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The *Primary Maths* series

What is *Primary Maths*?

Primary Maths is a unique new series that provides teachers with a complete and comprehensive mathematics teaching and learning program for students in years F to 6. This detailed *Teacher Resource Book* contains the program and acts as a foundation for the busy teacher.

The *Primary Maths* series at each year level includes:

- the *Teacher Resource Book*
- a full-colour *Student Activity Book*
- a *Practice & Homework Book* (except for the Foundation level).

Why was *Primary Maths* developed?

The *Primary Maths* series offers a range of stimulating and challenging activities for all strands, including Number and algebra, Statistics and probability, and Measurement and geometry.

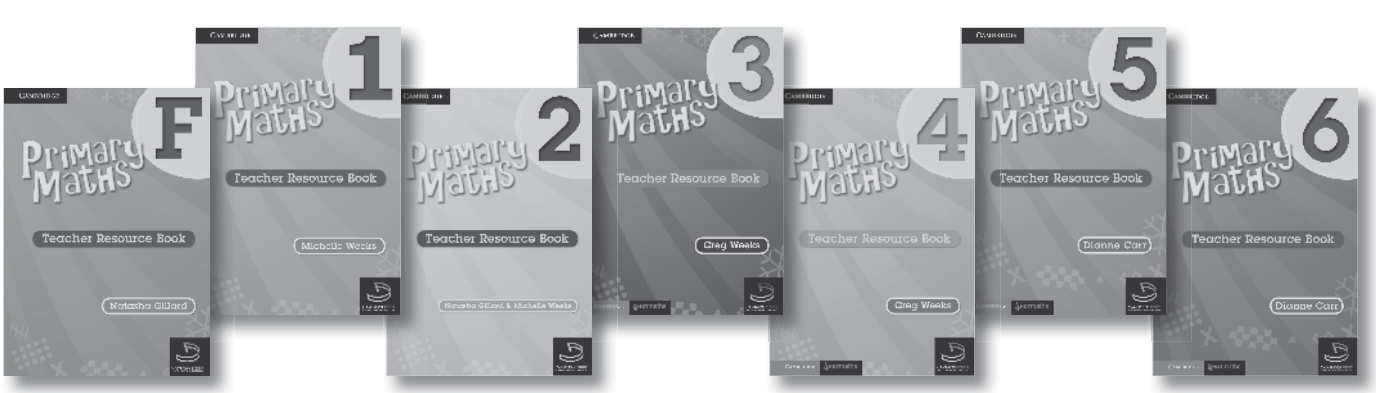
The philosophy upon which *Primary Maths* is based is the idea that students learn most effectively through physical and mental activities related to experiences in their world. The series breathes life into the mathematics curriculum by providing experiences that introduce and consolidate fundamental knowledge, skills and understanding.

Primary Maths is designed as a carefully sequenced program to support teachers in delivering quality mathematics experiences to students. With a suggested teaching sequence and detailed learning activities, it offers teachers full and continuous support.

Ideas on how to introduce and reflect on each lesson, tasks to support learners along the sequence, teaching tips and additional blackline masters and assessment pages are provided.

What do the different components of *Primary Maths* provide?

The *Primary Maths Teacher Resource Book* is the foundation of the series. It contains a yearly program, structured in 36 units of work. It includes weekly plans for teaching and learning, activities linked to assessment, teaching notes, half-yearly and yearly assessments, and blackline master pages.



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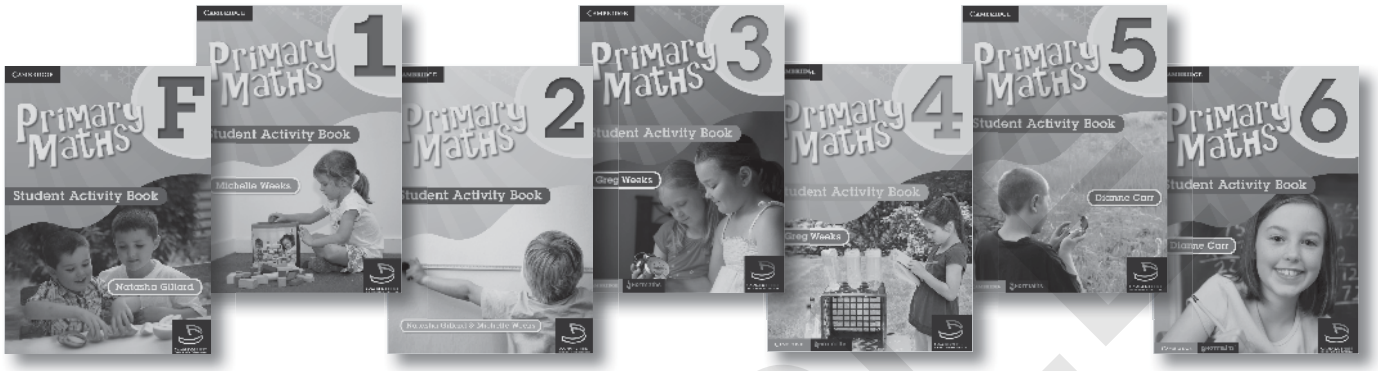
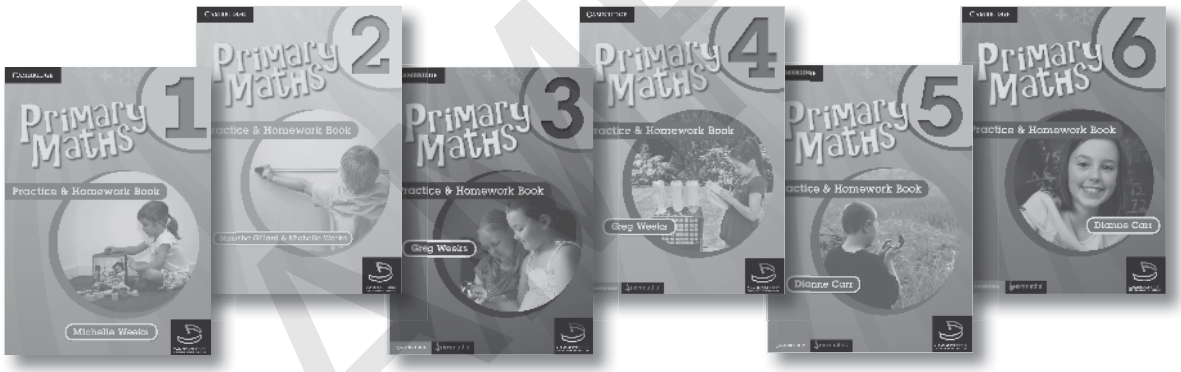
The *Primary Maths Student Activity Book* is filled with relevant, graded activities to motivate learners. Full-colour photos and illustrations link teaching and learning activities to everyday contexts and help to bring the maths curriculum alive. Arranged in strands and substrands, the pages allow for flexibility and for students to build on prior knowledge.



