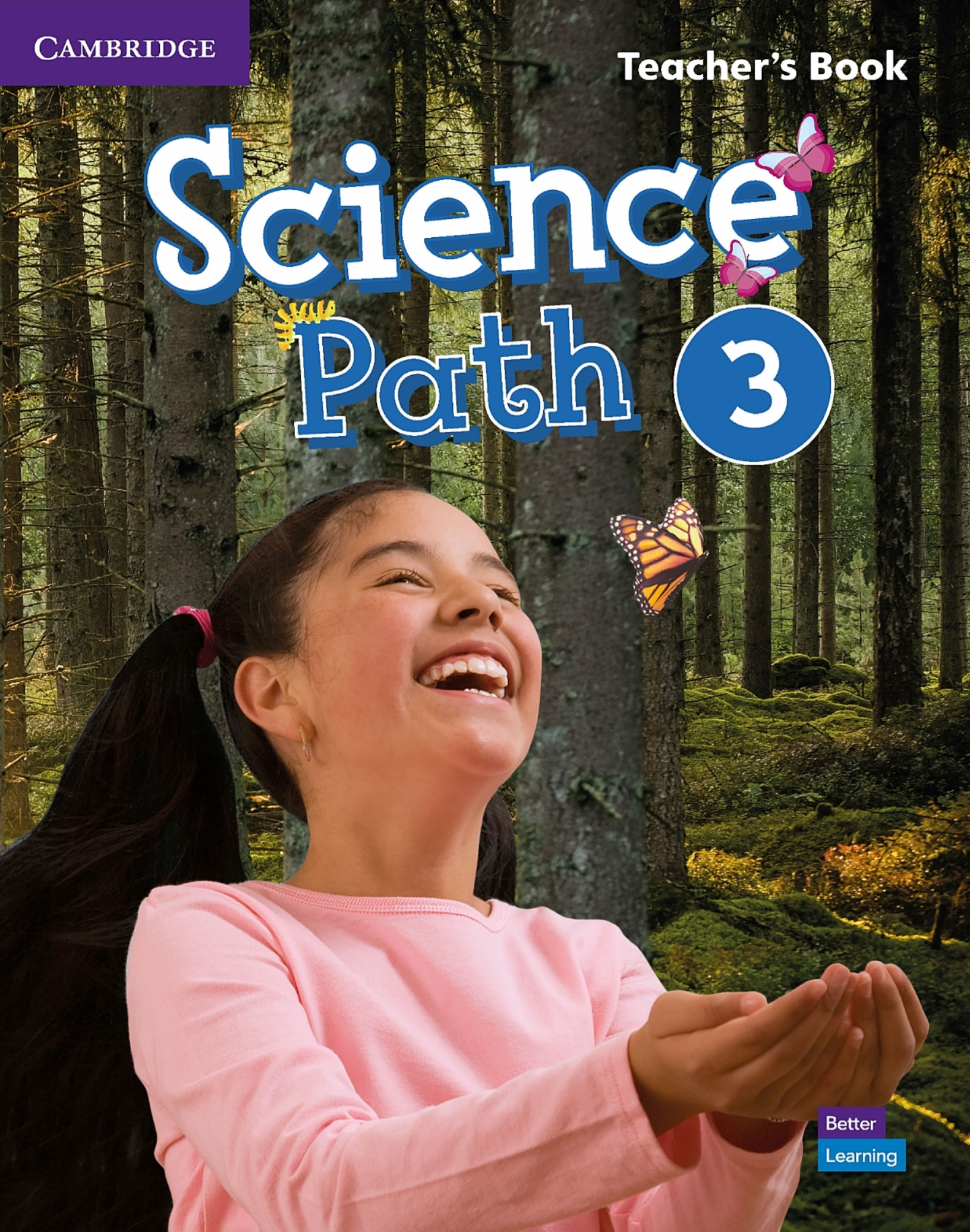
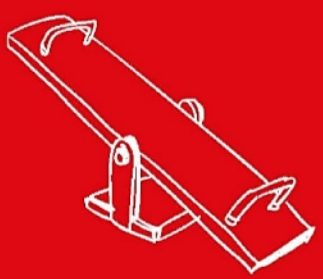

