About the new series

Whether your students are learning about the circulatory system or discovering how gravity works, this series will get them thinking like scientists.

The learner's books are packed with opportunities to plan experiments, make predictions and gather results that help them to think and work scientifically, along with specific support for the new Earth and Space strand of the curriculum. Each unit ends with a project to help students bring together what they have learnt and understand science in real-world contexts.

With vocabulary boxes, clear diagrams and supporting illustrations, the course makes science accessible for learners with English as a second language.

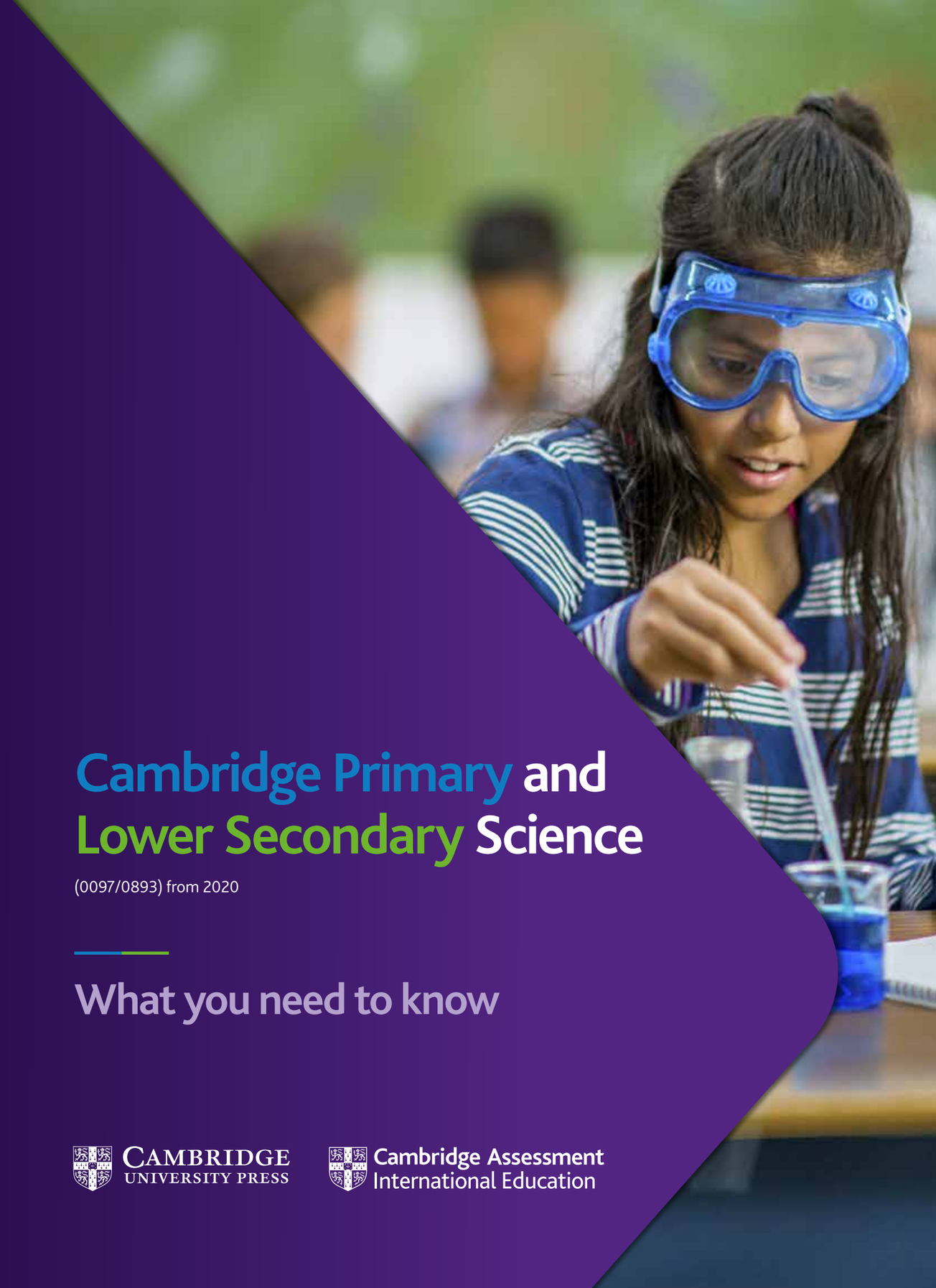
The accompanying teacher's resource includes everything you need to plan and run your lessons with confidence.

