Lesson-12: Skeletal and Muscular Systems

12 Periods (40 minutes each)

Learn Better (Main Course Book), Stay Ahead (Workbook), Book of Holistic Teaching, Book of Project Ideas, CRM signs, Poster

Animation, Animated Activities, Concept Map, Dictionary, eBook, I Explain, Infographic, Quiz, Slideshow, Test Generator

Confirming better: Asking for help is a sign of strength, not weakness.

Curricular Goals and Objectives (NCF)

To enable the students:

- to understand the structure and functions of the skeletal and muscular systems and how bones and muscles work together for movement.
- to identify types of joints and muscles.
- to differentiate between voluntary and involuntary muscles.
- to recognise the importance of caring for the skeletal and muscular systems.

Methodology

Period 1

SHOULD DO — 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we dive into our lesson, let us take a moment to relax and focus our minds with a short meditation. Ready?

Teacher: Sit comfortably in your chair, with your back straight and feet flat on the ground. Close your eyes gently and take a deep breath through your nose. Hold it for a moment, then slowly breathe out through your mouth.

Let us do these three more times. Breathe in and breathe out. As you breathe, imagine your mind becoming clear and ready to learn.

Open your eyes and smile at your friends. Let us start our lesson with positive energy.

Confirming better

Teacher: Before we start the class, let us all say something positive together, 'Asking for help is a sign of strength, not weakness.' Repeat after me: 'Asking for help is a sign of strength, not weakness.'

Teacher: Alright. Today, we are going to begin a new chapter, 'Skeletal and Muscular System.' We use a KWL chart to help us organise our thoughts and learning. I have made a KWL format on the blackboard. Please take out your notebooks and draw the same format.

K	W	L

MUST DO — 05 MIN.

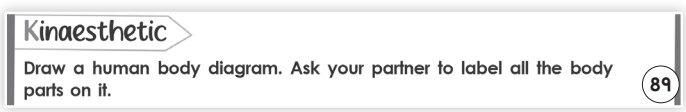
Teacher: Let us start by filling out the 'K' and 'W' columns. Take a few minutes to think and write. If you have any questions, feel free to ask.

Teacher: Before we start the chapter, we will do a quick Re-KAP, which involves revisiting our previous knowledge through creative activities using Kinaesthetic, Auditory and Pictorial methods to make our learning interactive and engaging.

Kinaesthetic

MUST DO — 10 MIN.

Teacher: Let us begin with Kinaesthetic activity. Draw a human body diagram on your paper.



(Let the students draw the human body.)

Teacher: Now, pass it to your partner. Your partner will label all the body parts on it. Make sure you help each other.

Teacher: Keep looking at your partner's diagram and check if all parts are labelled.

Auditory

MUST DO — 10 MIN.

Teacher: Now, let us move to listening. Please listen to me carefully and answer the questions that I ask. I want you to pay attention to every detail before answering. Are you ready?

Auditory*

Listen to your teacher carefully. Answer the questions. 89

Teacher: The skeletal and muscular systems work together to help our bodies move and stay strong. The skeletal system is made up of bones that provide structure and support to our body.

1. What are the two main systems that work together to help our bodies move?
2. What is the skeletal system made up of?

(Waits for student responses.)

Teacher: Excellent listening, everyone. I am proud of how carefully you all followed. Let us move on.

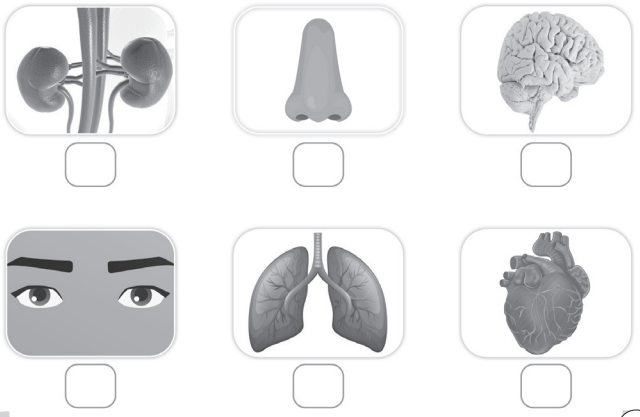
Pictorial

Teacher: Everyone, please look at the 'Pictorial' section. You can see six pictures.

MUST DO
10 MIN.

Pictorial PS

Look at the pictures. Identify which of these are the internal organs of the human body. Write 'I' below the pictures which show an internal organ.



89

Teacher: Your task is to identify which of these are internal organs. You will write the letter 'I' below each picture that shows an internal organ.

Teacher: Look at each picture carefully and write 'I' below the internal organ.

(Let the students complete the activity and discuss the correct answer.)

Teacher: Well done. I saw many of you marked the kidneys, brain, lungs and heart correctly. These are internal organs.

Differentiated Activities

110 km/hr

Which organ in our body helps in thinking?

80 km/hr

Name one internal organ that helps in breathing.

40 km/hr

Name one part in our body that helps us see.

Home Task

Draw any two internal organs. Label them clearly.

Period 2

Interacting better

MUST DO
10 MIN.

Teacher: Everyone, please look at the 'Interacting better' section. I want you to talk to your partner and discuss which organ in the body is responsible for pumping blood. Take your time and listen to each other carefully.

Interacting better ICL

Discuss with your partner which organ of the body is responsible for pumping blood. 90

(Let the students discuss the organ.)

(Use CRM signs to settle the class.)

Teacher: Great. The heart is the organ that pumps blood to all parts of the body. Well done, everyone. I really liked how you shared your thoughts with your partner.

MUST DO
30 MIN.

Teacher: Everyone, please open your books and look at the picture story given on page 90 of your Main Coursebook. Read it silently to yourself. Look carefully at each picture and the conversations.

Teacher: Take your time and try to understand what is happening.

(Let the students read the story.)

Teacher: Now that you have finished reading, let us have a quick discussion. What was Ryan working on at the beginning of the story?

Teacher: Yes, Ryan was working on his holiday project about bones and muscles. He wanted to finish it before going to the park.

Teacher: Very good. Next, what did Ryan's mother tell him about bones?

Teacher: She said that bones are hard and strong. They give shape to our body and also support it, helping us stand and move properly.

Teacher: Excellent answer. Now, think carefully. What do muscles help us do?

Teacher: Muscles help in the movement of our body parts. They pull the bones to move different parts like arms, legs or fingers.

Teacher: That is correct. What question did Ryan ask about bones?

Teacher: Ryan asked his mother what the longest bone in our body is. He wanted to include that in his project.

Teacher: Well done. Can you name that bone?

Teacher: Yes, it is the thigh bone. It is also called the femur.

Teacher: Brilliant. What is the function of the thigh bone?

Teacher: The thigh bone supports the weight of the whole body and helps us walk, run and jump.

Teacher: Good thinking. And what advice did Ryan's mother give him at the end?

Teacher: She told him to focus on the movements of his bones and muscles while playing. That way, he would learn more by observing how the body works in action.

Teacher: Well done, everyone. You have understood the story well.

You may show the **Dictionary** and **eBook** on the digital platform.

Differentiated Activities

110 km/hr

Which bone in the body is the longest and what is its function?

80 km/hr

Name one function of muscles in the body.

40 km/hr

Which organ helps in movement – bones or muscles?

Home Task

Draw a picture of yourself playing your favourite game. Label any two body parts where bones and muscles work together.

Period 3

SHOULD DO

05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Which organ in your body helps you think? (Brain)

Teacher: Which organ helps you breathe? (Lungs)

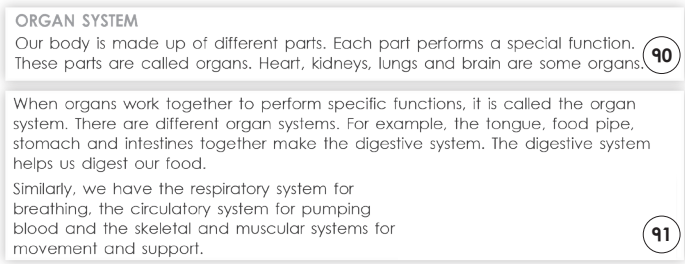
Teacher: Which organ pumps blood? (Heart)

Teacher: Which part of the body helps you see? (Eyes)

Teacher: Which part is used to smell things? (Nose)

Teacher: Excellent memory. I am happy to see that you remembered so well. Let us now start today's class.

(The teacher will read the last paragraph of page 90 and the first to third paragraphs of page 91 aloud and provide explanations to ensure that the students understand the content.)



ORGAN SYSTEM

Our body is made up of different parts. Each part performs a special function. These parts are called organs. Heart, kidneys, lungs and brain are some organs. 90

When organs work together to perform specific functions, it is called the organ system. There are different organ systems. For example, the tongue, food pipe, stomach and intestines together make the digestive system. The digestive system helps us digest our food.

Similarly, we have the respiratory system for breathing, the circulatory system for pumping blood and the skeletal and muscular systems for movement and support. 91

MUST DO

15 MIN.

Teacher: Let us begin with a small question. What is our body made up of?

Teacher: Well done. Our body is made up of different parts. These parts are called organs. Now tell me, can you name any organs?

Teacher: Excellent. The heart, kidneys, lungs and brain are some organs. Now, when these organs work together to perform a function, what do we call this group?

Teacher: Yes, that is called an organ system. There are different organ systems in our body. Let us think about digestion. What organs help us digest our food?

Teacher: Good answers. The tongue, food pipe, stomach and intestines together form the digestive system.

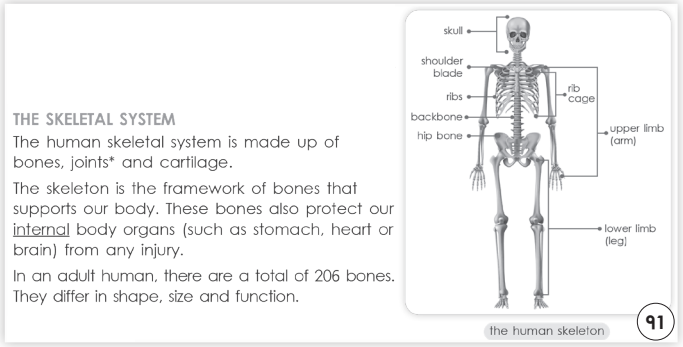
Teacher: What about breathing? Which system helps us breathe?

Teacher: Wonderful. That is the respiratory system. And for pumping blood, which system do you think is involved?

Teacher: Yes, that is the circulatory system. What about movement and support? What systems do we need for that?

Teacher: Correct. The skeletal and muscular systems help in movement and support. Great work, everyone.

Teacher: Now, let us discuss the skeletal system. What do you think the human skeletal system is made of?



Teacher: That is right. It is made of bones, joints and cartilage. Now tell me, what is the job of these bones?

MUST DO
10 MIN.

Teacher: Correct. The bones form the framework of our body. They also protect the internal organs. Can you name any internal organs that bones protect?

Teacher: Yes, like the stomach, heart and brain. Very good. How many bones are there in the body of an adult human?

Teacher: Excellent. There are 206 bones. Do you think all bones are the same?

Teacher: No, they differ in shape, size and function.

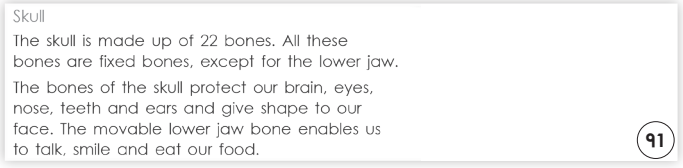
Teacher: Everyone, please look at the diagram of the human skeleton given on page 91 of your Main Course Book. Can you point to the skull?

Teacher: Good. Now show me the rib cage. And what about the backbone?

Teacher: Well done. How about the hip bone and shoulder blade?

Teacher: Great work. Can anyone point out the upper limb and lower limb?

Teacher: Excellent. You have observed the skeleton closely and labelled it correctly. Keep it up.



Teacher: Let us look at one part in detail. What is the name of the part of the skeleton that protects our brain?

MUST DO
10 MIN.

Teacher: Yes, it is called the skull. Do you know how many bones make up the skull?

Teacher: That is right. The skull is made up of 22 bones. Are all of them fixed?

Teacher: Only one bone is movable and that is the lower jaw. Very good. Now, can you tell me what the bones of the skull protect?

Teacher: Excellent. The bones of the skull protect the brain, eyes, nose, teeth and ears. The movable lower jaw helps us to eat and speak. Very well done, everyone.

You may show the **I Explain** on the digital platform.

Differentiated Activities

110 km/hr

Which organ system protects internal organs from injury?

80 km/hr

How many bones are there in the human skull?

40 km/hr

What is the number of bones in an adult human body?

Home Task

Draw a neat diagram of the human skeleton. Label the skull, backbone, rib cage, shoulder girdle and hip girdle.

Period 4

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What are the parts of our body called? (Organs)

Teacher: What is the group of organs working together called? (Organ system)

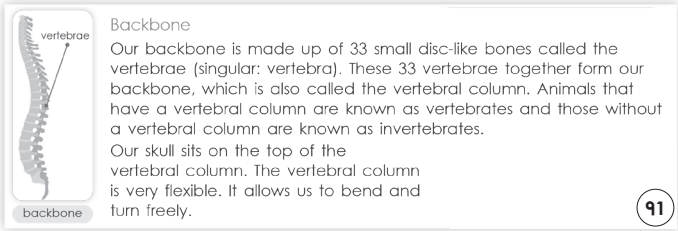
Teacher: How many bones are there in an adult human? (206)

Teacher: Which part of the skeleton protects the brain? (Skull)

Teacher: Name one movable bone in the skull. (Lower jaw)

Teacher: Well done, everyone. Let us now start today's class.

(The teacher will read the last two paragraphs of page 91 and the first two paragraphs of page 92 aloud and provide explanations to ensure that the students understand the content.)



Teacher: Let us begin by talking about an important part of our skeleton. Can you name the bone that runs along our back?

MUST DO
10 MIN.

Teacher: Yes, it is the backbone. What is our backbone made up of?

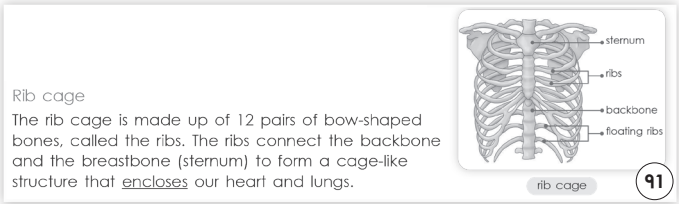
Teacher: Correct. It is made up of 33 small disc-like bones called vertebrae. What is the singular form of vertebrae?

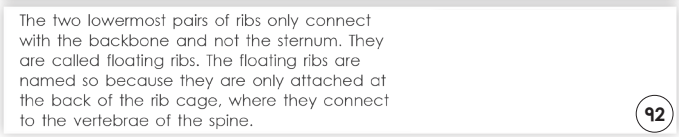
Teacher: Good. It is a vertebra. Now, what do these 33 vertebrae together form?

Teacher: That is right. They form our backbone or vertebral column. Can you tell me where our skull sits?

Teacher: Yes, it sits on top of the vertebral column. Now tell me, is the vertebral column flexible?

Teacher: Absolutely. It is very flexible. It allows us to bend and turn freely. Very well answered.





Teacher: Let us now talk about the rib cage. What is the rib cage made up of?

MUST DO
15 MIN.

Teacher: That is correct. It is made up of 12 pairs of bow-shaped bones called ribs. What do the ribs connect?