CAMBRIDGE
Teacher's Book
Science Path 3
Better Learning

WELCOME TO CAMBRIDGE SCIENCE PATH



Course objectives

- *Cambridge Science Path* takes students on a journey as they discover the wonders of biology, chemistry, and physics. Students are introduced to topics at a manageable pace, so they can engage with, enjoy, and fully assimilate new concepts.
- Students learn about and cement their understanding of new concepts through **projects**. There is an *Investigate* project that runs through each unit, in which students review and expand upon the concepts presented in the unit. Each individual stage of the *Investigate* project feeds into the project finale, in which students present or produce something to demonstrate their understanding of the topic.
- Students also engage with Science in a **hands-on** way by conducting **experiments**. This practices **critical-thinking skills** and promotes collaborative learning.
- Students learn about new concepts through discovery. In *Cambridge Science Skills*, **learner autonomy** is encouraged through the inclusion of interesting facts and thought-provoking questions. Our aim is for students to be inspired by the fun and wondrous world of Science.
- **Collaborative learning** is also encouraged through the *Investigate* projects that students carry out in pairs, in groups, and as a class.
- The course provides students with the **linguistic support** that they require to study Science in a second language. The course helps students develop their speaking, listening, reading, and writing skills. The unit projects give students practice of a range of skills and sub-skills.
- *Cambridge Science Path* provides students with practice of the **Cambridge English Qualifications for young learners**. Level 1 provides practice of *Pre-A1 Starters* question types.
- **Mixed-ability assessment** provides teachers with support for students of different levels within the same class. They focus on lower- and higher- order thinking skills, as well as critical thinking.
- *Cambridge Science Path* aims to help students develop the following key competences: linguistic competence; mathematical competence and basic competences in science and technology; digital competence; learning to learn; social and civic competences; initiative and entrepreneurship; and cultural awareness and expression.

Course components

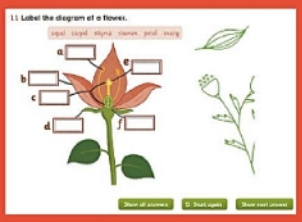
Student's Book: each unit includes a project, experiments, mixed-ability assessment and practice of the Cambridge English Qualifications for young learners.

Class audio: provided through Presentation Plus, as well as being available to download at www.cambridge.org/scienceaudio.

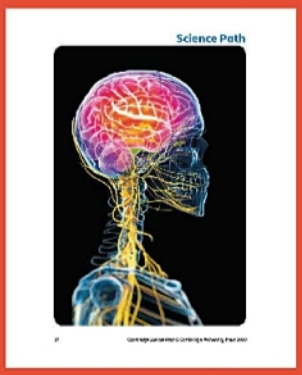
Teacher's Book: includes useful suggestions for activities at each stage of the lesson, answer keys, audio scripts, and track numbers for the audio.

Science Path Presentation Plus: includes an interactive, digital version of the Student's Book with a variety of features to help students cement their understanding of key concepts:

- flashcards in digital format
- answer keys
- audio with scripts available
- mixed-ability tests
- documentary videos for each unit to engage students in a visual way and allow them to see Natural Science in action!



Classroom materials: include posters and a full bank of flashcards to be used across levels. The posters consolidate learning by helping students engage with Science vocabulary and concepts in the classroom.



WELCOME UNIT
PAGES 4–5

Objective:

