CAMBRIDGE

Cambridge

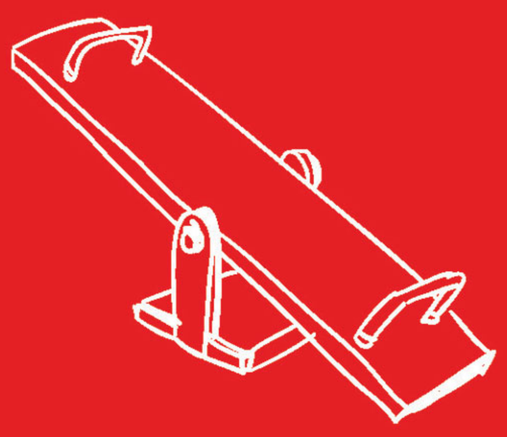
Natural Science

3

Teacher's Book

with Audio

Experience
Better
Learning



WELCOME TO CAMBRIDGE NATURAL SCIENCE

Course objectives

- The *Cambridge Natural Science* course has been designed specifically to follow the **LOMCE**. It takes learners on a journey as they discover the wonders of biology, chemistry and physics. Pupils are introduced to topics at a manageable pace, so they can engage with, enjoy and fully assimilate new concepts.
- Pupils learn about and cement their understanding of new concepts through **projects**. There is an *Investigate* project that runs through each unit, in which pupils review and expand upon the concepts presented in the unit. Each individual stage of the *Investigate* project feeds into the project finale, in which pupils present or produce something to demonstrate their understanding of the topic.
- Pupils also engage with Natural Science in a **hands-on** way by conducting **experiments**. This practises **critical-thinking skills** and promotes collaborative learning.
- Pupils learn about new concepts through discovery. In *Cambridge Natural Science*, **learner autonomy** is encouraged through the inclusion of interesting facts and thought-provoking questions. Our aim is for pupils to be inspired by the fun and wondrous world of Natural Science.
- **Collaborative learning** is also encouraged through the *Investigate* projects, which pupils carry out in pairs, in groups and as a class.
- The course provides pupils with the **linguistic support** that they require to study Natural Science in a second language. The course helps pupils develop their speaking, listening, reading and writing skills. The unit projects give pupils practice of a range of skills and sub-skills.
- Pupils are also given the opportunity to **review the grammar structures** presented in ***Cambridge Life Adventures***. There are links between the two courses that allow pupils to review Science content in English class and grammar structures in Science class.
- *Cambridge Natural Science* is further linked to *Cambridge Life Adventures* in that it provides pupils with practice of the **Cambridge English Qualifications for young learners**. Level 3 provides practice of *A1 Movers* and *A2 Flyers* question types.
- **Mixed-ability assessment** provides teachers with support for pupils of different levels within the same class. They focus on lower- and higher- order thinking skills, as well as critical thinking.
- *Cambridge Natural Science* has been developed around the **key competences** stipulated in the LOMCE. The course aims to help pupils 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

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

Activity Book: each unit includes activities that consolidate and expand upon the concepts introduced in the Pupil's Book, practice of the Cambridge English Qualifications for young learners and a bilingual glossary.

Class audio: provided through the *Digital Lab*, as well as being available to download online at www.thecambridgeteacher.es.

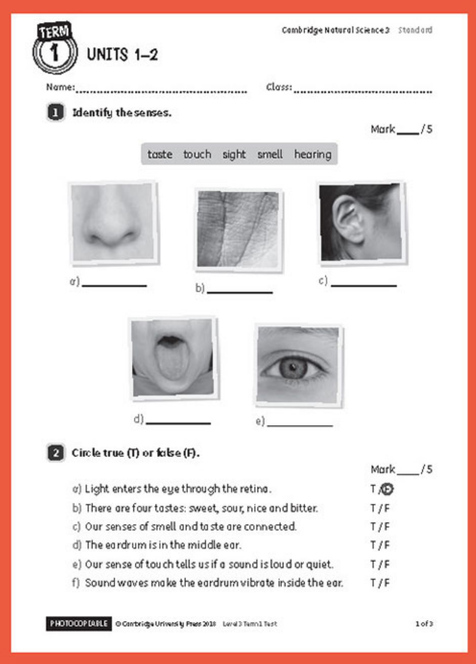
Teacher's Book: includes useful suggestions for activities at each stage of the lesson, answer keys, audio scripts and track numbers for the audio.