Teacher: Yes, they connect the backbone and the breastbone. What is the breastbone also called?

Teacher: It is called the sternum. When the ribs, backbone and sternum come together, what do they form?

Teacher: Wonderful. They form a cage-like structure. What do you think is protected inside this cage?

Teacher: Excellent. The heart and lungs. Now tell me, do all the ribs connect to the sternum?

Teacher: No, the last two pairs do not. What are these called?

Teacher: Correct. They are called floating ribs. Why do you think they are called floating?

Teacher: Very good. Because they only connect at the back to the vertebrae and not to the sternum.

Teacher: Now, everyone please look at the diagram of the rib cage given on page 91 of the Main Course Book. Can you see the sternum in the centre?

Teacher: Good. Now, point to the ribs. How are they shaped?

Teacher: Yes, they are bow-shaped. Can you find the floating ribs at the bottom?

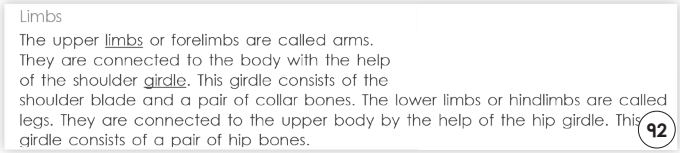
Teacher: Well done. These ribs are not connected to the sternum. What is the bone that runs along the back?

Teacher: Correct. That is the backbone or vertebral column. You have all understood the diagram very well. Excellent work.

Teacher: Let us now move on to limbs. What are the upper limbs called?

MUST DO
10 MIN.

Teacher: That is right. They are called arms or forelimbs. How are they connected to our body?



Teacher: Yes, with the help of the shoulder girdle. What does the shoulder girdle consist of?

Teacher: Correct. A pair of collar bones and the shoulder blade. Now, what are the lower limbs called?

Teacher: Very good. They are called hindlimbs or legs. How are they connected to our body?

Teacher: Yes, with the help of the hip girdle. And what does the hip girdle consist of?

Teacher: A pair of hip bones. Excellent work. You have remembered all the names very well.

Discovering better

(Explain the term mentioned in the 'Discovering better' section given on page 92.)

You may show the **Infographic** on the digital platform.

Differentiated Activities

110 km/hr

What is the total number of vertebrae that form the vertebral column?

80 km/hr

What is the name of the bone that connects the ribs in front?

40 km/hr

What are the upper limbs also called?

Home Task

Name the two girdles that help in connecting the limbs to the body. Then, write how many ribs are present in the human rib cage.

Period 5

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What is the backbone made up of? (33 vertebrae)

Teacher: What is the other name for the backbone? (Vertebral column)

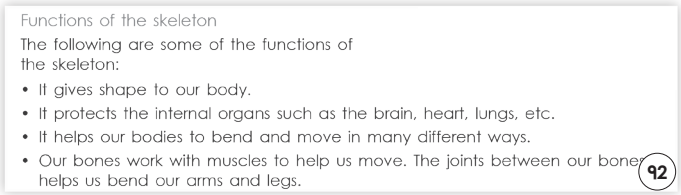
Teacher: How many pairs of ribs are in the rib cage? (12)

Teacher: What are the last two pairs of ribs called? (Floating ribs)

Teacher: What is the shoulder girdle made up of? (Shoulder blade and collar bones)

Teacher: Well done, everyone. Let us now start today's class.

(The teacher will read the last three paragraphs of page 92 aloud and provide explanations to ensure that the students understand the content.)



Functions of the skeleton

The following are some of the functions of the skeleton:

- It gives shape to our body.
- It protects the internal organs such as the brain, heart, lungs, etc.
- It helps our bodies to bend and move in many different ways.
- Our bones work with muscles to help us move. The joints between our bones helps us bend our arms and legs.

92

Teacher: Let us begin by thinking about why we have skeleton. What is one thing the skeleton gives to our body?

MUST DO

10 MIN.

Teacher: Very good. It gives shape to our body. What else does it do?

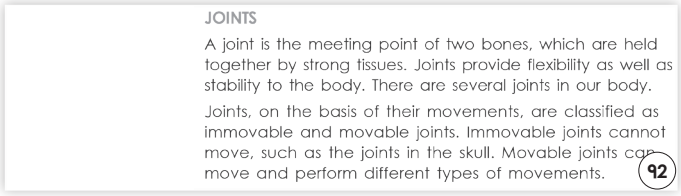
Teacher: Yes, it protects our internal organs. Can you name a few organs that are protected?

Teacher: That is right. The brain, heart and lungs. What other help do we get from the skeleton?

Teacher: Excellent. It helps us bend and move in different ways. Now tell me, do bones work alone?

Teacher: No, they work with muscles to help us move. What part of the skeleton helps us bend our arms and legs?

Teacher: Wonderful. The joints between bones.



JOINTS

A joint is the meeting point of two bones, which are held together by strong tissues. Joints provide flexibility as well as stability to the body. There are several joints in our body.

Joints, on the basis of their movements, are classified as immovable and movable joints. Immovable joints cannot move, such as the joints in the skull. Movable joints can move and perform different types of movements.

92

Teacher: Now, let us discuss joints. What is a joint?

MUST DO

10 MIN.

Teacher: Yes, it is the meeting point of two bones. What holds these bones together?

Teacher: Correct. Strong tissues. Joints give our body two things. Can you name them?

Teacher: Very good. Flexibility and stability. Are there many joints in our body?

Teacher: Yes, there are several. Now tell me, how are joints classified based on movement?

Teacher: Right. As immovable and movable joints. Can joints in the skull move?

Teacher: No, those are immovable. What about joints that help us move?

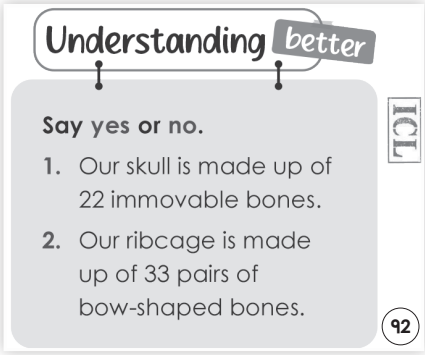
Teacher: Correct. Those are movable joints. Good thinking, everyone.

Understanding better

Teacher: Now, look at the 'Understanding better' section. Read the statements and tell me if they are true or false.

MUST DO

05 MIN.



Understanding better

Say yes or no.

1. Our skull is made up of 22 immovable bones.
2. Our ribcage is made up of 33 pairs of bow-shaped bones.

ICL

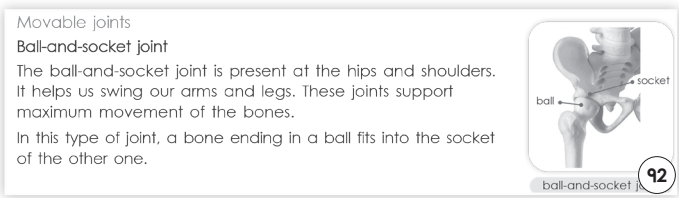
92

Teacher: Is our skull made up of 22 immovable bones?

Teacher: Yes, that is true. Next, our rib cage is made up of 13 pairs of ribs. Is it true or false?

Teacher: No, that is false. It is made up of 12 pairs. Good work, everybody.

Teacher: Let us look at one type of movable joint.



Movable joints

Ball-and-socket joint

The ball-and-socket joint is present at the hips and shoulders. It helps us swing our arms and legs. These joints support maximum movement of the bones.

In this type of joint, a bone ending in a ball fits into the socket of the other one.

92

Teacher: It is called the ball-and-socket joint. Where is it found?

MUST DO

10 MIN.

Teacher: Correct. In the hips and shoulders. What does this joint help us to do?

Teacher: Very good. It helps us swing our arms and legs. Now tell me, does this joint allow maximum movement?

Teacher: Yes, it does. Can you describe how this joint looks?

Teacher: Good thinking. A bone ending in a ball fits into the socket of the other bone. Please look at the diagram. Can you spot the ball and the socket?

Teacher: Excellent observation. That is the ball-and-socket joint. Great work today.

Differentiated Activities

110 km/hr

What is the type of joint that allows maximum movement?

80 km/hr

Where is the ball-and-socket joint present?

40 km/hr

What gives shape to our bodies?

Home Task

Draw a ball-and-socket joint and label the ball and socket. Write one sentence about where it is found in the body.

Period 6

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What gives flexibility and stability to the body? (Joints)

Teacher: What protects our brain and heart? (Skeleton)

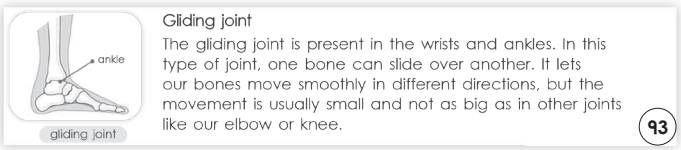
Teacher: What type of joint is found in the hip? (Ball-and-socket joint)

Teacher: How many pairs of ribs are in the rib cage? (12)

Teacher: What holds bones together at a joint? (Strong tissues)

Teacher: Well done, everyone. Let us now start today's class.

(The teacher will read the last four paragraphs of page 93 aloud and provide explanations to ensure that the students understand the content.)



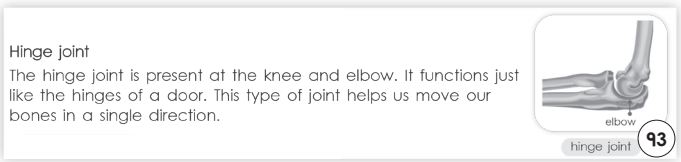
MUST DO
05 MIN.

Teacher: Let us begin by talking about the gliding joint. Where is this joint present in our body?

Teacher: Yes, on the wrists and ankles. What happens in this type of joint?

Teacher: That is right. One bone slides over another. Does it allow large movement?

Teacher: No, the movement is small but smooth. Well answered.



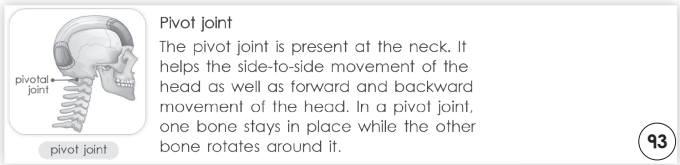
MUST DO
05 MIN.

Teacher: Now, let us learn about the hinge joint. Where do we find hinge joints?

Teacher: Correct. At the knees and elbows. What is the hinge joint compared to?

Teacher: Excellent. It works like the hinges of a door. How do the bones move in this joint?

Teacher: In a single direction. Great response.



MUST DO
05 MIN.

Teacher: Let us now explore the pivot joint. Where is this joint present?

Teacher: Yes, at the neck. What kind of movement does it allow?

Teacher: That is right. Side-to-side, forward and backward movement. In this joint, what does one bone do?

Teacher: One bone stays in place and the other rotates around it. Well done.

Poster

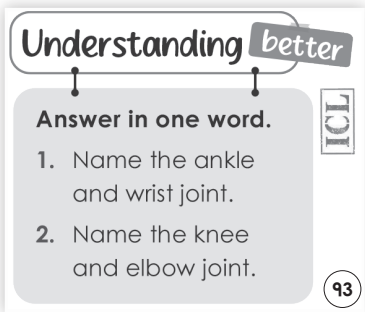
MUST DO
05 MIN.

Teacher: Let us take a moment to look at the poster on the wall.

(Please display and discuss the posters prominently in the classroom to reinforce learning about the types of joints. Encourage students to observe the posters and discuss the different types of joints.)

Teacher: Great observation, everyone.

Understanding better



MUST DO
05 MIN.

Teacher: Now, look at the 'Understanding better' section. Answer these in one word.

Teacher: Name the joint present in the ankle.

Teacher: Correct. The gliding joint is present in the ankles. In this joint, one bone slides over another to allow smooth movement.

Teacher: Name the joint in the knee and elbow.

Teacher: Very good. The hinge joint is found in the knee and elbow. It works like the hinges of a door and allows movement in one direction.

Teacher: Excellent. You answered both correctly and understood their function too. Keep it up.

Teacher: Let us now talk about the muscular system. Do the bones work alone?

MUSCULAR SYSTEM

The skeletal and muscular systems together perform different body movements.

The bones need muscles to perform different movements. Our body has nearly 650 muscles, each of which helps do a specific movement. In our body, muscles are of two types – voluntary and involuntary.

Voluntary muscles function when we decide to move them. For example, when we want to throw a ball, we move our arm muscles. However, the movement of involuntary muscles is not in our control. For example, cardiac muscles, which are responsible for beating of the heart, work on their own.

93

Teacher: No, they need help. What helps the bones to move?

MUST DO

10 MIN.

Teacher: That is right – muscles. Can anyone guess how many muscles we have in our body?

Teacher: Around 650. That is a huge number. Do you think all muscles do the same job?

Teacher: No, each one helps with a specific movement. Now let us group them. How are muscles classified?

Teacher: Into voluntary and involuntary.

Discovering better

Teacher: Now, think – which muscles do we control?

Teacher: Yes, voluntary muscles. Can you give an example of when we use them?

Teacher: Throwing a ball – good choice. Now, what about the muscles we do not control?

Teacher: Those are involuntary muscles. Can anyone name one?

Teacher: Cardiac muscles. What important job do they do?

Teacher: They make the heart beat. Those are excellent answers, everyone.

Differentiated Activities

110 km/hr

Which type of muscles work without our control?

80 km/hr

Where is the pivot joint located?

40 km/hr

How many muscles do we have in our body?

Home Task

List any two types of joints and name one body part where each is found.

Period 7

SHOULD DO

05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Which joint is present at the neck? (Pivot joint)

Teacher: What joint is found in the elbow? (Hinge joint)

Teacher: Which joint is found in the wrist? (Gliding joint)

Teacher: What muscles help us throw a ball? (Voluntary muscles)

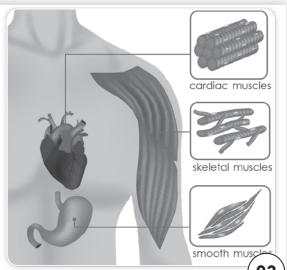
Teacher: Which muscles help in the beating of the heart? (Cardiac muscles)

Teacher: Well done, everyone. Let us now start today's class.

Types of muscles

Muscles are divided into three categories – skeletal, smooth and cardiac muscles.

- Skeletal muscles are voluntary in nature and help us move our body parts. For example, the muscles of the arms, legs and face.



different types of muscles

93

- Smooth muscles are involuntary muscles. They are present in our internal organs. For example, the muscles of the stomach, intestine and food pipe.
- Cardiac muscles are also involuntary muscles present in the heart.

94

Teacher: Today, we will explore different types of muscles. Can anyone name the three types?

MUST DO

15 MIN.

Teacher: Yes, skeletal, smooth and cardiac muscles. Let us start with skeletal muscles. Are they voluntary or involuntary?

Teacher: Correct. Skeletal muscles are voluntary. What do they help us do?

Teacher: They help us move our body parts. Can you name some body parts with skeletal muscles?

Teacher: That is right – arms, legs and face. Now let us talk about smooth muscles. Where are they found?

Teacher: In our internal organs. Are they voluntary or involuntary?

Teacher: Involuntary. Can you name some organs that have smooth muscles?

Teacher: Stomach, intestine and food pipe. Excellent. Now what about cardiac muscles? Where are they found?

Teacher: In the heart. Are they voluntary?

Teacher: No, cardiac muscles are involuntary. They work without us having to tell them.

Teacher: Now, everyone please look at the image. Can you spot the skeletal muscles?