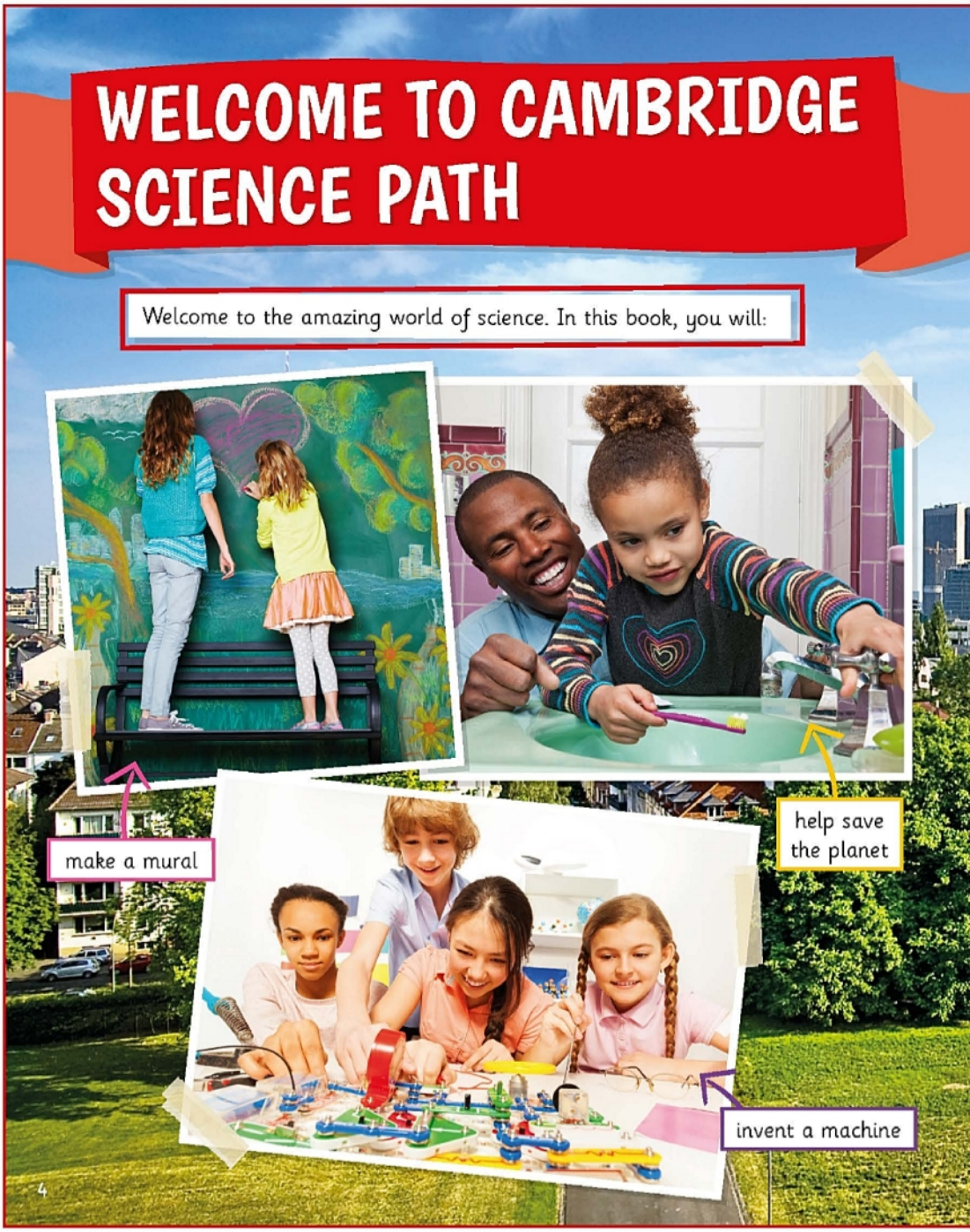
Students will become enthusiastic about the study of Science by discussing the images on these pages. They will be encouraged to predict the topics they will study this year and also to remember information related to these topics that they have studied in previous years.

Key vocabulary

beat, find, gold, heart, help, invent, investigate, machine, make, mural, old, perform, planet, plant, rap, safari, save, tree, vertebrate

Warm up

- Write the names of the topics that the students will study on the board: *the human body*; *animals*; *plants*; *materials, energy and mixtures*; and *machines*. Ask the students to work with a partner and try to match the pictures to the topics on the board. Human body: *make a mural* and *perform a rap*; animals: *go on safari*; plants: *investigate plants*; materials, energy and mixtures: *help save the planet* (by saving water and, therefore, energy); machines: *invent a machine*.



Tip

During this first lesson, make sure that the students understand your classroom rules for group work. It is worth taking time to establish the rules and to also involve the students in drawing them up.

Main concepts

- Invite students to read the labels of the pictures aloud. Collect feedback from the warm up as a class activity and write the suggestions under each heading on the board. Explain that there are different possibilities. For example, the mural could be about animals and plants, or it could be about the human body.
- Ask volunteers to read the points in the box at the bottom of page 5. Ask students if they have any ideas related to these points. They may know, for example, how to measure their heart rate or how to tell how old a tree is.
- Then, ask them to match the information in the box to the topics written on the board. Human body: *how fast your heart beats*; animals: *which vertebrates have two lives*; plants: *how to tell how old a tree is*; materials, energy and mixtures: *how to find gold*; machines: *how to make a car*.

