

Primary Maths

4

Teacher Resource Book

Greg Weeks

Consultants: Ed Lewis, Jim Grant



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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.

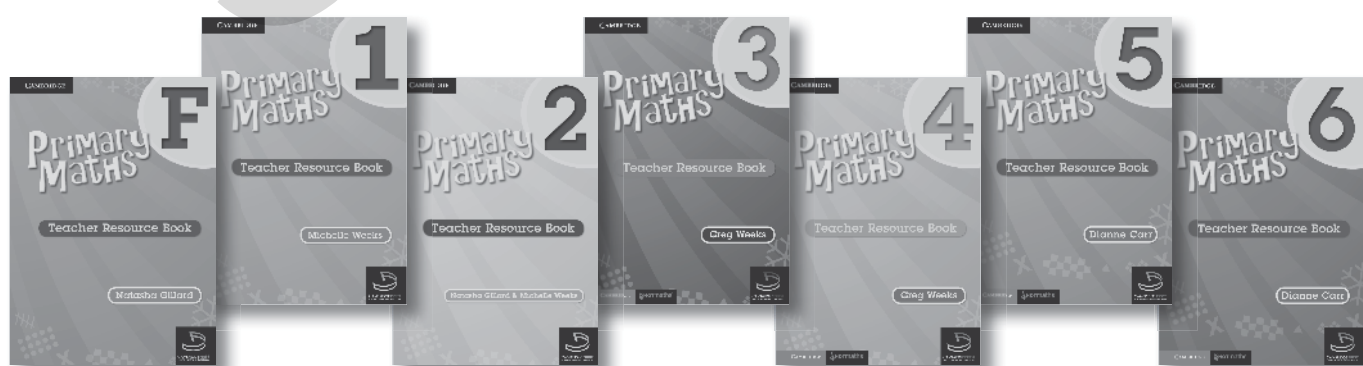
The philosophy upon which *Primary Maths* is based is the idea that students learn most effectively through physical and mental activities related to experiences in their world. The series breathes life into the mathematics curriculum by providing experiences that introduce and consolidate fundamental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

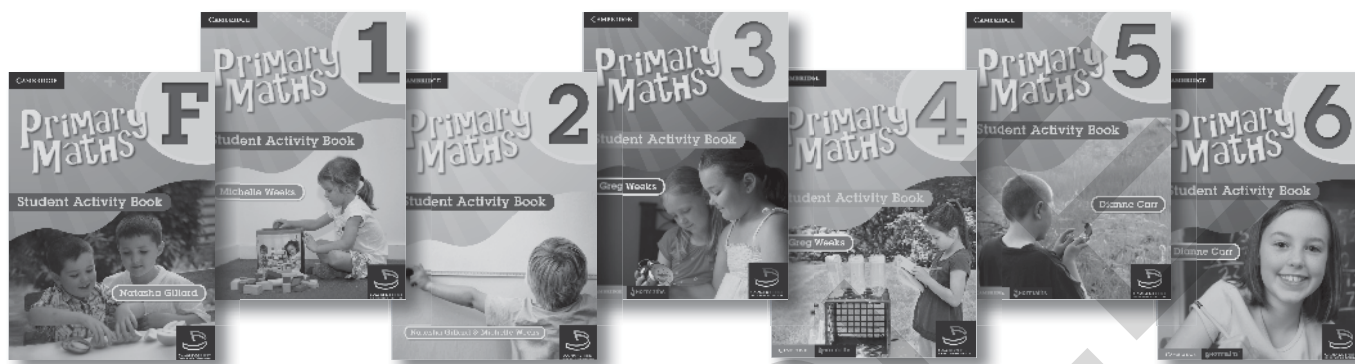
Ideas on how to introduce and reflect on each lesson, tasks to support learners along the sequence, teaching tips and additional blackline masters and assessment pages are provided.

