CAMBRIDGE

Cambridge

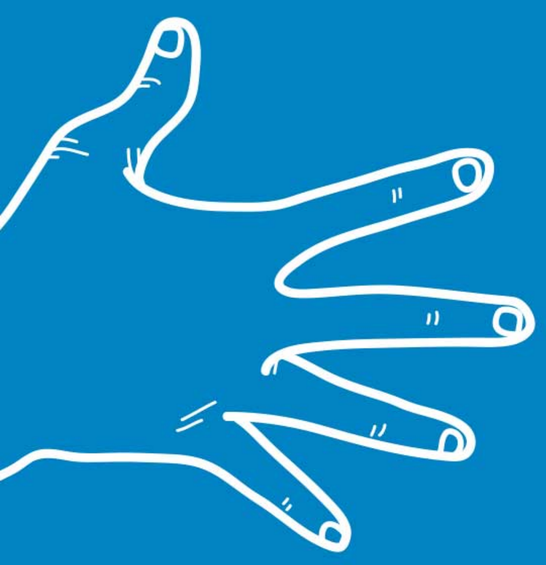
Natural Science

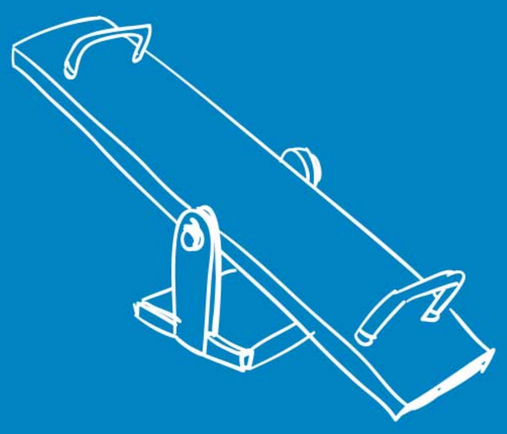
4

Teacher's Book

with Audio

Experience
Better
Learning





WELCOME TO CAMBRIDGE NATURAL SCIENCE

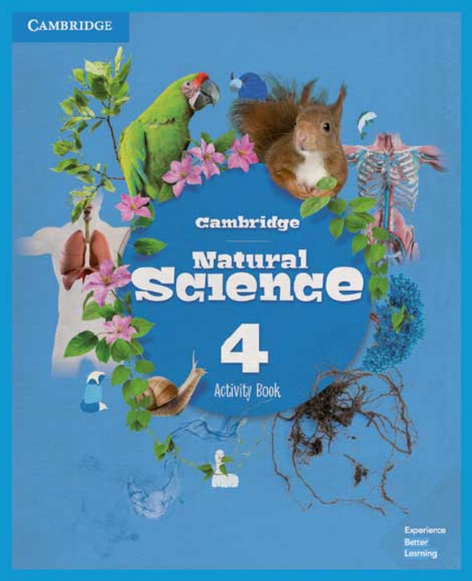
Course objectives

- 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 that they can engage with, enjoy and fully assimilate the 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 4 provides practice of *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

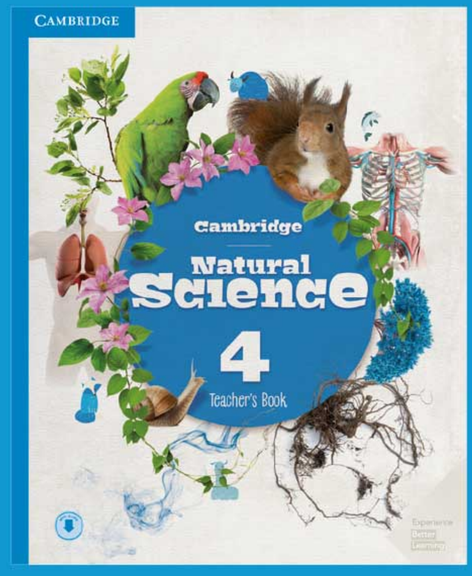
Pupil's Book: each unit includes a project, experiments, mixed-ability assessment and practice of the Cambridge English Qualifications for young learners.

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.