Learn more

- In groups, students write a question for each topic from the warm-up activity. Then, draw five circles on the board and divide each circle into five segments. Play a game of *trivia* using the groups' questions. The first group asks a question to the group next to them. If that group answers the question correctly, they color in one segment of their circle and ask their question to the next group. If they cannot answer or answer incorrectly, the question passes to the following group.

1

WHY DO BABIES HAVE MORE BONES THAN ADULTS?

Learning objectives

By the end of this unit, students will have achieved a greater understanding of the following concepts:

- the brain as the control center of the body
- the locomotor system and how it works
- the senses and the nervous system, and how they help us find out about our surroundings
- the sense organs and how they function
- the importance of taking care of the sense organs

Competences

This unit covers the following competences:

- Linguistic competence
- Mathematical competence and basic competences in science and technology
- Digital competence
- Learning to learn.

Key vocabulary

Nervous system: brain, brain stem, cerebellum, cerebrum, nerves, nervous system, sense organ

Musculoskeletal system: bones, joints, muscles, skeleton

Hearing: ear, eardrum, earwax, inner ear, middle ear, outer ear, vibrations

Sight: eye, eyebrows, eyelashes, eyelid, iris, pupil, retina, sight

Smell and taste: bitter, nose, nostrils, olfactory nerve, salty, sour, sweet, taste buds, tongue

Touch: hard, rough, sensory nerves, skin, smooth, soft, touch

Cambridge English Qualifications practice

You will find ***A1 Movers*** activity types in the following exercises:

Student's Book, Page 16, Activity 1 – Listening Part 1

Student's Book, Page 17, Activity 2 – Speaking (Odd-one-out)

Throughout this unit, you will find the following ***A1 Movers*** vocabulary:

catch, center, dance, different, drop, fall, help, loud, mean, message, move, noise, practice, rabbit, send, shape, shout, sweater, sweet, think, wave, wet, work, world

Materials needed for *Hands on*

- aluminum foil
- black card
- cardboard tube
- drawing pins
- elastic bands
- wax paper

Materials needed for other activities

- container
- dropper
- objects of different colors, sizes, and shapes
- lemon juice
- objects with texture, e.g. apple, ball, glove, pencil, pine cone, eraser, ruler, sponge, stone
- rice

Investigate

The *Investigate* project that runs through this unit encourages students to prepare a mural about the four seasons. The mural will demonstrate how our senses allow us to appreciate the seasons. The different *Investigate* stages practice the following skills:

- giving descriptions through writing and speaking
- autonomous research
- presentation of work

Other Resources

- Interactive activities
- Flashcards: *The five sense organs, muscles, and bones*
- Song: *Five senses*
- Video documentary: *Helping the senses*

UNIT 1
PAGES 6–7

Objective:

Students will review vocabulary and concepts relating to the human body studied in previous years and share their knowledge.