The *Primary Maths Practice & Homework Book* contains 36 double-page units of work that complement the *Primary Maths Student Activity Book*. It can be used for homework or to provide extra practice in the classroom.



Primary Maths includes links to relevant Cambridge HOTmaths lessons and activities. Cambridge HOTmaths is a comprehensive mathematics learning system – an interactive online maths learning, teaching and assessment resource for students and teachers. Visit the Cambridge HOTmaths website for more information: www.hotmaths.com.au

Primary Maths has also been conveniently referenced to Cambridge *Maths-in-a-Box*, a hands-on teaching resource that brings numeracy alive in the classroom. Each stage of *Maths-in-a-Box* contains 175 full-colour cards that provide additional support and enrichment for a complete classroom program.

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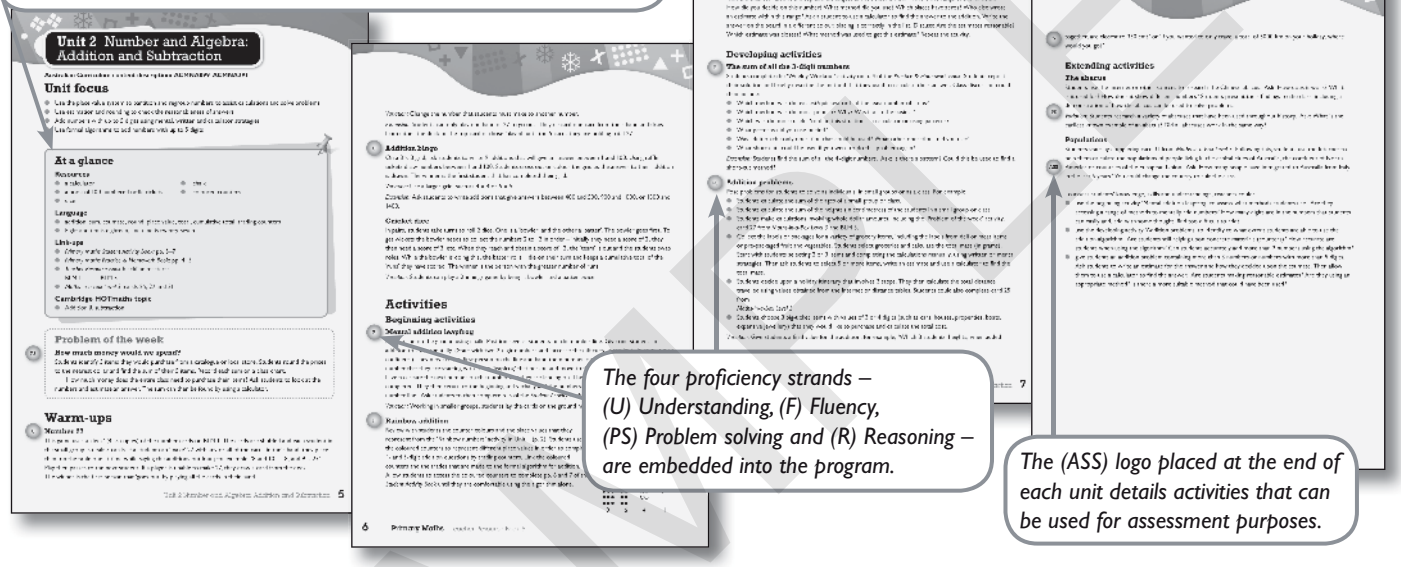
How do I use *Primary Maths*?

The *Primary Maths Teacher Resource Book* is designed to support teachers in delivering a comprehensive mathematics program. Opportunities have been taken to link learning across the substrands where appropriate.

The *Teacher Resource Book* contains a suggested sequence for learning, along with detailed lesson notes. The program includes ideas to introduce and reflect on each lesson and tasks to support learners along the sequence, including additional blackline masters (BLM) and assessment pages.

*'At a glance' provides all the relevant information with regard to activities, equipment, the target language and vocabulary, as well as the cross-references to the **Student Activity Book** pages, **Cambridge HOTmaths** topics, the BLMs and the **Maths-in-a-Box** cards.*



The four proficiency strands – (U) Understanding, (F) Fluency, (PS) Problem solving and (R) Reasoning – are embedded into the program.