Teacher: Good. They are shown in the arm. What about the smooth muscles?
Teacher: Yes, in the stomach. And where are the cardiac muscles?
Teacher: Correct – in the heart. You have observed and understood the diagram very well.

How do muscles work?

Muscles are important for body movements. They function by contraction and relaxation. When the muscles contract, the bones come close together. During bending of the knee, one of the muscles contracts and becomes tighter, while the other muscle relaxes.

We should maintain a straight posture while walking, standing or sitting. This helps in keeping our muscles in good shape. We should also take good care of our body. We should eat a healthy diet and exercise regularly. We should also avoid eating junk and unhealthy food.

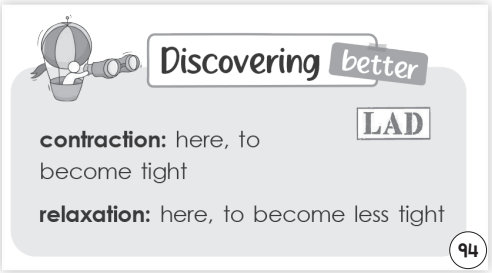
94

Teacher: Let us find out how muscles help us move. What do muscles do to help bones move?

MUST DO
15 MIN.

Teacher: They contract and relax.

Discovering better



Teacher: What happens when a muscle contracts?
Teacher: It becomes tight. And what about when it relaxes?
Teacher: It becomes less tight. Good. Now, think about bending your knee. What happens?
Teacher: One muscle contracts and the other relaxes. This is how movement happens.
Teacher: Why is it important to maintain a straight posture?
Teacher: It keeps our muscles in good shape. What else should we do to care for our muscles?
Teacher: Eat healthy food and exercise regularly. What should we avoid?
Teacher: Junk and unhealthy food. You all gave very thoughtful answers.

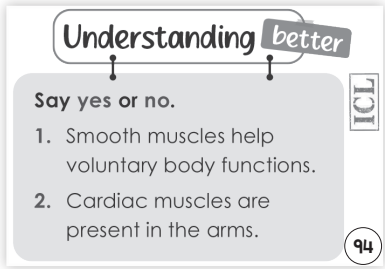
You may show the **Animation** on the digital platform.

Understanding better

Teacher: Now, look at the 'Understanding better' section and answer these in one word.

MUST DO
05 MIN.

Teacher: Do smooth muscles help voluntary body actions?
Teacher: No, smooth muscles do not help voluntary body actions.



Teacher: Are cardiac muscles present in the heart?
Teacher: Yes. The cardiac muscles present in the heart
Teacher: Excellent. You remembered everything correctly. Keep it up.

You may show the **Concept Map** and **Slideshow** on the digital platform.

Differentiated Activities

110 km/hr

Which muscles are present in the stomach and intestine?

80 km/hr

What type of muscles are found in the arms?

40 km/hr

Where are cardiac muscles found?

Home Task

Draw the diagram of different types of muscles. Label the skeletal muscles, smooth muscles and cardiac muscles.

Period 8

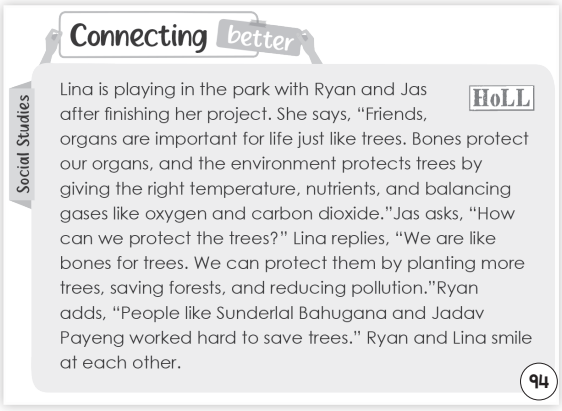
SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?
Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?
Teacher: Name the muscles that help us move our arms. (Skeletal muscles)
Teacher: Which muscles are found in the heart? (Cardiac muscles)
Teacher: Which muscles are found in the food pipe? (Smooth muscles)
Teacher: What happens when a muscle becomes tight? (Contraction)
Teacher: What keeps muscles in good shape? (Posture)
Teacher: Well done, everyone. Let us now start today's class.

Connecting better

Teacher: Let us begin with a lovely conversation. Lina is in the park with Ryan and Jas. What does she say about organs and trees?

MUST DO
10 MIN.



Teacher: Yes, organs protect us just like trees protect the environment. What do trees give us?

Teacher: Correct. They give the right temperature, nutrients and balance gases. Now, what question does Jas ask?

Teacher: Yes. He asks, 'How can we protect the trees?' What answer does Lina give?

Teacher: By planting more trees, saving forests and reducing pollution. Can anyone name the people who worked hard to save trees?

Teacher: Yes, Sunderlal Bahuguna and Jadav Payeng. Ryan and Lina smile at each other. That was a thoughtful exchange, was it not?

Grasping better

Teacher: Let us now grasp an important term. What is a joint?

MUST DO
05 MIN.

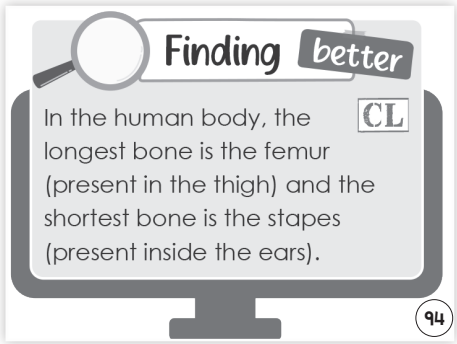
Teacher: Yes. A joint is a point where two bones join. Simple and clear. Well remembered.

Finding better

Teacher: Let us now discover something interesting. In the human body, what is the longest bone?

MUST DO
05 MIN.

Teacher: Correct. The femur is the longest bone, it is present in the thigh. What is the shortest bone?

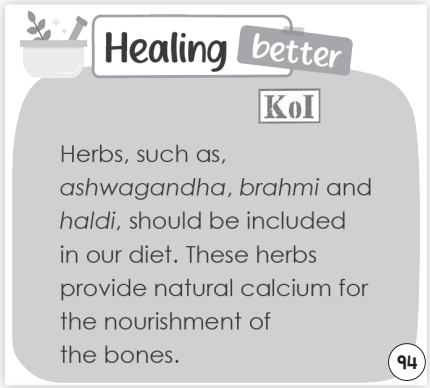


Teacher: Correct. The stapes is the shortest bone, it is present inside the ears. Fascinating facts, are they not?

Healing better

Teacher: Let us talk about healing our bones. Can you name any herbs that are good for bone health?

MUST DO
05 MIN.



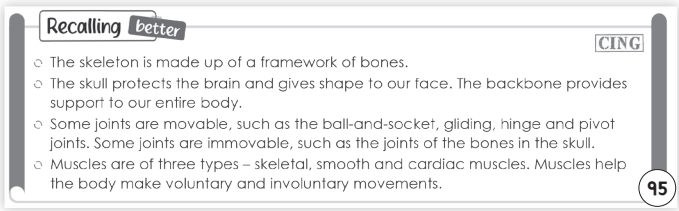
Teacher: Great. Ashwagandha, brahmi and haldi are some of the herbs that are good for bone health. Why should we include them in our diet?

Teacher: Correct. They provide natural calcium for the nourishment of the bones. Excellent.

Recalling better

Teacher: Let us now recall everything we have learnt so far. Who can tell me what the skeleton is made up of?

MUST DO
10 MIN.



Teacher: Yes, a framework of bones. Well remembered. Now tell me, what does the skull do?

Teacher: Correct. It protects the brain and gives shape to our face. You are thinking clearly. What about the backbone? What is its role?

Teacher: Excellent. It provides support to the entire body. Great work. Now, are all joints in our body movable?

Teacher: No, some are movable and some are immovable. Very good. Can anyone name a few movable joints?

Teacher: Yes, the ball-and-socket, gliding, hinge and pivot joints. That is a complete answer. What about immovable joints?

Teacher: Correct. The joints in the skull are immovable. You are doing really well. Now, one last question – how many types of muscles do we have?

Teacher: Three – skeletal, smooth and cardiac muscles. Fantastic memory. These muscles help the body perform both voluntary and involuntary movements. Wonderful work, everyone.

You may show **Animated Activities** and **Quiz** on the digital platform.

Differentiated Activities

110 km/hr

Name the shortest bone in the human body.

80 km/hr

What is the function of the skull?

40 km/hr

What protects the brain?

Home Task

Complete the 'Trying better' activity given on page 94 of the Main Coursebook.

Period 9

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What do trees give to protect the environment? (Temperature and gases)

Teacher: What is the point called where two bones meet? (Joint)

Teacher: What is the longest bone in the human body? (Femur)

Teacher: Name one herb that helps nourish bones. (Haldi)

Teacher: What type of joint is found in the knee? (Hinge)

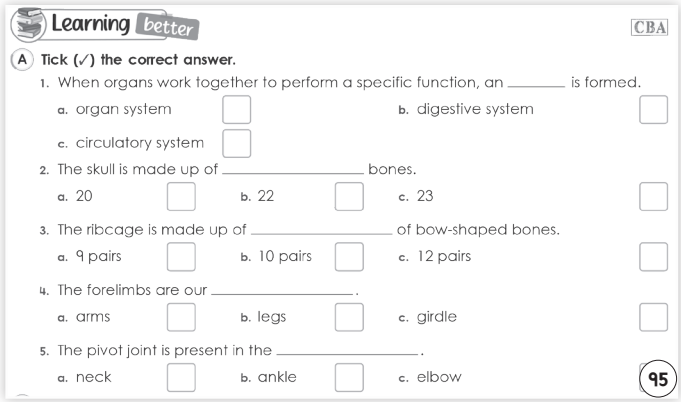
Teacher: Well done, everyone. Let us now start today's class.

Learning better

MUST DO
10 MIN.

Teacher: Everyone, please open page 95 of your Main Course Book.

In Exercise 'A' of 'Learning better' you have to tick the correct answer. Are you ready to get started?



Learning better — CBA

A Tick (✓) the correct answer.

1. When organs work together to perform a specific function, an _____ is formed.
   a. organ system ☐ b. digestive system ☐ c. circulatory system ☐
2. The skull is made up of _____ bones.
   a. 20 ☐ b. 22 ☐ c. 23 ☐
3. The ribcage is made up of _____ of bow-shaped bones.
   a. 9 pairs ☐ b. 10 pairs ☐ c. 12 pairs ☐
4. The forelimbs are our _____.
   a. arms ☐ b. legs ☐ c. girdle ☐
5. The pivot joint is present in the _____.
   a. neck ☐ b. ankle ☐ c. elbow ☐

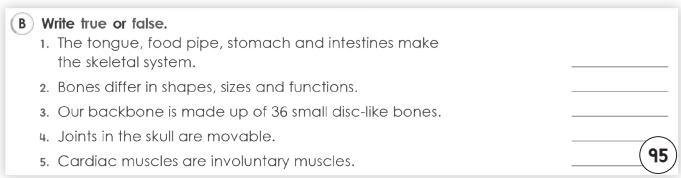
95

Teacher: Great. Let us begin with the first question. When organs work together to perform a specific function, an _____ is formed.

Teacher: The correct answer is organ system. Well done. (Similarly, complete all five questions. And discuss the correct answers.)

Teacher: Let us start Exercise 'B' of the 'Learning better' section. You have to write either true or false. Are you ready to get started?

MUST DO
10 MIN.



B Write true or false.

1. The tongue, food pipe, stomach and intestines make the skeletal system. _____
2. Bones differ in shapes, sizes and functions. _____
3. Our backbone is made up of 36 small disc-like bones. _____
4. Joints in the skull are movable. _____
5. Cardiac muscles are involuntary muscles. _____

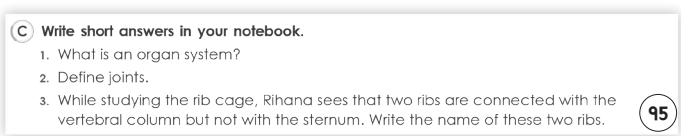
95

Teacher: Great. Let us begin with the first question. The tongue, food pipe, stomach and intestines make up the skeletal system.

Teacher: These organs are part of the digestive system, not the skeletal system. So, the statement is 'false'. (Similarly, complete all five questions and discuss the correct answer.)

Teacher: In Exercise 'C' of the 'Learning better' section, you have to write a short answer. Are you ready to get started?

MUST DO
15 MIN.



C Write short answers in your notebook.

1. What is an organ system?
2. Define joints.
3. While studying the rib cage, Rihana sees that two ribs are connected with the vertebral column but not with the sternum. Write the name of these two ribs.

95

Teacher: Great. Let us begin with the first question. What is an organ system?

(Students have to write the answers for the given questions in about 40 to 50 words in their notebook. Wait for the students to write the answers.)

(Similarly, complete all three questions and discuss the correct answer with the class.)

Differentiated Activities

110 km/hr

Name two systems in our body that help in movement.

80 km/hr

What is formed when organs work together?

40 km/hr

What protects the brain?

Home Task

Revise the three types of muscles. Write one example of where each type is found in the human body.

Period 10

SHOULD DO 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What protects our heart and lungs? (Rib cage)

Teacher: Name the joint present at the neck. (Pivot)

Teacher: Which muscles help in digestion? (Smooth)

Teacher: Which bones form the framework of our body? (Skeleton)

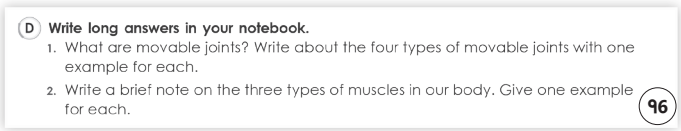
Teacher: Name the shortest bone in the body. (Stapes)

Teacher: Well done, everyone. You have remembered your concepts very clearly. Let us now start today's class.

Learning better

MUST DO 20 MIN.

Teacher: Everyone, please open page 96 of your Main Course Book. Let us explore some long-answer questions. In Exercise 'D' of the 'Learning better', you have to write a long answer. Let us begin with the first question. What are movable joints? Write about the four types of movable joints with one example for each.



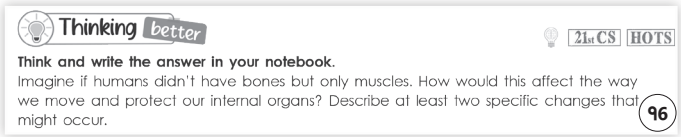
(D) **Write long answers in your notebook.**

1. What are movable joints? Write about the four types of movable joints with one example for each.
2. Write a brief note on the three types of muscles in our body. Give one example for each.

96

(Students have to write the answers for the given questions in about 100 to 150 words in their notebook. Wait for the students to write the answers.)

(Similarly, complete the second question and discuss the correct answer with the class.)



Thinking better 21st CS HOTS

Think and write the answer in your notebook.

Imagine if humans didn't have bones but only muscles. How would this affect the way we move and protect our internal organs? Describe at least two specific changes that might occur.

96

Teacher: Let us begin with a question to make us think deeply.

MUST DO 15 MIN.

Teacher: Imagine if humans did not have bones and only had muscles. How do you think this would affect our movement and protection of internal organs? Can you describe two specific changes that might happen?

Teacher: Please write your answers in your notebook. Once you are done, we will share and discuss.

(Let the students think and write their answers in their notebooks. Discuss some of the ideas.)

Teacher: Excellent ideas. You have all thought carefully and creatively. Well done, everyone.

(Instruct the students to bring their Little Book in their next class.)

