AUSTRALIAN Signpost MATHS
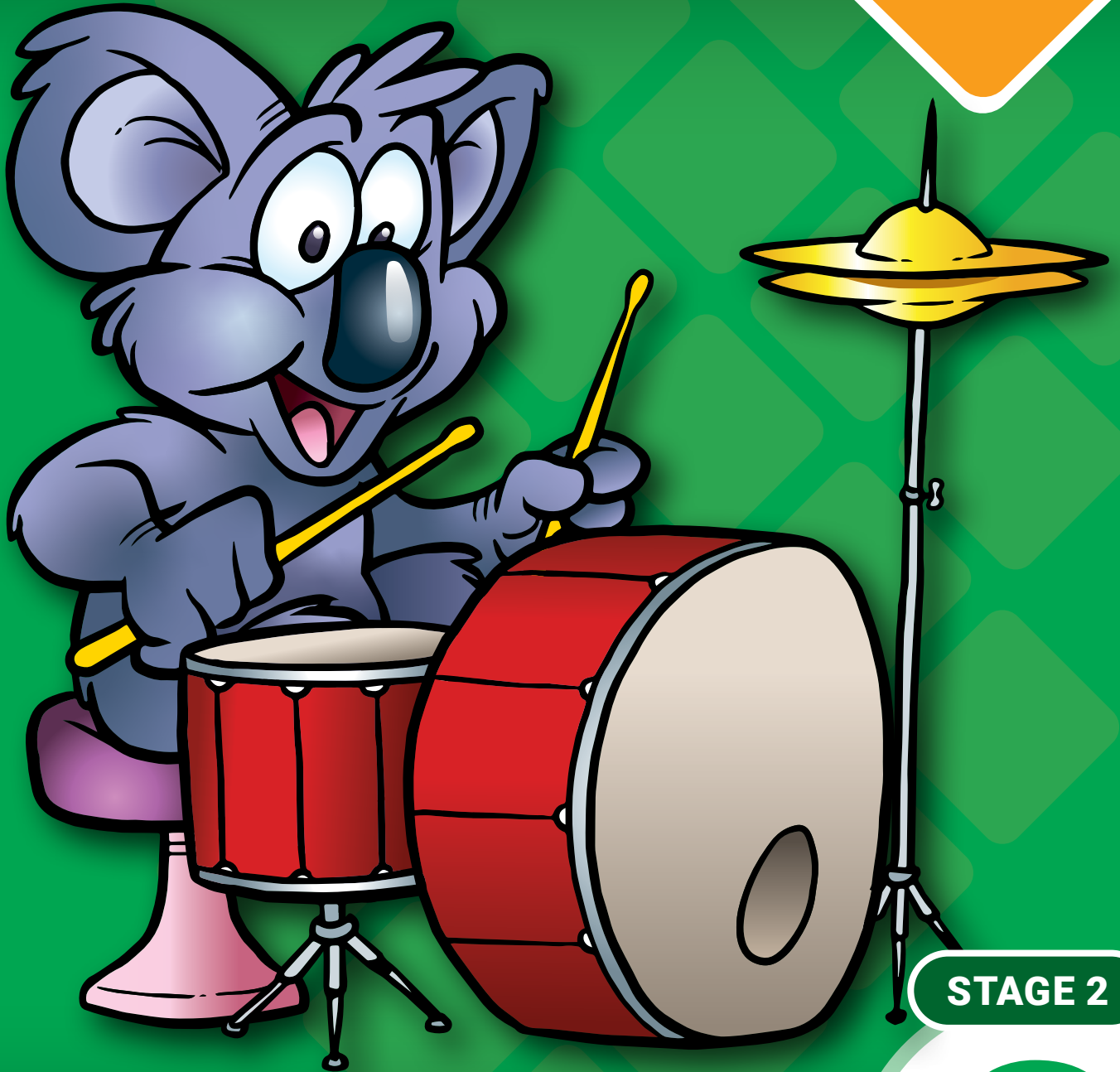
NSW

STAGE 2

3

Alan McSeveny   Rachel McSeveny   Diane McSeveny-Foster

AUSTRALIAN
Signpost
MATHS NSW

STAGE 2

3

Alan McSeveny   Rachel McSeveny   Diane McSeveny-Foster

Maths is fun with Australian Signpost Maths NSW.