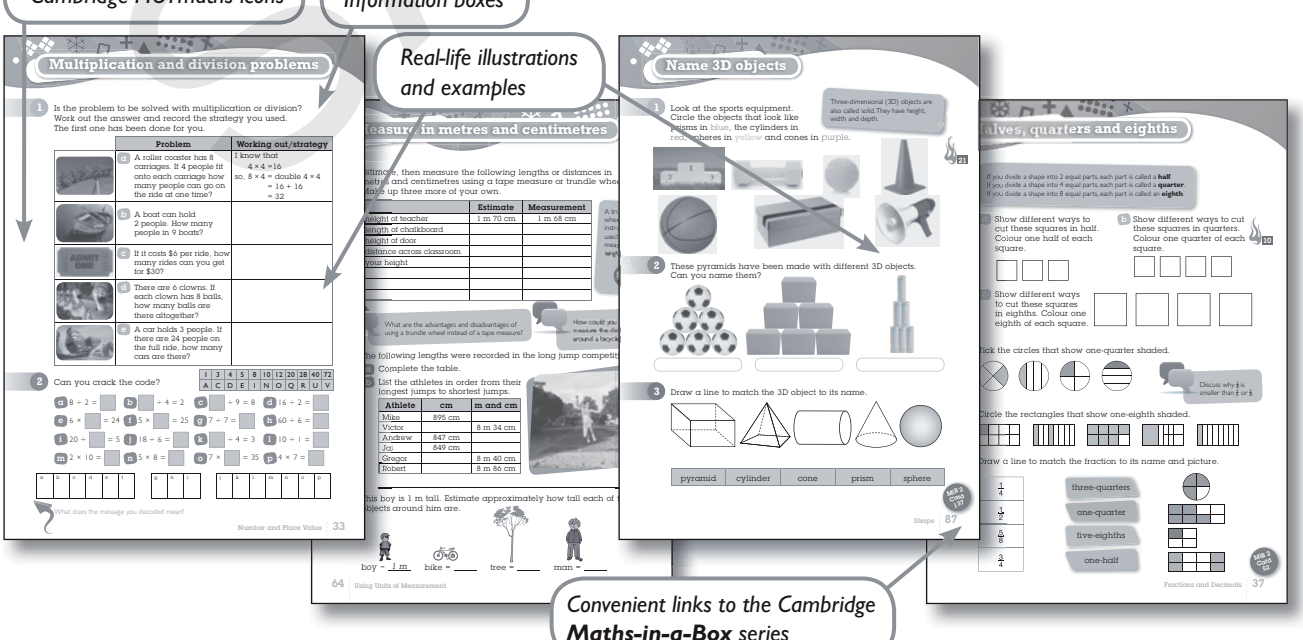
The (ASS) logo placed at the end of each unit details activities that can be used for assessment purposes.

The *Primary Maths Student Activity Book* is filled with interesting activities to motivate learners. Graded activities are presented using photos and illustrations that link to the real world and create interest. Discussion ideas, information boxes and challenge questions ensure that the book caters to students of all aptitudes.

Cambridge HOTmaths icons

Information boxes

Real-life illustrations and examples



*Convenient links to the Cambridge **Maths-in-a-Box** series*

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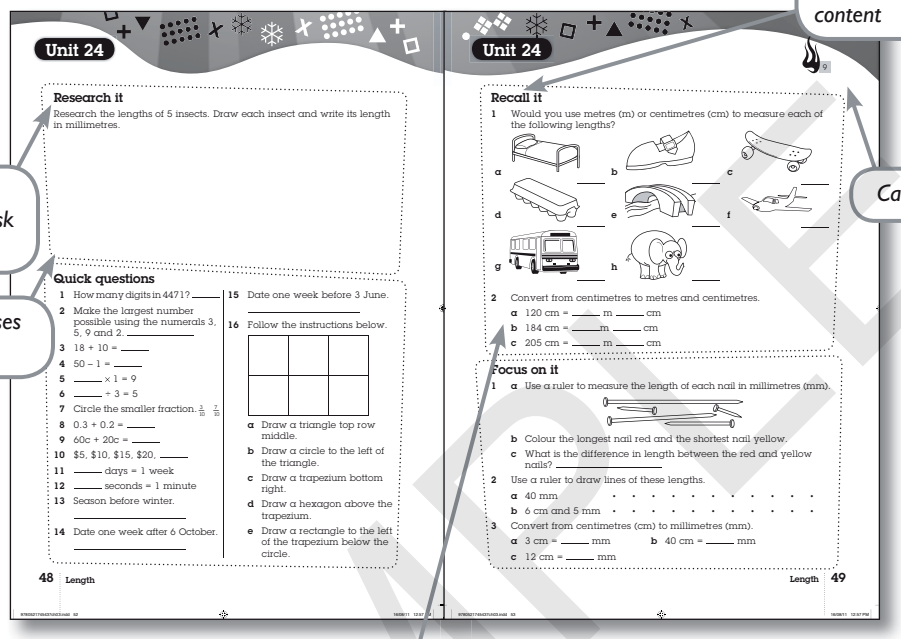
The *Primary Maths Practice & Homework Book* nicely complements the *Primary Maths Student Activity Book*. It provides extra classroom practice and/or homework activities. There are four sections for each of the 36 units, including real-world problems, quick mental questions, revision of prior learning and practice of new concepts. The units closely follow the teaching sequence set out in the *Teacher Resource Book*.



Recall it: a review of prior content

Weekly workout: an extended open-ended task for the week

Quick questions: exercises in mental computation

Cambridge HOTmaths icon

Focus on it: ample practice of the current week's work

We encourage you to take possession of this program and use it as relevant to the needs of your students and yourself. You may use as much or as little of the wealth of information and ideas presented in this *Teacher Resource Book* as you like.

Ed Lewis and Jim Grant
Consultants

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Introduction

Primary Maths is an all-new series of print and digital resources written especially for the year F to 6 Australian Curriculum: Mathematics. It provides an authoritative and practical interpretation of the new content strands, content descriptors, elaborations and achievement standards, building on learning sequences and teaching methods that have been shown to work in the state curricula. *Primary Maths* provides a range of mathematics activities that encourage students to think about situations and problems, to talk to others about their ideas and to develop their own strategies as confident learners.

Mindful that the Australian Curriculum specifies minimum content to be covered, the series includes some topics that are necessary prerequisites for specified content. It also includes logical extensions in a range of topics. The result is a reliable teaching structure and sequence that can be taught confidently with the minimum of preparation. All activities, explanations and exercises have been designed to cater for the full range of ability levels.