Differentiated Activities

110 km/hr

What would happen to internal organs if there were no bones in the body?

80 km/hr

What helps give shape and support to our bodies?

40 km/hr

What protects the brain?

Home Task

Complete the 'Creating better' activity given on page 96 of the Main Coursebook.

Period 11

SHOULD DO 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Which system is made up of muscles and bones? (Muscular system)

Teacher: What connects the ribs to the backbone and sternum? (Rib cage)

Teacher: Which muscle type works without us knowing? (Involuntary)

Teacher: Which joint helps the head to move side to side? (Pivot)

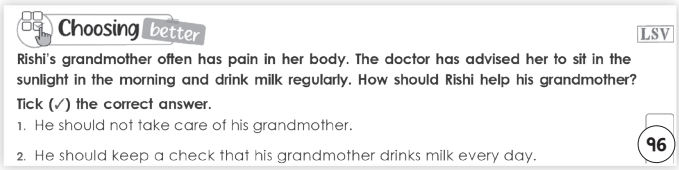
Teacher: Name the bone that supports our back. (Backbone)

Teacher: Well done, everyone. You remembered your concepts well. Let us now start today's class.

Choosing better

MUST DO
05 MIN.

Teacher: Let us look at the 'Choosing better' section. Rishi's grandmother has pain in her body and the doctor advised her to sit in the sunlight and drink milk regularly. Here are two options:


Choosing better
LSV
Rishi's grandmother often has pain in her body. The doctor has advised her to sit in the sunlight in the morning and drink milk regularly. How should Rishi help his grandmother?
Tick (✓) the correct answer.
1. He should not take care of his grandmother.
2. He should keep a check that his grandmother drinks milk every day.
96

1. He should not take care of his grandmother.
2. He should keep a check that his grandmother drinks milk every day.

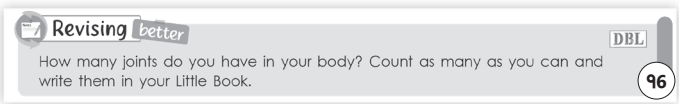
Which one do you think is correct?

Teacher: Correct. He should keep a check that his grandmother drinks milk every day. That is the right choice. Sitting in sunlight provides Vitamin D, which helps the body absorb calcium and keeps the bones strong. This choice also teaches us to care for our elders and support them in building healthy habits.

Revising better

MUST DO
10 MIN.

Teacher: Now, let us revise something we have learnt. How many joints do you think you have in your body?


Revising better
DBL
How many joints do you have in your body? Count as many as you can and write them in your Little Book.
96

Teacher: Try to count as many as you can. Then, write them in your Little Book. Take your time and enjoy the activity.

(Let the students write the name of the joints in their Little Book.)

Teacher: You may have written joints like the shoulder, elbow, wrist, fingers, neck, hip, knee, ankle and toes. These are all places where two bones meet and help us to move. Well done, everyone.

Pledging better

MUST DO
05 MIN.

Teacher: Great. Now, we will discuss the 'Pledging better' section. A pledge is a promise we make to ourselves to follow something important.


Pledging better
SDGs
In my own little way, I pledge to keep my surroundings clean to prevent diseases and keep my community healthy.
SDG 3: GOOD HEALTH AND WELL-BEING
96

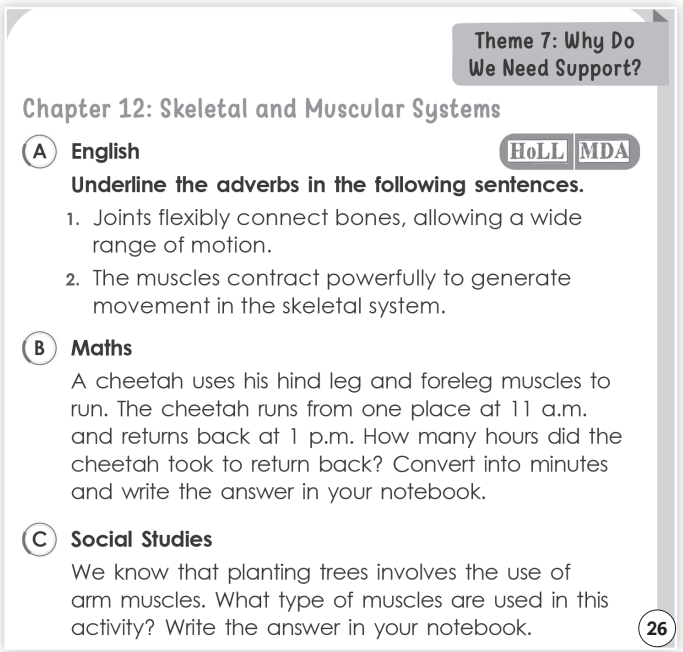
Teacher: Let us pledge together. Repeat after me – 'In my own little way, I pledge to keep my surroundings clean to prevent diseases and keep my community healthy.'

Teacher: That was a lovely pledge. Thank you for being so thoughtful. Together, let us continue to work towards good health and well-being. This supports SDG 3: Good Health and Well-Being.

Book of Holistic Teaching

COULD DO
15 MIN.

Refer to the Book of Holistic Teaching, page number 26 under the title 'Skeletal and Muscular Systems.' Complete the activities mentioned in this section and ensure that the students complete them. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and materials to help the students successfully finish the activities.


Theme 7: Why Do We Need Support?

Chapter 12: Skeletal and Muscular Systems

(A) English — HoLL | MDA

Underline the adverbs in the following sentences.

1. Joints flexibly connect bones, allowing a wide range of motion.
2. The muscles contract powerfully to generate movement in the skeletal system.

(B) Maths

A cheetah uses his hind leg and foreleg muscles to run. The cheetah runs from one place at 11 a.m. and returns back at 1 p.m. How many hours did the cheetah took to return back? Convert into minutes and write the answer in your notebook.

(C) Social Studies

We know that planting trees involves the use of arm muscles. What type of muscles are used in this activity? Write the answer in your notebook.

26

(Instruct students to bring their workbooks in their next class.)

Differentiated Activities

110 km/hr

Name one reason why sunlight is important for bone health.

80 km/hr

Which vitamin helps in the absorption of calcium in bones?

40 km/hr

What food item helps make bones strong?

Home Task

The Project Idea, given in the book of Project Ideas, page 18 under the title 'Skeletal and Muscular Systems.' This project should be assigned to the students as a home task to work on. Ensure that the students understand the project requirements and provide any necessary guidance or materials they might need.

Period 12

SHOULD DO — 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's class with a quick round of questions. Answer each one in a single word. Ready?

Teacher: What part of the body protects the lungs? (Ribs)

Teacher: Which joint allows movement in all directions? (Ball-and-socket)

Teacher: What is the function of the vertebral column? (Support)

Teacher: Which muscles work when we want them to? (Voluntary)

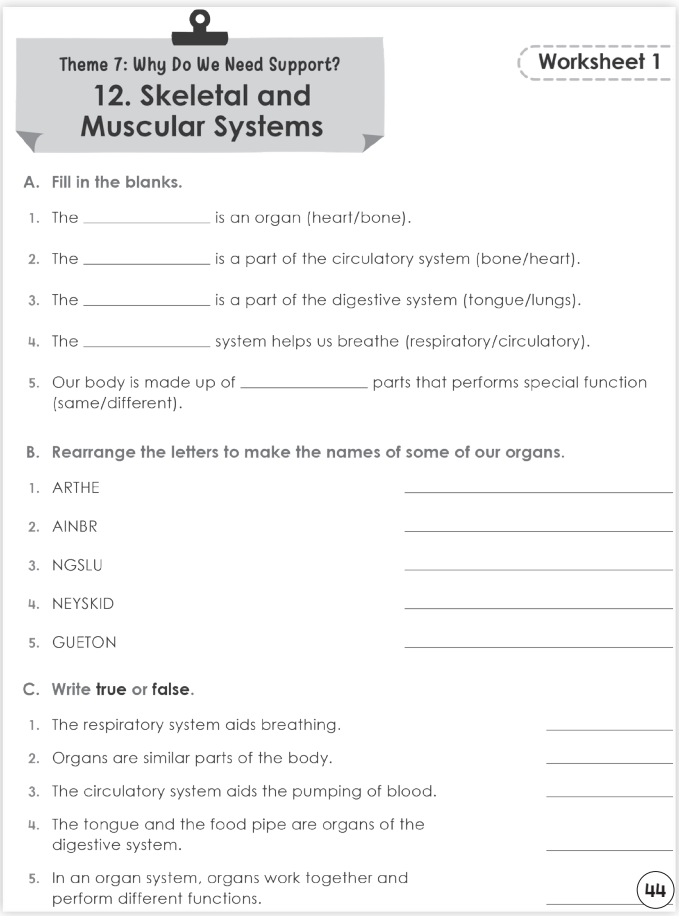
Teacher: What do smooth muscles help with inside our body? (Digestion)

Teacher: Excellent work. You are all thinking very clearly. Let us now begin today's lesson.

Worksheet 1

MUST DO — 10 MIN.

Teacher: Let us do some activities from the workbook. Everybody, please open page 44 of your workbook and answer the questions given in worksheet - 1.



Theme 7: Why Do We Need Support?

12. Skeletal and Muscular Systems

Worksheet 1

A. Fill in the blanks.

1. The _____ is an organ (heart/bone).
2. The _____ is a part of the circulatory system (bone/heart).
3. The _____ is a part of the digestive system (tongue/lungs).
4. The _____ system helps us breathe (respiratory/circulatory).
5. Our body is made up of _____ parts that performs special function (same/different).

B. Rearrange the letters to make the names of some of our organs.

1. ARTHE _____
2. AINBR _____
3. NGSLU _____
4. NEYSKID _____
5. GUETON _____

C. Write true or false.

1. The respiratory system aids breathing. _____
2. Organs are similar parts of the body. _____
3. The circulatory system aids the pumping of blood. _____
4. The tongue and the food pipe are organs of the digestive system. _____
5. In an organ system, organs work together and perform different functions. _____

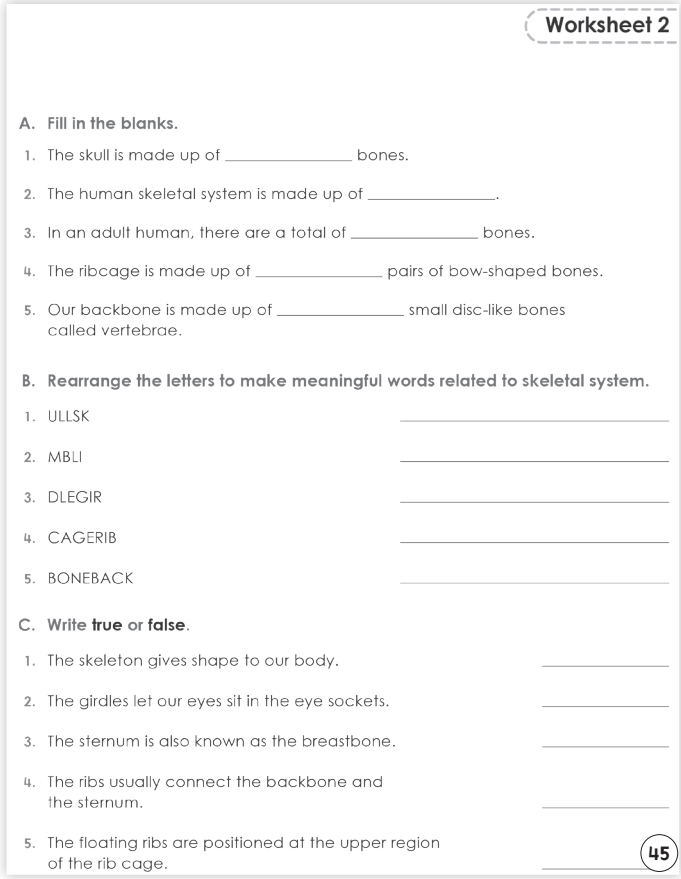
44

(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

Worksheet 2

MUST DO — 10 MIN.

Teacher: Let us do some activities from the worksheet - 2. Everybody, please open page 45 of your workbook and answer the questions given in worksheet – 2.



Worksheet 2

A. Fill in the blanks.

1. The skull is made up of _____ bones.
2. The human skeletal system is made up of _____.
3. In an adult human, there are a total of _____ bones.
4. The ribcage is made up of _____ pairs of bow-shaped bones.
5. Our backbone is made up of _____ small disc-like bones called vertebrae.

B. Rearrange the letters to make meaningful words related to skeletal system.

1. ULLSK _____
2. MBLI _____
3. DLEGIR _____
4. CAGERIB _____
5. BONEBACK _____

C. Write true or false.

1. The skeleton gives shape to our body. _____
2. The girdles let our eyes sit in the eye sockets. _____
3. The sternum is also known as the breastbone. _____
4. The ribs usually connect the backbone and the sternum. _____
5. The floating ribs are positioned at the upper region of the rib cage. _____

45

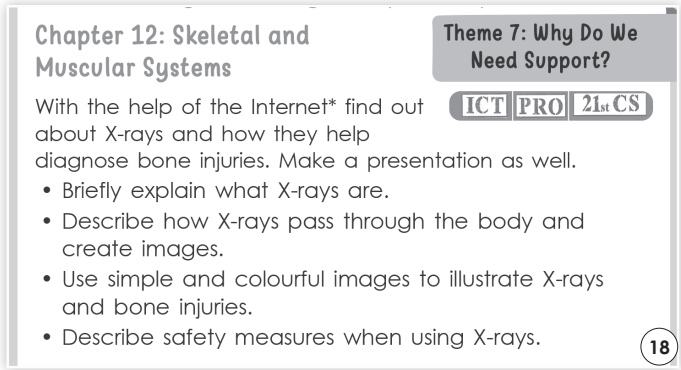
(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

You may generate additional practice worksheets using the **Test Generator** given on the digital platform.

Book of Project Ideas

COULD DO — 10 MIN.

Discuss the project assigned as the home task in the eleventh period, focusing on helping students understand the objectives and addressing any challenges they face.



Chapter 12: Skeletal and Muscular Systems

Theme 7: Why Do We Need Support?

ICT PRO 21st CS

With the help of the Internet* find out about X-rays and how they help diagnose bone injuries. Make a presentation as well.

- Briefly explain what X-rays are.
- Describe how X-rays pass through the body and create images.
- Use simple and colourful images to illustrate X-rays and bone injuries.
- Describe safety measures when using X-rays.

18

Teacher: Now, let us complete the 'KWL' activity.

SHOULD DO
05 MIN.

Teacher: Take out your notebook and fill in the 'L' column. Write what have you learned in this chapter.

(Wait for students to fill in the chart.)

Teacher: Let us all give a huge round of applause to everyone for their hard work and creativity. Great work, everyone. See you in the next class. Have a wonderful day ahead.

Differentiated Activities

110 km/hr

Which nutrient in milk helps in strengthening bones?

80 km/hr

Name one daily habit that supports bone health.

40 km/hr

Which natural source gives us Vitamin D?

Home Task

Complete worksheet 3.

Worksheet 3

A. Correct the underlined words and rewrite the correct sentences in the given space.

1. Our body has only a single joint.
2. A joint provides rigidity to the body.
3. The joints present in the skull are movable.
4. A joint is the meeting point of a hundred bones.
5. The ball and socket joint is one of the immovable joints.

