

Primary Maths

2

Teacher Resource Book

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Contents

The <i>Primary Maths</i> series	iv
Introduction	viii
Teaching sequence	x
Teacher notes	xiv
Unit 1 Number and Algebra: Number and Place Value	1
Unit 2 Number and Algebra: Addition and Subtraction	5
Unit 3 Measurement and Geometry: Area	9
Unit 4 Measurement and Geometry: Shape	13
Unit 5 Measurement and Geometry: Shape	17
Unit 6 Measurement and Geometry: Time	21
Unit 7 Number and Algebra: Multiplication and Division	25
Unit 8 Statistics and Probability: Chance	29
Unit 9 Number and Algebra: Patterns and Algebra	33
Unit 10 Number and Algebra: Number and Place Value	37
Unit 11 Measurement and Geometry: Volume and Capacity	41
Unit 12 Number and Algebra: Addition and Subtraction	45
Unit 13 Measurement and Geometry: Location	49
Unit 14 Number and Algebra: Multiplication and Division	53
Unit 15 Number and Algebra: Fractions and Decimals	57
Unit 16 Measurement and Geometry: Length	61
Unit 17 Statistics and Probability: Data	65
Unit 18 Measurement and Geometry: Area	69
Half-yearly assessment	73
Unit 19 Number and Algebra: Number and Place Value	79
Unit 20 Measurement and Geometry: Mass	83
Unit 21 Number and Algebra: Addition and Subtraction	87
Unit 22 Measurement and Geometry: Shape	91
Unit 23 Number and Algebra: Addition and Subtraction	95
Unit 24 Number and Algebra: Multiplication and Division	99
Unit 25 Number and Algebra: Fractions and Decimals	103
Unit 26 Measurement and Geometry: Volume and Capacity	107
Unit 27 Measurement and Geometry: Location	111
Unit 28 Number and Algebra: Number and Place Value	115
Unit 29 Number and Algebra: Addition and Subtraction	119
Unit 30 Measurement and Geometry: Length	123
Unit 31 Measurement and Geometry: Transformation	127
Unit 32 Measurement and Geometry: Time	131
Unit 33 Number and Algebra: Financial Maths	135
Unit 34 Number and Algebra: Multiplication and Division	139
Unit 35 Measurement and Geometry: Shape	143
Unit 36 Statistics and Probability: Data	147
Yearly assessment	151
Blackline masters	157

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.

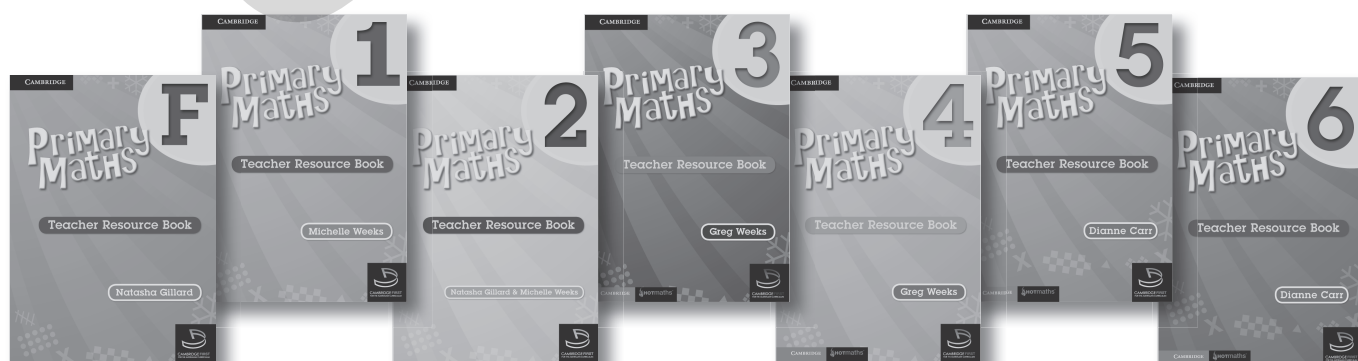
The philosophy upon which *Primary Maths* is based is the idea that students learn most effectively through physical and mental activities related to experiences in their world. The series breathes life into the mathematics curriculum by providing experiences that introduce and consolidate fundamental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