Along with the three content strands (Number and Algebra, Measurement and Geometry, and Statistics and Probability), the four proficiency strands are clearly listed and defined within the *Primary Maths Teacher Resource Book*. Although some topics or lessons may lend themselves more closely to one particular proficiency strand,
all of the strands play a role in good teaching and learning.

While the proficiency strands are interwoven and interdependent, clearly defining four separate strands helps us to think about what resources we might use in our classes. Creating a lesson plan or set of exercises that takes students along all four strands may take a little thought, but should be simple to put into practice.

As a class teacher, it is worthwhile considering how your lesson plan addresses each of the four proficiency strands. The four proficiency strands are:

Understanding

Students build a robust knowledge of adaptable and transferable mathematical concepts. They make connections between related concepts and progressively apply the familiar to develop new ideas. They develop an understanding of the relationship between the 'why' and the 'how' of mathematics. Students build understanding when they connect related ideas, when they represent concepts in different ways, when they identify commonalities and differences between aspects of content, when they describe their thinking mathematically and when they interpret mathematical information.

At year 3, Understanding includes connecting number representations with number sequences, partitioning and combining numbers flexibly, representing unit fractions, using appropriate language to communicate times, and identifying environmental symmetry.

The appearance of this icon U in the *Teacher Resource Book* indicates that the Understanding proficiency strand is addressed by the activity adjacent to it.

Fluency

Students develop skills in choosing appropriate procedures, carrying out procedures flexibly, accurately, efficiently and appropriately, and readily recalling factual knowledge and concepts. Students are fluent when they calculate answers efficiently, when they recognise robust ways of answering questions, when they choose appropriate methods and approximations, when they recall definitions and regularly use facts, and when they can manipulate expressions and equations to find solutions.

At year 3, Fluency includes recalling multiplication facts, using familiar metric units to order and compare objects, identifying and describing outcomes of chance experiments, interpreting maps and communicating positions.

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The appearance of this icon F in the *Teacher Resource Book* indicates that the Fluency proficiency strand is addressed by the activity adjacent to it.

Problem Solving

Students develop the ability to make choices, interpret, formulate, model and investigate problem situations, and communicate solutions effectively. Students formulate and solve problems when they use mathematics to represent unfamiliar or meaningful situations, when they design investigations and plan their approaches, when they apply their existing strategies to seek solutions, and when they verify that their answers are reasonable.

At year 3, Problem Solving includes formulating and modelling authentic situations involving planning methods of data collection and representation, making models of three-dimensional objects and using number properties to continue number patterns.

The appearance of this icon PS in the *Teacher Resource Book* indicates that the Problem Solving proficiency strand is addressed by the activity adjacent to it.

Reasoning

Students develop an increasingly sophisticated capacity for logical thought and actions, such as analysing, proving, evaluating, explaining, inferring, justifying and generalising. Students are reasoning mathematically when they explain their thinking, when they deduce and justify strategies used and conclusions reached, when they adapt the known to the unknown, when they transfer learning from one context to another, when they prove that something is true or false, and when they compare and contrast related ideas and explain their choices.

At year 3, Reasoning includes generalising from number properties and results of calculations, comparing angles, and creating and interpreting variations in the results of data collections and data displays.

The appearance of this icon R in the *Teacher Resource Book* indicates that the Reasoning proficiency strand is addressed by the activity adjacent to it.

The essential foundations of the *Primary Maths* series are:

- The interconnectedness of the components within each of the three content strands are emphasised and grouped into units of work that can be taught comfortably within a school year.
- All exercises classify questions according to the four proficiency strands of the Australian Curriculum, enabling teachers to easily offer a range of questions that emphasise different proficiencies. As well as the core understanding and fluency skills, much attention has been paid to problem-solving and reasoning questions to promote students' logical and analytical thought processes, enabling them to employ creative mathematical strategies in a wide range of contexts and to achieve a deeper understanding.

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Cambridge *Primary Maths* / HOTmaths integrated program

Aims of the program and suggestions for use

Cambridge HOTmaths teacher and student subscriptions are available with the *Primary Maths* series. This program integrates the content of the two resources, showing which HOTmaths topics, lessons, widgets, walkthroughs and HOTsheets can be used with the topics. It is provided for the use of both teachers and students (and their parents).

A Cambridge HOTmaths student account allows students to use the full range of HOTmaths content in class or at home, and enables the teacher to use the PROGRESS TRACKER (a learning management system) to monitor students' work and topic quiz scores. (Parents can also track their own child's work.) This makes it an ideal homework and revision resource.

A Cambridge HOTmaths teacher account allows HOTmaths to be run on one computer in a classroom, and is particularly useful when using data projectors and interactive whiteboards.

Examples of activities which can be done with **student accounts** on individual computers at home or in class:

- Revisit work from earlier terms or years where requisite prior knowledge is lacking.
- Do a HOTmaths lesson as homework to prepare for a lesson using the textbook.
- Do a TOPIC QUIZ as homework.
- Do SCORCHER quizzes for homework, or when other assignments have been finished early.
- Do a HOTmaths lesson to catch up on missed work.
- Try the alternative approach of an interactive WIDGET or WALKTHROUGH when having difficulty grasping a concept or learning a skill.
- Use the DICTIONARY to test and reinforce understanding of mathematical terminology, and use the links provided to see mathematical terms in use.
- Use GAMES to begin as a warm-up to a topic or as a reward at the end of the topic.

Examples of activities that can be done in class with a **teacher account**:

- Display an interactive WIDGET in class to illustrate a concept.
- After going through a widget, print out multiple copies of an accompanying HOTsheet to work through.
- Display an interactive WALKTHROUGH example for the class to suggest answers for the embedded questions.
- Display a TOPIC QUIZ for the class to write down their answers on paper.
- Display and discuss the HOTmaths lesson notes as an alternative to the textbook topic introduction.
- Set advanced students to work as a group on higher level HOTmaths activities while the rest of the class tackles foundation/standard work.
- Set foundation-level students to work as a group to revisit previous work (including previous years) while the rest of the class is tackling other work.

