or cavities formed in our teeth?
3. Write any two effects of tooth decay.
4. What are temporary teeth?
5. Monika eats too many sweets and chocolates. Her friend, Nitika, always stops her from doing this.  
(a) What is tooth decay?  
(b) What do you learn from Nitika?

(Value Corners)

### D Long Answer Question:

Describe the structure of a tooth.

### E Think And Answer:

1. Sonu has white shining teeth. But his school friend, Monu, has a yellow covering on his teeth. What is the reason?
2. Neha got all her new teeth in place of the teeth she has lost when she was a child. But her father who lost his two teeth in an accident did not get any new teeth in their place. Why?



## Activity

### Group Activity/Project

With the help of your friends, make a colourful chart to show correct method of brushing teeth. Put it in your classroom.

### Group Discussion

Discuss in the class: 'Care of teeth'

## Life Skill

Your teeth are very important, so take proper care of them so that they last lifetime. Follow the ways to take care of your teeth given in the lesson.



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