Key vocabulary

bones, joints, senses, skeleton

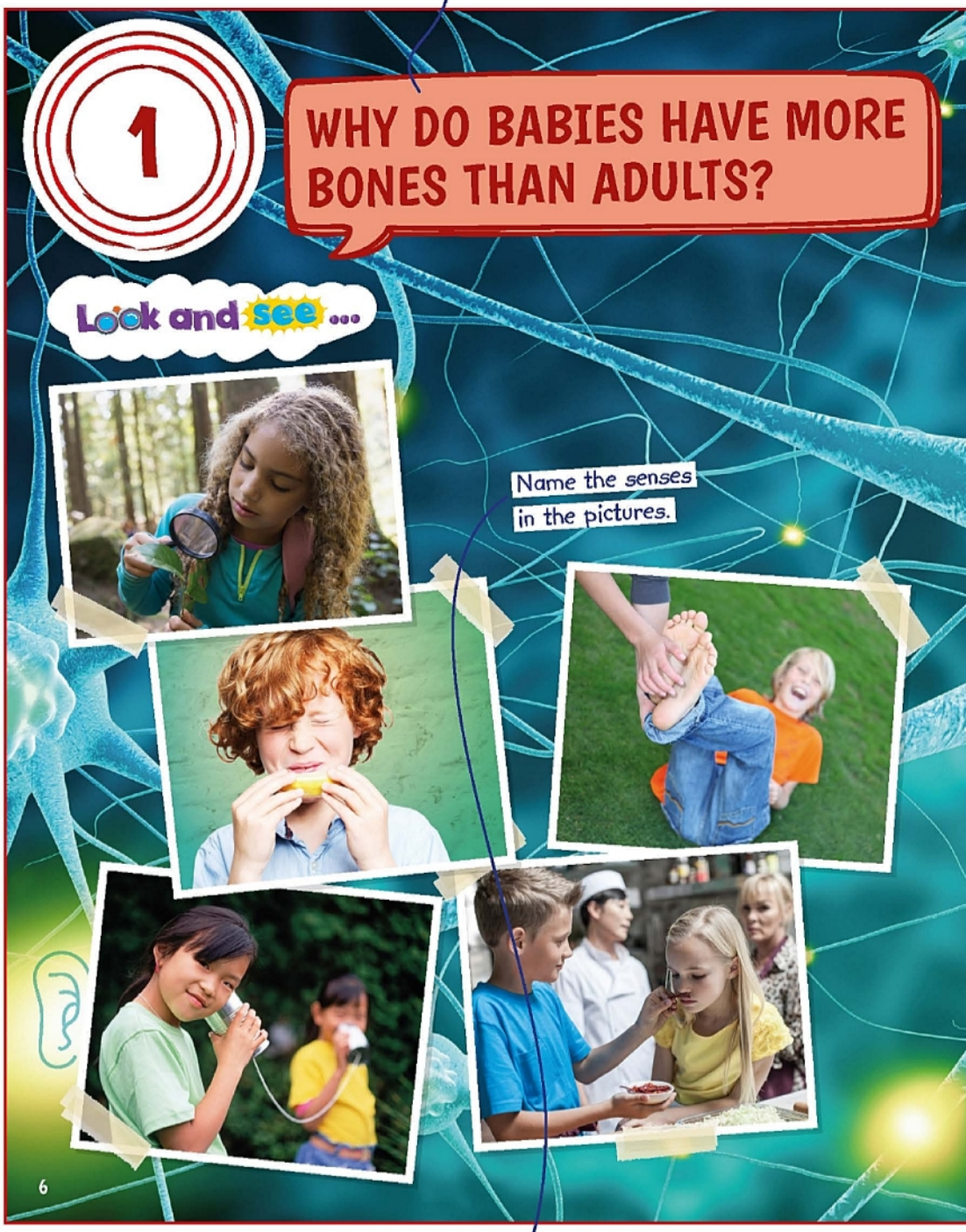
Warm up

- In groups, students think of parts of the body which begin with different letters of the alphabet. Set a time limit and award five points for words that the other groups do not think of and one point for shared words.