B. Rearrange the letters to make names of different types of joints.

1. LLAB
2. VOTPI
3. GEHIN
4. KETSOC
5. DINGGLI

C. Rearrange the following jumbled words to make meaningful sentences.

1. move / can / movable / joints
2. meeting / point / of / a joint / is / the / two / bones
3. stability / and / flexibility / provide / joints / body / to the
4. knee / and / elbow / is / at / the / present / hinge / joint
5. hip / and / shoulder / is / the / present / at / the / ball / and / socket / joint

46

Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• demonstrate the ability to identify and describe the structure and functions of bones, muscles and joints and explain how they contribute to physical movements through practical activities.
Socio-Emotional and Ethical Development	• develop teamwork and ethical responsibility by collaborating in group activities, such as creating models and engaging in discussions.
Cognitive Development	• describe and explain the functions of the skeletal and muscular systems, including the types of muscles and joints and their impact on body movement.
Language and Literacy Development	• articulate their understanding of body systems through answer writing, engaging in vocabulary building related to anatomical terms such as bones, joints and muscles.
Aesthetic and Cultural Development	• appreciate the structure and function of the human body by exploring it through creative activities, such as drawing and model-making.
Positive Learning Habits	• engage in self-directed learning through activities such as recalling knowledge, using visual aids and applying the learned concepts in practical activities to enhance their understanding of the skeletal and muscular systems.

Starry Knights
Are the learners aware of their strengths and weaknesses? After the lesson, could you teach them the different strengths we have as in muscular as well as mental strength? Share a few incidents here.

Give yourself a STAR.

Lesson-13: Our Nervous System

12 Periods (40 minutes each)

Learn Better (Main Coursebook), Stay Ahead (Workbook), Book of Holistic Teaching, Book of Project Ideas, CRM signs

Animation, Animated Activities, Concept Map, Diagram, Dictionary, eBook, I Explain, Quiz, Slideshow, Test Generator

Confirming better: I am grateful for the support I receive from others.

Curricular Goals and Objectives (NCF)

To enable the students:

- to understand the structure and functions of the brain, spinal cord and nerves.
- to explain how sensory, motor and mixed nerves transmit information.
- to identify and describe the functions of the five sense organs.
- to appreciate the role of reflex actions in protecting the body.

Methodology

Period 1

SHOULD DO — 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Before we dive into our lesson, let us take a moment to relax and focus our minds with a short meditation. Ready?

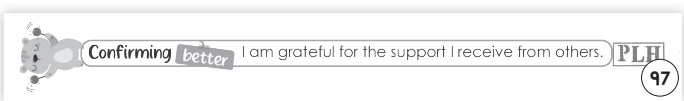
Teacher: Sit comfortably in your chair, with your back straight and feet flat on the ground. Close your eyes gently and take a deep breath through your nose. Hold it for a moment, then slowly breathe out through your mouth.

Let us do these three more times. Breathe in and breathe out. As you breathe, imagine your mind becoming clear and ready to learn.

Open your eyes and smile at your friends. Let us start our lesson with positive energy.

Confirming better

Teacher: Before we start the class, let us all say something positive together: 'I am grateful for the support I receive from others.' Repeat after me: 'I am grateful for the support I receive from others.'



MUST DO — 05 MIN.

Teacher: Alright. Today, we are going to begin a new chapter, 'Our Nervous System.' We use a KWL chart to help us organise our thoughts and learning. I have made a KWL format on the blackboard. Please take out your notebooks and draw the same format.

K	W	L

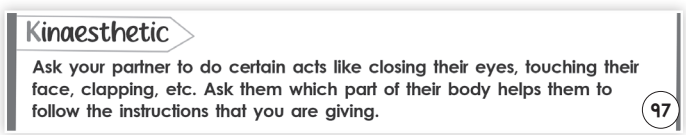
Teacher: Let us start by filling out the 'K' and 'W' columns. Take a few minutes to think and write. If you have any questions, feel free to ask.

Teacher: Before we start the chapter, we will do a quick Re-KAP, which involves revisiting our previous knowledge through creative activities using Kinaesthetic, Auditory and Pictorial methods to make our learning interactive and engaging.

Kinaesthetic

MUST DO — 10 MIN.

Teacher: Let us begin our lesson with a fun kinaesthetic activity. You will work with a partner. I want you to follow these instructions. Your partner will ask you to close your eyes, touch your face, clap and so on.



Teacher: Now, can you tell me, which part of your body helps you follow these instructions? Think carefully.

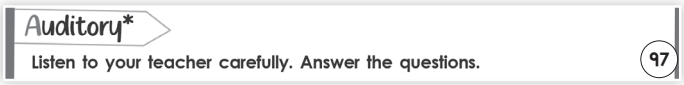
(Let the students think.)

Teacher: Excellent responses. Your eyes, hands and ears all help you follow these instructions. Well done, everyone. This shows how we use our sense organs for different actions.

Auditory

MUST DO 10 MIN.

Teacher: Now, let us move to listening. Please listen to me carefully and answer the questions that I ask. I want you to pay attention to every detail before answering. Are you ready?



Teacher: The skeletal and muscular systems work together to help our bodies move and stay strong. The skeletal system is made up of bones that provide structure and support to our body.

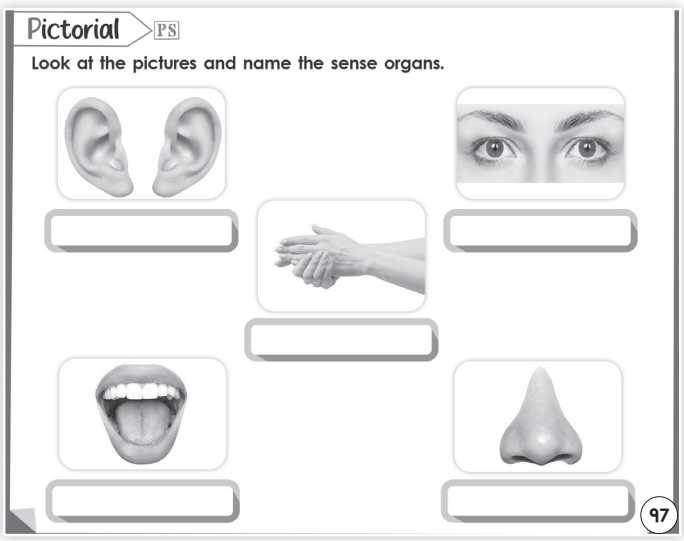
1. What are the two main systems that work together to help our bodies move?
2. What is the skeletal system made up of?
   (Waits for student responses.)

Teacher: Excellent listening, everyone. I am proud of how carefully you all followed. Let us move on.

Pictorial

MUST DO 10 MIN.

Teacher: Everyone, please look at the 'Pictorial' section given on page 97 of your Main Coursebook. You can see five pictures.



Teacher: Your task is to name the sense organs you see in the pictures.

(Let the students write the name of the given sense organs.)

Teacher: Yes. The first picture shows the ears, which help us hear. The second picture is of the eyes, which help us see. The next one is the mouth, which is used for tasting and speaking. The last one is the nose, which helps us smell.

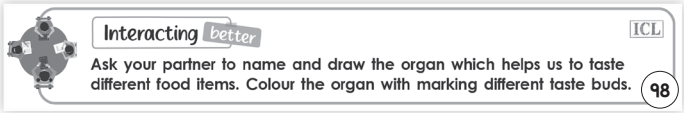
Teacher: Great work, everyone. You are getting better at identifying sense organs. Keep practising.

Period 2

MUST DO 10 MIN.

Interacting better

Teacher: Now, let us move on to an interesting activity where we will be working with our partners. You will be asked to name the organ that helps us taste different food items. Can anyone guess which organ helps us taste food?



Teacher: Yes, that is right. It is the tongue. Now, I want you to draw the tongue on your paper. After you finish drawing, colour the organ and mark the different taste buds on it. Taste buds help us distinguish between sweet, sour, bitter and salty flavours.

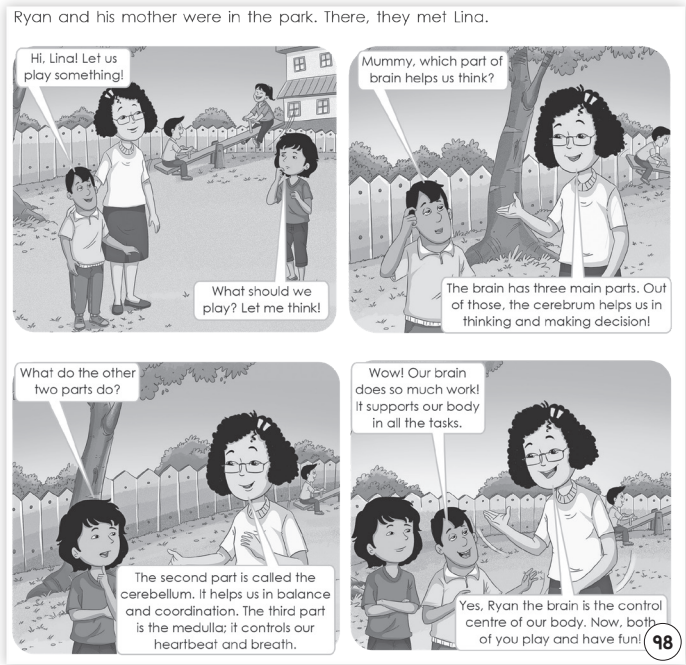
(Let the students draw the tongue and mark the taste buds.)

Teacher: Wonderful. I can see you all are getting the hang of this. Once you finish drawing and colouring, you can show your work to your partner and discuss how taste buds help us enjoy food.

(Let the students discuss the organ.)

(Use CRM signs to settle the class.)

Teacher: Well done, everyone. Keep up the good work.



Teacher: Everyone, please open your books to page 98. You will see a picture story. Take a few moments to read it silently to yourself. Pay attention to each picture and the conversations happening between the characters.

MUST DO 30 MIN.

Teacher: Take your time and focus on understanding what is going on in the story.

(Let the students read the story.)

Teacher: Now that you have finished reading, let us have a discussion about what we have learned.

Teacher: Can anyone tell me what Ryan and his mother were doing in the park?

Teacher: Yes, they were in the park and they met Lina. They were deciding what to play.

Teacher: When Ryan asked his mother which part of the brain helps us think, what was her response?

Teacher: Exactly. She told him that the cerebrum helps us think and make decisions.

Teacher: Now, what did she say about the other two parts of the brain? Can anyone remember?

Teacher: That is correct. The cerebellum helps with balance and coordination and the medulla controls our heartbeat and breathing.

Teacher: From this story, what do you think is the most important role of the brain?

Teacher: Yes, the brain is the control centre of our body. It helps us think, control our balance and support vital functions like breathing and heartbeat. Well done.

Teacher: So, as we see in the story, the brain plays a very important role in everything we do. It helps us think, move and perform basic functions to keep us alive.

Teacher: Well done, everyone. You have understood the story well.

You may show the **Dictionary** and **eBook** on the digital platform.

Differentiated Activities

110 km/hr

Explain the functions of the cerebrum and its role in our daily activities.

80 km/hr

Which part of the brain helps us with balance and coordination?

40 km/hr

Which part of our body helps us think?

Home Task

Draw a simple diagram of the brain. Label the cerebrum, cerebellum and medulla. Write one function for each part of the brain.

Period 3

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: Which part of the brain helps us think and make decisions? (Cerebrum)

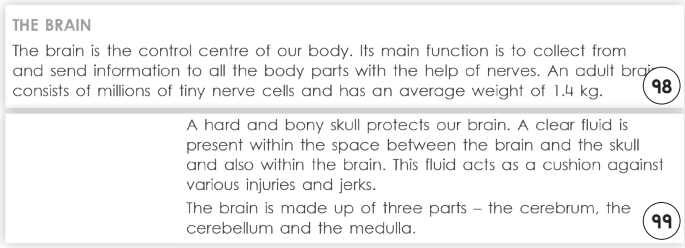
Teacher: Which part of the brain helps us with balance and coordination? (Cerebellum)

Teacher: Which part of the brain controls our heartbeat and breathing? (Medulla)

Teacher: What sense organ helps us taste food? (Tongue)

Teacher: What part of the body helps us see? (Eyes)

Teacher: Excellent answers. Let us now start today's class. (The teacher will read the last paragraph of page 98 and the first two paragraphs of page 99 aloud and provide explanations to ensure that the students understand the content.)



THE BRAIN

The brain is the control centre of our body. Its main function is to collect from and send information to all the body parts with the help of nerves. An adult brain consists of millions of tiny nerve cells and has an average weight of 1.4 kg. 98

A hard and bony skull protects our brain. A clear fluid is present within the space between the brain and the skull and also within the brain. This fluid acts as a cushion against various injuries and jerks.

The brain is made up of three parts – the cerebrum, the cerebellum and the medulla. 99

MUST DO
15 MIN.

Teacher: Today, we will be learning about the brain. Can anyone tell me what the brain controls in our body?

Teacher: Great responses. Yes, the brain is the control centre of our body. Its main function is to collect and send information to all the body parts through nerves.

Teacher: Now, tell me how much the adult brain weighs on average.

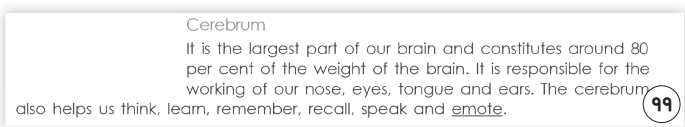
Teacher: Well done. The adult brain weighs around 1.4 kilograms. It is protected by a hard, bony skull. Can anyone tell me what else helps protect the brain?

Teacher: Exactly. There is a clear fluid that surrounds the brain. This fluid cushions the brain and protects it from injuries and jerks.

Teacher: Can anyone name the three main parts of the brain?

Teacher: Excellent. The brain is made up of the cerebrum, the cerebellum and the medulla. These three parts work together to help our body function properly.

Teacher: Great job. You are doing fantastic. Let us move on to the next part of the lesson.



Cerebrum

It is the largest part of our brain and constitutes around 80 per cent of the weight of the brain. It is responsible for the working of our nose, eyes, tongue and ears. The cerebrum also helps us think, learn, remember, recall, speak and emote. 99

MUST DO
10 MIN.

Teacher: Who can tell me which part of the brain is the largest?

Teacher: That is right. The cerebrum is the largest part of the brain and makes up around 80% of its weight. Can anyone tell me what the cerebrum helps us do?

Teacher: Wonderful. The cerebrum helps control thinking, remembering and making decisions. It also plays a key role in muscle movement.

Teacher: What other functions do you think the cerebrum controls?

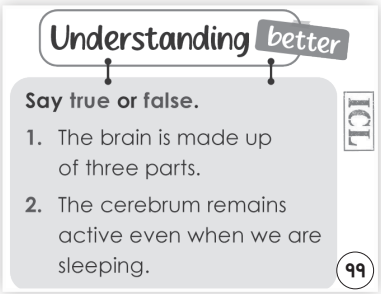
Teacher: Yes, the cerebrum is responsible for the working of our nose, eyes, tongue and ears. It helps us think, learn, speak and even express our emotions.

Teacher: Fantastic work, everyone.

Understanding better

MUST DO
10 MIN.

Teacher: Let us check our understanding with a true or false exercise. I will read out two statements and you tell me if they are true or false. Ready?



Teacher: First statement: 'The brain is made up of three parts'

Teacher: Yes, that is true. The brain consists of three important parts – the cerebrum, cerebellum and medulla.

Teacher: Second statement: 'The cerebrum remains active even when we are sleeping.'

Teacher: Yes, that is true. Even when we sleep, the cerebrum continues to work. It helps us breathe, keeps our hearts beating and allows us to dream.