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Teaching sequence

Term 1

Unit 1	Unit 2	Unit 3
Whole Numbers **ACMNA052**	***Addition and Subtraction*** **ACMNA054 ACMNA055 ACMNA053**	***Length*** **ACMMG061**
• Recognises, models, represents and orders four-digit numbers • Reproduces numbers in words using their numerical representations and vice versa • Identifies the number before and after a given four-digit number • Uses the symbols for 'is less than' (<) and 'is greater than' (>) to show the relationship between two four-digit numbers • Counts forwards and backwards by tens or hundreds, on and off the decade • Uses four-digit numbers	• Recognises and explains the connection between addition and subtraction • Recalls addition facts and related subtraction facts to develop efficient mental strategies for computation • Uses mental strategies for addition and subtraction involving two-digit numbers, including: – the jump strategy – the split strategy • Applies place value to solve addition and subtraction problems involving two-digit numbers	• Describes 1 centimetre as one hundredth of a metre • Estimates, measures and compares lengths or distances using metres and centimetres • Records lengths or distances using metres and centimetres • Uses a tape measure, ruler or trundle wheel to measure lengths or distances
Unit 4	**Unit 5**	**Unit 6**
Shape **ACMMG063**	***Patterns and Algebra*** **ACMNA056 ACMNA060**	***Multiplication and Division*** **ACMNA057**
• Compares and describes features of prisms, pyramids, cylinders, cones and spheres • Identifies and names three-dimensional objects as prisms, pyramids, cylinders, cones and spheres • Recognises similarities and differences between prisms, pyramids, cylinders, cones and spheres	• Recalls multiplication facts of two, three, five and ten • Identifies and describes patterns when counting forwards or backwards by threes, fours, sixes, sevens, eights or nines • Finds a higher term in a number pattern given the first five terms	• Links multiplication and division facts using groups or arrays
Unit 7	**Unit 8**	**Unit 9**
Whole Numbers **ACMNA051**	***Fractions and Decimals*** **ACMNA058**	***Shape***
• Investigates the conditions required for a number to be odd or even • Identifies even numbers using skip counting by twos or by grouping even collections of objects in twos • Explains why numbers that end in the digits 0, 2, 4, 6 and 8 are even and numbers ending in 1, 3, 5, 7 and 9 are odd	• Models and represents unit fractions, including $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$ and $\frac{1}{5}$ snd their multiples to complete a whole	• Manipulates, compares and describes features of two-dimensional shapes, including pentagons, octagons and parallelograms • Identifies and names shapes in different orientations • Compares and describes the features of special groups of quadrilaterals • Uses measurement to describe features of two-dimensional shapes • Groups two-dimensional shapes using multiple attributes

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Term 2

Unit 10	Unit 11	Unit 12
Addition and Subtraction **ACMNA053 ACMNA055**	***Volume and Capacity*** **ACMMG061**	***Patterns and Algebra*** **ACMNA054**
• Applies place value to partition, rearrange and regroup numbers to assist calculations and solve problems • Combines knowledge of addition and subtraction facts and partitioning to aid computation (e.g. 57 + 19 = 57 – 20 + 1) • Uses mental strategies for addition and subtraction involving two-digit numbers, including: – the compensation strategy – bridging the decades	• Recognises the need for a formal unit to measure volume and capacity • Estimates, measures and compares volumes and capacities (to the nearest litre) • Uses the abbreviation for litre (L)	• Demonstrates the connection between addition and subtraction by writing equivalent number sentences • Uses the equals sign to record equivalent number relationships and to mean 'is the same as' rather than as an indication to perform an operation
Unit 13	**Unit 14**	**Unit 15**
Geometric Reasoning **ACMMG064**	***Fractions and Decimals*** **ACMNA058**	***Time*** **ACMMG062**
• Identifies angles as measures of turn and compare angle sizes in everyday situations • Identifies and names right angles • Identifies and names perpendicular lines • Identifies the arms and vertex of an angle • Identifies the imaginary arm of an angle if only one arm is visible	• Models, compares and represents fractions with denominators 5, 10 and 100	• Recognises the coordinated movements of the hands on an analog clock • Associates the numerals 3, 6 and 9 with 15, 30 and 45 minutes and uses the terms 'quarter-past' and 'quarter-to' • Identifies which hour has just passed when the hour hand is not pointing to a numeral
Unit 16	**Unit 17**	**Unit 18**
Chance **ACMSP067**	***Data*** **ACMSP068 ACMSP069**	***Location*** **ACMMG065**
• Lists all the possible outcomes in a simple chance situation • Predicts and records all possible outcomes in a simple chance experiment	• Conducts surveys to collect data • Creates a simple table to organise data	• Describes the location of an object using more than one descriptor

