

01 | Organs and Organ Systems

Warm-up

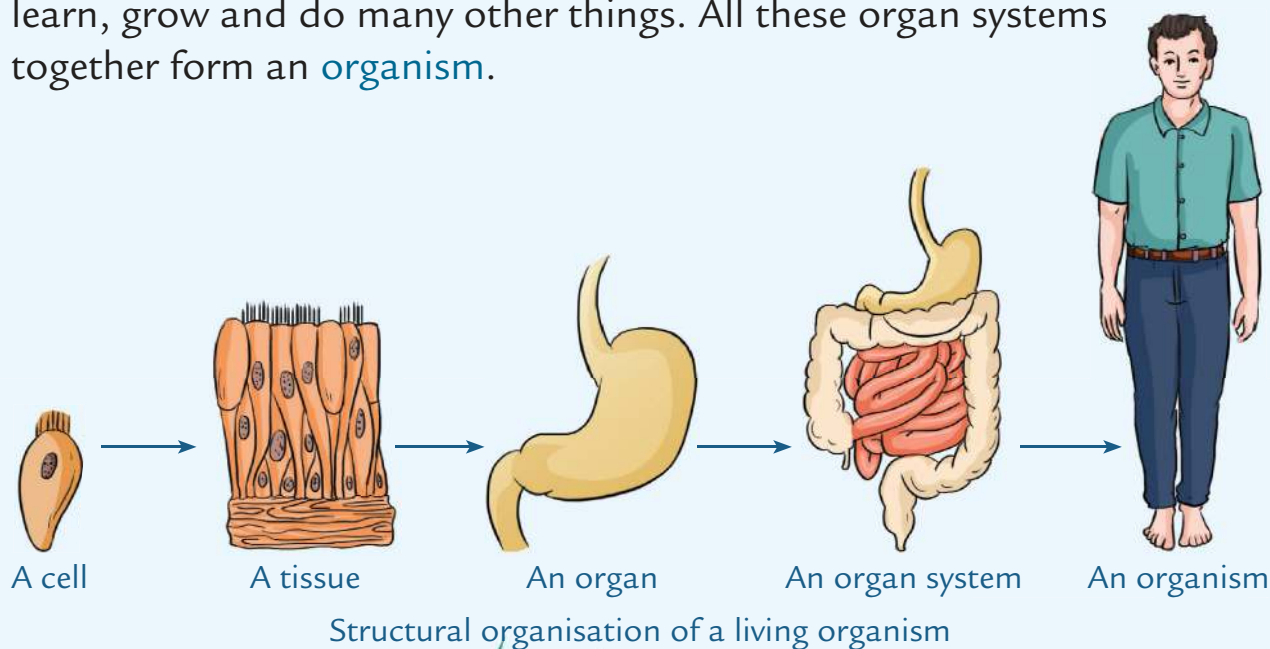
Name the part of the body you use to

1. kick a football.....
2. draw a painting.....

We use different organs of our body to do different things.

Do you know that all the organs in our body are made up of small building blocks? Each building block is called a **cell**. A cell is the smallest structural and functional unit of a living organism. (AN)

Many cells of the same type join together to form a **tissue**. Different tissues join to form an **organ**. A group of organs that work together to do a particular work form an **organ system**. Different organ systems work together to make it possible for the human body to walk, play, learn, grow and do many other things. All these organ systems together form an **organism**.

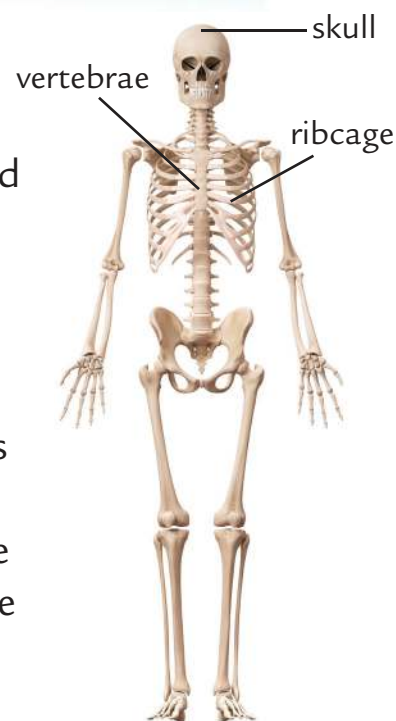




SKELETAL SYSTEM

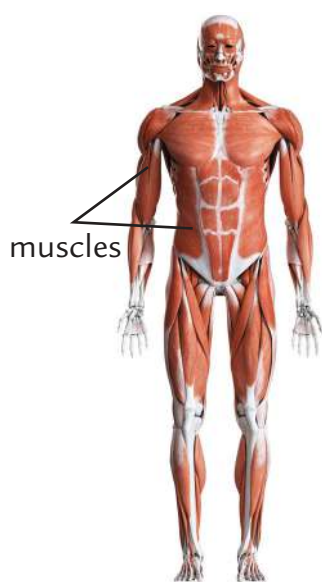
The **skeleton** is a framework of bones in our body. It gives our body shape and support. It also helps in movement and protects our internal body parts.