Test generator: allows teachers to build their own tests for each unit, terms and end of year assessment.

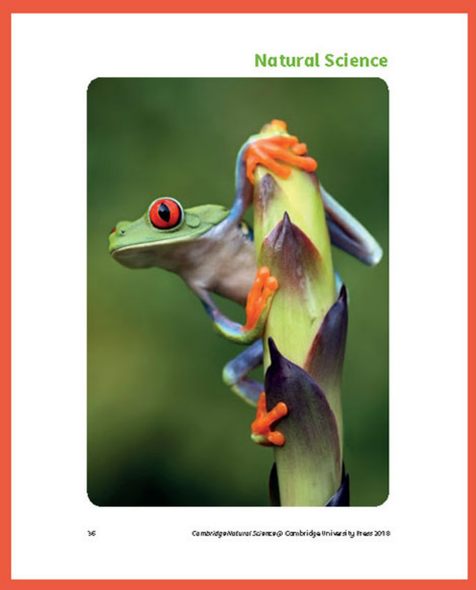
Digital Lab: includes an interactive, digital version of the Pupil's Book with a variety of features to help pupils cement their understanding of key concepts:

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

Digital Resource Bank: includes mixed-ability tests, project evaluation grids and curriculum evaluation grids. They are available online and at www.thecambridgeteacher.es.



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



WELCOME UNIT
PAGES 4–5

Objective:

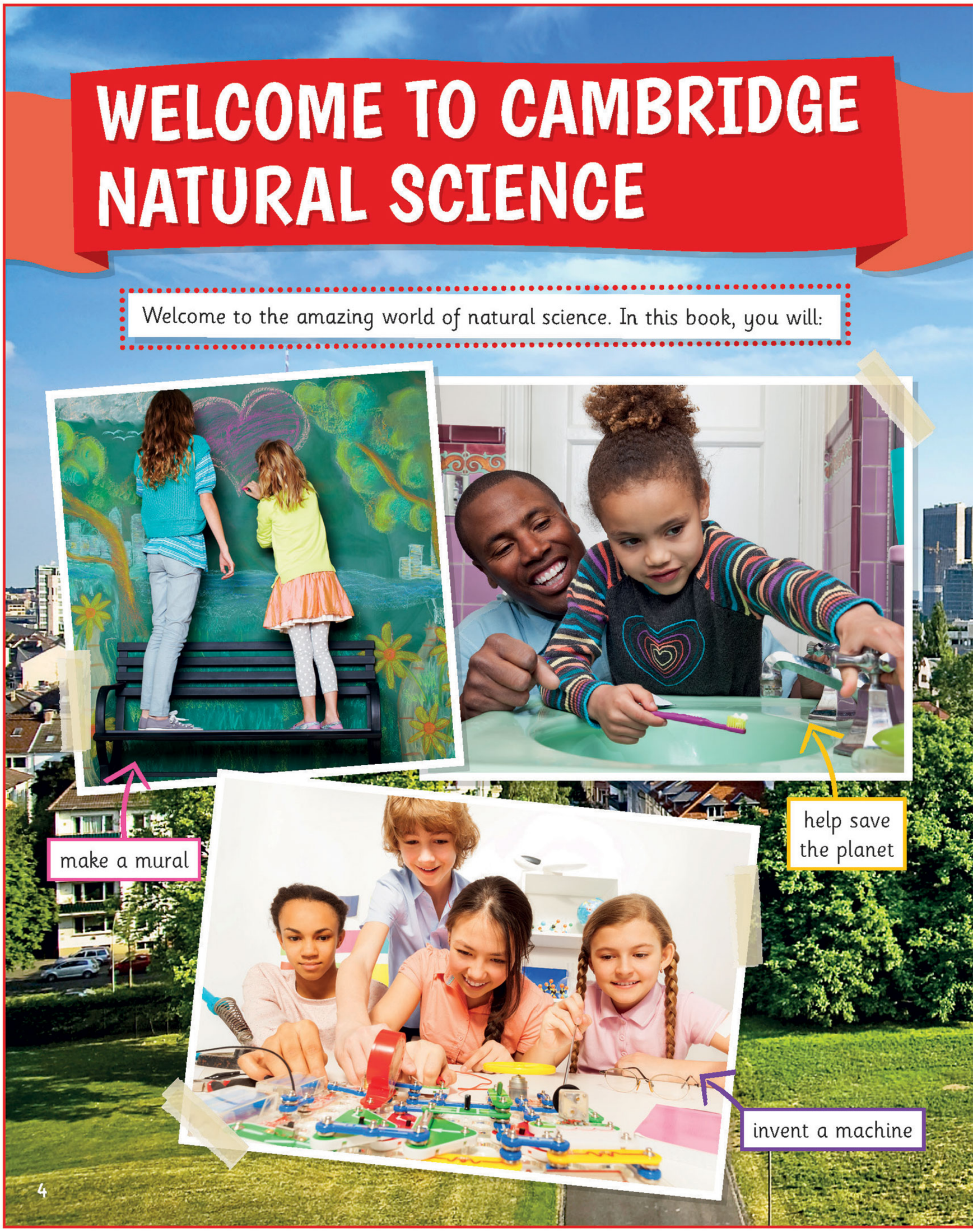
Pupils will become enthusiastic about the study of Natural Science by discussing the images on these pages. They will be encouraged to predict the topics they will study this year and also to remember information related to these topics that they have studied in previous years.