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Term 3

Unit 19	Unit 20	Unit 21
Whole Numbers **ACMNA052 ACMNA053**	***Mass*** **ACMMG061**	***Multiplication and Division*** **ACMNA056 ACMNA057**
• Applies an understanding of place value and the role of zero to read, write and order four-digit numbers • States the place value of digits in four-digit numbers • Records numbers up to four digits using expanded notation • Rounds numbers to the nearest 10, 100 or 1000 when estimating	• Recognises the need for a formal unit to measure mass • Uses the kilogram as a unit to measure mass • Uses hefting to identify objects that are 'more than', 'less than' and 'about the same as' 1 kilogram • Measures the mass of an object in kilograms using an equal arm balance • Estimates and checks the number of similar objects that have a total mass of 1 kilogram • Uses the abbreviation for kilogram (kg) • Recognises the need for a smaller unit than the kilogram • Uses grams to measure the mass of small objects	• Solves and writes simple word problems in numerical form and vice versa • Uses ÷ ⟌ to indicate division • Describes and record method used in solving multiplication and division problems • Lists multiples of a given number
Unit 22	**Unit 23**	**Unit 24**
Shape **ACMMG063**	***Patterns and Algebra*** **ACMNA056 ACMNA057**	***Length*** **ACMMG061**
• Identifies three-dimensional objects in the environment and from drawings, photographs or descriptions • Makes models of prisms, pyramids, cylinders, cones and spheres given a three-dimensional object, picture or photograph to view • Sketches prisms, pyramids, cylinders and cones, attempting to show depth	• Builds the multiplication facts to at least 10 × 10 by recognising and describing patterns and applying the commutative property	• Recognises the need for a smaller unit than the centimetre • Estimates, measures and compares lengths or distances using millimetres • Recognises that 10 millimetres equal 1 centimetre and describes 1 millimetre as one tenth of a centimetre • Uses the abbreviation for millimetre (mm)
Unit 25	**Unit 26**	**Unit 27**
Financial Maths **ACMNA059**	***Data*** **ACMSP070**	***Location*** **ACMMG065**
• Represents money values in multiple ways and counts the change required for simple transactions to the nearest 5 cents • Money concepts • Applies decimal knowledge when using money • Performs calculations with money	• Interprets information presented in simple tables • Interprets information presented in column graphs and picture graphs	• Uses a key or legend to locate specific objects • Constructs simple maps and plans, e.g. map of their bedroom

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Term 4

Unit 28	Unit 29	Unit 30
Addition and Subtraction **ACMNA055 ACMNA060**	***Volume and Capacity*** **ACMMG061**	***Patterns and Algebra*** **ACMNA060**
• Uses mental strategies for addition and subtraction involving three-digit numbers, including: – the jump strategy – the split strategy – the compensation strategy • Adds and subtracts two three-digit numbers, with and without trading, using concrete materials and recording their method • Uses a formal written algorithm and applies place value to solve addition and subtraction problems involving three-digit numbers • Uses patterns to extend number facts	• Recognises the advantages of using a cube as a unit when packing or stacking • Uses the cubic centimetre as a formal unit for measuring volume and uses the abbreviation cm3 • Constructs three-dimensional objects using cubic centimetre blocks and counts to determine volume • Packs small containers with cubic centimetre blocks and describes packing in terms of layers	• Identifies and writes the rules for number patterns • Creates and describes patterns using whole numbers, fractions and decimals
Unit 31	**Unit 32**	**Unit 33**
Financial Maths **ACMNA059**	***Transformation*** **ACMMG066**	***Time*** **ACMMG062**
• Recognises the relationship between dollars and cents, and that not all countries use these denominations and divisions (e.g. the Japanese yen)	• Identifies symmetry in Aboriginal rock carvings or art • Identifies symmetry in the natural and built environment • Finds lines of symmetry for a given shape	• Recognises the coordinated movements of the hands on an analog clock, including how many minutes it takes for the minute hand to move from the 12 to any other numeral • Reads analog and digital clocks to the minute • Records digital time using the correct notation • Recognises the need for a smaller unit than the minute • Uses seconds to measure time and recognises there are 60 seconds in 1 minute
Unit 34	**Unit 35**	**Unit 36**
Chance **ACMSP067**	***Location*** **ACMMG065**	***Data*** **ACMSP069**
• Compares familiar events and describes them as being equally likely or more or less likely to occur • Distinguishes between certain and uncertain events	• Uses a compass to find north and hence east, south and west • Uses given directions to follow a route on a simple map • Uses an arrow to represent north on a map	• Constructs vertical and horizontal column graphs and picture graphs on grid paper using one-to-one correspondence

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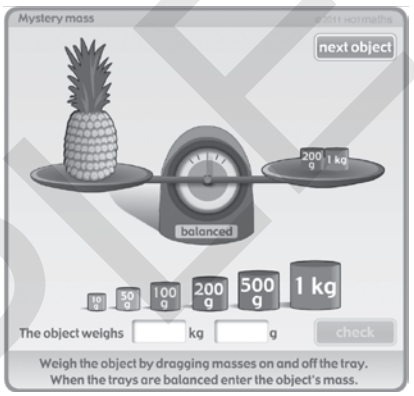
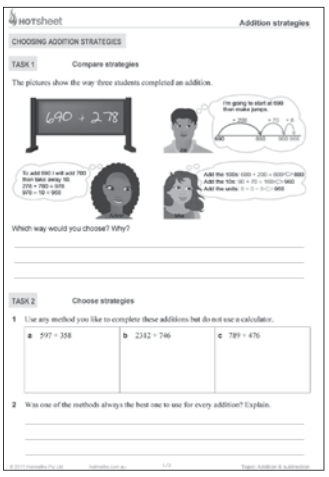
Cambridge HOTmaths and *Primary Maths*

What is Cambridge HOTmaths?

Links to the subscription-based Cambridge HOTmaths website (www.cambridge.edu.au/hotmaths) appear throughout the *Primary Maths* series. Cambridge HOTmaths is a comprehensive interactive maths learning system for both teachers and students. It offers various educational tools to assist with maths learning, ranging from walkthrough problems and interactive widget animations to worksheets and online drill and practice. This content is connected to a powerful learning management system that provides comprehensive data on student progress and understanding.

The following Cambridge HOTmaths resources are linked to the *Primary Maths* series.

Widgets, or interactive investigations, offer a range of learning experiences that encourage students to explore mathematical concepts. Project them onto a whiteboard for full class discussion and teaching, or invite individual students to the front of the class to manipulate them. Great for students who learn visually or kinaesthetically, widgets can also be used by students individually to explore a concept, either in a one-to-one classroom or as homework.	
Walkthroughs offer teachers another aide to teaching in class or at home. They take students step by step through a problem, and provide feedback that is specifically related to students' responses. The walkthroughs are a great tool for picking up student misconceptions early and, when used individually, they support students to work at their own pace and level.	
HOTsheets are worksheets with mathematical investigations, games and problem-solving activities that can be used for small group work or whole-class discussion. Many of the HOTsheets feature open-ended questions, which are ideal for homework tasks that can then be discussed together in class the following day. HOTsheets can be printed and laminated to create a ready-made set of puzzles and problems for the upper primary classroom, or a new worksheet can be accessed any time through the Cambridge HOTmaths site.	