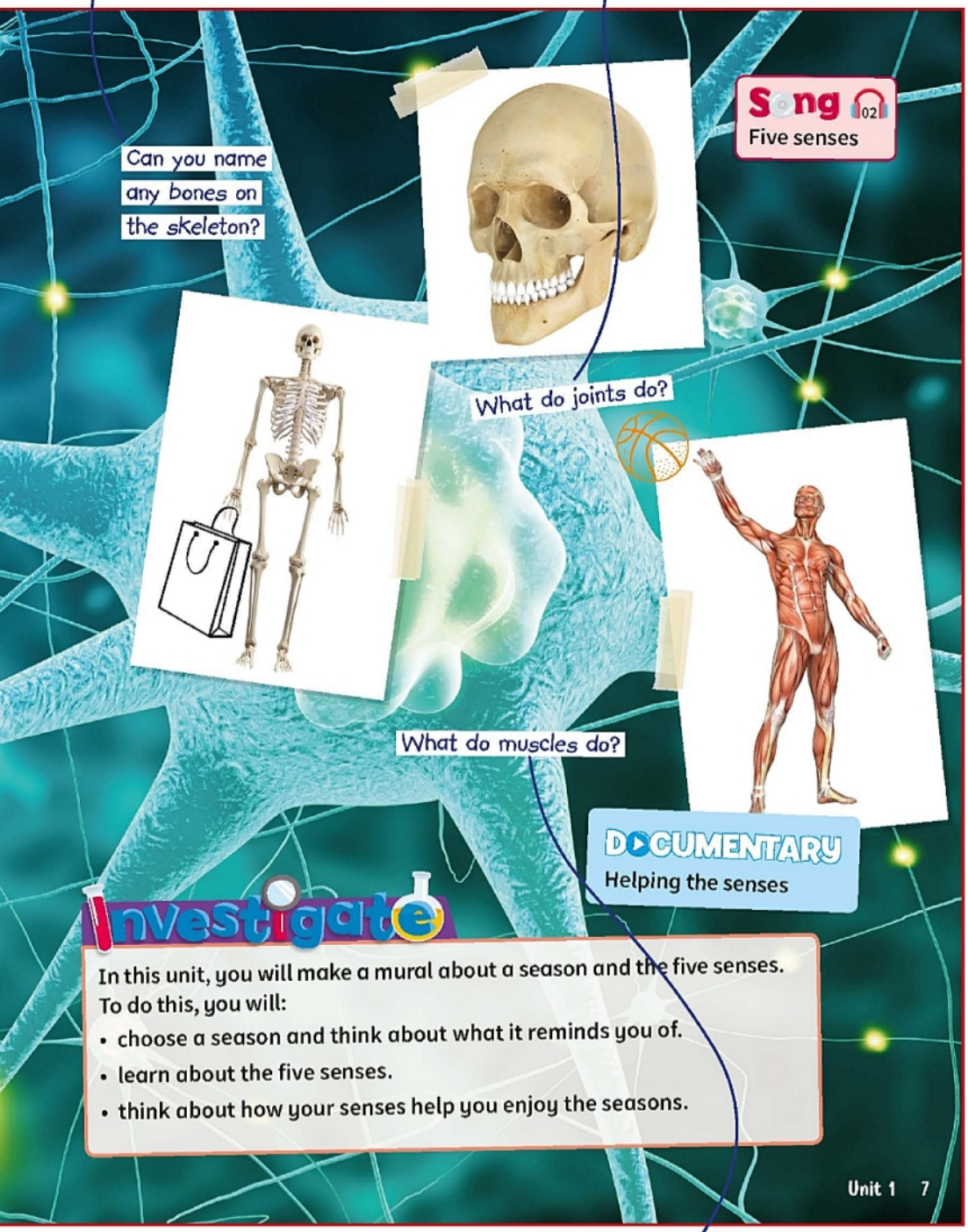
Main concepts

- Students look at the pictures and predict what they are going to be learning about in this unit. Review the names of the five senses and the sense organs, and write the words on the board for reference. Students answer the questions in pairs.

Babies have about 300 bones when they are born. Some of these bones later join together and become one larger one.



Sight, taste, hearing, smell, and touch



Learn more

- Tell the students that you are going to test their observation skills. Ask them to look at the pictures for a few minutes and then to close their books. Ask the students: *What was the girl looking at? What was the boy tasting?* etc.

  Play the audio of the *Five senses* song (track 02).

Song
The song focuses on the senses and the sense organs.

Documentary
The documentary focuses on the five senses. It shows how our senses perceive things. It also gives students an opportunity to talk about visual impairment and hearing loss.

Tip

Have objects ready to bring into the class during the teaching of this unit, to help the students better understand the five senses and what they perceive. For example, you could bring in a selection of foods for them to smell and taste, or different materials for them to touch. Students learn well through *hands on* experiences.

UNIT 1
PAGES 8–9

Objective:

Students will be able to identify the three main parts of the brain and understand their functions. They will understand how information is sent to and from the brain.

