

Primary Maths

6

Student Activity Book

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Introduction

Students learn mathematical skills and concepts in everyday life as they interact with their environment and the people around them. They pose and answer questions, recognise and represent numbers, count, estimate and calculate, measure, identify shapes and investigate spatial relationships.

Primary Maths Student Activity Book 6 provides a series of mathematics activities that encourage students to think about situations and problems, talk to others about their ideas and develop their own strategies as confident learners.

In keeping with the Australian mathematics curriculum, *Primary Maths* fosters the development of the four proficiency strands – Understanding, Fluency, Problem solving and Reasoning – through the wide range of activities that it offers the student. These activities address and develop the descriptions and elaborations of the Australian curriculum’s three content strands, as outlined below.

Within the *Primary Maths* Student Activity Book 6 there are links to our subscription-based Cambridge HOTmaths website, a comprehensive interactive maths learning system for both teachers and students. Cambridge HOTmaths offers various educational tools to assist with maths learning, ranging from walkthrough problems to interactive widget animations, worksheets, and online drill and practice. This content is connected to a powerful reporting system that provides comprehensive reports on student progress and understanding.

Number and Algebra

Primary Maths promotes the use of number and mathematical concepts so that students can understand the properties of whole numbers and perform operations with numbers, using efficient mental and written strategies and appropriate technologies. *Primary Maths* develops students’ understanding of fractions and decimals by using visual representations, which then feed into operational techniques. Problems involving calculations with money and various other measurements provide contexts in which to develop understandings of decimal systems.

Mathematics involves a search for patterns and relationships. Accordingly, generating, describing and recording number patterns using a variety of strategies are important skills developed by using *Primary Maths*. This study of number patterns is an important precursor to the study of algebra that students will undertake in their secondary education.

Measurement and Geometry

Number ideas are further developed in the context of measurement activities in *Primary Maths*. Objects are investigated in terms of their length, area, mass, volume and capacity. Estimation is encouraged and measurements are recorded using numbers and metric units. Other measurement systems for temperature and time are also examined. Students also use their knowledge of the decimal system to practise conversions between the units.

Students further develop their understandings of location by using simple maps and grid references to represent positions.

Primary Maths investigates the shape, size, pattern, position and movement of everyday objects to develop students’ skills of spatial visualisation. Students identify and draw three-dimensional objects, including a range of prisms and pyramids. Angles are measured and constructed using protractors and classified using appropriate terminology.

Statistics and Probability

In the probability activities, students continue to investigate the outcomes of chance situations. They increase their understandings by assigning numerical values to the likelihood of different events occurring, by representing probabilities using fractions and understanding that probabilities range from 0 to 1.

While undertaking statistics activities, students conduct surveys, classify and organise data using tables, and present and interpret their findings in a variety of displays and then justify their choice of representation.

Page elements

The *Primary Maths* Student Activity Books use a system of subtle colour coding to indicate the level of difficulty of the questions, which is outlined below:

 1 yellow – beginning

 2 blue – consolidation

 3 red – extension



The red arrow on the pages indicates a challenge question.



Reference throughout the books is made to our successful *Maths-in-a-Box* series that can be used in conjunction with the books to provide additional support and enrichment.



Discussion icons are indicated throughout the books to highlight areas where class or small-group discussion can take place.



This icon indicates material that has been included to ensure smooth and sensible bridging between the year levels. The authors of *Primary Maths* have presented a thorough and pedagogically sound interpretation of the Australian mathematics curriculum. They have also included material that they feel offers a whole and complete course and complements the core content to ensure students receive a complete understanding of the material.

In addition, purple boxes contain information to help students recall past learning, or offer hints and further explanation of difficult concepts.

Cambridge HOTmaths icons



Cambridge HOTmaths flames are positioned throughout the book indicating links to relevant interactive material available at the Cambridge HOTmaths site.

www.hotmaths.com.au

A complete list of all relevant Cambridge HOTmaths material can be found on the HOTmaths contents pages following.

The following icons on the HOTmaths contents pages illustrate the various types of additional material available on the HOTmaths site:



Widgets (interactive activities)



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



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

Cambridge HOTmaths is a live, dynamic and ever growing resource. Notifications on changes and additions to HOTmaths information post publication can be found here. www.cambridge.edu.au/primarymaths

Cambridge HOTmaths and Primary Maths integrated program

This program integrates the content of two resources, Primary Maths and Cambridge HOTmaths, combining print books and interactive digital material.