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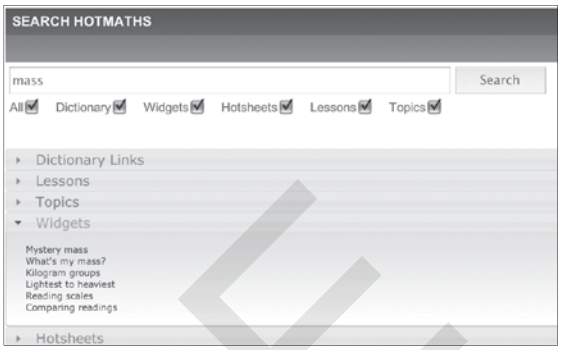
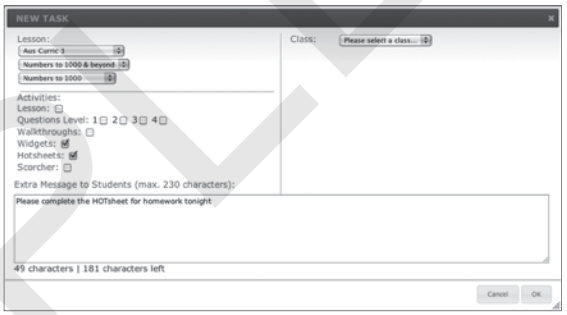
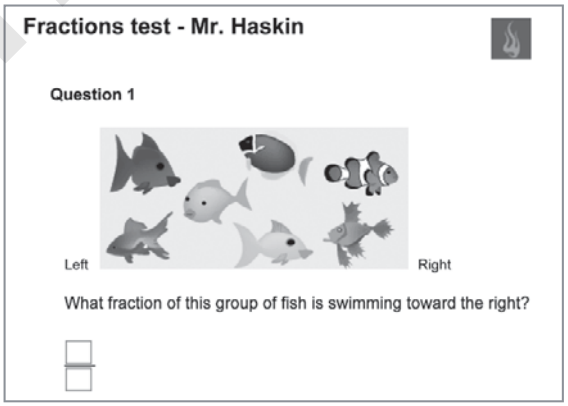
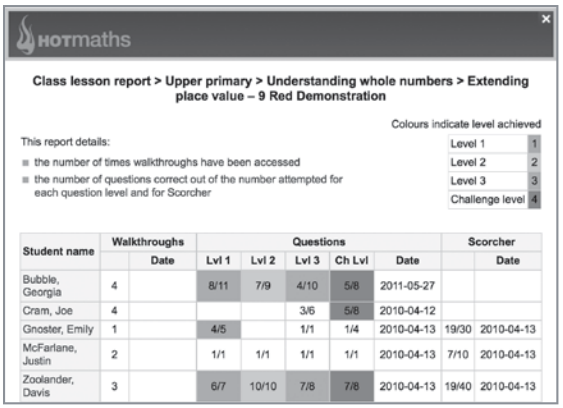
Cambridge HOTmaths also offers a sophisticated learning management system to help teachers direct students, assess progress and track work. The following are key components of the learning management.

Searchable learning tools help teachers find appropriate resources quickly and save time preparing material.	
Task manager allows teachers to direct their students to specific Cambridge HOTmaths activities in the classroom or for homework. Completed tasks are marked and the results are recorded in the learning management system.	
Test generator offers a bank of questions that allows teachers to design their own online or printable tests. Tests completed online are automatically marked and the results recorded.	
Records of work completed save teachers valuable time marking classwork and homework. Teachers can see an overview of an entire course or drill down to specific student results within a single lesson.	

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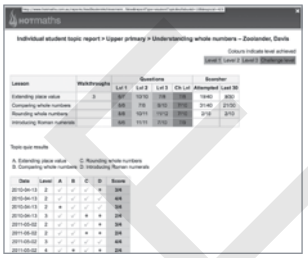
Diagnostic reports give teachers an instant snapshot of their class, quickly identifying any areas of difficulty and any students who are struggling or need extension. As reports are updated in real time, teachers can have their class take a quick online quiz to receive immediate feedback on class and individual strengths and weaknesses.	
Individual student reports are available to students and their teachers. These reports provide detailed information about each student and are a great tool for parent–teacher interviews and the school report process.	

More information about the learning management system, including how to use all the tools and reports, can be found on the Cambridge HOTmaths website at www.cambridge.edu.au/hotmaths

Cambridge HOTmaths icons

Cambridge HOTmaths flames appear throughout the *Primary Maths Student Activity Book* and the *Practice & Homework Book* to indicate links to relevant material on the HOTmaths website. Each book includes a HOTmaths contents page that identifies the online resources represented by the flames. The full contents page for each book can also be found on the *Primary Maths* website at www.cambridge.edu.au/primarymaths

The icons used in the HOTmaths contents pages indicate the type of resource being suggested.

Widgets (interactive activities)

Walkthroughs (step-by-step demonstrations of mathematical concepts)

HOTsheets (a variety of PDF worksheets that build upon concepts)

Using the Cambridge HOTmaths website

To access the Cambridge HOTmaths resources, log in to the Cambridge HOTmaths website and then work through the navigation system as set out below.

From the main page, select the **Cambridge Primary Maths – Aus Curric 3** course from the drop-down menu. A full list of topics is displayed on screen. Click on the topic you wish to use.	