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

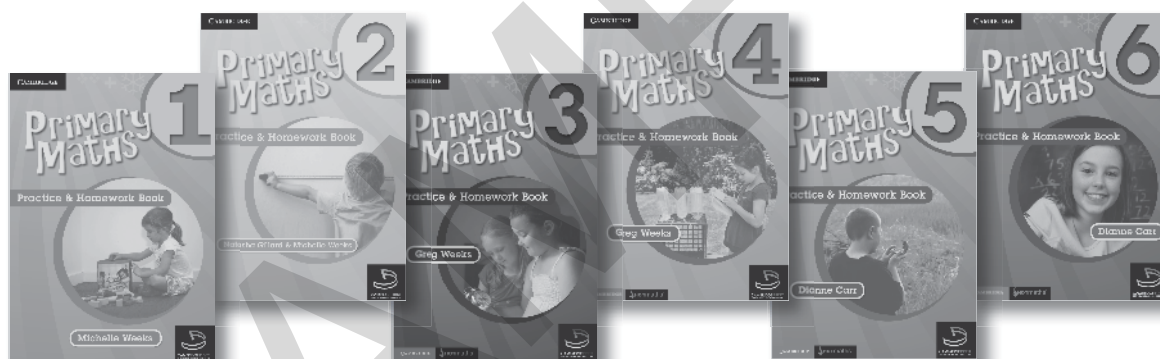
The *Primary Maths Teacher Resource Book* is the foundation of the series. It contains a yearly program, structured in 36 units of work. It includes weekly plans for teaching and learning, activities linked to assessment, teaching notes, half-yearly and yearly assessments, and blackline master pages.



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.



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 strands 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.

Unit 2 Number and Algebra: Addition and Subtraction

Unit focus

- Use place value to add and subtract to solve problems
- Use the four operations to solve problems
- Use the four operations to solve problems
- Use the four operations to solve problems

At a glance

Resources

- Place value chart
- Base ten blocks
- Number line
- Counting sticks

Language

- Add
- Subtract
- Sum
- Difference
- Product
- Quotient

Links

- Maths-in-a-Box: Addition and Subtraction
- Cambridge HOTmaths: Addition and Subtraction

Problem of the week

Warm-ups

Activities

Beginning activities

Maths-in-a-Box

Cambridge HOTmaths

Assessment

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

Angles

Angles are formed by two rays meeting at a common point called the vertex.

Right angles

A right angle is an angle of 90 degrees.

Angles in the environment

Angles are found everywhere in our environment.

Angles in polygons

The sum of the interior angles of a polygon can be found using the formula: $(n-2) \times 180$, where n is the number of sides.

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

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*.

Unit 15

Solve it
Can you work out how much each small box weighs?

1. $A = \text{---} \text{ g}$ $B = \text{---} \text{ g}$

2. $C = \text{---} \text{ g}$ $D = \text{---} \text{ g}$

3. $F = \text{---} \text{ g}$ $G = \text{---} \text{ g}$

Quick questions

- Write the largest number using 2, 7, 3, 8.
- Write 4071 in words.
- $32 + 19 = \text{---}$
- $700 - 400 = \text{---}$
- 6 books at \$7 each.
- $20 \div 5 = \text{---}$
- Is $\frac{2}{3} > \frac{1}{2}$?
- $19 \div 2 = 3 \times \text{---}$
- Is 4881 an odd number?

11 True or false?
a South is the direction opposite north.
b West is the direction opposite south.
c A pentagon has 5 sides.
d A cube has 6 faces.
e A circle has a pair of parallel sides.

12 Write the volume of the model. Each cube represents 1 cm³.

30 Mass

Unit 15

Recall it
This table shows how many of each item is needed to make 1 kg.

Item	How many I need to make 1 kg
Glue stick	4
Tape	2
Eraser	6
Stapler	2
Hole punch	1

Number needed to make 1 kg

1 Complete the graph.
2 Which item is the heaviest?
3 Which item is the lightest?
4 Which two items have the same mass?

Focus on it
1 Indri collects magnets from around the world.

Magnet	City	Mass
	Beijing	550 g
	London	285 g
	New York	310 g
	Paris	300 g
	Sydney	470 g

a Which magnet is the heaviest?
b Which magnet is the lightest?
c Order the magnets from heaviest to lightest.
d How much would two of the Sydney magnets weigh?
e Which two magnets have a total mass of 860 g?

31 Mass

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

Quick questions: exercises in mental computation

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

Recall it: a review of prior content

Cambridge HOTmaths icon

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

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 4, Understanding includes making connections between representations of numbers, partitioning and combining numbers flexibly, extending place value to decimals, using appropriate language to communicate times, using informal units for comparing, and describing properties of symmetrical shapes.


The appearance of this icon  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 4, Fluency includes recalling multiplication tables, communicating sequences of simple fractions, using instruments to measure accurately, creating patterns with shapes and their transformations, and collecting and recording data.




The appearance of this icon  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 4, Problem Solving includes formulating, modelling and recording authentic situations involving operations, comparing large numbers and time durations, and using properties of numbers to continue patterns.