A human baby is born with over 300 **bones**. As the baby grows up, some bones fuse together. The body of an adult human has 206 bones. The bones in our head form the **skull** that protects the brain. The **ribcage** protects the lungs and the heart. Our backbone or **vertebral column** is made up of 33 bones. Each bone is called a **vertebra**. Thirty-three vertebrae make a backbone. It protects the **spinal cord**. The point where two bones join is called a **joint**. Joints help us move and bend in different ways.



Skeletal system

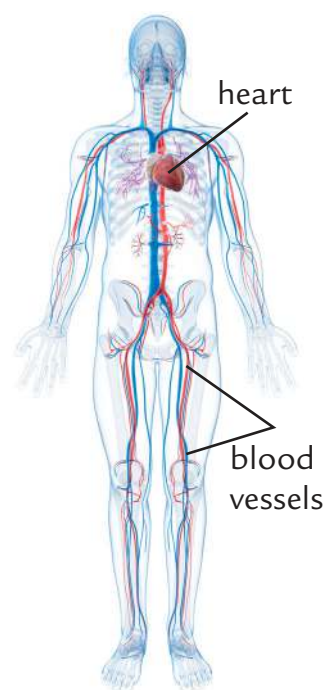
MUSCULAR SYSTEM



Muscular system

Our body has about 650 **muscles**. Muscles are attached to bones and together they are responsible for all movements in our body, like bending arms and knees.

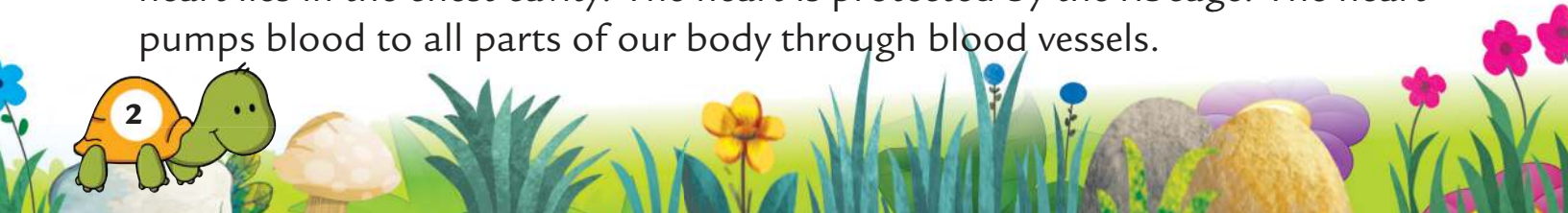
There are two types of muscles—voluntary and involuntary. The muscles that are in our control, for example, the muscles in our arms, legs, fingers and toes, are called **voluntary muscles**. We can move these muscles when we want. The muscles in our heart, chest and stomach are not under our control and are called **involuntary muscles**. These muscles move on their own.



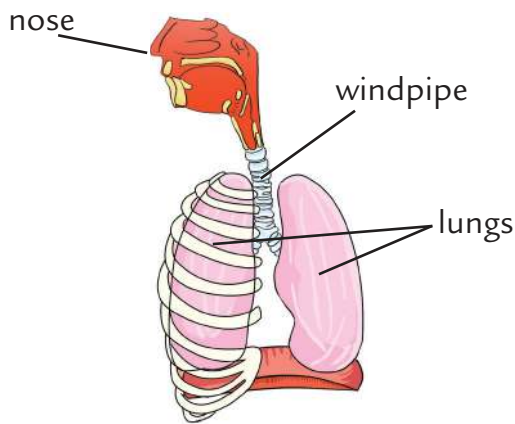
Circulatory system

CIRCULATORY SYSTEM

The circulatory system consists of the heart, blood and blood vessels. The heart lies in the chest cavity. The heart is protected by the ribcage. The heart pumps blood to all parts of our body through blood vessels.



