

## About the new series

From 3D shapes and numbers to gathering data, this series takes a hands-on approach to help your learners develop and reinforce their mathematical skills.

Learners are fully supported with worked examples and practice exercises, while six end-of-unit projects provide opportunities for deeper investigation of mathematical concepts.

With key vocabulary highlighted, clear explanations and supporting illustrations, the course makes maths accessible for your learners.

The accompanying teacher's resource provides 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

Find out more and view samples online at  
[cambridge.org/education/primary\\_lower\\_secondary](https://www.cambridge.org/education/primary_lower_secondary)

## Cambridge Primary and Lower Secondary Mathematics

(0096/0862) from 2020

### What you need to know



Contact your local Cambridge University Press representative:  
[cambridge.org/education/find-your-sales-consultant](https://www.cambridge.org/education/find-your-sales-consultant)

We've created new resources ready for the new Cambridge Primary and Lower Secondary Mathematics curriculum frameworks (0096/0862) 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](https://www.cambridgeinternational.org).

To develop the new series we spoke to 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' mathematical skills, you'll find an active learning approach, support for differentiation and clearly defined assessment for learning opportunities.

## Key changes

Alignment of strands in Primary and Lower Secondary with Upper Secondary.

Streamlined learning objectives.

Introduction of Thinking and Working Mathematically as a method of engaging learning with maths.

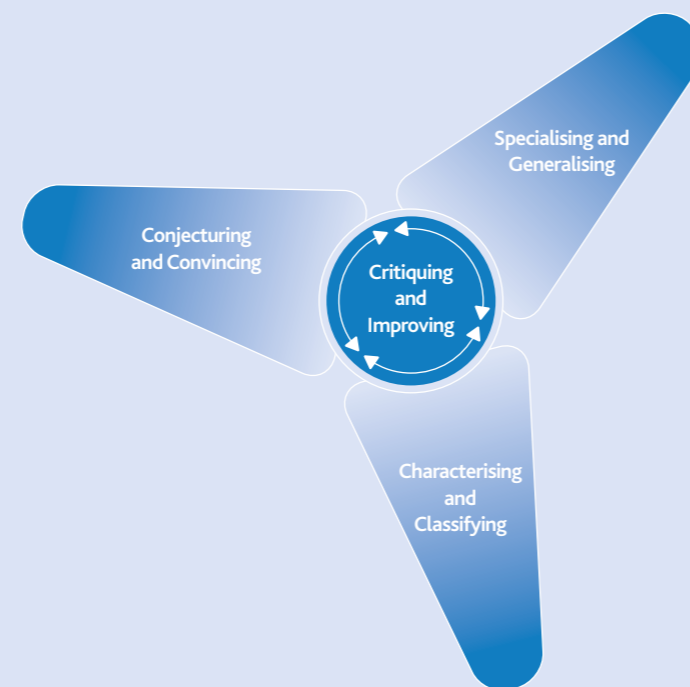
Removed mental strategies.

## What this means for you

Progression within the year group will be clearer, removing the jumps for learners as they move between stages at Primary and Lower Secondary and onwards to Cambridge IGCSE™ and O Level.

Learning objectives have been reduced by approximately 30% to remove duplication, and reworded to make them clearer.

The previous problem-solving learning objectives have been replaced with a series of Thinking and Working Mathematically characteristics.



There are no mental strategy learning objectives.

## How we support you

The progression of skills in the learner's book and workbook matches the progression outlined in the curriculum frameworks, meaning less repeated content over stages.

A diagnostic test is supplied for Stage 3 upwards that allows you to understand what learners already know when starting a new stage.

The introduction of a prior knowledge review at the start of each unit allows you to quickly understand what your learners already know and remember to ensure that they remain on track to begin new skills and topics.

Links to the Cambridge Primary and Lower Secondary Mathematics curriculum frameworks are made clear, with their corresponding reference codes, in the teacher's resource so you can be confident that all learning objectives are fully covered.

These characteristics, made up of four pairs, help learners to engage with mathematical problems and activities, offering strategies that learners can develop over the course of their studies.

These characteristics do not form a single strand in Cambridge Primary and Lower Secondary Mathematics, but instead are applied across all of the strands in the curriculum frameworks.

In the learner's book and workbooks, learners will see questions with the Thinking and Working Mathematically icon. These are questions that will get students to apply these strategies. The required strategies are listed in the teacher's resource, so that you can advise learners on how to approach these. As learners progress through the curriculum they will become increasingly familiar with the vocabulary and the characteristics. Specific 'Think like a mathematician' investigations allow further development of these characteristics and are aimed at pair or small-group work in order to encourage discussion.

The teacher's resource offers guidance on the Thinking and Working Mathematically characteristics, how you can encourage their application, and lists all relevant questions in the corresponding stage. In each section of teaching notes, one Thinking and Working Mathematically question from each exercise is identified for further guidance and to help increase familiarity with these skills.

Mental mathematics is still a critical part of mathematical learning at Primary and Lower Secondary stages. The teacher's resource for each stage has opportunities in each unit for you to develop, encourage and consolidate mental maths skills and strategies.