The appearance of this icon  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 4, Reasoning includes using generalising from number properties and results of calculations, deriving strategies for unfamiliar multiplication and division tasks, comparing angles, communicating information using graphical displays and evaluating the appropriateness of different displays.

The appearance of this icon  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.

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.

Teaching sequence

Term 1

Unit 1		Unit 2	Unit 3
Whole Numbers ACMNA071 ACMNA072		Addition and Subtraction ACMNA073	Length ACMMG084
<ul style="list-style-type: none"> Investigate and use properties of odd and even numbers Recognise, model, represent and order 5-digit numbers Reproduce numbers in words using their numerical representations and vice versa State the place value of digits in 5-digit numbers Record numbers up to 5-digits using expanded notation Round numbers to the nearest ten, hundred or thousand when estimating Recognise and represent numbers to hundreds of thousands 		<ul style="list-style-type: none"> Use mental strategies for addition and subtraction of 3-digit numbers, including: the compensation strategy; changing the order of addends to form multiples of 10; the jump strategy; the split strategy Record mental strategies on an open number line Use a formal written algorithm and apply place value to solve addition and subtraction problems involving 3-digit numbers 	<ul style="list-style-type: none"> Use a tape measure, ruler or trundle wheel to measure lengths or distances Record lengths or distances using centimetres and millimetres Convert between metres and centimetres, and centimetres and millimetres Record lengths or distances using decimal notation to 2 decimal places
Unit 4		Unit 5	Unit 6
Location ACMMG090		Time ACMMG085	Multiplication and Division ACMNA075 ACMNA076
<ul style="list-style-type: none"> Draw and describe a path or route on a simple map or plan 		<ul style="list-style-type: none"> Relate analog notation to digital notation Read analog and digital clocks to the minute Convert between units of time 	<ul style="list-style-type: none"> Use mental strategies to recall multiplication facts up to 10×10, including the commutative property of multiplication Use known facts to work out unknown facts
Unit 7		Unit 8	Unit 9
Area ACMMG290		Fractions and Decimals ACMNA077 ACMNA078	Shape ACMMG088
<ul style="list-style-type: none"> Recognise the need for a unit larger than a square centimetre Construct a square metre Estimate, measure and compare areas in square metres 		<ul style="list-style-type: none"> Find equivalence between halves, quarters and eighths Model and order mixed numerals Find equivalence between fifths, tenths and hundredths Model mixed numerals and place them on a number line Find equivalence between thirds and sixths Convert mixed numerals to improper fractions and vice versa 	<ul style="list-style-type: none"> Make representations of 2D shapes in different orientations Construct 2D shapes from a variety of materials Compare and describe 2D shapes that result from combining and splitting common shapes with and without the use of digital technologies

Term 2

Unit 10	Unit 11	Unit 12
Addition and Subtraction ACMNA073	Volume and Capacity ACMMG084 ACMMG290	Multiplication and Division ACMNA075 ACMNA076
<ul style="list-style-type: none"> Use mental strategies for addition and subtraction involving 4-digit numbers, including the jump strategy, the split strategy and the compensation strategy Add and subtract two 4-digit numbers, with and without trading, use concrete materials and record their method Use a formal written algorithm and apply place value to solve addition and subtraction problems, involving 4-digit numbers 	<ul style="list-style-type: none"> Recognise the need for a unit smaller than the litre Estimate, measure and compare volumes and capacities using millilitres Make a measuring device calibrated in multiples of 100 millilitres Use a measuring device calibrated in millilitres Use the abbreviation for millilitre (mL) Recognise that 1000 millilitres equal 1 litre Convert between millilitres and litres Compare the volumes of 2 or more objects by marking the change in water level when each is submerged in a container 	<ul style="list-style-type: none"> Recognise and use \div and $\overline{)}$ to indicate division Use mental strategies to divide by a 1-digit number, including the inverse relationship of multiplication and division, and recall known division facts relate to known division facts Describe and record methods used in solving multiplication and division problems Describe the relationship between multiplication facts
Unit 13	Unit 14	Unit 15
Transformation ACMMG091	Fractions and Decimals ACMNA079	Mass ACMMG084
<ul style="list-style-type: none"> Make tessellating designs by reflecting (flipping), translating (sliding) and rotating (turning) a 2D shape Create symmetrical patterns, pictures and shapes with and without digital technology 	<ul style="list-style-type: none"> Interpret decimal notation for tenths and hundredths Order decimals with the same number of decimal places (to 2 decimal places) on a number line Round a number with 1 or 2 decimal places to the nearest whole number Use division by 10 to extend place value system 	<ul style="list-style-type: none"> Compare mass of objects in grams Measure and compare the masses of objects in grams using a set of scales Measure and compare the masses of objects in kilograms using a set of scales
Unit 16	Unit 17	Unit 18
Data ACMSP096 ACMSP097	Shape	Chance ACMSP092 ACMSP093 ACMSP094
<ul style="list-style-type: none"> Interpret information presented in column graphs and picture graphs Mark equal spaces on axes, label axes and name the display Represent the same data in more than one way 	<ul style="list-style-type: none"> Create nets from everyday packages Recognise nets of 3D objects Sketch 3D objects from different views 	<ul style="list-style-type: none"> Order events from least likely to most likely Use the language of chance in everyday contexts Identify everyday events where one cannot happen if the other happens Identify events where the chance of one will not be affected by the occurrence of the other