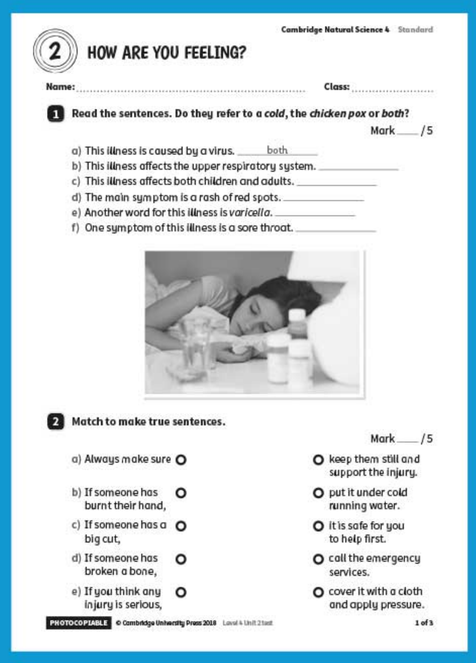


Test generator: allows teachers to build their own tests for each unit, terms and end of year assessment.

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.


Cambridge Natural Science 4 Standard

2 HOW ARE YOU FEELING?

Name: ..... Class: .....

1 Read the sentences. Do they refer to a *cold*, the *chicken pox* or *both*?

Mark ___ / 5

a) This illness is caused by a virus. ___both___
b) This illness affects the upper respiratory system. _____
c) This illness affects both children and adults. _____
d) The main symptom is a rash of red spots. _____
e) Another word for this illness is *varicella*. _____
f) One symptom of this illness is a sore throat. _____

2 Match to make true sentences.

Mark ___ / 5

a) Always make sure	keep them still and support the injury.
b) If someone has burnt their hand,	put it under cold running water.
c) If someone has a big cut,	it is safe for you to help first.
d) If someone has broken a bone,	call the emergency services.
e) If you think any injury is serious,	cover it with a cloth and apply pressure.

PHOTOCOPIABLE © Cambridge University Press 2018 Level 4 Unit 2 test 1 of 3

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:

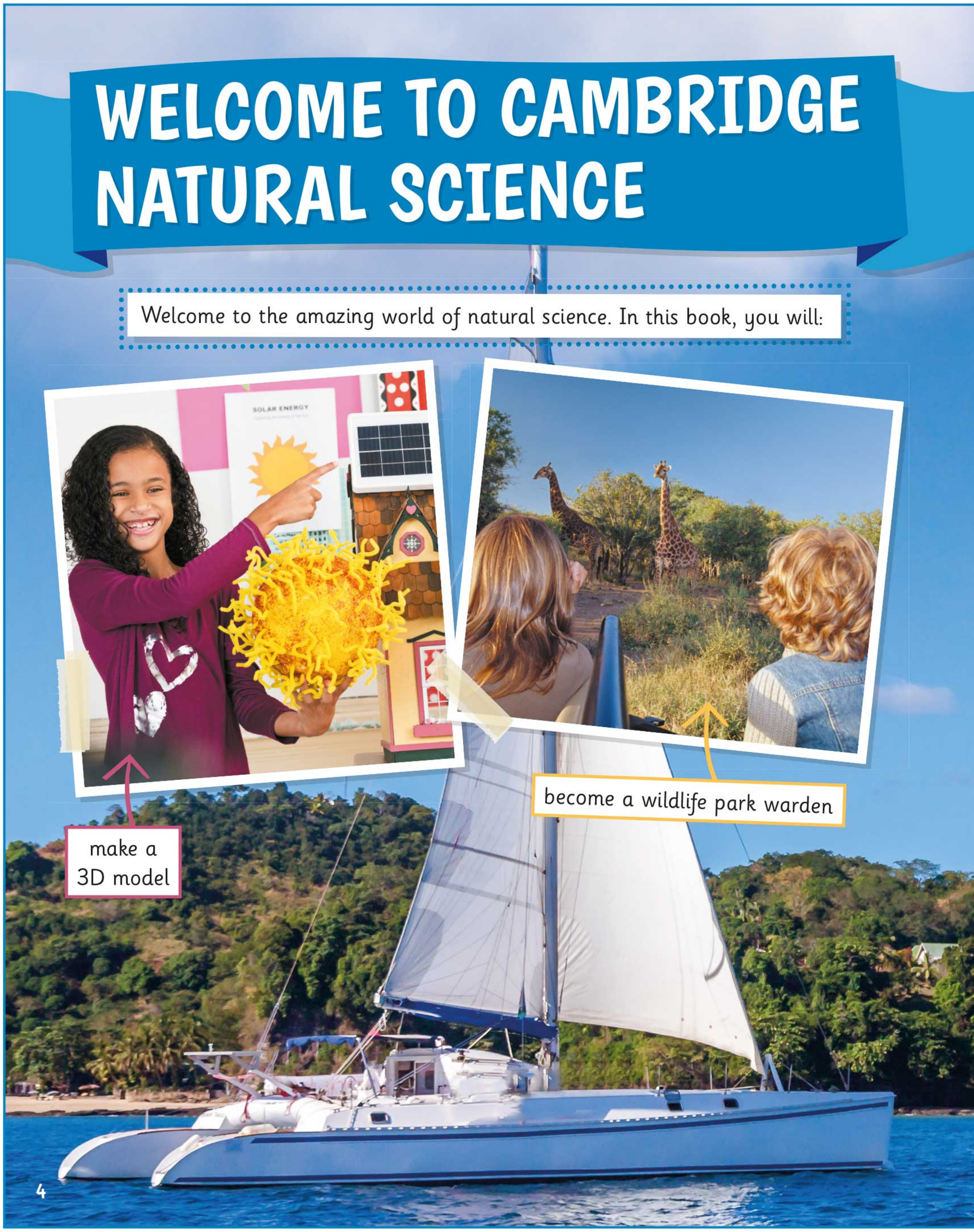
Pupils will become enthusiastic about the study of Natural Science by discussing the images on these pages. They will be encouraged to predict the topics they will study this year and also to guess what projects they will work on.