1 fish 2 fish

What is Australian Signpost Maths?

Australian Signpost Maths NSW is a mathematics program providing direction and support for teaching and learning. The series covers the content and skills presented in the NSW Mathematics Syllabus K–6, 2024.

A Student Book and an online Teacher Resource are provided for Kindergarten (Early Stage 1).

For Years 1 to 6, a Student Book, an online Teacher Resource and a Mentals Book are provided for each year level. The online Teacher Resources provide a wealth of support for teachers.

The content has been carefully sequenced within each year level and across the K–6 series to take into account students' expected mathematical development. However, from the rich and varied material provided, teachers can develop individual learning programs to meet the needs of each student.

The Student Books are designed to support explicit teaching methods. Many group activities are provided in Activity, Investigation and Fun spots within the Student Books and the online Teacher Resource.

To maximise the benefits of the program, the Student Book, the online Teacher Resource and the Mentals Book should be used together.

Student Books

Mentals Books

Teacher Resource

This is Australian Signpost Maths New South Wales.

Structure of Australian Signpost Maths NSW

In the Year 3 to 6 books, the worksheet pages cover all three elements: Number and algebra, Measurement and space, and Statistics and probability.

These are presented in five chapters:
• Number and algebra
• Operations and algebra
• Measurement
• Space
• Statistics and probability.

This gives teachers flexibility in programming that is more appropriate to Years 3 to 6.

The contents cross-reference allows teachers to quickly find the pages where each concept has been covered.

Within the program, explicit teaching, critical and creative thinking, language development and identification and treatment of weaknesses are given high priority.

Identifying and addressing areas of need

Five progress tests are designed to identify each student's areas of need, and the follow-up program after each of the tests is designed to address these needs. A reference to the relevant worksheet page is given for each test question. A remediation record page is used to track the student's progress.

Parallel progress retests are provided for further testing after remediation has taken place.

These testing resources can be found in the online Teacher Resource.

Special features of Australian Signpost Maths NSW

● **The traffic light icons**

These are found on the top right of each worksheet page in the Student Books.
They allow students to assess their own progress and give feedback to the teacher.

● **Green:** I found this work easy.
● **Orange:** I found some work on the page difficult.
● **Red:** I don't understand the work on this page.

● **Dictionary**

Terms used in the Student Book and terms that should be understood at this level are recorded here to provide a reference for students and teachers. This is found on pages xiv–xxii of this book.
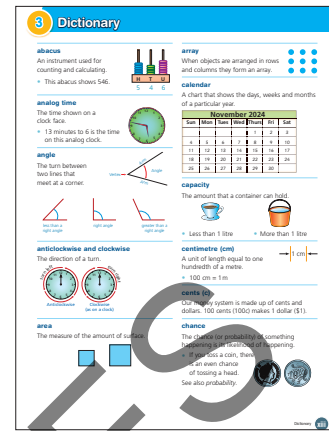
● **ID cards (Years 1 to 6)**

These cards review the language of Mathematics by asking students to identify common terms, shapes and symbols. They are designed to be reused and are found in the online Teacher Resource and in the front of the Mentals Books.
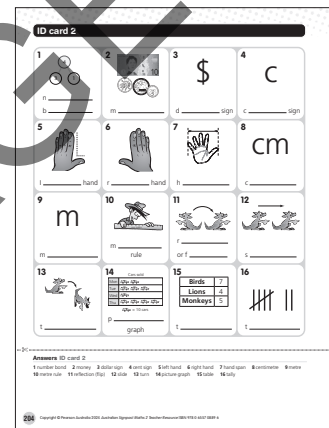
● **Progress tests**

These allow the teacher to identify each student's strengths and weaknesses. Cross-references for each question direct teachers and students to the pages where that work is introduced. Tables are provided to record the follow-up that takes place and parallel tests are provided for retesting. These tests can be found in the online Teacher Resource.
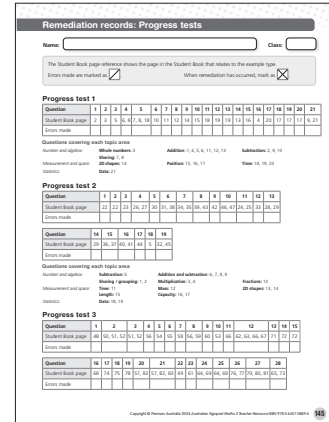
● **Year 3 Consolidation booklet**