Components in the series

- Learner's book with digital access
- Digital learner's book
- Workbook with digital access
- Teacher's resource with digital access
- Digital Classroom (up to Stage 6)

Find out more and view samples online at
cambridge.org/education/primary_lower_secondary

Contact your local Cambridge University Press representative:
cambridge.org/education/find-your-sales-consultant



Cambridge Primary and Lower Secondary Science

(0097/0893) from 2020

What you need to know

CAMBRIDGE UNIVERSITY PRESS

Cambridge Assessment International Education

We've created new resources ready for the new Cambridge Primary and Lower Secondary Science curriculum frameworks (0097/0863) from 2020. This brochure explains how our resources will help you and your learners prepare for the changes. More information can be found on the Cambridge Assessment International Education website **cambridgeinternational.org**.

To develop the new series we spoke to thousands of teachers around the world to make sure we're meeting your needs and supporting you to deliver better learning. As well as activities to develop your learners' scientific skills, you'll find an active learning approach, support for differentiation and clearly defined assessment for learning opportunities.

Key changes	What this means for you	How we support you
Earth and Space content is split out rather than being contained within other content strands.	Earth and Space learning objectives are given greater prominence in the curriculum frameworks and follow smooth progression through the frameworks.	Earth and Space content is covered thoroughly throughout our resources, in engaging and logical units.
Knowledge and understanding learning objectives from the four content strands have been clarified to ensure that progression is clear through the nine stages.	Units and topics follow on smoothly from stage to stage.	Background knowledge sections within teacher's resources support you by showing the knowledge and understanding that learners will encounter in earlier and later stages.
Thinking and Working Scientifically learning objectives focus on the skills that need to be developed throughout the frameworks. Previously, these have commonly been known and referred to as scientific enquiry skills, but Thinking and Working Scientifically is broader in scope.	Scientific enquiry has been replaced with Thinking and Working Scientifically.	All the skills included within Thinking and Working Scientifically are covered throughout our resources, embedded within the context of the scientific knowledge and understanding learning objectives from the four content strands. 'Think like a scientist' features in the learner's books focus on the development of these skills in particular, offering opportunities for learners to actively engage with the development of these skills.
Models and representations are given added focus as a specific part of the curriculum frameworks.	Models and representations are given greater prominence in the curriculum frameworks and follow smooth progression through the frameworks.	Engaging examples of models and representations are included throughout our resources to support you and your learners with this new element of the curriculum.
Science in context provides a framework for how context can be incorporated into the teaching of science.	Choosing, and applying, a context in teaching becomes a decision for each school and/or teacher to make so the context is relevant to your learners.	Suggestions of projects are included at the end of each unit and allow you to use contexts that are familiar and relevant to your learners, helping them to recognise how science relates to the real world.

We are working with Cambridge Assessment International Education towards endorsement of these titles

Cambridge Primary Science Learner's Book Stage 4

Think like a scientist

Finding materials

You will need:
paper and pencils, clipboard or stiff card to lean on

Look around your classroom or school.

What are things made of?

Use your eyes. Observe carefully.

What does the material look like?

Use your hands. What does the material feel like?

Draw some of the things and write the name of the materials.

How am I doing?

Look at a friend's work. Have they got the materials right?

Was it easy to name the materials by looking at them?

How did the materials feel? Tell a friend why it helped you to feel the materials.

Look what I can do!

- ☐ I can find and name seven or more materials.
- ☐ I can write words on a picture to show what I know.

› 3.2 Properties of materials

We are going to:

- find out about the properties of materials
- observe materials to find out their properties.

Getting started

- Look around you. Feel some materials.
- Tell your friends how the material feels.

dull	shiny
flexible	smooth
hard	soft
magnifying glass	sort
property/properties	strong
rigid	threads
rough	weak

This metal is strong.