RESPIRATORY SYSTEM



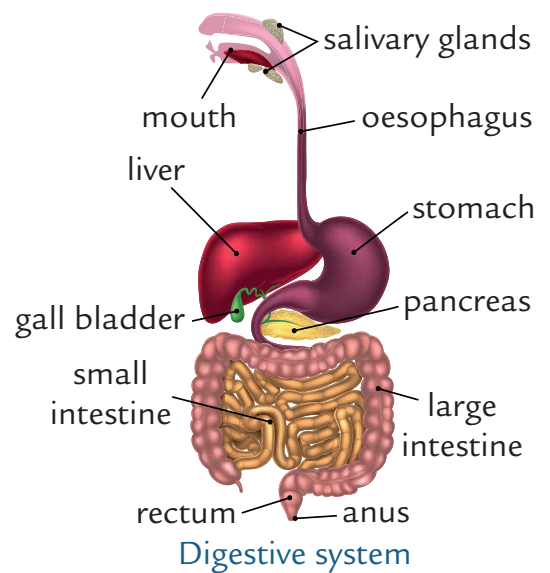
Respiratory system

The respiratory system enables us to breathe. The air we breathe in or inhale through the nose goes down the windpipe. The windpipe is connected to the lungs. The exchange of gases happens in lungs. Lungs take in oxygen which is then transported to all parts of the body. The carbon dioxide received by the lungs is exhaled through the nose. This process is called **respiration**.

DIGESTIVE SYSTEM

The food that we eat is broken down into simpler forms (nutrients) that are absorbed by the blood. This process is called **digestion**.

Digestion begins in the **mouth**. Food is broken down into smaller pieces with the help of the teeth. The saliva from the salivary glands moistens the food and breaks down the carbohydrates or starch of our *roti* or bread into simple sugars. It then goes down the **food pipe** or **oesophagus** into the stomach. The stomach produces hydrochloric acid and gastric juices which break down the food into a semi-solid mix. This broken down food enters the **small intestine** where it is completely or fully digested. It is mixed with digestive juices from the **pancreas** and **bile juice** from the **liver**. Afterwards, nutrients from the digested food are absorbed by the blood vessels present in the small intestine and sent to the rest of the body. The food that is not digested goes to the **large intestine** and the extra water and nutrients get reabsorbed.



Digestive system

Fact Corner

Bile juice is produced by the liver and is stored in the gallbladder.



The undigested food goes to the **rectum**. The undigested food is egested (removed) through the **anus**.

Subject Connect | English Life Skills Cognitive: Problem solving

The following parts of the body are spelled wrong. Correct their spelling and rewrite them in your notebook.

1. AURGAN
2. LEVER
3. BODI

Quick Connect INT

Fill in the blanks.

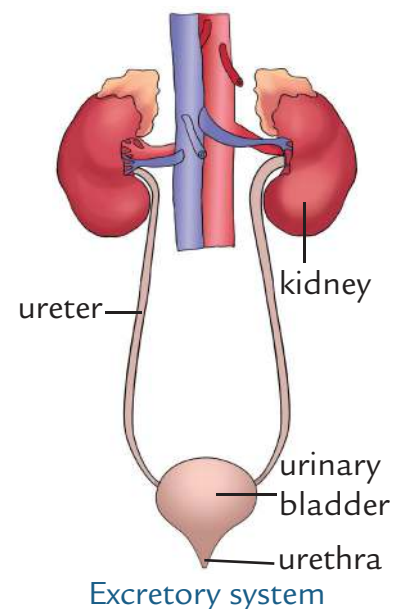
1. The stomach produces acid.
2. The heart is protected by the
3. Our body has about muscles.

NERVOUS SYSTEM

The nervous system consists of the brain, spinal cord and nerves. The brain is the control centre of our body. We see, hear, walk, think and learn with the help of our brain. The brain is joined to the spinal cord. The spinal cord connects all nerves of the body to the brain. These nerves carry messages to the brain from different parts of the body. The brain then processes the messages and sends a signal to the concerned part of the body to react appropriately to the situation.

EXCRETORY SYSTEM

Waste products need to be removed from our body. The pair of kidneys in our body filter the blood and remove waste in the form of urine. The kidneys then send the urine to the urinary bladder through the pair of ureters. We can control our urge to urinate because it is controlled by our nervous system.



Activity Corner

21st
Century Skills Creativity

Make a 3D model of any organ system using waste materials. Then, using your model, explain the working of that system to the rest of the class.

Keywords

Cell • A cell is the smallest structural and functional unit of a living organism.

Tissue • A group of similar cells joined together is called a tissue.

Organ system • A group of organs that work together to do a particular job forms an organ system.

Skeleton • The framework of bones in a human body is called the skeleton.

Digestion • The process by which the body digests and assimilates food is called digestion.