Key vocabulary

alcohol, awareness, boat, bicycle, campaign, float, giraffe, health, lever, machine, material, neighbourhood, oxygen, plant, recycle, respiratory rate, sense, sink, sun, table quiz, warden, wildlife

Warm up

- Write these words up on the board: *3D model*, *awareness campaign* and *quiz*. First, elicit the meaning of each term. Then, ask pupils if they have ever prepared or taken part in any one of these things. Ask them to give examples, e.g. *Last year, I helped to prepare an awareness campaign about saving energy.*



Main concepts

- Ask pupils to look at the images. Invite them to read the labels. For the 'make a 3D model' photo, tell pupils that they will be making a 3D model of some body systems. For the 'create a health awareness campaign' photo, ask: *Can you think of any healthy habits to include in the awareness campaign?* For the 'become a wildlife park warden' photo, ask them: *What animals can you see? What group do they belong to?* For the 'organise a table quiz' photo, brainstorm ideas as to how a table quiz works. For the 'learn about recyclable materials' photo, ask pupils: *What materials do you recycle at home?* For the 'find machines in your neighbourhood' photo, ask pupils: *What simple machines can you find in a bicycle?*

Learn more

- Draw pupils' attention to the box on page 5. Work through the list, clarifying any doubts pupils may have in relation to concepts and vocabulary.

Tip

Use this first lesson of the year to set out classroom rules for group work. Involve the pupils in deciding what the rules should be.

1

HOW ARE WE MADE?

Learning objectives

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

- body systems and how they work together
- the respiratory system and how we breathe
- the circulatory system and how it moves blood around our body
- the male and female reproductive systems
- fertilisation, pregnancy and childbirth

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

Body systems: circulatory, digestive, excretory, locomotor, nervous, reproductive, respiratory

Respiratory system: alveoli, bronchi, bronchiole, carbon dioxide, diaphragm, lungs, oxygen, respiration, trachea

Circulatory system: arteries, atrium, blood, blood vessels, capillaries, circulation, heart, veins, ventricle

Male reproductive system: penis, scrotum, sperm, sperm ducts, testicles, urethra

Female reproductive system: fallopian tubes, ova, ovaries, uterus, vagina, vulva

Sexual reproduction: childbirth, embryo, fertilisation, foetus, pregnancy, umbilical cord

Cambridge English Qualifications practice

You will find ***A2 Flyers*** activity types in the following exercises:
Pupil's Book, Page 18, Activity 1 – Listening Part 1
Activity Book, Page 7, Activity 12 – Reading and Writing Part 2

Throughout this unit, you will find the following ***A2 Flyers*** vocabulary:
air, as, begin, break, chess, cut, each, feel, finger, glue, group, happen, high, hour, if, keep, large, low, minute, once, other, push, remember, repeat, rich, stay, thousand, through, time, until, use, way, will

Materials needed for *Hands on*

- pencil
- notebook
- digital thermometer
- clock or stopwatch

Materials needed for other activities

- fruits and vegetables of different sizes

Investigate

The *Investigate* project that runs through this unit encourages pupils to find out more about body systems by making a 3D body systems mural. The different *Investigate* stages practise the following skills:

- giving descriptions through writing and speaking
- autonomous decision-making
- presentation of work
- working as a team

Digital Lab

- Interactive activities
- Flashcards: *The human body*
- Song: *From egg to baby*
- Video documentary: *Respiration and circulation*

UNIT 1
PAGES 6–7

Objective:

Pupils will review vocabulary and concepts relating to body systems studied in previous years, and be introduced to concepts relating to human reproduction.