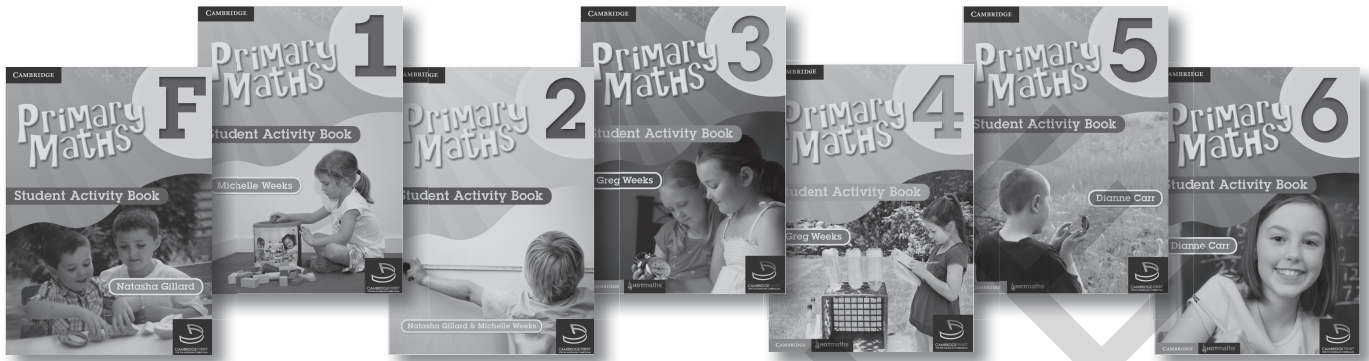
Ideas on how to introduce and reflect on each lesson, tasks to support learners along the sequence, teaching tips and additional blackline masters and assessment pages are provided.

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

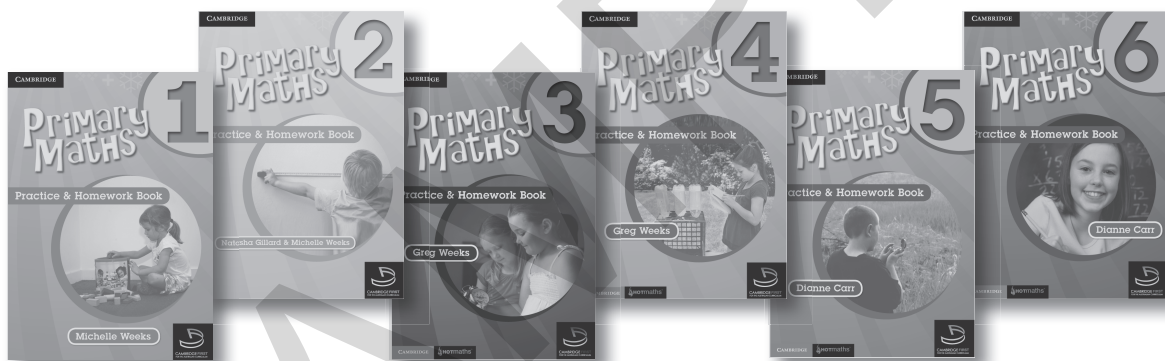
The *Primary Maths Teacher Resource Book* is the foundation of the series. It contains a yearly program, structured in 36 units of work, and includes weekly plans for teaching and learning, activities linked to assessment, teaching notes, half-yearly and yearly assessments, and blackline master pages.



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.



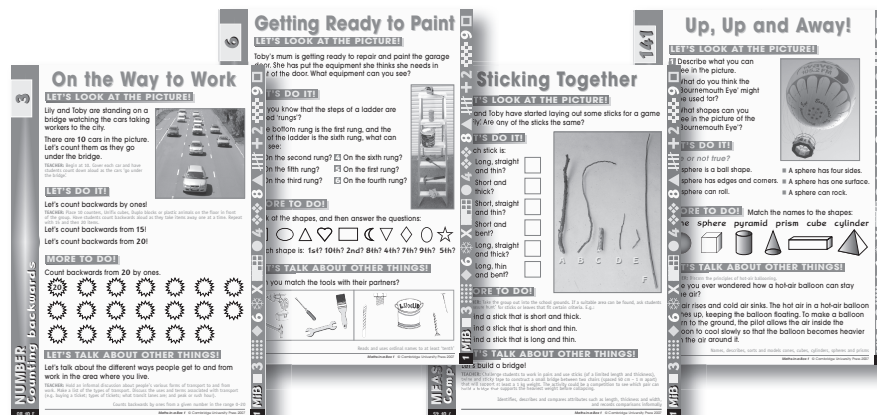
The *Primary Maths Practice & Homework Book* contains 36 double-page units of work that complement the *Primary Maths Student Activity Book*. It can be used for homework or to provide extra practice in the classroom.



