

Primary Maths

5

Student Activity Book

Dianne Carr

Consultants:
Ed Lewis and Jim Grant



CAMBRIDGE
UNIVERSITY PRESS

Contents

Page	Title
Number and Algebra	
Number and Place Value	
Whole Numbers	
1	Numbers in the billions
2	Placing value in the billions
3	Batty about billions
4	Number abbreviations
Addition and Subtraction	
5	Addition of numbers to 5 digits
6	Addition of larger numbers
7	Focus on addition
8	Subtracting numbers
9	Subtraction of larger numbers
10	What is the difference?
11	Subtraction strategies
12	Addition and subtraction
13	Sum or difference?
14	Addition and subtraction problems
Multiplication and Division	
15	Mental multiplication
16	1-digit multiplication
17	2-digit multiplication
18	Division by 2, 5 and 10
19	Division notation
20	Division and the calculator
21	Division down the drain
22	Is it divisible?
23	Division problems
24	More divisions

25	Dividing them up
26	Factors and multiples
27	Factors of numbers
28	Composite and prime numbers
Fractions and Decimals	
29	Thirds, sixths and twelfths
30	Fractions of a group
31	Comparing thirds, sixths and twelfths
32	Multiplication and 'of'
33	Comparing fractions
34	Are they the same fraction?
35	Equivalent fractions
36	Forming equivalent fractions
37	Changing fractions
38	Adding whole numbers and fractions
39	Subtracting a fraction
40	Addition with a common denominator
41	Subtraction with a common denominator
42	Place value of decimals
43	Decimals, fractions and place value
44	Comparing decimals
45	Working with decimals
46	Percentage
47	Percentages, decimals and fractions
48	Calculate with percentages
49	Using percentages
Financial Maths	
50	Financial planning
51	Sausage sizzle fundraising

Patterns and Algebra	
52	Identifying patterns
53	Geometric patterns
54	Patterns in columns
55	Working with patterns
56	The rule
57	Graphing patterns
58	Missing numbers
Measurement and Geometry	
Using Units of Measurement	
Length	
59	Introducing kilometres
60	Working with kilometres
61	Kilometre problems
62	Measuring perimeter
63	Calculating perimeters
64	Perimeters using different units
65	Perimeter and speed
Area	
66	The hectare
67	Calculating area
68	The square kilometre
69	Using the square kilometre
70	Area of triangles
71	Area of irregular shapes
Volume and Capacity	
72	The cubic metre
73	Estimating with cubic metres
74	Measuring with cubic metres
75	Capacity of containers

Mass	
76	Measuring in tonnes
77	Mass and multiplication
78	An environmental mass
79	Mass and you
Temperature	
80	Reading thermometers
Time	
81	Using a.m. and p.m. time
82	24-hour time
83	Using 24-hour time
84	TV guide timings
85	How long does it take?
86	Time to work around the house
87	Australian time zones
Shape	
Three-dimensional Space	
88	Identifying prisms
89	Naming prisms
90	Prisms and their nets
91	Sketching prisms
92	Identifying pyramids
93	Naming pyramids
94	Pyramids and their nets
95	Sketching pyramids
96	Drawing top, side and front views
97	Identifying solids from drawings
98	Solids from different views
Two-dimensional Space	
99	Properties of the sides of triangles
100	Properties of triangles

101	Properties of quadrilaterals
102	Circles
103	Constructing circles
104	Regular and irregular shapes
105	Comparing and identifying shapes
Location and Transformation	
106	Where am I?
107	Seating at the cinema
108	A rail network
109	Watching sport
110	Touring in the country
111	Travelling around
112	Take a trip around Australia
113	Be a world traveller
114	Transformations
115	Rotational symmetry
116	Scale drawing
117	Cartoon fun
Geometric Reasoning	
118	Measuring angles
119	Constructing angles
120	Properties of angles in triangles
Statistics and Probability	
Data	
121	Introducing divided bar graphs
122	Divided bar graphs
123	Introducing sector (pie) graphs
124	Sector (pie) graphs
125	Comparing graphs
126	Dot plots and graphs
127	Which graph?