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 pupils will study on the board: *the human body*; *animals*; *plants*; *materials, energy and mixtures*; and *machines*. Ask the pupils to work with a partner and try to match the photos 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 pupils understand your classroom rules for group work. It is worth taking time to establish the rules and to also involve the pupils in drawing them up.

Main concepts

- Invite pupils to read the labels of the photos 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 pupils 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, pupils 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 colour 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, pupils will have achieved a greater understanding of the following concepts:

- the brain as the control centre 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

Locomotor 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:

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

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

Activity Book, Page 6, Activity 12 – Reading and Writing Part 1

Activity Book, Page 7, Activity 13 – Reading and Writing Part 4

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

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

Materials needed for *Hands on*

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

Materials needed for other activities

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

Investigate

The *Investigate* project that runs through this unit encourages pupils 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 practise the following skills:

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

Digital Lab

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

UNIT 1
PAGES 6–7

Objective:

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

Key vocabulary

bones, joints, senses, skeleton

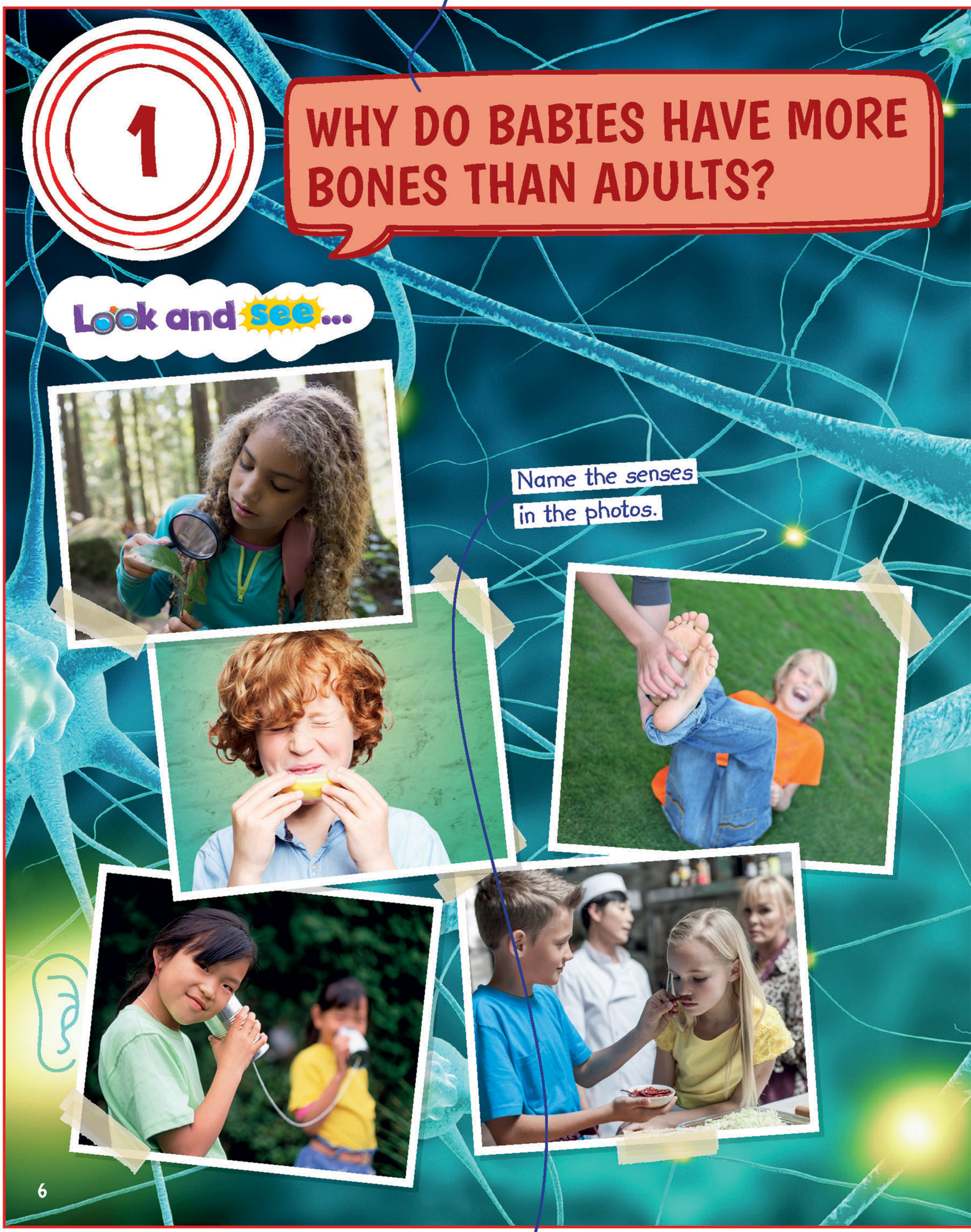
Warm up

- In groups, pupils 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

- Pupils look at the photos 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. Pupils answer the questions in pairs.

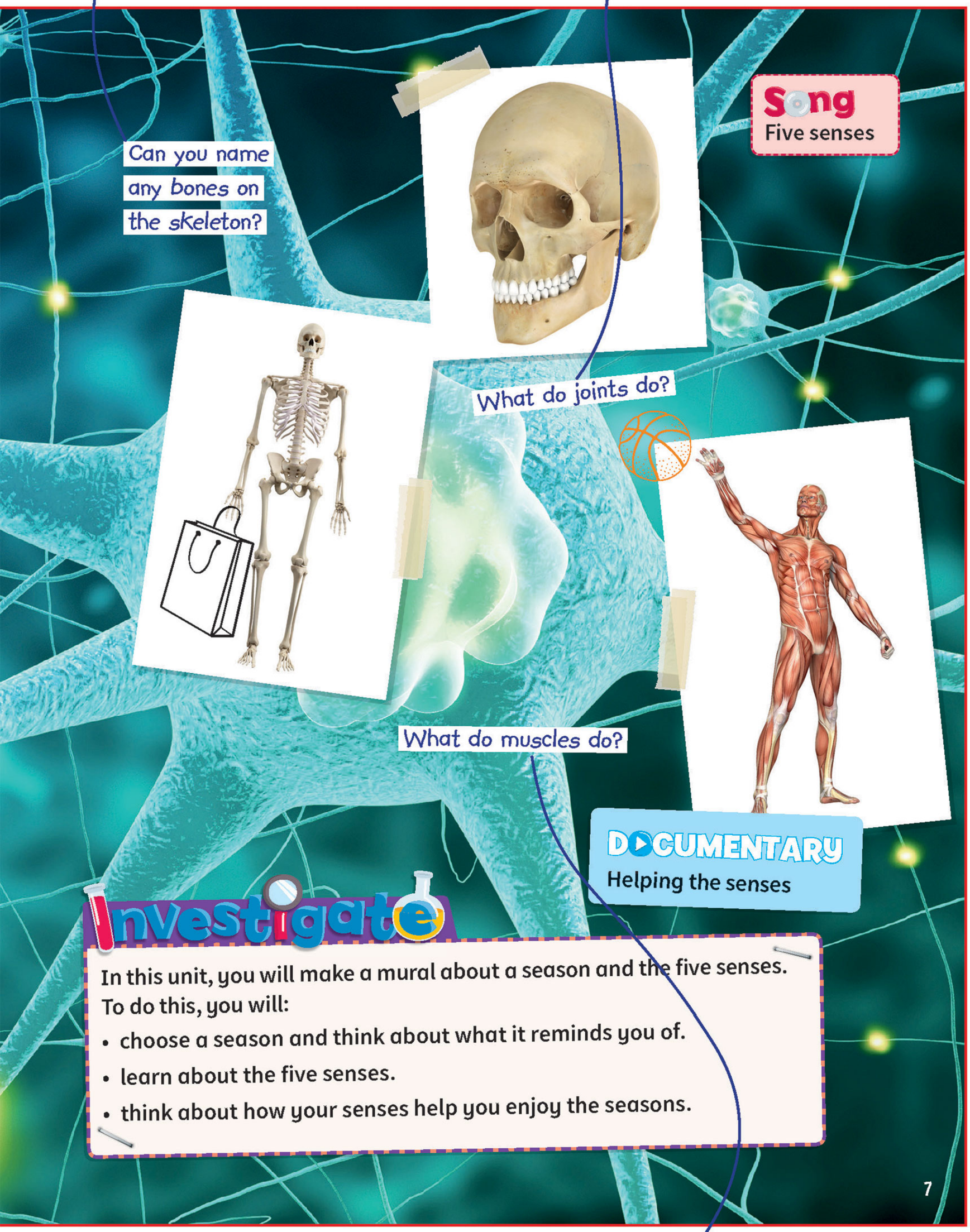
Babies have about 300 bones when they are born. Some of these bones later join together and become one larger one.