Primary Maths includes links to relevant Cambridge HOTmaths lessons and activities at years 3 to 6. 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.cambridge.edu.au/hotmaths

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 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 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, *Practice & Homework Book* pages, the *BLMs* and the *Maths-in-a-Box* cards.

Unit 4 Measurement and Geometry: Shape

Unit focus

- Describe the features of three-dimensional objects
- Name, describe, sort and model cubes, cones, cylinders, spheres and prisms
- Recognise three-dimensional objects in pictures and the environment and presented in different orientations
- Identify two-dimensional shapes as faces of three-dimensional objects

At a glance

Resources

- a box with lids cut in the side
- blocks
- a variety of 3D objects and models
- rectangles
- triangles
- circles
- polyhedrons
- CD/DVD player
- pipe cleaners

Language

- cylinder, cube, prism, sphere, cone, pyramid, rectangle, square, circle, triangle, corner, edges, face, top view, bottom view, side view, back view, perspective, orientation

Link-ups

- Primary Maths Student Activity Book pp. 87–89
- Primary Maths Practice & Homework Book pp. 87–89
- Teacher Resource Book blackline masters BLM 14
- Maths-in-a-Box cards 14A, 14B, 14C and 14D

Problem of the week

Which 3D objects from the classroom could have formed each of these shapes?

Warm-ups

Double ten-ten

Give each student a blank ten-ten grid (BLM 14) and ask them to write 4 of the following numbers in each square: 4, 10, 12, 14, 16, 18 or 20 (numbers can be repeated). Randomly call out 4, 4, 4, 4, 7, 8, or 10. Students use 4 blocks the number you call out and one of the squares from their ten-ten grid to illustrate and compare play and one number ten-ten grid.

Mystery box

An instructor in a circle and places a variety of everyday 3D objects in the centre, such as a soccer ball, water bottle, tin can, chocolate, cereal box, soap, camera and pencil. Ask students to draw their own guess as to what a model.

Developing activities

What can we see?

Divide students into small groups and have each group sit around a table. Place an object in the centre of the table and encourage students to draw what they see from where they are sitting. When complete, have students rotate around the table to draw the same object from the new viewpoint. Volunteer the group's drawings and ask the class to match each drawing to the viewpoint it was drawn from. Have students then complete p. 88 of the Student Activity Book.

Pyramids and prisms

Display card 14 from *Maths-in-a-Box* 1 and discuss the shapes that have been made using geometric. Have students answer the questions on the card to find the different 3D shapes that can be based on the base of the 3D models.

Shapely shadows

Show students how to use a torch to project a shadow of a shape onto a piece of paper. Divide students into small groups and give each group a different 3D object and a torch. Ask students to predict what its shadow will look like. Draw it and then see if they were correct by making the shadow. Ask one student to hold the 3D shape while another student holds the torch to project the shadow. Have a short student trial around the class and, if possible, take the 2D shape to the model. Have students repeat the activity again using the same 3D object but changing its orientation to produce the shadow from a different viewpoint. Discuss the different 2D shapes that resulted from the same 3D object.

Which shape?

Display card 15 from *Maths-in-a-Box* 1 and ask students to answer the questions on the card. Discuss how 3D objects can be based on the faces of 2D objects. Give each student 6 pipe cleaners. Show them a 2D object and ask them to use the pipe cleaners to make the shape of one of its faces. Repeat for different 2D objects.

Faces of 3D objects

Ask students to work in pairs with a variety of 3D objects. Encourage groups to discuss and identify which 2D shapes are represented as faces on the different objects. Give each student a piece of paper. Ask them to select a 3D object and make one face to project onto their paper. Have them repeat this process with all the faces of their 3D object. Look at the different 2D shapes that are created using the faces for each object. Have students then complete p. 89 of the Student Activity Book.

Extending activities

Top views

Ask students to record as many objects as possible in the room that are:

- a rectangular top view
- a rectangular top view
- a square top view

3D object number sentences

Ask students to write number sentences for, and find the answer to, the following problems:

- How many square faces do 3 cubes have?
- How many triangular faces do 3 triangular pyramids have?
- How many square faces do 7 square pyramids have?
- How many circular faces do 4 cylinders have?