## > 1.1 Counting and sequences

**We are going to...**

- count on and back in steps of tens, hundreds and thousands starting from any number
- count back through zero to include negative numbers such as  $-2$
- recognise linear sequences and non-linear sequences
- extend sequences and describe the term-to-term rule
- recognise and extend patterns that represent square numbers.

You will continue counting forwards and backwards in steps of constant size and you will start to use **negative numbers**.

Around the coasts of Antarctica temperatures are between  $-10^{\circ}\text{C}$  and  $-30^{\circ}\text{C}$ .

Try counting back in tens starting at 30 and ending with  $-30$ .



**Worked example 1**

Carlos writes a number sequence.  
The first **term** in his sequence is 8.  
He uses the rule 'subtract 2' to work out the next term.  
What is the fifth term in his sequence?

$$8 \xrightarrow{-2} 6 \xrightarrow{-2} 4 \xrightarrow{-2} 2 \xrightarrow{-2} 0$$

Start with 8 and subtract 2 each time until you have five terms.

**Answer:** The fifth term is 0.

- linear sequence
- negative number
- non-linear sequence
- spatial pattern
- square number
- term
- term-to-term rule

**Worked example 2**

The numbers in this sequence increase by 50 each time.

$$60 \xrightarrow{+50} 110 \xrightarrow{+50} 160 \xrightarrow{+50} \dots$$

What is the first number greater than 1000 that is in the sequence?

Explain how you know.

60, 110, 160, 210, 260 ...

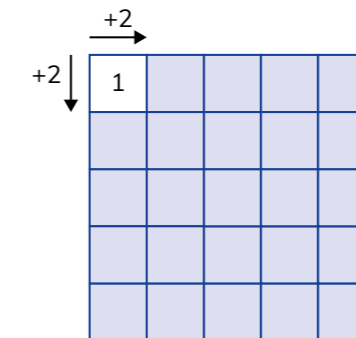
Write down the first few terms.

(You could write down all the terms in the sequence, but it would take a long time.)

**Answer:** The terms all end in 10 or 60 so the first number greater than 1000 is 1010.

### Exercise 1.1

- 1 Copy and complete this square using the rule 'add 2 across and add 2 down'.  
What do you notice about the numbers on the diagonal? Discuss with your partner.



Draw two more 5 by 5 squares and choose a rule using addition. Predict what the numbers on the diagonal will be before you complete the squares.

- 2 Choose any two of these three sequences.

How are they similar to each other and how are they different?

2, 4, 6, 8 ...

2, 5, 8, 11 ...

3, 5, 7, 9 ...

Clear information on what learners will cover.

Key terms highlighted in the context of use.

Key vocabulary terms for learners to become familiar with.

Worked examples to help students see how to apply new skills.

## 1 Numbers and the number system

3 Look at these sequences.  
Which could be the odd one out? Explain your answer.

13, 16, 19, 22 ...

8, 11, 14, 17 ...

-5, -2, 1, 4 ...

9, 12, 15, 18 ...

16, 19, 22, 25 ...

Think about your answers to questions 2 and 3.  
Are there other possible answers?

4 Use different first terms to make sequences that all have the **term-to-term rule** 'add 3'.  
Can you find a sequence for each of the following?

- a Where the terms are all multiples of 3.
- b Where the terms are not whole numbers.
- c Where the terms are all odd.
- d Where the terms include both 100 and 127.

5 Abdul makes a number sequence.  
The first term of his sequence is 397.  
His term to term rule is 'subtract 3'.  
Abdul says, 'If I keep subtracting 3 from 397 I will eventually reach 0.'  
Is he correct?

Explain your answer.

6 Which sequences are linear and which are not?  
Write the next term for each sequence. Explain your answers to your partner.

- a Add five: 4, 9, 14, ...
- b Subtract four: 20, 16, 12, ...
- c Add one more each time: 2, 3, 5, ...
- d Multiply by three: 2, 6, 18, ...

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Thinking and Working  
Mathematically questions  
clearly identified.

Reflection questions to  
make students think about  
how they are learning.

## 1.1 Counting and sequences

- e Subtract one less each time: 50, 41, 33, ...
- f Divide by two: 32, 16, 8, ...
- g Multiply each counting number by itself: 1, 4, 9, ...

### Think like a mathematician

These sets of beads have **consecutive** numbers in the circles.  
The numbers add up to the number in the square.

Example:



Complete these sets of beads.



27



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Describe to a partner how to find the middle number of each set of beads.

#### Tip



Consecutive numbers  
are next to each other.  
For example, 3, 4, 5  
and 6.

### Look what I can do!

- I can count on and back in steps of different sizes.
- I can extend linear sequences and describe the term-to-term rule.
- I can recognise non-linear sequences.
- I can extend patterns that represent square numbers.

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Investigative activities that  
encourage learners to apply  
the Thinking and Working  
mathematically characteristics.

A summary ticklist at the  
end of each section helps  
students state what they  
have done.