Sight, taste, hearing, smell and touch

Skull, ribs, backbone, etc.

Joints are where our bones connect to each other.



Muscles help us move.

Learn more

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

  Play the audio of the *Five senses* song (track 01).

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 pupils 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 pupils 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. Pupils learn well through *hands on* experiences.

UNIT 1
PAGES 8–9

Objective:

Pupils 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 pupils 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 pupils 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.

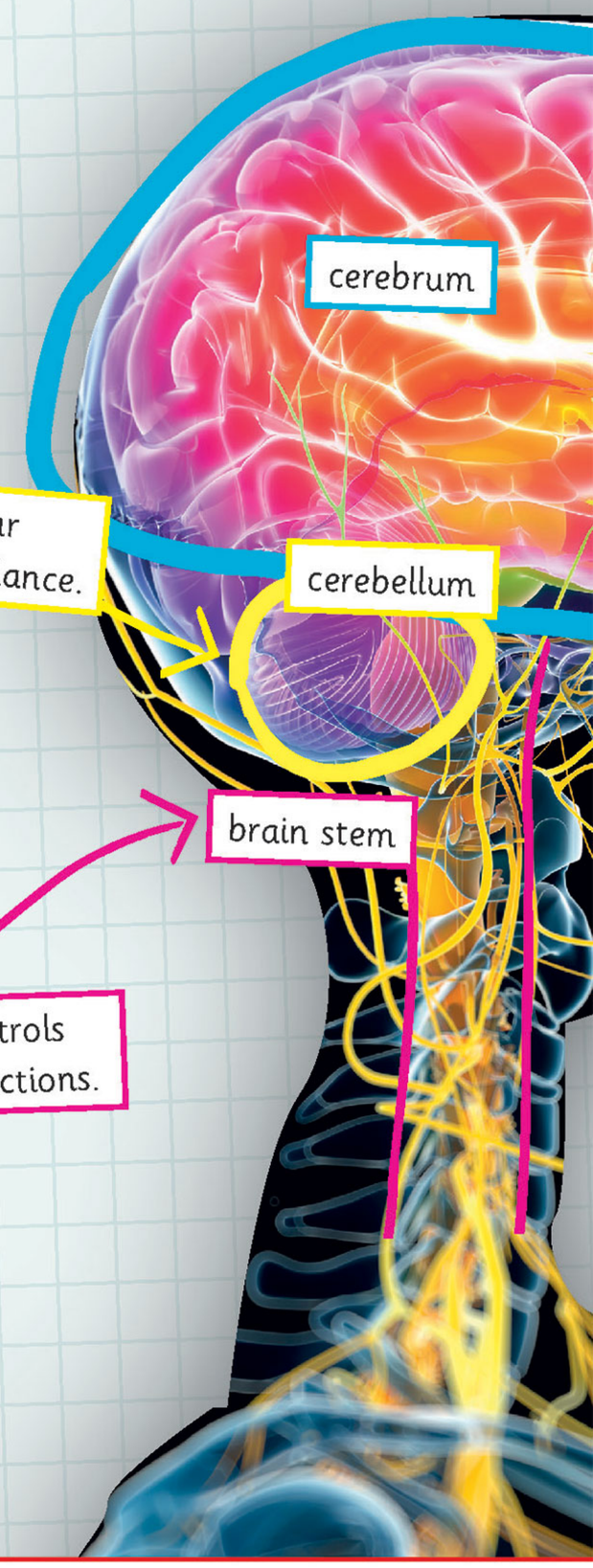
The brain is the organ that controls everything we do. It receives information from the sense organs through the nerves and then sends information to different parts of the body.