2D shapes and 3D objects

Ask students to write number sentences for, and find the answer to, the following problems:

- How many 2D shapes can be used to make a 3D object?
- How many 3D objects can be made from 2D shapes?

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.

Real-life illustrations and examples

Information boxes

Cubic centimetres and millilitres

1. Fill each of the containers below with cubic centimetre blocks and record its capacity, in cubic units, in the table.

Container	Number of blocks (cm ³)	Volume (in millilitres (mL))
Lunch box		
Plastic box		
Small container		

2. How do the values for the capacity in cubic centimetres and the capacity in millilitres compare? What do you notice about your answers?

3. Complete the following statement:
The volume of one cubic centimetre block (1 cm³) is the volume of one millilitre (1 mL) at room temperature.

4. Peter bought this fish tank. It measures 175 cm across, 85 cm deep and 50 cm wide.

a. What volume, in cubic centimetres, does this fish tank occupy?

b. If Peter fills his fish tank to the rim, how many millilitres of water has he used? How many litres is that?

Volume of irregular solids

The volume of water that is displaced (moved) when an object is submerged is equal to the volume of the object. Use the relationship between cubic units and millilitres to help you.

1. Obtain a measuring cup that holds 500 mL of liquid. Add 100 mL of it.

2. Place each of these objects, one at a time, into the measuring cup. Record the volume of the water that the object is submerged. When you remove the object, check that the water level returns to 100 mL. If it doesn't, add water before the next object.

Object	Volume before	Volume after	Volume of water displaced	Vol. of object
Maths-in-a-Box	300 mL			
Lump of plasticine	300 mL			
Plastic figure	300 mL			
	300 mL			
	300 mL			

3. Calculate the volume of water that was displaced by each object. Use this to find the volume, in cubic centimetres, of the objects on the table.

4. Use the volume of water displaced to help you calculate the volume, in cubic centimetres, of the following objects.

a. A plug

b. A can of tuna

Small volumes

1. Obtain a medicine cup that holds 40 mL of liquid. Add 10 mL of water to it.

2. Place each of the objects in the table below, and three of your own choice, into the measuring cup, one at a time. Record the volume of the water before the object is submerged. When you remove the object, check that the water level returns to 10 mL. If it doesn't, add water before measuring the next object.

Object	Volume before	Volume after	Volume of water displaced	Volume of object (cm ³)
20c coin	30 mL			
Marble	30 mL			
Keyring	30 mL			
	30 mL			
	30 mL			

3. Calculate the volume of water displaced by each object and use this to find the volume, in cubic centimetres, of the objects. Complete the table with the following objects in cubic centimetres.

a. Lump of plasticine

b. Necklace

Other volumes

1. The monthly water usage of the O'Brien family is shown in the table below.

Month	Water usage (kilolitres)
January	14.9
February	26.25
March	27.655
April	27.009
May	28.56
June	27.4
July	28.045
August	27.44
September	20.95
October	21.8
November	20.65
December	21.068

a. What is a kilolitre?

b. Calculate the total volume, in kilolitres, of water used by the O'Brien family during the year.

c. How many litres is that?

d. Suggest a possible reason that the value for August is so low.

e. There was a large drop in the family's usage of water after August. Suggest a possible reason their water usage reduced at this time.

2. The engine of motorcycles and cars are often referred to by their capacity expressed in cc. A motorcycle like that in the picture is said to have an 800 cc engine.

a. What does 'cc' stand for?

b. Use the internet or another source to find out which volume this measurement refers to. Write an answer in the space below.

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*.

Weekly workout: an extended, open-ended week-long task that broadens student understanding and requires them to 'Do it', 'Make It', 'Draw It', 'Design It', 'Find It', 'Investigate It', 'Research it', 'Solve It', 'Create it', 'Play it', 'Record it' or 'Discuss It'.

Quick questions: exercises in mental computation

Recall it: a review of prior content

Unit 23

Solve it

- Find a map of your local area on Google Maps. Locate 2 nearby parks or sports grounds. One of these could be your school oval.
- Select the 'map' view rather than the 'satellite' view. Draw a diagram of each park. Use the scale on the map to find the length and width of each park.
- Calculate the area of each park. Which one has the larger area?
- Locate 2 different car parks in your area. Following the same steps, find out which one has the larger area.
- Compare the total combined areas of the 2 parks to the total combined area of the car parks. Which is larger?