Teacher: Well done, everyone. You did a fantastic job in understanding the brain and its parts.

Differentiated Activities

110 km/hr

Explain the functions of the cerebrum, cerebellum and medulla.

80 km/hr

Which part of the brain helps us think and make decisions?

40 km/hr

What is the main function of the cerebrum?

Home Task

Observe your family members. Write down three activities they do that involve thinking and decision-making. Describe how the brain may be involved in each of these tasks.

Period 4

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some new questions and you have to answer them. Ready?

Teacher: Which part of the brain is involved in controlling our emotions? (Cerebrum)

Teacher: What helps the brain to send messages to different parts of the body? (Nerves)

Teacher: Which part of the brain is responsible for thinking and decision-making? (Cerebrum)

Teacher: Can anyone tell me which part of the brain helps in controlling our body temperature? (Hypothalamus)

Teacher: What part of the body surrounds and protects the brain? (Skull)

Teacher: Excellent job, everyone. Let us now start today's class.

(The teacher will read the third to fifth paragraphs of page 99 aloud and provide explanations to ensure that the students understand the content.)

Cerebellum

This part of the brain lies below the cerebrum. It helps in coordinating the muscle actions and balancing the body. If the cerebellum does not work properly, our body makes jerky movements.

99

MUST DO
10 MIN.

Teacher: Today, we will learn about the cerebellum. Who can tell me where the cerebellum is located?

Teacher: Yes, the cerebellum lies just below the cerebrum. What is the function of the cerebellum?

Teacher: Correct. The cerebrum is responsible for coordinating our muscle actions and helps us balance our body.

Teacher: Can anyone explain what happens if the cerebellum does not work properly?

Teacher: Correct. If the cerebellum does not function properly, the body makes jerky movements.

Teacher: Well done. Let us move on to the next part of the lesson.

Medulla

Below the cerebellum, lies the medulla oblongata or medulla. It forms a connection between the brain and the spinal cord. It regulates the involuntary activities of the body, such as respiration and heartbeat. The medulla remains active even when we are sleeping.

99

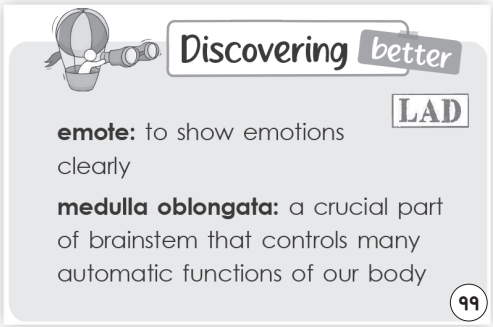
MUST DO
15 MIN.

Teacher: Now, let us discuss the medulla. Can anyone tell me where the medulla is located?

Teacher: Yes, the medulla lies just below the cerebellum. It connects the brain to the spinal cord.

Discovering better

(Explain the term given in the discovering better section of page 99.)



Teacher: What is the main function of the medulla?

Teacher: Exactly. The medulla regulates involuntary activities of the body such as breathing and heartbeat.

Teacher: Do you know what makes the medulla so important even when we are sleeping?

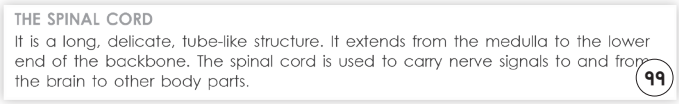
Teacher: Great answer. The medulla remains active even when we are sleeping to ensure our vital functions, like breathing, continue.

Teacher: Let us also look at the picture of the human brain given on page 99 of the Main Coursebook. Can anyone point out where the cerebellum and medulla are located in the image?

(Let the students locate the cerebellum and medulla in the image.)

Teacher: Fantastic. The cerebellum is located at the back of the brain, just below the cerebrum and the medulla lies just below the cerebellum.

Teacher: Great work. Now, let us move on to the next part. You may show the **Diagram** and **I Explain** on the digital platform.



Teacher: Next, let us talk about the spinal cord. Who can tell me what the spinal cord does?

MUST DO
10 MIN.

Teacher: Yes, the spinal cord is a long, delicate, tube-like structure that extends from the medulla to the lower end of the backbone.

Teacher: What is the main job of the spinal cord?

Teacher: Correct. The spinal cord carries nerve signals to and from the brain to other parts of the body.

Teacher: Can anyone point to where the spinal cord is located in the diagram?

Teacher: Excellent. The spinal cord runs down from the medulla and extends to the lower back.

Teacher: Well done, everyone. Let us now review what we have learned so far.

Differentiated Activities

110 km/hr

Explain the function of the medulla and its importance in regulating vital functions.

80 km/hr

What does the cerebellum help us with?

40 km/hr

Where is the spinal cord located?

Home Task

Observe your family members. This time, write down two activities where they are moving or balancing their body, such as walking or carrying something. How do you think the cerebellum and medulla help in these activities?

Period 5

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What part of the brain controls the way we think and make decisions? (Cerebrum)

Teacher: Why do you think the cerebellum is so important for our daily activities? (Helps with balance and coordination)

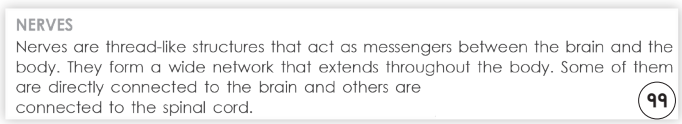
Teacher: Can anyone explain what would happen if the medulla stopped working? (Would affect heartbeat, breathing and other vital functions)

Teacher: What do you think would happen if the spinal cord was damaged? (Disrupts signals between the brain and body, leading to paralysis)

Teacher: Why is the skull and the fluid surrounding the brain important for protection? (They protect the brain from injuries and shocks)

Teacher: Excellent answers, everyone. Let us now start today's class.

(The teacher will read the last two paragraphs of page 99 and first two paragraphs of page 100 aloud and provide explanations to ensure that the students understand the content.)



Teacher: Today, we will learn about nerves. Can anyone tell me what nerves do in our body?

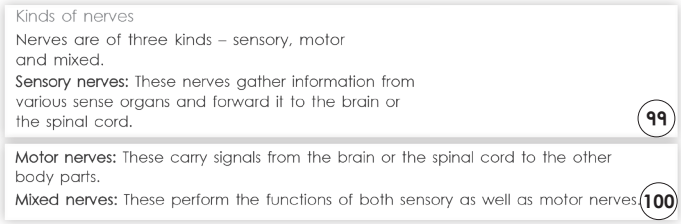
MUST DO
10 MIN.

Teacher: Exactly. Nerves are thread-like structures that act as messengers between the brain and the body. They form a wide network throughout our body.

Teacher: What is the main job of nerves?

Teacher: Yes. Nerves carry signals to and from the brain and spinal cord, ensuring that different parts of our body work together.

Teacher: Great job, everyone. Let us now learn about the different kinds of nerves.



Teacher: Nerves are of three kinds: sensory nerves, motor nerves and mixed nerves. Let us start with sensory nerves. Can anyone tell me what sensory nerves do?

MUST DO
15 MIN.

Teacher: Yes. Sensory nerves gather information from various sense organs and forward it to the brain or spinal cord. They help us sense the world around us, such as feeling heat or cold, seeing or hearing.

Teacher: Now, what do motor nerves do?

Teacher: Great. Motor nerves carry signals from the brain or spinal cord to other body parts, allowing us to move and perform actions.

Teacher: Finally, we have mixed nerves. Can anyone guess what these nerves do?

Teacher: Correct. Mixed nerves perform the functions of both sensory and motor nerves. They are responsible for carrying information in both directions.

Teacher: Well done. Let us now learn about reflex actions.

Teacher: Let us talk about reflex actions. Can anyone explain what a reflex action is?

MUST DO
10 MIN.

Teacher: Yes, reflex actions are quick responses that help us protect ourselves from injury. For example, if you touch something hot, your body quickly pulls away before you even think about it.

Teacher: Why do you think the brain is not usually involved in reflex actions?

Teacher: Excellent. Reflex actions are processed by the spinal cord and they happen so quickly that the brain does not have time to react.

Teacher: Well done, everyone. You are doing great in understanding these concepts. Let us move to the next activity.

You may show **Animation** on the digital platform.

Differentiated Activities

110 km/hr

Explain the function of sensory nerves, motor nerves and mixed nerves in the body.

80 km/hr

What do sensory nerves do in the body?

40 km/hr

Which type of nerve helps us move our body parts?

Home Task

Write down three reflex actions you have experienced. Describe each one and explain how the spinal cord helps you react quickly.

Period 6

Teacher: Good morning, students. How are you all today?

SHOULD DO
05 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some new questions and you have to answer them. Ready?

Teacher: What are nerves responsible for in our body? (Carrying signals to and from the brain)

Teacher: What do sensory nerves do? (Gather information and send it to the brain or spinal cord)

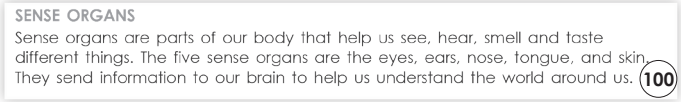
Teacher: What is the role of motor nerves? (Carry signals from the brain to body parts)

Teacher: What are mixed nerves responsible for? (Perform both sensory and motor functions)

Teacher: What is a reflex action? (A quick response processed by the spinal cord)

Teacher: Excellent answers, everyone. Let us now start today's class.

(The teacher will read the third to the last paragraph of page 100 aloud and provide explanations to ensure that the students understand the content.)



Teacher: Today, we will begin with an exciting topic, sense organs. Can anyone tell me what sense organs are and what they help us do?

MUST DO
05 MIN.

Teacher: That is right. Sense organs are parts of our body that help us see, hear, smell and taste different things. The five sense organs are the eyes, ears, nose, tongue and skin.

Teacher: These sense organs send information to our brain, helping us understand the world around us. Why do you think our sense organs are so important for us?

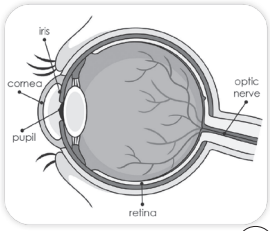
Teacher: Exactly. Without our sense organs, we would not be able to experience the world the way we do. Well done, everyone. Now, let us move on to the eyes.

Eyes

Each eye is located in a deep pocket called the socket. It is protected by the eyelashes and eyelids. Both of these help keep dirt and dust away from our eyes.

The front part of the eye consists of a circular and transparent area called the cornea. The coloured circle present at the front of the eye is called the iris.

A black spot called the pupil is the opening through which light enters the eye lens. This light travels from the pupil to the retina, where the image is formed. Our eyes are connected to the brain through the optic nerves.



the structure of an eye

100

Teacher: Let us now turn our attention to the eyes. Can anyone tell me where they are located?

MUST DO

15 MIN.

Teacher: Correct. The eyes are situated in a deep cavity known as the socket. They are protected by the eyelashes and eyelids, which help keep dirt and dust away.

Teacher: What is the first part of the eye that light enters?

Teacher: Yes, the cornea is the first part of the eye that light passes through. It is a transparent, circular area at the front.

Teacher: What do we call the coloured circle in the eye?

Teacher: Well done. That is the iris. And the black spot in the middle is the pupil, which controls the amount of light entering the eye.

Teacher: Now, let us refer to the diagram of the eye. Can anyone point to the cornea?

Teacher: That is right. The cornea is the initial part where light enters the eye. Next, can someone point to the iris on the diagram?

Teacher: Perfect. The iris is the coloured part of the eye. Now, let us look for the pupil. Can anyone find it?

Teacher: Excellent. The pupil is the black circle in the centre of the eye, controlling the flow of light. Now, can anyone locate the retina on the diagram?

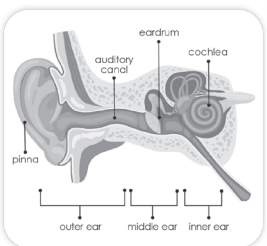
Teacher: Yes, the retina is where the image forms and the optic nerve transmits this image to the brain for processing. Fantastic work, everyone.

Teacher: Now that we have covered the eyes, let us move on to discuss the ears.

Ears

The ear has three parts – the outer ear, the middle ear and the inner ear. The part of the ear that we can see from outside is called the pinna or the outer ear.

The sound waves are received by the outer ear. The waves then travel to the middle ear, hitting the eardrum. The eardrum produces vibrations. These vibrations then travel to the inner ear. Inside the cochlea, tiny hair cells convert these vibrations into electrical signals. These electrical signals are sent to the brain through the auditory nerve. The brain receives the signals and interprets them as sound, allowing us to hear and understand the noises around us.



the structure of an ear

100

Teacher: Now, let us move on to studying the ears. The ear consists of three parts. Who can name them?

MUST DO

15 MIN.

Teacher: Yes, they are the outer ear, middle ear and inner ear. The visible part of the ear is called the pinna or outer ear.

Teacher: How does the ear help us hear?

Teacher: Correct. The outer ear collects sound waves, which then travel to the middle ear, where the eardrum vibrates.

Teacher: What happens next after the sound vibrations reach the inner ear?

Teacher: Great. The vibrations travel to the cochlea, where tiny hair cells convert them into electrical signals. These signals are sent to the brain through the auditory nerve.

Teacher: Now, let us look at the diagram of the ear. Who can point to the pinna?

Teacher: Well done. The pinna is the part of the ear that we can see and it collects sound waves. Can anyone show me the eardrum?

Teacher: Excellent. The eardrum vibrates when sound waves reach it. These vibrations then move to the cochlea. Who can point to the cochlea on the diagram?

Teacher: Perfect. The cochlea contains tiny hair cells that change vibrations into electrical signals, which are sent to the brain through the auditory nerve.

Teacher: Great work, everyone. You are doing wonderful work. Keep it up.

Differentiated Activities

110 km/hr

Explain the role of the iris, pupil and retina in the functioning of the eye.

80 km/hr

What part of the eye controls the amount of light entering?

40 km/hr

Which sense organ helps us hear?

Home Task

Draw a diagram of the human eye and label the cornea, iris, pupil and retina. Write a short description of the function of each part.

Period 7

Teacher: Good morning, students. How are you all today?

SHOULD DO

05 MIN.

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What part of the ear receives sound waves? (Outer ear)

Teacher: What does the retina do in the eye? (Forms the image)

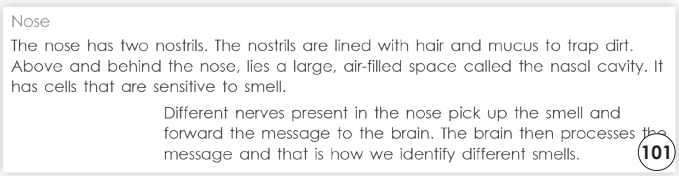
Teacher: Which part of the eye controls the amount of light entering? (Pupil)

Teacher: What part of the ear converts sound vibrations into electrical signals? (Cochlea)

Teacher: What is the function of the iris in the eye? (Controls the colour and amount of light entering the eye)

Teacher: Excellent job, everyone. Let us now start today's class.

(The teacher will read the first four paragraphs of page 101 aloud and provide explanations to ensure that the students understand the content.)



Nose

The nose has two nostrils. The nostrils are lined with hair and mucus to trap dirt. Above and behind the nose, lies a large, air-filled space called the nasal cavity. It has cells that are sensitive to smell.

Different nerves present in the nose pick up the smell and forward the message to the brain. The brain then processes the message and that is how we identify different smells.

101

Teacher: Let us start by talking about the nose. Can anyone tell me how many nostrils we have?