Term 3

Unit 19	Unit 20	Unit 21
<i>Financial Maths</i> ACMNA080	<i>Length</i> ACMMG084	<i>Multiplication and Division</i> ACMNA076
<ul style="list-style-type: none"> Solve problems involving purchases and the calculation of change to the nearest five cents with and without digital technologies Recognise that not all countries use dollars and cents Carry out calculations in another currency as well as in dollars and cents, and identify both as decimal systems 	<ul style="list-style-type: none"> Recognise the features of an object associated with length that can be measured Use the term 'perimeter' to describe the total distance around a shape Estimate and measure the perimeter of 2D shapes 	<ul style="list-style-type: none"> Use mental strategies to multiply a 2-digit number by a 1-digit number, including: use known facts; multiplying the tens and then the units; the relationship between multiplication facts; factorising Describe and record methods used in solving multiplication and division problems
Unit 22	Unit 23	Unit 24
<i>Shape</i> ACMMG290 ACMMG087	<i>Addition and Subtraction</i> ACMNA073	<i>Area</i> ACMMG084 ACMMG290
<ul style="list-style-type: none"> Compare the areas of regular and irregular shapes by informal means Compare areas with metric units, such as counting the squares required to cover two areas by overlaying the areas with a grid of centimetre squares 	<ul style="list-style-type: none"> Use mental strategies, concrete materials and the formal algorithm to solve addition and subtraction problems involving 3-, 4- and 5-digit numbers by applying place value Apply place value to partition, rearrange and regroup numbers to assist calculations and solve problems 	<ul style="list-style-type: none"> Record area in square metres Calculate areas of squares and rectangles and use the abbreviations for square metre (m²) and square centimetre (cm²)
Unit 25	Unit 26	Unit 27
<i>Fractions and Decimals</i> ACMNA079	<i>Patterns and Algebra</i> ACMNA074 ACMNA081	<i>Location</i> ACMMG090
<ul style="list-style-type: none"> Recognise that the symbol % means 'per cent' Relate a common percentage to a fraction or decimal Equate 10% to $\frac{1}{10}$, 25% to $\frac{1}{4}$ and 50% to $\frac{1}{2}$ 	<ul style="list-style-type: none"> Create, with materials or a calculator, a variety of patterns using whole numbers, fractions or decimals Describe a simple number pattern in words Identify examples of number patterns in everyday life 	<ul style="list-style-type: none"> Use coordinates on simple maps to describe position Plot points at given coordinates