Quick questions

- Write the number for \$45 m in full.
- $185 + 9658 = \underline{\hspace{2cm}} + 2465$
- $8942 - 465 = \underline{\hspace{2cm}}$
- $48 \times 62 = \underline{\hspace{2cm}}$
- Write your answer as a mixed number.
 $\frac{4616}{7} = \underline{\hspace{2cm}}$
- $8374 \text{ cm} = \underline{\hspace{2cm}} \text{ mm}$
- Draw a rectangle around the corners of this triangle.
- Which object has the smallest volume?
- Which quadrilaterals do not contain right angles?
- Write the next 3 numbers in the pattern.
 $\frac{1}{2}, 1, 1\frac{1}{2}, 2, 2\frac{1}{2}$
- Change $\frac{25}{100}$ into a mixed number.
- $\frac{3}{4}$ of 90 = $\underline{\hspace{2cm}}$
- Circle the equivalent fractions.
 $\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{4}{8}$
- $5.92 + 3.296 = \underline{\hspace{2cm}}$
- $34\ 930 \text{ kg} = \underline{\hspace{2cm}} \text{ t}$
- A wall is painted at 1:30 p.m. and is dry at 8:45 p.m. the same day. How long did it take to dry?
- What is the average of these numbers:
52, 34, 56, 43, 82, 32
- Which net would form a pentagonal prism?
A B

46 Length

Unit 23

Recall it

- Measure the perimeter of each shape. Record your answer in the units shown.
a $\underline{\hspace{2cm}} \text{ mm}$
b $\underline{\hspace{2cm}} \text{ cm}$
c $\underline{\hspace{2cm}} \text{ cm}$
 $\underline{\hspace{2cm}} \text{ m}$
 $\underline{\hspace{2cm}} \text{ km}$
- Abdul has 12 m of wood to make a frame for a sandpit.
a In the space provided, draw 2 different sandpits that Abdul could make with this length of wood.
b Which one has the larger area?

Focus on it

This diagram shows a scale drawing of Tran's backyard. Use this drawing to help you answer the questions.

- What are the dimensions of the garden shed?
- If the backyard was re-fenced, how many metres of fencing would be needed? Give your answer to the nearest 10 cm.
- Tran asked for a trampoline as a birthday present. Trampolines are built with diameters of 2 m, 3 m or 4 m. Which trampoline/s will fit in Tran's backyard?

Length 47

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

Introduction

Primary Maths is an all-new series of print and digital resources written especially for the years 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 take 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 2, Understanding includes connecting number calculations with counting sequences, partitioning and combining numbers flexibly, and identifying and describing the relationship between addition and subtraction and between multiplication and division.


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 recalling factual knowledge and concepts readily. 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 2, Fluency includes counting numbers in sequences readily, using units iteratively to compare measurements, listing possible outcomes of chance events, and describing and comparing time durations.

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 2, Problem Solving includes formulating problems from authentic situations, making models and using number sentences that represent problem situations, planning routes on maps, and matching transformations with their original shape.

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 2, Reasoning includes using known facts to derive strategies for unfamiliar calculations, comparing and contrasting related models of operations, describing connections between 2D and 3D representations, and creating and interpreting simple representations of data.

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.