Key vocabulary

brain, brain stem, cerebellum, cerebrum, nerves, nervous system, sense organ

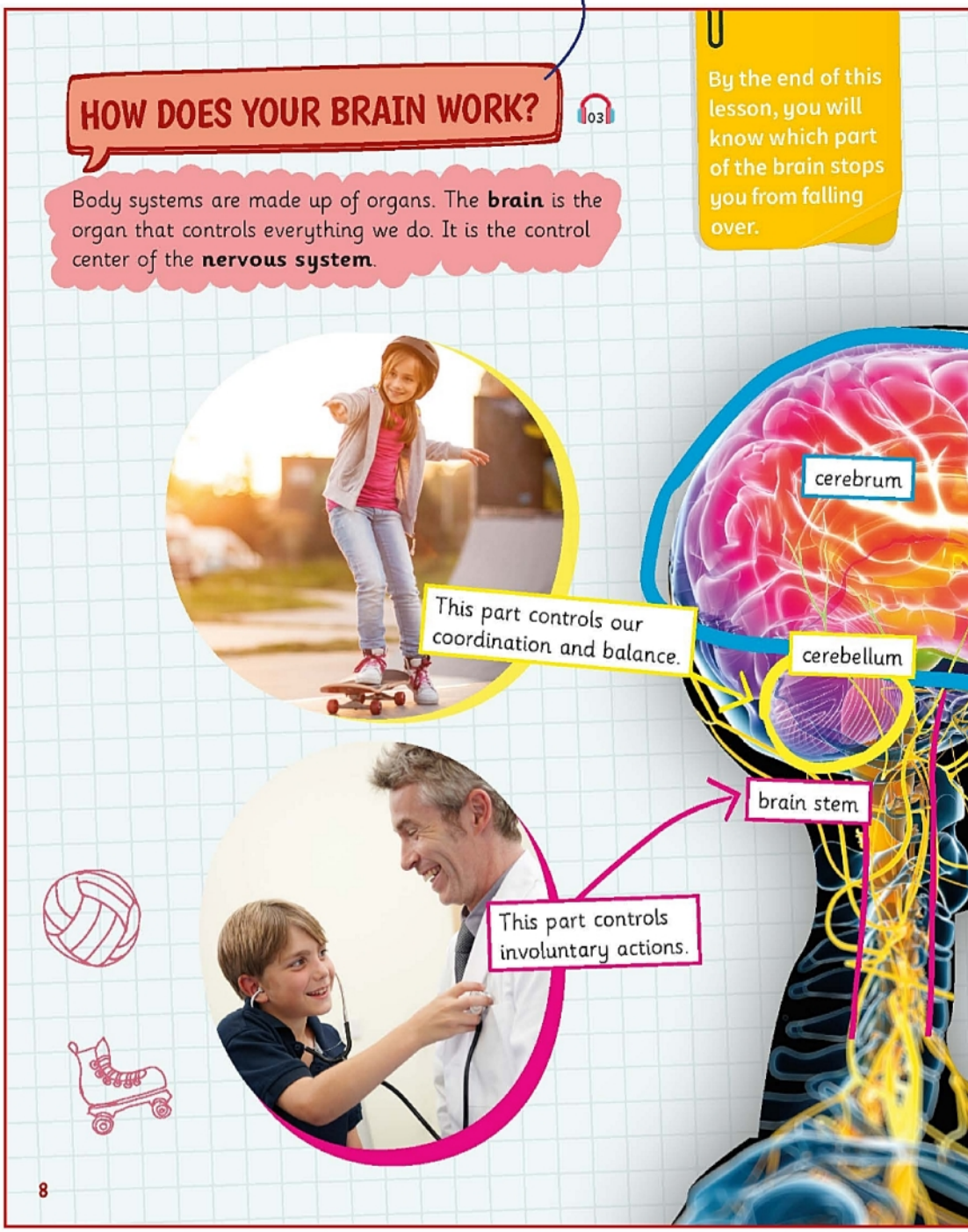
Tip

To help students understand the concept of involuntary actions, invite them to sit in silence and write down everything that is happening inside their bodies at that moment.

Warm up

- Introduce the topic by playing a total physical response (TPR) game. Tell students to stand up; walk three steps; pick up an object; stand on one leg; close their eyes while still standing on one leg; bend down; stretch up; and return to their seats. Elicit that they were able to follow the commands thanks to their brain and nervous system.

The brain is the organ that controls everything we do. It receives information from the sense organs through the nerves and then sends information to different parts of the body.

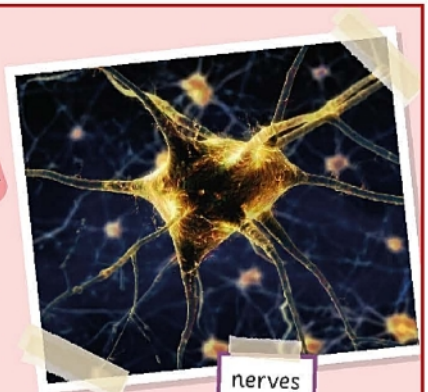


Eyes, ears, nose, tongue, skin

Do you remember what the sense organs are?

Our sense organs send information to our brain. This information travels to our brain through the **nerves**.

The brain then sends information back, through the nerves, to different parts of the body.



nerves

This part controls voluntary actions.

Which part of the brain helps us to dance?