MUST DO

15 MIN.

Teacher: Yes, we have two nostrils. The nostrils are lined with hair and mucus, which help trap dirt. Why do you think this is important?

Teacher: Correct. This helps keep dirt and harmful particles from entering our lungs. Now, can anyone tell me where the nasal cavity is located?

Teacher: Right. The nasal cavity is the air-filled space behind and above the nose. It is here that we have special cells sensitive to smell.

Teacher: How does our brain help us identify different smells?

Teacher: Exactly. The nerves in the nose send signals to the brain, which processes these signals, allowing us to recognise different smells.

Teacher: Great job. Let us now talk about the tongue.

Teacher: The tongue helps us speak, but it also plays a very important role in tasting. Can anyone tell me what other tasks the tongue helps us with?

MUST DO

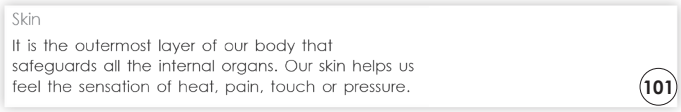
10 MIN.

Teacher: That is right. The tongue helps us chew, swallow food and taste. Now, can anyone explain what taste buds do?

Teacher: Excellent. The tongue has many taste buds that allow us to identify different flavours. Can anyone point out on the diagram where the taste buds are located?

Teacher: Perfect. As shown in the diagram, taste buds are located in different areas of the tongue. The tip of the tongue detects sweet flavours, the sides detect sour flavours, the back detects bitter flavours and the middle detects salty flavours.

Teacher: Wonderful understanding. Now, let us move on to the next part about the skin.



Skin

It is the outermost layer of our body that safeguards all the internal organs. Our skin helps us feel the sensation of heat, pain, touch or pressure.

101

Teacher: Let us now talk about the skin. Can anyone tell me what the main job of the skin is?

COULD DO

05 MIN.

Teacher: Yes, the skin is the outermost layer of our body and helps protect the internal organs. Why do you think it is so important to protect our organs?

Teacher: Exactly. The skin acts as a barrier and keeps harmful things out. It also helps us feel sensations like heat, pain and pressure.

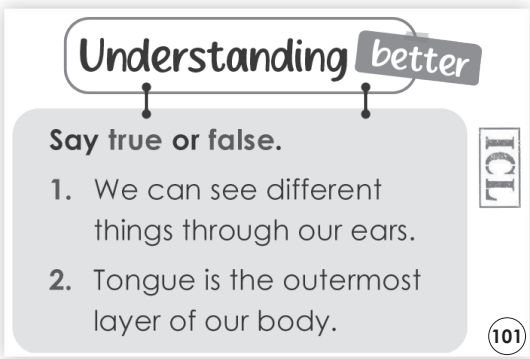
Teacher: You all did a wonderful job understanding how our body helps us interact with the world around us.

Understanding better

Teacher: Let us now check our understanding with a true or false exercise. I will read out some statements and you tell me whether they are true or false. Ready?

MUST DO

05 MIN.



Understanding better

Say true or false.

1. We can see different things through our ears.
2. Tongue is the outermost layer of our body.

ICL

101

Teacher: 'We can see different things through our ears.'

Teacher: That is false. We see things through our eyes, not our ears.

Teacher: 'The tongue is the outermost layer of our body.'

Teacher: That is false. The outermost layer of our body is the skin, not the tongue

Teacher: Well done, everyone.

You may show the **Concept Map** and **Slideshow** on the digital platform.

Differentiated Activities

110 km/hr

Explain the process through which the nose helps us identify smells and how the brain processes this information.

80 km/hr

Which organ helps us taste food?

40 km/hr

What are taste buds responsible for?

Home Task

Observe the things around you and identify five smells you can sense. Write down what each smell reminds you of and explain how your nose helps you recognise them.

Period 8

SHOULD DO 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: How many nostrils do we have? (Two)

Teacher: What part of the ear collects sound waves? (Pinna)

Teacher: What does the skin help us feel? (Heat, pain, touch, pressure)

Teacher: Which part of the body helps us speak and taste food? (Tongue)

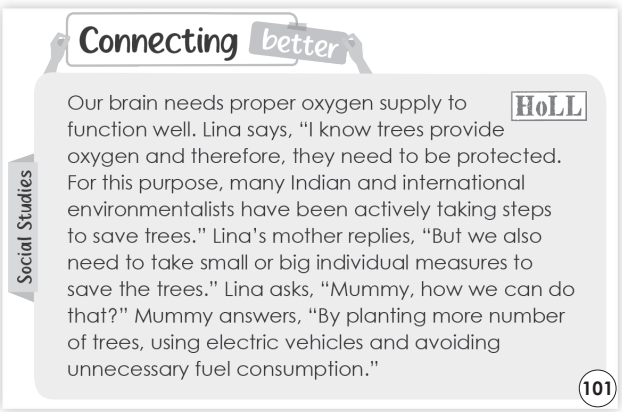
Teacher: What does the brain do with the signals from the nose? (Processes the smell)

Teacher: Excellent job, everyone. Let us now move forward with our lesson.

Connecting better

MUST DO 05 MIN.

Teacher: Let us begin with the 'Connecting better'. Read the conversation between Lina and her mother.



(Let the students read.)

Teacher: Can anyone tell me why trees are important for our brains?

Teacher: Exactly. Trees provide oxygen, which our brain needs to function well. Can anyone tell me what steps have been taken to protect trees?

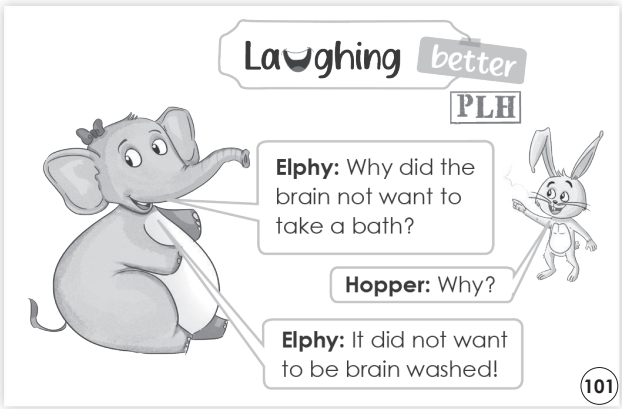
Teacher: Yes. Many environmentalists are working to save trees. Can anyone share some ways we can do that?

Teacher: Great. By planting more trees, using electric vehicles and avoiding unnecessary fuel consumption, we can contribute to saving trees and protecting the environment.

Laughing better

MUST DO 05 MIN.

Teacher: Let us move on to Laughing Better. Here is a funny question: Why did the brain not want to take a bath?

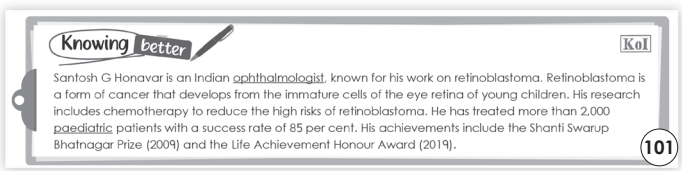


Teacher: It did not want to be brainwashed. That is a good joke. Laughter is also important for our brain, it helps us relax and feel good.

Knowing better

MUST DO 10 MIN.

Teacher: Let us now talk about a very important person in the field of medicine, Dr. Santosh G Honavar. Can anyone tell me what Dr. Honavar is known for?



Teacher: Yes, Dr. Honavar is an ophthalmologist and he is well-known for his work on retinoblastoma. Do you know what retinoblastoma is?

Teacher: Correct. Retinoblastoma is a form of cancer that affects the eye retina of young children. It develops from immature cells in the retina.

Teacher: Dr. Honavar has worked hard to reduce the risks of retinoblastoma through chemotherapy. Can anyone explain how chemotherapy helps?

Teacher: Well done. Chemotherapy is a treatment that helps reduce the risk of cancer by killing the cancer cells. Dr. Honavar has treated over 2,000 paediatric patients with an impressive success rate of 85%.

Teacher: Dr. Honavar has received many awards for his work. Can anyone name one of the awards he has won?

Teacher: Yes, he has received the Shanti Swarup Bhatnagar Prize and the Life Achievement Honour Award for his achievements.

Teacher: Fantastic. You all have done a great job learning about Dr. Honavar and his contributions. Let us move forward with the next part of our lesson.

Discovering better

Teacher: Let us now explore some new terms. Can anyone tell me what an ophthalmologist is?

MUST DO
05 MIN.

Teacher: Exactly. An ophthalmologist is a doctor who specialises in treating eye-related diseases.

Teacher: Now, can anyone explain what paediatric means?

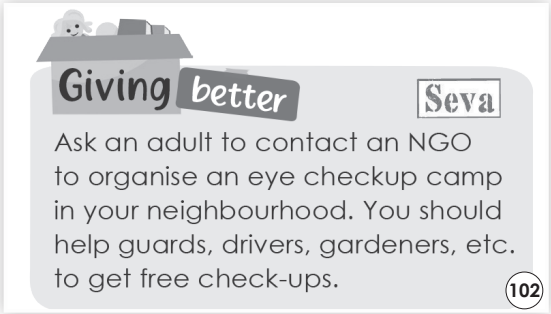
Teacher: Yes. Paediatric refers to things related to children. For example, a paediatric ophthalmologist treats eye problems in children.

Teacher: Great understanding, everyone. You are doing a wonderful job. Let us continue with the next part of our lesson.

Giving better

Teacher: Now, let us talk about Giving Better. What can you do to help your community?

MUST DO
05 MIN.



Teacher: You can ask an adult to contact an NGO to organise an eye check-up camp in your neighbourhood. You can help guards, drivers and gardeners get free eye check-ups. This is a wonderful way to give back to the community.

Healing better

Teacher: Let us now move to Healing Better. Can anyone tell me how coconut oil helps our skin?

MUST DO
05 MIN.

Teacher: Correct. When applied on the skin, coconut oil helps remove dryness and keeps the skin smooth. It is a natural way to heal and nourish our skin.

You may show the **Animated Activities** and **Quiz** on the digital platform.

Differentiated Activities

110 km/hr

Explain the importance of trees in providing oxygen for our brains and how we can contribute to saving them.

80 km/hr

What does an ophthalmologist treat?

40 km/hr

What part of the body does an ophthalmologist specialise in?

Home Task

Write about two ways you can help protect the environment, like planting trees or using electric vehicles. Share how these activities can improve our health and help our brains.

Period 9

SHOULD DO
05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What do trees provide that is important for our brain? (Oxygen)

Teacher: What does an ophthalmologist specialise in? (Eye-related diseases)

Teacher: What can you do to help in your community regarding eye health? (Organise an eye check-up camp)

Teacher: How does coconut oil help the skin? (Removes dryness and nourishes the skin)

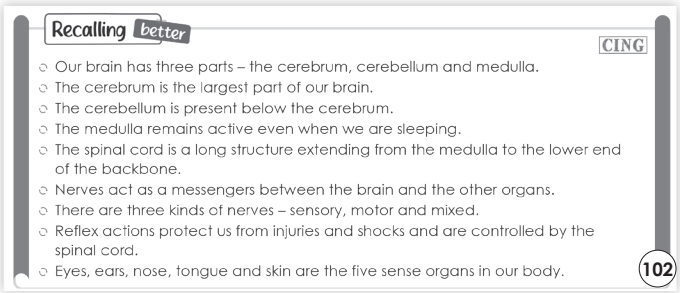
Teacher: What part of the body helps us to speak, chew and taste? (Tongue)

Teacher: Excellent work, everyone. Let us now move forward with our lesson.

Teacher: Let us now recall everything we have learnt so far. I will ask some questions and I want you to answer them. Ready?

MUST DO

15 MIN.



Recalling better

CING

- Our brain has three parts – the cerebrum, cerebellum and medulla.
- The cerebrum is the largest part of our brain.
- The cerebellum is present below the cerebrum.
- The medulla remains active even when we are sleeping.
- The spinal cord is a long structure extending from the medulla to the lower end of the backbone.
- Nerves act as a messengers between the brain and the other organs.
- There are three kinds of nerves – sensory, motor and mixed.
- Reflex actions protect us from injuries and shocks and are controlled by the spinal cord.
- Eyes, ears, nose, tongue and skin are the five sense organs in our body.

102

Teacher: What are the three parts of the brain?

Teacher: Correct. The three parts of the brain are the cerebrum, cerebellum and medulla.

Teacher: Which part of the brain is the largest?

Teacher: Yes, the cerebrum is the largest part of our brain.

Teacher: Where is the cerebellum located?

Teacher: Great. The cerebellum is located below the cerebrum.

Teacher: Does the medulla remain active when we are sleeping?

Teacher: Yes, the medulla remains active even when we are sleeping. It controls vital functions like heartbeat and breathing.

Teacher: What is the spinal cord?

Teacher: Correct. The spinal cord is a long structure that extends from the medulla to the lower end of the backbone.

Teacher: What role do nerves play in the body?

Teacher: Right. Nerves act as messengers between the brain and the other organs, helping the body communicate and function.

Teacher: How many kinds of nerves are there and what are they?

Teacher: Yes, there are three kinds of nerves: sensory, motor and mixed.

Teacher: What do reflex actions do and where are they controlled?

Teacher: Great. Reflex actions protect us from injuries and shocks and are controlled by the spinal cord.

Teacher: What are the five sense organs in our body?

Teacher: Correct. The five sense organs are the eyes, ears, nose, tongue and skin.

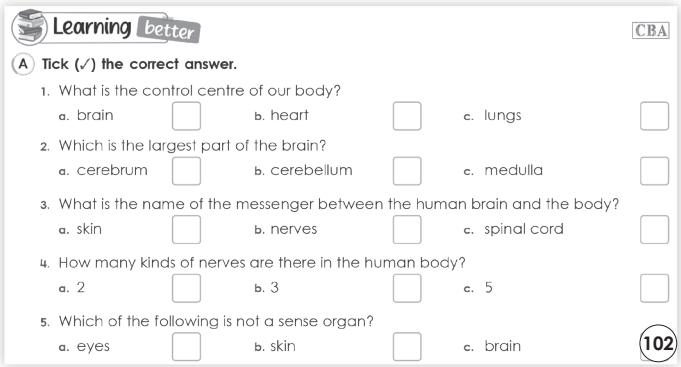
Teacher: Excellent work, everyone. You have done a great job recalling everything. Let us move forward with the next part of the lesson.

Learning better

Teacher: Everyone, please open page 102 of your Main Course Book. In Exercise 'A' of 'Learning better' you have to tick the correct answer. Are you ready to get started?

MUST DO

10 MIN.



Learning better

CBA

A Tick (✓) the correct answer.

1. What is the control centre of our body?
   a. brain ☐ b. heart ☐ c. lungs ☐
2. Which is the largest part of the brain?
   a. cerebrum ☐ b. cerebellum ☐ c. medulla ☐
3. What is the name of the messenger between the human brain and the body?
   a. skin ☐ b. nerves ☐ c. spinal cord ☐
4. How many kinds of nerves are there in the human body?
   a. 2 ☐ b. 3 ☐ c. 5 ☐
5. Which of the following is not a sense organ?
   a. eyes ☐ b. skin ☐ c. brain ☐

102

Teacher: Great. Let us begin with the first question. What is the control centre of our body?

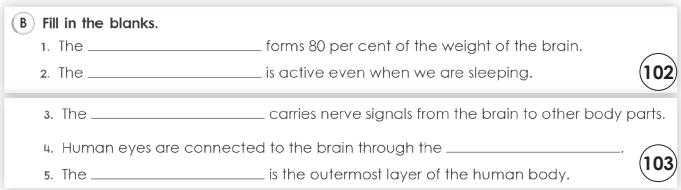
Teacher: The correct answer is brain. Well done.