Key vocabulary

baby, child, childbirth, digestive system, locomotor system, mother, nervous system, pregnancy, respiratory system, toddler

Warm up

- Ask pupils to stand up and push their chairs under their desks. Tell them to do 25 jumping jacks on the spot, without bumping into the pupil next to them.
- Then, ask pupils to sit down and work with a partner. Tell pupils to brainstorm and write a list of all the body systems they used to do the jumping jacks.
- Ask volunteers to read out their ideas and collate them on the board.

Main concepts

- Pupils look at the photos and predict what they are going to learn about in this unit. Review the names of some of the body systems.

Out of breath, sweaty, tired, etc.

Oxygen

1

HOW ARE WE MADE?

Look and see...

What do we get from the air that helps us live?

How do you feel after running around for a long time?

What body systems are the people in these photos using?

Locomotor, digestive, respiratory, circulatory and nervous systems

Pupils' own answers

Song
From egg to baby

How old do you think these children are?

DOCUMENTARY
Respiration and circulation

Investigate

In this unit, you will create a 3D body systems mural. To do this, you will:

- learn more about the respiratory system, including how we get oxygen from the air.
- learn more about the circulatory system, including how the heart pumps blood.
- differentiate between the male and female reproductive systems.
- understand how a tiny egg develops into a baby.

Learn more

- Tell pupils that you are going to test their observation skills. Ask them to look at the photos for one minute. Tell pupils to close their books and ask them questions about the photos: *What game was the boy playing? What were the family eating? What was the boy doing with his dad?*

Tip

To help pupils recall the names of the body systems they have learned about in previous years, play a game of *Snowman*, an alternative version of the game *Hangman*. Every time a pupil gets a letter wrong, you add a part of the snowman: a circle for its body, a circle for its head, two sticks for arms, a top hat, two eyes and a frown.

Song

The song focuses on the pregnancy journey: from the fertilisation of the ova to the delivery of a newborn baby.

Documentary

The documentary focuses on two body systems: the circulatory system and the respiratory system. It shows how the circulatory system moves the blood around the body and how the respiratory system performs respiration.

UNIT 1
PAGE 8

Objective:

Pupils will review the concept of body systems, as well as the main body systems they have learned about in previous years.

Key vocabulary

circulatory, digestive, excretory, female, locomotor, male, nervous, reproductive, respiratory

Warm up

- Ask pupils: *When was the last time you worked in a group?* As this is likely to be the first unit pupils study this school year, it is likely that they will tell you about something they did on their summer holidays, for example at summer camp.
- Explain to pupils that inside our bodies, there are systems. These systems work together to keep our bodies working.

Main concepts

- Ask pupils to look at the pictures and names of the body systems. Then, ask pupils what each system does, one by one. Remind them that they studied these body systems in previous years.

Learn more

- Ask pupils to find out what the Latin word *vita* means and how it is related to the term *vital system.*

Because they keep us alive. The title is a play on the word *vital*.

Here's the hidden baby!

WHY ARE BODY SYSTEMS *VITAL*?

By the end of this lesson, you will know what the main body systems are.

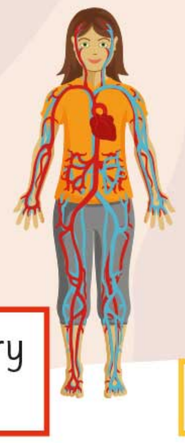
Body systems are groups of organs which work together to perform a specific job. For example, the locomotor system allows us to move around from one place to another. Do you remember what each one of these systems allows us to do?