Teaching sequence

Year 2 Term 1

Unit 1	Unit 2	Unit 3
<i>Number and Place Value</i> ACMNA027	<i>Addition and Subtraction</i> ACMNA029 ACMNA030	<i>Area</i> ACMMG037
<ul style="list-style-type: none"> • Represent and order numbers up to 300 • Count forwards and backwards by ones • Identify the number before and after a given number 	<ul style="list-style-type: none"> • Use and explain strategies for solving addition and subtraction problems • Use counting on as a strategy for solving addition problems • Use counting back as a strategy for solving subtraction problems • Use doubles and near doubles as a strategy for addition 	<ul style="list-style-type: none"> • Compare and order several shapes and objects based on area using appropriate uniform informal units • Compare and order two or more areas using informal units • Record area by referring to the number and type of units used • Draw the spatial structure of repeated units
Unit 4	Unit 5	Unit 6
<i>Shape</i> ACMMG043	<i>Shape</i> ACMMG042	<i>Time</i> ACMMG040 ACMMG041
<ul style="list-style-type: none"> • Describe the features of three-dimensional objects • Name, describe, sort and model cubes, cones, cylinders, spheres and prisms • Recognise three-dimensional objects in pictures and the environment and presented in different orientations • Identify two-dimensional shapes as faces of three-dimensional objects 	<ul style="list-style-type: none"> • Describe and draw two-dimensional shapes with and without digital technologies • Identify key features of squares, rectangles, triangles, kites, rhombuses, circles, hexagons and trapeziums • Count edges and corners of 2D shapes 	<ul style="list-style-type: none"> • Name and order months and seasons • Use a calendar to identify the date and determine the number of days in each month • Use calendars to locate specific information such as finding a given date and saying what day it is • Identify personal or culturally specific days
Unit 7	Unit 8	Unit 9
<i>Multiplication and Division</i> ACMNA031	<i>Chance</i> ACMSP047	<i>Patterns and Algebra</i> ACMNA035 ACMNA036
<ul style="list-style-type: none"> • Represent multiplication as groups and arrays • Describe equal rows and solve problems involving equal rows • Recognise multiplication as repeated addition 	<ul style="list-style-type: none"> • Identify practical activities and everyday events that involve chance • Describe outcomes as 'likely' or 'unlikely' • Identify some events as 'certain' or 'impossible' • Classify a list of everyday events according to how likely they are to happen, using the language of chance 	<ul style="list-style-type: none"> • Continue number patterns involving skip counting • Represent number patterns on a number line • Build addition facts to at least 12 • Relate addition and subtraction facts

Year 2

Term 2

Unit 10	Unit 11	Unit 12
Number and Place Value ACMNA027	Volume and Capacity ACMMG037	Addition and Subtraction ACMNA029 ACMNA030
<ul style="list-style-type: none"> • Apply an understanding of place value to represent and order numbers • Count forwards and backwards by ones • Identify the number before and after a given number 	<ul style="list-style-type: none"> • Use appropriate informal units to estimate, measure and record volume and capacity • Compare and order the capacities of two or more containers and the volumes of two or more models or objects • Packs cubic units into rectangular containers so there are no gaps 	<ul style="list-style-type: none"> • Use and explain strategies for solving addition and subtraction problems • Use a hundreds chart to assist with addition and subtraction • Use 'building to ten' as a strategy for solving addition problems
Unit 13	Unit 14	Unit 15
Location ACMMG044	Multiplication and Division ACMNA031 ACMNA032	Fractions and Decimals ACMNA033
<ul style="list-style-type: none"> • Interpret simple maps of familiar locations and identify relative positions of key features • Describe the position of objects in models, photographs and drawings • Describe the path from one location to another on a drawing • Use drawings to represent the position of objects along a path • Construct arrangements of objects from a set of directions 	<ul style="list-style-type: none"> • Represent multiplication as repeated addition • Represent division as grouping into equal sets 	<ul style="list-style-type: none"> • Model and describe halves and quarters of a shape • Model and describe halves and quarters of a collection
Unit 16	Unit 17	Unit 18
Length ACMMG037	Data ACMSP049 ACMSP050	Area ACMMG037
<ul style="list-style-type: none"> • Compare and order several shapes and objects based on length using appropriate uniform informal units • Recognise the need for a formal unit to measure lengths or distances • Compare lengths using finger length, counters, hand spans or a piece of string 	<ul style="list-style-type: none"> • Collect, check and classify data • Interpret information presented in a table • Recognise the usefulness of tally marks • Organise data into a simple column graph and interpret results • Identify categories of data and use them to sort data 	<ul style="list-style-type: none"> • Compare and order several shapes and objects based on area using appropriate uniform informal units • Use appropriate informal units to estimate and measure area • Draw the spatial structure (grid) of the repeated units • Describe why the area remains constant when units are rearranged • Record area by referring to the number and type of units used