(Similarly, complete all five questions. And discuss the correct answers.)

Teacher: Let us start Exercise 'B' of the 'Learning better' section. You have to fill in the blanks. Are you ready to get started?

MUST DO

10 MIN.



B Fill in the blanks.

1. The _____ forms 80 per cent of the weight of the brain.
2. The _____ is active even when we are sleeping.

102

3. The _____ carries nerve signals from the brain to other body parts.
4. Human eyes are connected to the brain through the _____.
5. The _____ is the outermost layer of the human body.

103

Teacher: Great. Let us begin with the first question. The _____ forms 80 per cent of the weight of the brain.

Teacher: That is right. The cerebrum forms 80 per cent of the weight of the brain. Well done.

(Similarly, complete all five questions and discuss the correct answer.)

Differentiated Activities

110 km/hr

Explain the role of the cerebellum in the brain and describe its location relative to the cerebrum.

80 km/hr

What does the medulla control and why is it important for our body?

40 km/hr

What part of the brain controls thinking and decision-making?

Home Task

Write down one important function of each of the three parts of the brain: cerebrum, cerebellum and medulla. Then, describe how nerves help our body communicate and function.

Period 10

SHOULD DO 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What does the cerebrum control? (Thinking, decision-making)

Teacher: Which part of the brain is responsible for balance and coordination? (Cerebellum)

Teacher: What part of the body connects the brain to the lower end of the backbone? (Spinal cord)

Teacher: Which part of the body helps us hear and understand sound? (Ears)

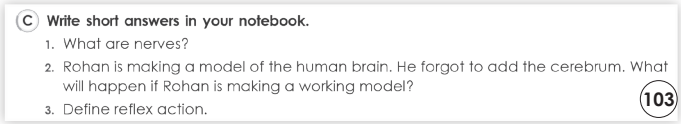
Teacher: What helps us to taste different flavours? (Tongue)

Teacher: Excellent job, everyone. Let us now move forward with our lesson.

Learning better

MUST DO 15 MIN.

Teacher: Everyone, please open page 103 of your Main Course Book. In Exercise 'C' of the 'Learning better' section, you have to write a short answer. Are you ready to get started?



C Write short answers in your notebook.

1. What are nerves?
2. Rohan is making a model of the human brain. He forgot to add the cerebrum. What will happen if Rohan is making a working model?
3. Define reflex action.

103

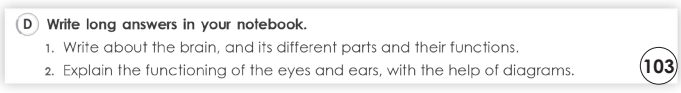
Teacher: Great. Let us begin with the first question. What are nerves?

(Students have to write the answers for the given questions in about 40 to 50 words in their notebook. Wait for the students to write the answers.)

(Similarly, complete all three questions and discuss the correct answer with the class.)

MUST DO 20 MIN.

Teacher: Everyone, please open page 103 of your Main Course Book. Let us explore some long-answer questions. In Exercise 'D' of the 'Learning better', you have to write a long answer. Let us begin with the first question. Write about the brain and its different parts and their functions.



D Write long answers in your notebook.

1. Write about the brain, and its different parts and their functions.
2. Explain the functioning of the eyes and ears, with the help of diagrams.

103

(Students have to write the answers for the given questions in about 100 to 150 words in their notebook. Wait for the students to write the answers.)

(Similarly, complete the second question and discuss the correct answer with the class.)

Differentiated Activities

110 km/hr

Explain the role of the cerebellum in maintaining balance and coordination. How does its damage affect the body?

80 km/hr

What part of the brain is responsible for decision-making and thinking? How does it help us in daily tasks?

40 km/hr

What part of the brain controls our heartbeat and breathing? Why is it important?

Home Task

Write about the three parts of the brain: cerebrum, cerebellum and medulla. Explain what each part does and why it is important for our daily activities. Include at least one example of how each part helps our body function.

Period 11

SHOULD DO 05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Great. Let us begin today's lesson with a quick game. I will ask some questions and you have to answer them. Ready?

Teacher: What happens if the cerebellum does not work properly? (It affects balance and coordination.)

Teacher: Can you explain how reflex actions help us avoid injury? (They provide quick responses to danger.)

Teacher: Why is the spinal cord so important for communication in the body? (It carries signals between the brain and other body parts.)

Teacher: What role do nerves play in sending messages throughout the body? (They act as messengers between the brain and organs.)

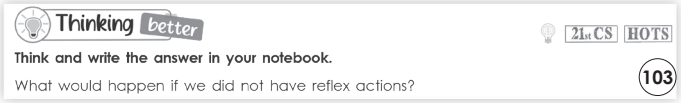
Teacher: How do the sense organs help us understand the world around us? (They gather information and send it to the brain.)

Teacher: Excellent job, everyone. Now, let us dive into the next part of our lesson.

Thinking better

MUST DO 10 MIN.

Teacher: Let us begin with the Thinking Better section. I want everyone to think carefully and answer the following question. What would happen if we did not have reflex actions?



(Let the students think and write.)

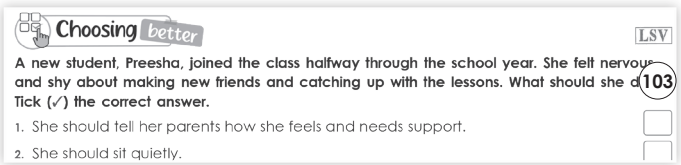
Teacher: Excellent. Reflex actions are really important to keep us safe. Reflex actions help us protect our body from harm. For example, if we touch something hot, our body reacts immediately without thinking and we pull our hand away. This helps us avoid burns. Now, let us move to the next section.

Choosing better

MUST DO

05 MIN.

Teacher: In the Choosing Better section, we will read about a new student named Preesha. She is feeling nervous and shy about making new friends and catching up with lessons. What do you think she should do?



Teacher: Here are two options:

1. She should tell her parents how she feels and needs support.
2. She should sit quietly.

Teacher: What do you think is the best option?

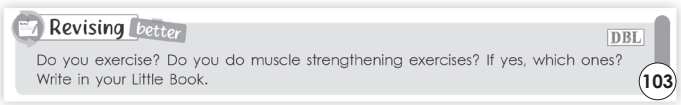
Teacher: Yes, the best option is to tell her parents how she feels. This way, they can support her and help her adjust to the new environment. Well done, everyone.

Revising better

MUST DO

05 MIN.

Teacher: Now, let us move to the Revising Better section. I want to know if you do any exercise. Do you do muscle-strengthening exercises? If so, which ones do you do? Write in your little book.



(Let the students write in their Little Books.)

Teacher: It is essential to keep our bodies healthy and strong. Regular exercise helps us stay fit. Who can share what exercises they do to keep their muscles strong?

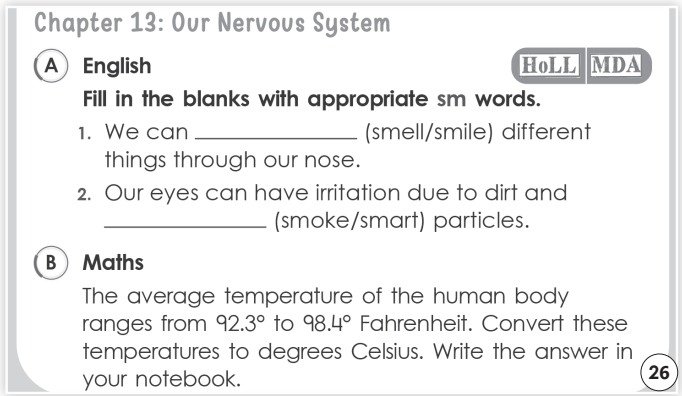
Teacher: Excellent. Keep up the good work. Regular exercise will keep you healthy and energetic.

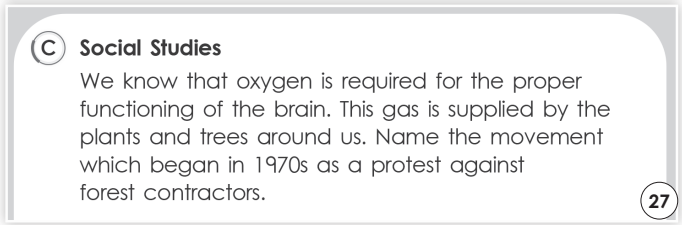
Book of Holistic Teaching

COULD DO

15 MIN.

Refer to the Book of Holistic Teaching, page number 26 under the title 'Our Nervous System.' Complete the activities mentioned in this section and ensure that the students complete them. These activities are designed to enhance their holistic understanding and engagement with the topic. Provide any necessary support and materials to help the students successfully finish the activities.





(Instruct the students to bring their workbook in their next class.)

Differentiated Activities

110 km/hr

How do reflex actions help protect us from harm and why are they important?

80 km/hr

What happens if we do not have reflex actions?

40 km/hr

Why do we pull our hand away when we touch something hot?

Home Task

The Project Idea, given in the book of Project Ideas, page 18 under the title 'Our Nervous System.' This project should be assigned to the students as a home task to work on. Ensure that the students understand the project requirements and provide any necessary guidance or materials they might need.

Period 12

SHOULD DO

05 MIN.

Teacher: Good morning, students. How are you all today?

Teacher: Let us begin today's class with a quick review of what we have learned so far. I will ask five questions and I want you to answer them. Ready?

Teacher: How does the cerebrum help us perform daily tasks? (It helps in thinking and decision-making)
Teacher: What part of the brain helps us with balance and movement coordination? (The cerebellum)
Teacher: What is the medulla's role in our body, especially when we are sleeping? (It controls vital functions like heartbeat and breathing)
Teacher: What part of the brain helps us process information from our sense organs? (The cerebrum)
Teacher: Why is it important for the spinal cord to carry signals between the brain and the body? (It helps the body function properly by transmitting messages)
Teacher: Well done, everyone. Let us now move forward with our lesson.

Worksheet 1

Teacher: Let us do some activities from the workbook. Everybody, please open page 47 of your workbook and answer the questions given in worksheet - 1.

MUST DO
10 MIN.

Theme 7: Why Do We Need Support?
13. Our Nervous System

Worksheet 1

A. Fill in the blanks.

1. The brain is the _____ centre of our body.
2. The main function of the brain is to collect _____ from all body parts.
3. The brain is made up of _____ parts.
4. The cerebrum is the _____ part of the brain.
5. Cerebrum constitutes around _____ of the weight of the brain.

B. Write true or false.

1. The brain is the control centre of our body. _____
2. A hard and bony skull protects our brain. _____
3. A human brain has two parts. _____
4. Cerebellum is the largest part of the brain. _____
5. Cerebrum constitutes around 75% of the weight of the brain. _____

C. Match the columns.

Column A		Column B
1. brain	•	• a. coordinates the muscle actions
2. skull	•	• b. largest part of brain
3. cerebrum	•	• c. control centre of body
4. cerebellum	•	• d. protects the brain
5. medulla	•	• e. active while sleeping

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(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

Worksheet 2

Teacher: Let us do some activities from the worksheet - 2. Everybody, please open page 48 of your workbook and answer the questions given in worksheet – 2.

MUST DO
10 MIN.

Worksheet 2

A. Fill in the blanks.

1. A hard and bony _____ protects our brain.
2. _____ is responsible for the working of our nose, tongue and ears.
3. If the cerebellum does not work properly, our body makes _____ movements.
4. _____ is present below the cerebellum.
5. _____ is a long, delicate and tube-like structure.

B. Rearrange the letters to make meaningful words related to the brain.

1. FORMATIONIN _____
2. ULLKS _____
3. RUMCEREB _____
4. BELLUMCERE _____
5. ULLAMED _____

C. Write true or false.

1. Cerebrum is responsible for the working of our nose and eyes. _____
2. Cerebellum helps us think, learn and emote. _____
3. Cerebellum lies below the cerebrum. _____
4. Medulla forms a connection between the brain and the spinal cord. _____
5. Medulla remains active even when we are sleeping. _____

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(Let the students answer the questions on their own. Then discuss the answer by writing the correct answer on the blackboard.)

You may generate additional practice worksheets using the **Test Generator** given on the digital platform.

Book of Project Ideas

COULD DO
10 MIN.

Discuss the project assigned as the home task in the eleventh period, focusing on helping students understand the objectives and addressing any challenges they face.

Chapter 13: Our Nervous System ICT PRO 21st CS

With the help of Internet* prepare a presentation on Nervous System.

- Briefly explain what the nervous system is.
- Introduce the main parts of nervous system – the brain, spinal cord and nerves.

18

- Describe the main functions (sending signals, controlling actions).
- Describe how nerves transmit signals.

19

Teacher: Now, let us complete the 'KWL' activity.

SHOULD DO
05 MIN.

Teacher: Take out your notebook and fill in the 'L' column. Write what you have learned in this chapter.
(Wait for students to fill in the chart.)
Teacher: Let us all give a huge round of applause to everyone for their hard work and creativity. Great work, everyone. See you in the next class. Have a wonderful day ahead.

Differentiated Activities

110 km/hr

What happens if the spinal cord is damaged and how does it affect communication in the body?

80 km/hr

How do the brain, nerves and sense organs work together to help us understand our surroundings?

40 km/hr

What does the cerebrum help us do?

Home Task

Complete worksheet 3.

Worksheet 3

A. Fill in the blanks.

1. The spinal cord extends from _____ to the lower end of the backbone.
2. Nerves are _____ structures that act as a messenger between the brain and the body.
3. _____ form a wide network that extends throughout the body.
4. There are _____ kinds of nerves in our body.
5. Nerves can be _____, motor and mixed.

B. Unscramble the words to make meaningful words related to nerves.

1. ENGERMESS _____
2. WORKNET _____
3. ORYSENS _____
4. ORMOT _____
5. EDMIX _____

C. Write true or false.

1. The spinal cord is a long, delicate and tube-like structure. _____
2. The spinal cord is used to carry nerve signals from the brain to other body parts. _____
3. The spinal cord is a thread-like structure that acts as a messenger between the brain and the body. _____
4. All the nerves are directly connected to the brain. _____
5. There are only two kinds of nerves in our body. _____

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Learning Outcomes

The students will:

Domain	Learning Outcome
Physical Development	• enhance their fine motor skills by practising tasks that involve body movements and reflex actions, resulting in improvements in physical coordination, balance and dexterity.
Socio-Emotional and Ethical Development	• recognise the importance of communication through the nervous system, encouraging empathy and cooperation when learning about reflex actions and their role in protecting the body.
Cognitive Development	• identify the three main parts of the brain (cerebrum, cerebellum, medulla) and explain their functions while understanding how the brain, nerves and sense organs work together to process sensory information.
Language and Literacy Development	• develop language skills by discussing complex concepts like reflex actions, the role of the brain and the functions of sense organs while also improving their written communication through short and long answers describing these processes.
Aesthetic and Cultural Development	• appreciate the complexity of the human body by learning about the nervous system and its role in communication, movement and safety, fostering respect for the science behind our body.
Positive Learning Habits	• demonstrate curiosity and engagement by actively participating in activities like model-making (brain model) and creative discussions about the nervous system, encouraging hands-on learning and collaborative thinking.

Starry Knights
Are you satisfied with your teaching or you need more improvisation? Kindly reflect on your teaching and mention a few things you would like to work on.

Give yourself a STAR.