Wrap-up

Organ Systems

Skeletal System
framework of bones

Circulatory System
heart, blood, blood vessels

Digestive System
mouth, oesophagus, liver, stomach, pancreas, small intestine, large intestine

Excretory System
a pair of kidneys, a pair of ureters, urinary bladder, urethra

Muscular System
voluntary and involuntary muscles

Respiratory System
nose, windpipe, a pair of lungs

C. Write T for True or F for False.

1. Bile juice is secreted by the pancreas.
2. The respiratory system enables us to breathe.
3. The muscles in our heart and stomach are voluntary muscles.
4. Food is digested in the large intestine.

D. Answer the following questions.

1. Name the parts of the circulatory system.
2. Name the two types of muscles.
3. What is digestion?
4. What is respiration?

Wear Your Thinking Cap!

Life Skills

Cognitive: Critical thinking

- A. Why is the proper functioning of excretory system essential for us?
- B. What will happen if we do not chew our food properly?

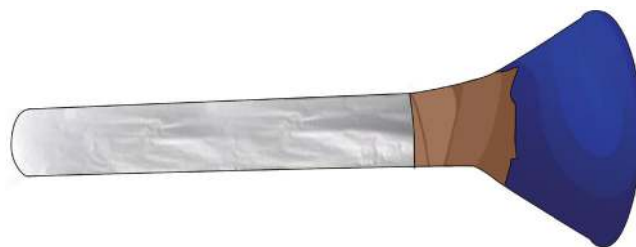
Things to Do

21st
Century Skills

Creativity

Make a stethoscope

A stethoscope is used by a doctor to listen to our heartbeat. You can make a simple stethoscope at home. You will need a kitchen paper roll, a funnel and tape. First, tape the funnel to one end of the kitchen paper roll.



Then, ask a friend to place the stethoscope on the side of the funnel against your heart. Can he/she hear your heartbeat? Now, do some exercise and ask your friend to listen to your heartbeat again. Did the rate of your heartbeat increase or decrease?

Short Biography | Christiaan Barnard

Dr Christiaan Barnard was born on 8th November 1922 in South Africa. He performed the world's first human heart transplant operation in 1967.

Life Skills and Values

21st
Century
Skills Initiative

Let us learn a yoga asana – Pranayama.

To start, take a full, deep breath and give out air slowly. Take in air again, and begin giving out air by quickly pulling in the lower abs to force air out in short **spurts**.

(Practise this only under the guidance of an expert/adult.)



Halasana



Sukhasana



Shavasana



Naukasana



Sarvangasana

spurts • a sudden and short period of increased activity, effort or speed



02 | Tongue and Teeth

Warm-up

Life Skills

Cognitive: Critical thinking

Write a slogan for the given picture.



We should keep our mouth clean. Our mouth has tongue and teeth.

TONGUE

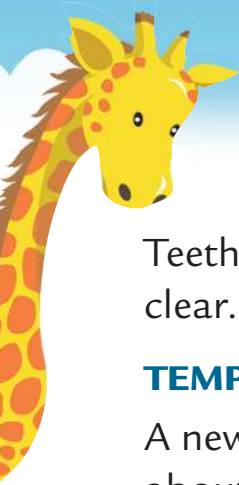
The tongue is a muscular organ that helps us taste and swallow food. It also helps us talk. If you look at your tongue in the mirror, you will see that it is covered by little bumps, called **papillae**. These papillae give the tongue its rough texture. The surface of the papillae is covered with thousands of taste buds.

When we put food in our mouth, the taste buds send a message to our brain and help us tell whether the food is salty, sweet, sour or bitter.

We should use a clean and soft tongue cleaner to clean our tongue.

TEETH (AN)

Human beings have a pair of jaws in their mouth. The upper jaw is fixed. The lower jaw can move. Each jaw has a row of hard white teeth. Together, they form a complete set of teeth.



Teeth help us chew our food properly. They also help in making our speech clear.

TEMPORARY TEETH AND PERMANENT TEETH

A newborn baby does not have teeth. Teeth start growing when a baby is about six months old. This process is called **teething**. By the time the baby becomes three years old, it has a set of 20 teeth. This set of first teeth is called **temporary teeth** or **milk teeth**.

When a child is about six or seven years old, the next set of teeth starts appearing. The second set of teeth is called **permanent teeth**. As permanent teeth grow, they push the milk teeth out.

Children have 28 teeth. At the age of about 18 years, four more teeth start growing. These are called **wisdom teeth**. An adult has a full set of 32 teeth: 16 of these are on the upper jaw and 16 on the lower jaw.

TYPES OF TEETH

Based on their function and structure, teeth are of four types—incisors, canines, premolars and molars.