This paper is weak.

This wood is hard.

This fabric is soft.

This plastic is flexible.

This wood is rigid.

This metal is shiny.

This paper is dull.

Activities throughout help your learners develop their scientific enquiry skills.

Opportunities for students to self-assess their learning help them develop reflection skills.

'Getting started' feature helps your learners think and talk about what they already know.

Unit-specific vocabulary is clearly pulled out.

Learners are clear on the lesson focus.

We are working with Cambridge Assessment International Education towards endorsement of these titles

Cambridge Lower Secondary Science Learner's Book Stage 7

Explaining the properties

Matter can only flow (be poured) if the particles can move past one another.

Matter can only change volume if the particles in it can spread out or move closer together.

Solids

The particles in a solid are very close together. This makes it difficult for the volume of a solid to be made smaller. Solids have a fixed shape because attractive forces hold the particles together. These forces stop the particles from moving around. The particles can only vibrate. This means that a solid cannot flow.

Liquids

The volume of a liquid cannot be changed. The particles are very close together and cannot be squashed. The particles touch each other but they can move past each other. The attractive forces between the particles are weak enough to allow them to move but strong enough to hold them together.

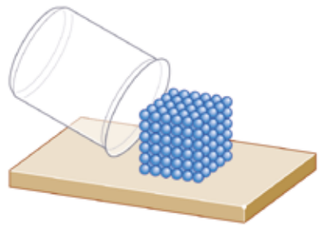
Gases

Particles in a gas are a long way apart so they can move quickly in all directions. The particles can move easily because there are no attractive forces between them. This means that gas has no fixed shape or volume.

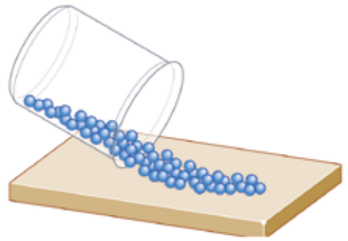
When you squash a gas, the particles move closer together and the gas takes up less space.

No particles?

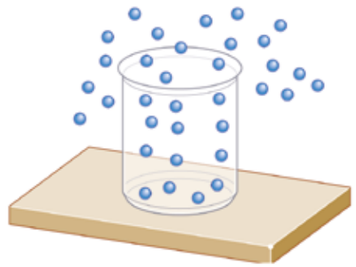
A space where there are no particles at all is called a **vacuum**. A vacuum contains nothing.



Solids cannot flow.



Liquids can flow.



Gases can flow and spread out.

Think like a scientist

Particle theory

Scientists observe the world around them and think carefully about what they see. Development of the particle theory was based on the observations that scientists made about how solids, liquids and gases behave.

Scientists saw that most solids cannot be compressed. Can you think of any solids that do not fit the rules of particle theory? Think about the properties of a sponge or a marshmallow. Can a sponge be compressed?

Questions

1 Use particle theory to explain how a sponge can be a solid, but it can also be compressed.
2 How well does particle theory explain the properties of solids, liquids and gases?
3 What are the strengths of the particle theory?
4 What are the weaknesses of the particle theory?

Activity 2.1.1

States of matter

On a large piece of paper, draw three large squares and label them 'solid', 'liquid' and 'gas', like this. Leave space around them.

Solid	Liquid	Gas

In each square, draw how the particles are arranged in that state of matter.

In the spaces around the squares, write the properties of the three states of matter.

Summary checklist

- ☐ I can classify matter as solid, liquid or gas.
- ☐ I can list the properties of solids liquids and gases.
- ☐ I can describe the way in which particles are arranged in solids, liquids and gases.
- ☐ I can explain the properties of solids, liquids and gases using particle theory.

Clear diagrams and narrative help learners' understanding of scientific concepts.

Opportunities to further develop scientific enquiry skills are included throughout Lower Secondary as well.

Learners can reflect on their learning and how well they understand the unit content.

Activities throughout help learners demonstrate their knowledge.

We are working with Cambridge Assessment International Education towards endorsement of these titles