Term 4

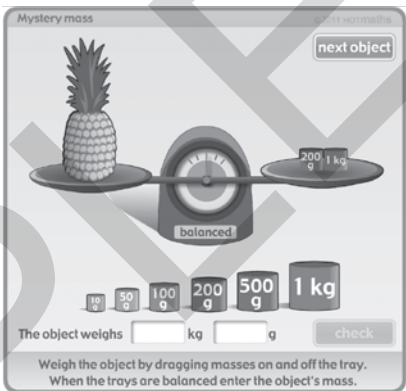

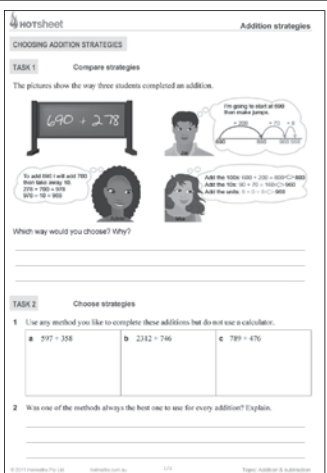
Unit 28	Unit 29	Unit 30
Financial Maths ACMNA073 ACMNA080	Mass ACMMG084	Multiplication and Division ACMNA074 ACMNA075 ACMNA076
<ul style="list-style-type: none"> Solve addition and subtraction problems that involve money by using a variety of strategies 	<ul style="list-style-type: none"> Recognise that 1000 grams equal 1 kilogram Interpret commonly used fractions of a kilogram and relate these to the number of grams 	<ul style="list-style-type: none"> List multiples for a given number Find square numbers using concrete materials and diagrams Determine factors for a given number
Unit 31	Unit 32	Unit 33
Geometric Reasoning ACMMG089	Patterns and Algebra ACMNA076 ACMNA082 ACMNA083	Time ACMMG085 ACMMG086
<ul style="list-style-type: none"> Compare angles using informal means, such as an angle tester Describe angles using everyday language and the term 'right' to describe the angle formed when perpendicular lines meet Draw angles of various sizes by tracing along the adjacent sides of shapes and describe the angle drawn 	<ul style="list-style-type: none"> Apply the associative property of addition and multiplication to aid mental computation Complete number sentences involving one operation by calculating missing values Use equivalent number sentences involving addition and subtraction to find unknown quantities 	<ul style="list-style-type: none"> Read and interpret simple timetables, timelines and calendars
Unit 34	Unit 35	Unit 36
Temperature ACMMG084 ACMSP097	Location ACMMG090	Data ACMSP096 ACMSP097
<ul style="list-style-type: none"> Use a thermometer to measure and compare temperature Read and interpret the graduated scales on a thermometer to the nearest gradation 	<ul style="list-style-type: none"> Use N, S, E and W to describe the location of an object on a simple map, given an arrow that represents north Use a compass rose to indicate each of the key directions Determine the directions NE, NW, SE and SW, given one of the directions Use NE, NW, SE and SW to describe the location of an object on a simple map, given a compass rose Identify the scale used on maps 	<ul style="list-style-type: none"> Create a two-way table to organise data Interpret information presented in two-way tables

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.

<p>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.</p>	
<p>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.</p>	
<p>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.</p>	

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.

Student name	Walkthroughs		Questions				Scorchers	
	Date		Lvl 1	Lvl 2	Lvl 3	Ch Lvl	Date	Date
Bubble, Georgia	4		8/11	7/9	4/10	5/8	2011-05-27	
Cram, Joe	4				3/6	5/8	2010-04-12	
Gnostr, Emily	1		4/5		1/1	1/4	2010-04-13	19/30 2010-04-13
McFarlane, Justin	2		1/1	1/1	1/1	1/1	2010-04-13	7/10 2010-04-13
Zoolander, Davis	3		6/7	10/10	7/8	7/8	2010-04-13	19/40 2010-04-13

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.

Class topic quiz report - Upper primary - Understanding whole numbers - 3 Red Demonstration

Legend:
A: Extending place value B: Comparing whole numbers C: Rounding whole numbers
D: Understanding Number patterns
The best topic quiz for selected levels is displayed

Student name	Lat	Date	A	B	C	D	Total
2	2011-05-02						24
3	2011-05-02						24
4	2011-05-12						24
5	2011-05-02						24
6	2011-05-02						24
7	2011-05-02						24
8	2011-05-02						24
9	2011-05-13						24
10	2011-05-13						24
11	2011-05-13						24
12	2011-05-13						24
13	2011-05-13						24
14	2011-05-13						24
15	2011-05-13						24
16	2011-05-13						24
17	2011-05-13						24
18	2011-05-13						24
19	2011-05-13						24
20	2011-05-13						24
21	2011-05-13						24
22	2011-05-13						24
23	2011-05-13						24
24	2011-05-13						24
25	2011-05-13						24
26	2011-05-13						24
27	2011-05-13						24
28	2011-05-13						24
29	2011-05-13						24
30	2011-05-13						24

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.

Individual student topic report - Upper primary - Understanding whole numbers - Zastanov, David

Legend:
A: Extending place value B: Comparing whole numbers C: Rounding whole numbers
D: Understanding Number patterns
The best topic quiz for selected levels is displayed

Student name	Lat	Date	A	B	C	D	Total
1	2011-05-02						24
2	2011-05-02						24
3	2011-05-02						24
4	2011-05-02						24
5	2011-05-02						24
6	2011-05-02						24
7	2011-05-02						24
8	2011-05-02						24
9	2011-05-02						24
10	2011-05-02						24
11	2011-05-02						24
12	2011-05-02						24
13	2011-05-02						24
14	2011-05-02						24
15	2011-05-02						24
16	2011-05-02						24
17	2011-05-02						24
18	2011-05-02						24
19	2011-05-02						24
20	2011-05-02						24
21	2011-05-02						24
22	2011-05-02						24
23	2011-05-02						24
24	2011-05-02						24
25	2011-05-02						24
26	2011-05-02						24
27	2011-05-02						24
28	2011-05-02						24
29	2011-05-02						24
30	2011-05-02						24

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



2 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 4** course from the drop-down menu.