Year 2

Term 3

Unit 19	Unit 20	Unit 21
Number and Place Value ACMNA027	Mass ACMMG038	Addition and Subtraction ACMNA029 ACMNA030
<ul style="list-style-type: none"> • Apply an understanding of place value to represent and order numbers • Count forwards and backwards by ones • Identify the number before and after a given number 	<ul style="list-style-type: none"> • Compare masses of objects using balance scales • Compare and order the masses of two or more objects using informal units • Use an equal arm balance to find two collections of objects that have the same mass • Calculate differences in mass by measuring and comparing 	<ul style="list-style-type: none"> • Use and explain strategies for solving addition and subtraction problems • Represent addition on a number line • Add two 2-digit numbers using trading • Make generalisations involving addition
Unit 22	Unit 23	Unit 24
Shape ACMMG043	Addition and Subtraction ACMNA029 ACMNA030 ACMNA034	Multiplication and Division ACMNA031
<ul style="list-style-type: none"> • Describe the features of three-dimensional objects • Identify geometric features such as the number of faces, corners or edges • Identify two-dimensional shapes as faces of three-dimensional objects • Recognise that objects look different from different views • Represent three-dimensional objects by making models and drawings 	<ul style="list-style-type: none"> • Use and explain strategies for solving addition and subtraction problems • Subtract a one-digit number from a two-digit number with trading • Count collections of coins • Identify equivalent values in collections of coins 	<ul style="list-style-type: none"> • Represent multiplication as repeated addition • Label collections of equal rows and equal groups using words and symbols • Model the commutative property of multiplication
Unit 25	Unit 26	Unit 27
Fractions and Decimals ACMNA033	Volume and Capacity ACMMG037	Location ACMMG044
<ul style="list-style-type: none"> • Model and describe halves, quarters and eighths of a whole shape • Model and describe halves, quarters and eighths of a collection 	<ul style="list-style-type: none"> • Compare and order several shapes and objects based on volume and capacity using appropriate uniform informal units • Use appropriate informal units to estimate, measure and record volume and capacity • Compare and order the capacities of two or more objects by marking the change in water level when each is submerged • Compare capacities using a range of containers 	<ul style="list-style-type: none"> • Interpret simple maps of familiar locations and identify relative positions of key features • Describe the position of objects in models from memory, photographs and drawings • Make simple models from memory, photographs, drawing or descriptions • Describe the path from one location to another on a drawing • Understand that we use representations of objects and their positions, such as maps, to allow us to receive and give directions and to describe place

Year 2

Term 4

Unit 28	Unit 29	Unit 30
Number and Place Value ACMNA026 ACMNA027	Addition and Subtraction ACMNA030 ACMNA034	Length ACMMG037
<ul style="list-style-type: none"> Investigate number sequences Recognise, model, represent and order numbers to 1000 Use the terms 'more than' and 'less than' to compare numbers Identify missing elements in number patterns 	<ul style="list-style-type: none"> Subtract a two-digit number from a two-digit number with trading Perform simple calculations with money Make generalisations involving addition and subtraction 	<ul style="list-style-type: none"> Compare and order several shapes and objects based on length using appropriate uniform informal units Recognise the need for a formal unit to measure lengths/distances Uses the metre as a unit to measure lengths/distances Measures lengths or metres to the nearest metre or half-metre
Unit 31	Unit 32	Unit 33
Transformation ACMMG045 ACMMG046	Time ACMMG039	Financial Maths ACMNA030 ACMNA034
<ul style="list-style-type: none"> Investigate the effect of one-step slides and flips with and without digital technologies Understand that objects can be moved but changing position does not alter an object's size or features Identify and describe half and quarter turns Predict and reproduce a pattern based around half and quarter turns of a shape and sketching the next element in the pattern 	<ul style="list-style-type: none"> Tell time to the quarter hour using the language of 'past' and 'to' Describe the characteristics of half past and quarter past times on an analogue clock 	<ul style="list-style-type: none"> Use and explain strategies for solving addition and subtraction problems Uses the equals sign to record equivalent number relationships Count and order small collections of Australian coins and notes according to their value
Unit 34	Unit 35	Unit 36
Multiplication and Division ACMNA031 ACMNA032	Shape ACMMG042	Data ACMSP048 ACMSP049 ACMSP050
<ul style="list-style-type: none"> Model and use strategies for multiplication and division Use repeated addition or repeated subtraction as a strategy to solve problems Recognise the symbols for multiplication and division 	<ul style="list-style-type: none"> Describe and draw two-dimensional shapes with or without digital technologies Identify and name parallel, vertical and horizontal lines in pictures and the environment Identify key features of two-dimensional shapes such as straight, vertical, parallel or horizontal lines 	<ul style="list-style-type: none"> Create displays of data, using lists, tables and picture graphs, and interpret them Identify a question based on one categorical variable; gather data relevant to the question Organise data into a simple column graph and interpret results Create picture graphs to represent data using one-to-one correspondence