HOW DOES YOUR BRAIN WORK?

By the end of this lesson, you will know which part of the brain stops you from falling over.

Body systems are made up of organs[1]. The **brain** is the organ which controls everything we do. It is the control centre of the **nervous system**.

This part controls our coordination and balance.



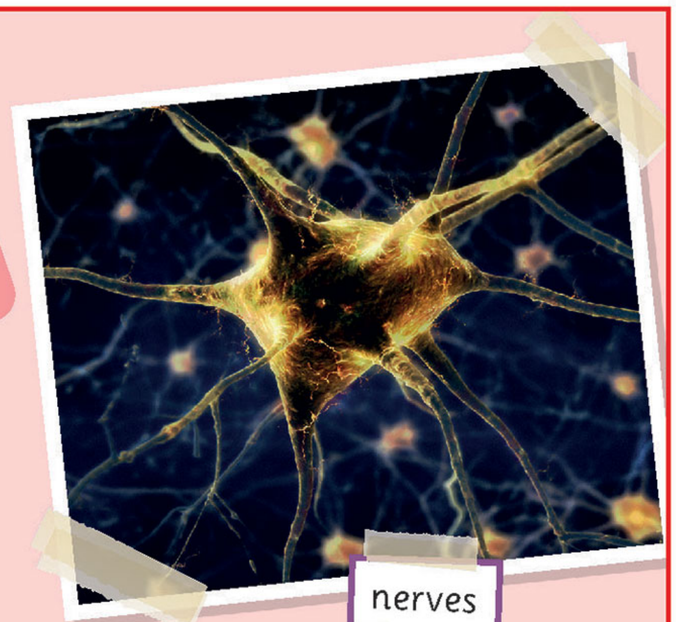
This part controls involuntary actions.

Eyes, ears, nose, tongue, skin

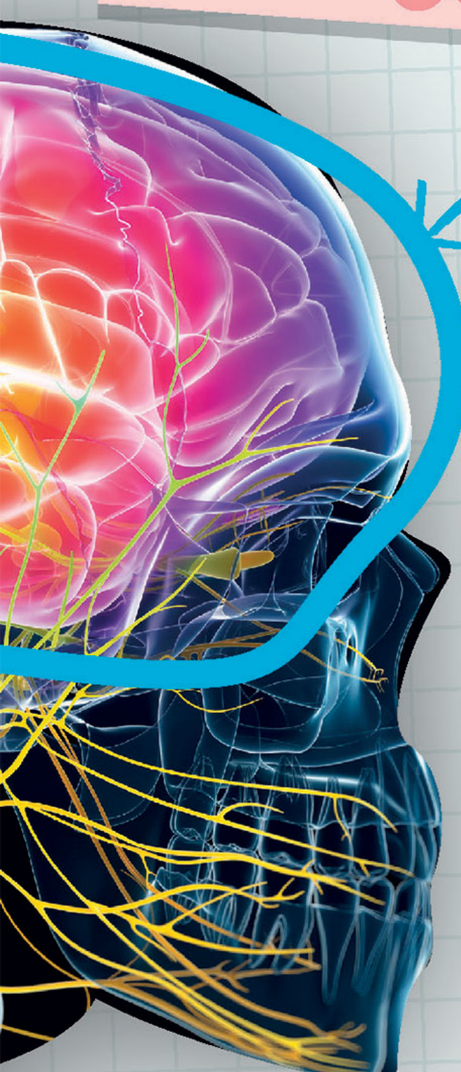
Do you remember what the sense organs are?

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 …

¹**organ:** a part of the body that does an important job in a body system

Main concepts

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

Learn more

- Show how messages pass along the nerves by squeezing hands: pupils stand in a circle holding hands. The first pupil squeezes the right hand of the pupil 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 pupils create their own messages.

Pupils 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 …*