A full list of topics is displayed on screen. Click on the topic you wish to use.

CONTROL CENTRE

- View topics and lessons
- Set and manage tasks
- Search HOTmaths
- View student/class reports
- My messages
- Edit my personal details
- Manage my account
- Choose my classes

Test generator:

- Generate tests
- View test reports

Administration:

- Manage school classes
- Add a student subscription

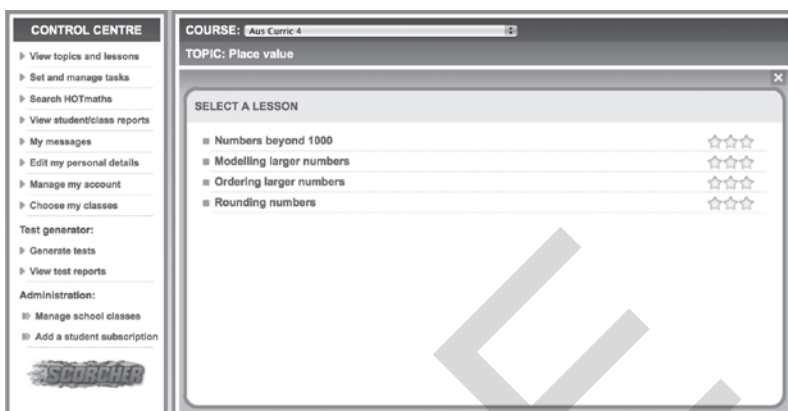
COURSE: Aus Curric 4


TOPICS: Select a topic



- Place value
- Addition & subtraction
- Multiplication & division
- Number patterns
- Fractions, decimals & money
- Measurement
- Time
- Geometry & directions
- Chance
- Data

[Click here for more course details](#)

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  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  HOTsheets and  HOTsheet solutions.

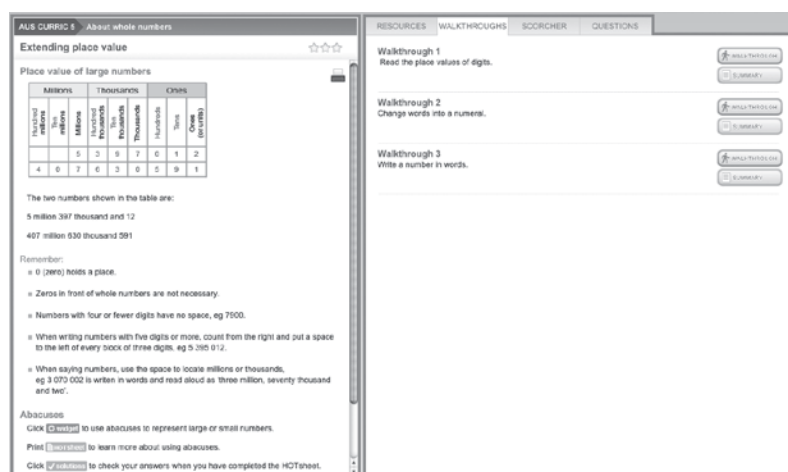
They will open in a new browser window and can be printed and photocopied for class use.



You can also access  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.



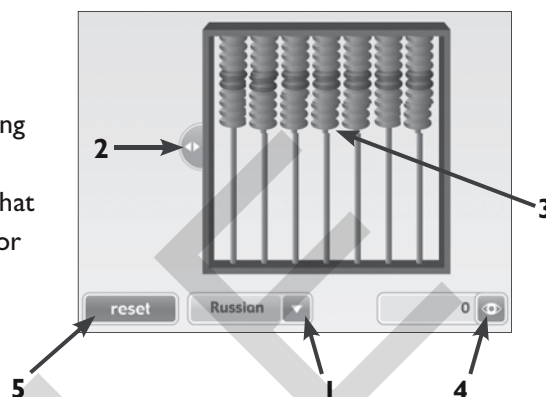
Using a Cambridge HOTmaths Widget

A graphic example of how to work through a Cambridge HOTmaths widget is shown below.



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.



Teacher notes

SAMPLE