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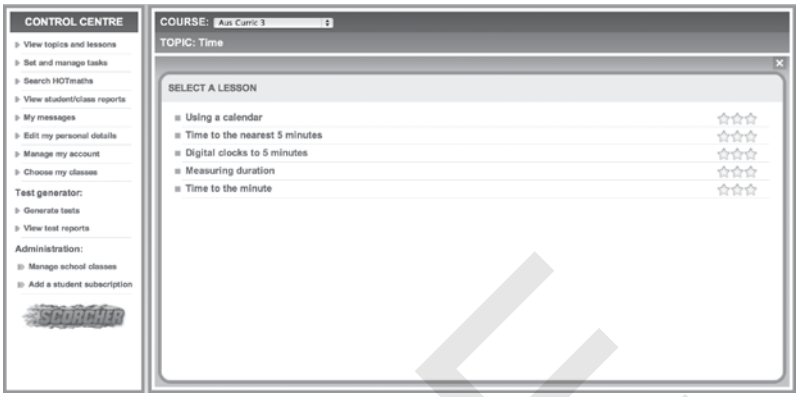
The next screen shows all the lessons contained in the selected topic. Click on the lesson you wish to use.

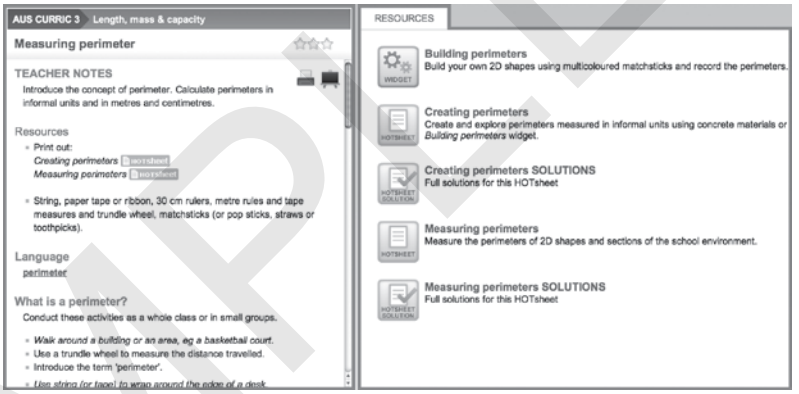


The right-hand panel shows the resources available in the lesson.

These include WIDGET widgets, which are interactive animations that will open in the right-hand panel, but can be expanded to full screen for classroom use.

The resources also include HOTsheet HOTsheets and HOTsheet SOLUTION HOTsheet solutions.

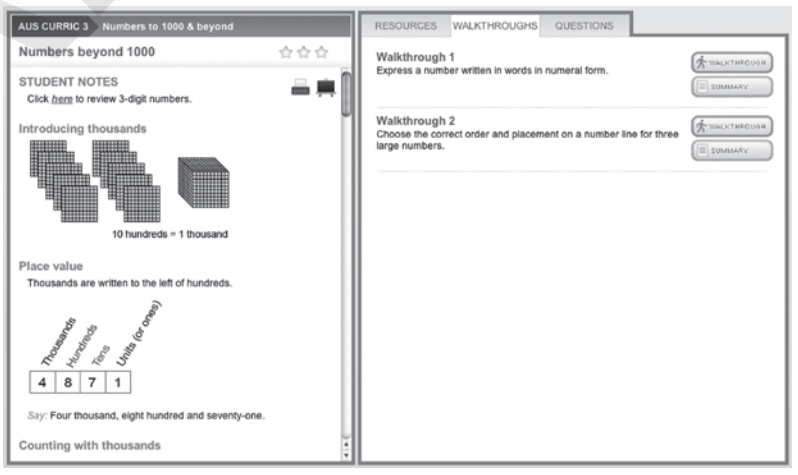
They will open in a new browser window and can be printed and photocopied for class use.



You can also access WALKTHROUGH walkthroughs.

Click on the Walkthroughs tab to see the walkthroughs available in the lesson.

Click on the Walkthrough button to go through the lesson step by step, or click on the Summary button to see the final solution complete with comments.



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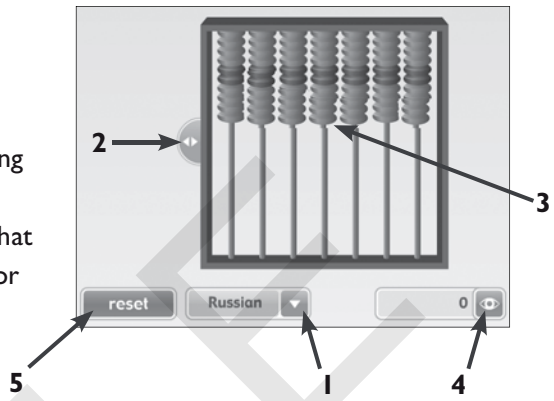
Using a Cambridge HOTmaths Widget

A graphic example of how to work through a Cambridge HOTmaths widget is shown below. This widget can be found in the Cambridge Primary Maths Ans Cumi 5 Course.



Abacuses

Navigate to the topic 'About whole numbers', the lesson 'Extending place value' and the widget 'Abacuses'. This widget allows you to move the beads on an abacus to create large and small numbers that display on the screen. It can be used as a teacher demonstration or students can create their own numbers on the abacus.

1 Click the green drop-down button to select the type of abacus you want to use (Russian, Chinese or Japanese).
2 Click and drag the orange semicircle left or right to adjust the number of place values in the abacus (between 3 and 9).
3 Click (*do not drag*) the beads on the abacus to create a number.
4 The number created will display on screen. To hide this, click the blue 'eye' button next to the display.
5 Reset the abacus to zero by clicking the red 'reset' button.

Alternatively, begin the lesson by opening the widget for full class display using a data projector or interactive whiteboard. Discuss the place value represented by the columns on the Russian abacus. Click the blue 'eye' button to hide the value shown on the abacus and ask students to come forward to create various numbers. Discuss what happens when ten beads are dragged down in one column.

After completing these activities, extend the class by examining both the Chinese and Japanese abacuses and how they represent numbers.

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Teacher notes

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