Within Cambridge HOTmaths, you will find:

- ▶ over 600 interactive investigations (Widgets)
- ▶ a powerful reporting system*
- ▶ lesson notes and an illustrated dictionary
- ▶ drill and practice activities (Scorcher)
- ▶ test generator*
- ▶ over 400 complete lessons
- ▶ diagnostic tests and assessments
- ▶ over 1000 printable worksheets
- ▶ games for upper primary
- ▶ task manager*.

* Included in teacher accounts only



Here are some 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** as a warm-up to a topic or as a reward at the end of the topic
- print out a copy of an accompanying **HOTsheet** to work through, after going through a widget.

www.cambridge.edu.au/hotmaths

HOTmaths contents

Course: Aus Curric 6

HOTmaths item number	Page number	HOTmaths topic	Lesson within the topic	Widgets, HOTsheets and Walkthroughs	
 1	p.1	Number systems	Rounding whole numbers		Walkthrough 1
 2	p.4	Types of whole numbers	Negative numbers		The extended number line
 3	p.7	Addition & subtraction	Addition strategies		Walkthrough 1
 4	p.9	Addition & subtraction	Subtraction strategies		Choosing subtraction strategies
 5	p.13	Multiplication & division	Dividing larger numbers		Recording division
 6	p.16	Multiplication & division	Exploring division		Walkthrough 4
 7	p.19	Multiplication & division	Multiplying by two digits		Walkthrough 2
 8	p.22	Multiplication & division	Multiplying by two digits		Walkthrough 1
 9	p.25	Multiplication & division	Introducing grouping symbols		Expression calculator with brackets
 10	p.27	Types of whole numbers	Primes & composites		Walkthrough 2
 11	p.30	Fractions	Improper fractions & mixed numerals		Mixed vs improper
 12	p.33	Fractions	Fractions of a group		Fractions of a mischief of mice
 13	p.38	Fractions	Whole numbers & fractions		Walkthrough 1
 14	p.41	Fractions	Multiples of fractions		Strategies for multiplying with fractions
 15	p.44	Fractions	Add & subtract related fractions		Working with different denominators
 16	p.47	Decimals & money	Adding decimals		Adding decimals
 17	p.50	Decimals & money	Dividing decimals by a whole number		Dividing into a decimal
 18	p.52	Percentages	Calculating with percentages		Discounts
 19	p.56	Addition & subtraction	Adding in columns		Column addition
 20	p.62	Patterns & unknown numbers	Rules for number patterns		Mystery machine
 21	p.65	Patterns & unknown numbers	Rules for number patterns		Walkthrough 1

You can use the Search HOTmaths function from the Control Centre to locate specific content.

HOTmaths item number	Page number	HOTmaths topic	Lesson within the topic	Widgets, HOTsheets and Walkthroughs	
 22	p.71	Length, perimeter & area	Converting units of length		Length converter
 23	p.74	Length, perimeter & area	Area of triangles		Investigating areas of triangles
 24	p.80	Length, perimeter & area	Surface area		Surface area
 25	p.83	Volume & capacity	Measuring capacity		Estimating capacity
 26	p.86	Volume & capacity	Linking litres & cubes		Water overflow
 27	p.89	Mass	Measuring & recording masses		Mystery mass
 28	p.92	Mass	Converting units of mass		Relating mass and capacity
 29	p.94	Time	Calendars & timelines		Time to research
 30	p.98	3D shapes	Naming 3D shapes		Describing 3D shapes
 31	p.100	3D shapes	Nets & models		Walkthrough 1
 32	p.102	3D shapes	Drawing 3D shapes		Drawing tool
 33	p.106	2D shapes & transformations	Triangles		Sorting triangles
 34	p.112	2D shapes & transformations	Symmetry		Rotation patterns
 35	p.113	2D shapes & transformations	Translate, rotate, reflect		Reflecting shapes
 36	p.114	2D shapes & transformations	Enlarging & reducing		Using rays to enlarge
 37	p.115	Position & scale	The Cartesian plane		The four quadrants
 38	p.116	Angles	The language of angles		Making angles
 39	p.117	Angles	Finding unknown angles		Calculating angles
 40	p.121	Data	Line graphs		Reading and drawing line graphs
 41	p.124	Data	Introducing sector (pie) graphs		Reading sector graphs
 42	p.125	Data	Picture & column graphs		Telling stories with picture graphs
 43	p.128	Chance	Chancy tasks		Ice Cream Parlour
 44	p.130	Chance	What is the chance?		Marble jar chances