Chance

128	Chance events
129	Investigating spinners
130	What is the chance?
131	Rolling with the dice



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 5 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 5 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



10

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:



WIDGET

Widgets (interactive activities)



WALKTHROUGH

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



HOTSHEET

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 5

HOTmaths item number	Page number	HOTmaths topic	Lesson within the topic	Widgets, HOTsheets and Walkthroughs
 1	p.1	About whole numbers	Extending place value	 Abacuses
 2	p.3	About whole numbers	Extending place value	 Reading, writing and understanding numbers
 3	p.5	Addition & subtraction	Addition strategies	 Jump addition
 4	p.6	Addition & subtraction	Addition strategies	 Choosing addition strategies
 5	p.9	Addition & subtraction	Subtraction strategies	 Choosing subtraction strategies
 6	p.14	Addition & subtraction	Subtracting in columns	 Magic squares
 7	p.15	Multiplication & division	Multiplication strategies	 Splitting to multiply
 8	p.19	Multiplication & division	Exploring division	 Grouping
 9	p.22	Multiplication & division	Dividing larger numbers	 Recording division
 10	p.25	Multiplication & division	Dividing larger numbers	 Delving into division
 11	p.31	Fractions	Understanding fractions	 Shady patterns
 12	p.35	Fractions	Which fractions are the same size?	 Comparing fractions
 13	p.39	Fractions	Whole numbers & fractions	 Bits and pieces
 14	p.43	Decimals & percentages	Decimal place values	 Moving decimal places
 15	p.47	Decimals & percentages	Percentages–decimals–fractions	 Ordering types of fractions  Percentage, decimal and fraction cards
 16	p.53	Patterns & missing numbers	Numbers in designs	 Building fences
 17	p.56	Patterns & missing numbers	Rules for number patterns	 Mystery machine
 18	p.57	Patterns & missing numbers	Rules for number patterns	 Patterns and tables
 19	p.60	Length & area	Converting units of length	 Length converter
 20	p.62	Length & area	Perimeter	 Comparing perimeters  Building perimeters

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

HOTmaths contents

HOTmaths item number	Page number	HOTmaths topic	Lesson within the topic	Widgets, HOTsheets and Walkthroughs	
 21	p.66	Length & area	Units of area		Local areas
 22	p.70	Length & area	Area of triangles		Investigating areas of triangles
 23	p.74	Volume, capacity & mass	Measuring volume		Estimating in cubic metres
 24	p.79	Volume, capacity & mass	Converting units of mass		Relating mass and capacity
 25	p.83	Time	Clock times		Telling the time; 24-hour time
 26	p.88	3D shapes	Naming 3D shapes		Shapes galore
 27	p.91	3D shapes	Drawing 3D shapes		Drawing tool
 28	p.94	3D shapes	Nets & models		Make me!
 29	p.98	3D shapes	Naming 3D shapes		Describing 3D shapes
 30	p.103	Angles & 2D shapes	Circles		Designs with compasses
 31	p.104	Angles & 2D shapes	Exploring polygons		Pinboard
 32	p.106	Maps, plans & directions	Grid coordinates		Town planning
 33	p.110	Maps, plans & directions	Grid coordinates		London street map
 34	p.114	Symmetry & transformations	Translate, rotate, reflect		Walkthrough 1
 35	p.115	Symmetry & transformations	Symmetry		Translation
 36	p.120	Angles & 2D shapes	Triangles		Rotation patterns
 37	p.121	Chance & data	Reading divided bar graphs		Exploring triangles
 38	p.124	Chance & data	Introducing sector (pie) graphs		Reading divided bar graphs
 39	p.125	Chance & data	Introducing sector (pie) graphs		Reading sector graphs
 40	p.126	Chance & data	Dot plots		Comparing graphs
 41	p.127	Chance & data	Reading divided bar graphs		Drawing dot plots
					Bars, columns and pictures