Cerebrum

Investigate STAGE 1

- Choose one of the four seasons.
- Quickly write down five things it reminds you of.
- Compare your list with a partner.

I've chosen ... It reminds me of ...

Main concepts

- Once the students have read the text on the page, draw a table with three columns on the board labeled *cerebrum*, *cerebellum*, and *brain stem*. Ask the students to name different actions, e.g. breathing, walking, etc., and identify the part of the brain that controls the action. Volunteers write the action in the correct column. Once completed, the students copy the table into their notebooks.

Learn more

- Show how messages pass along the nerves by squeezing hands: students stand in a circle holding hands. The first students squeezes the right hand of the students who is next to them and tells them to send the message on. The first message should be an easy one, e.g. two gentle squeezes and one hard squeeze.
- Then, in smaller groups, the students create their own messages.

Students choose a season and quickly write down five things it reminds them of. It is a good idea to impose a time limit. They then compare their list with a partner's. Make sure they use the target language, e.g. *I've chosen ... It reminds me of ...*

UNIT 1
PAGE 10

Objective:

Students will be able to recognize the musculoskeletal system and understand its functions.

Key vocabulary

bones, joints, musculoskeletal system, muscles

Warm up

- Review the parts of the body. Play games such as *Can you touch your …* or *Simon says*.

Main concepts

- Once the students have read the text, ask them to explain the differences between bones and muscles. Check that they know the function of the joints and that they can name the *shoulder*, *elbow*, *wrist*, *hip*, *knee*, and *ankle*. In pairs, they can investigate how muscles work by relaxing and contracting their biceps.

Learn more

- Play the game *True or false?* Make true and false statements about the content in this lesson. You can also review vocabulary from last year, e.g. *The elbow is in the torso*, etc.
- On a piece of black card, students make a skeleton using white modeling clay. They label the joints *shoulders*, *elbows*, *wrists*, *hips*, *knees*, and *ankles*.

Your skeleton gives your body shape. It also provides support and helps movement.

Students point to the bones on the diagram.

WHY DO YOU HAVE A SKELETON?

04

By the end of this lesson, you will know what the parts of the musculoskeletal system are.

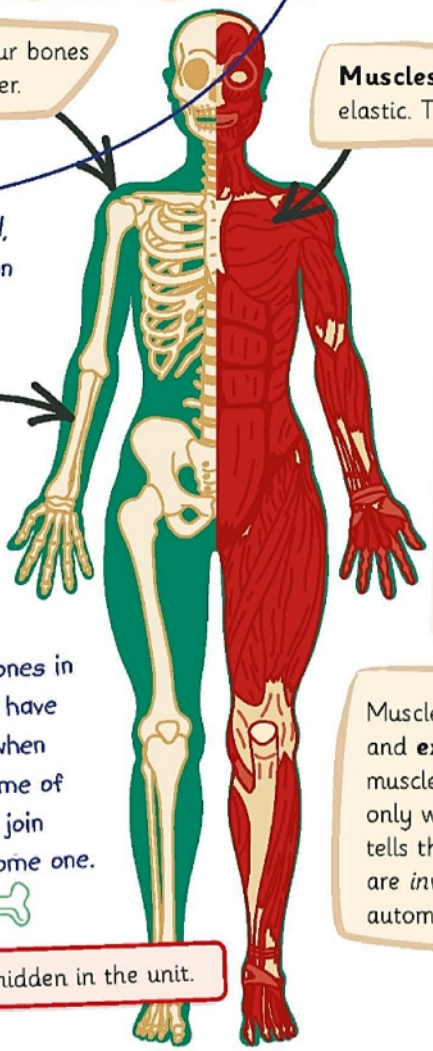
The **musculoskeletal system** allows us to move. It has three main parts.

Joints are where our bones connect to each other.

Muscles are soft and elastic. They help us move.

Can you find the skull, ribs, and spinal column in the skeleton?

Bones are hard and rigid. They form our **skeleton**, which gives our body shape.



Adults have 206 bones in their body. Babies have about 300 bones when they are born. Some of these bones later join together and become one.

Muscles work by **contracting** and **expanding**. Some muscles are *voluntary* – they only work when our brain tells them to. Other muscles are *involuntary* and they work automatically – like the heart.

Find the skeleton hidden in the unit.

10

Hidden skeleton on page 13.

For next lesson … container, rice