locomotor system

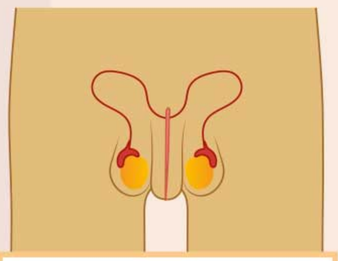

nervous system

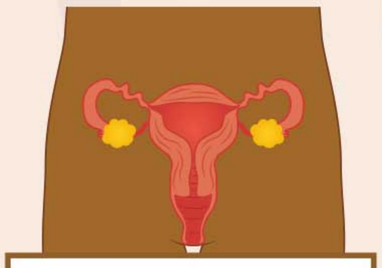

digestive system


excretory system

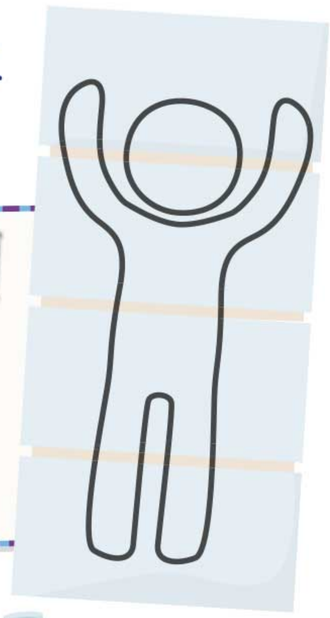

circulatory system


respiratory system


male reproductive system


female reproductive system

Body systems are sometimes called 'vital systems'. In English, the word *vital* means 'absolutely necessary' and 'essential for life'.



Investigate STAGE 1

- In groups of four, join four sheets of A2 card together. Lay out the sheets horizontally and tape them together from behind.
- One member of the group lies down on the long piece of paper with their arms, legs and fingers spread out.
- The other group members trace the outline of their body.

This stage of the *Investigate* project must be carried out in the classroom. Make sure that pupils understand that the four pieces of A2 card need to be laid out in such a way that they can comfortably draw the outline of one of the group members on them. Make sure they use tape on only one side and draw on the other.

VITAL SIGNS

Hands on...

Before you start

The doctor checks our vital signs to make sure that our body systems are working properly. You can also check some of the vital signs of your classmates.

Materials

pencil, notebook, digital thermometer, clock or stopwatch

Method

1 Work with a partner. Copy and complete the table in your notebook:

	Body temperature	Pulse (beats per minute)	Respiratory rate (breaths per minute)
Your name	..... °C	..... bpm	..... bpm
Your partner's name	..... °C	..... bpm	..... bpm

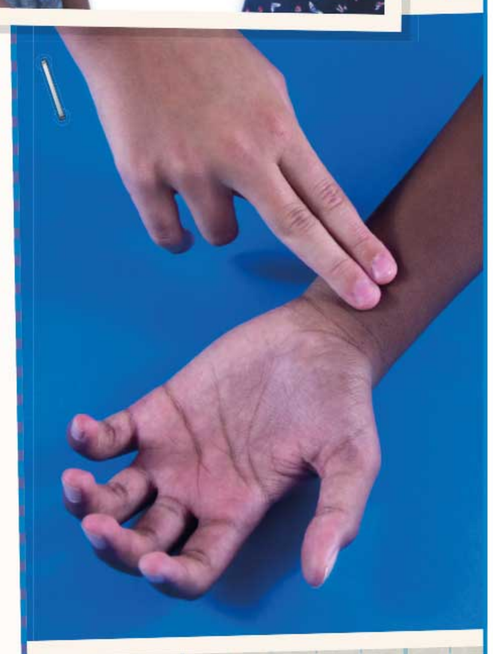
2 Measure your partner's body temperature using the thermometer. Make a note of it in your notebook.

3 Measure your partner's pulse. Place your forefinger and middle finger on your partner's wrist and count the pulsations for one minute. Write it down.

4 Finally, measure your partner's respiratory rate. Using the clock, count how many times they breathe in and out in one minute.

5 Then, it is your turn to be the patient.

6 Run once around the school patio and repeat the process.



My partner had a *higher / lower* body temperature than me.

My pulse was *quicker / slower* than my partner's.

Conclusions

Are your results very different from your partner's?

How have the results changed after you ran?

It is unlikely that pupils will have the same results.

Body temperature, pulse and respiratory rate should all increase after running.

UNIT 1
PAGE 9

Objective:

Pupils will do a practical investigation into how to measure some of their vital signs.

Key vocabulary

body system, pulse, respiratory rate, vital sign

Warm up

- Ask pupils: *How do you know if someone is alive?* Elicit responses such as: *You check to see if they are breathing. You check their pulse. You touch their body to see if it is warm.* If pupils are having difficulty expressing themselves, help them to remember the relevant vocabulary and language structures.

Main concepts

- Create three groups of pairs: one group measures body temperature; one measures pulse; one measures respiratory rate. This makes it easier to share thermometers and stopwatches.
- If resources are scant, do the investigation with half of the class during the previous or next lesson.

Learn more

- Ask pupils to find out what the fourth primary vital sign is and how it is measured. *Blood pressure is measured using a sphygmomanometer.*