This booklet is found in the online Teacher Resource. It is designed to reinforce work completed in class and provides practice of important skills and addition and subtraction facts. The booklet can be used when there is limited supervision or when a student finishes classwork early.
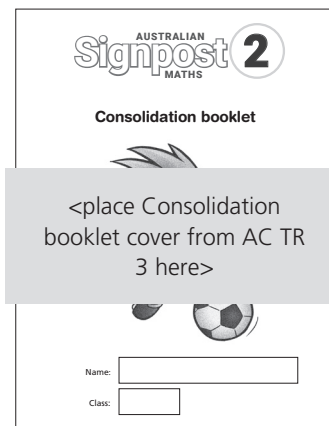
● **Answers**

These are supplied in the Student Book and the online Teacher Resource.

● **Blackline masters (BLM)**

References are made to the blackline masters in the online Teacher Resource suggestions provided for each student work page.

● **Differentiation**

Each Student Book work page has a Teacher Resource page to support it. Cross-references direct the teacher to pages where the concept is introduced and developed. These references may be from the Student Book for the previous year, the current year or the next year.

The Teacher Resource support pages provide additional learning activities for students who need remediation or extension activities. The blackline masters provide activities to support students of various learning abilities.

● **Cartoons**

Cartoons are used to motivate and instruct.

● **Extra support pages**

Addition and subtraction facts are reinforced in Extra Support 1–4.
The algorithm strategy pages extend the fast worker.
These are cross-referenced to the Student Book pages.

Australian Signpost Maths NSW icons

Signpost icons are used throughout the book as cues to the essential nature of exercises and activities, and as a guide to ways of engaging with them. These icons often indicate alternative or more concrete approaches to dealing with concepts.

CONCEPT This icon highlights **important rules and concepts** occurring throughout the book. It often appears with worked examples.

ACTIVITY Activities provide **applications and enrichment**. These activities usually involve the use of concrete materials and partner or group work.

FUN SPOT These enjoyable activities are used to **motivate and involve** students in mathematical pursuits. They usually involve games and puzzles.

INVESTIGATION Investigations allow students to **explore and discover** maths concepts.

ICT These activities involve the use of computers or other technology.

I'm on the top of each page.

Structure of the New South Wales Mathematics Syllabus K-6

The NSW Mathematics Syllabus content is presented in three strands:

1 Number and algebra   **2** Measurement and space   **3** Statistics and probability
Working mathematically pervades each of these strands.

Textbook structure
Within the Year 3 **Contents** (pages vi to xi), we show related pages using these categories:

Chapter 1: Number and algebra
• Counting, number   • Place value   • Rounding   • Fractions   • Patterns, algebra

Chapter 2: Operations and algebra
• Addition   • Subtraction   • Multiplication   • Division   • Mental strategies   • Number patterns
• Money   • Problem solving

Chapter 3: Measurement
• Length   • Area   • Volume   • Capacity   • Mass   • Telling the time   • Duration   • Problem solving

Chapter 4: Space
• 2D space   • Angles, lines   • Symmetry, turning   • 3D objects   • Position, directions

Chapter 5: Statistics and probability
• Collecting data   • Surveys   • Creating data displays   • Analysing data displays
• Chance language   • Chance experiments

The **Cross-reference** (pages xii and xiii) give a clear indication of where syllabus content is addressed.
The **Suggested program** is provided in the Contents pages and aligns with the Mentals Book and Progress tests and Retests.
Each Mentals unit reviews the previous 2 weeks' content from the Student Book suggested program.

Suggested program

This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.

Page	Unit	Number and algebra — Title	Content	Counting, number	Place value	Rounding	Fractions	Patterns, algebra	Suggested program
1	1:01	Counting		●				●	Term 1 — Week 3
2	1:02	Counting		●					
3	1:03	Numbers to 1000		●	●				
4	1:04	Numbers to 1000		●	●				Week 4
5	1:05	Numbers to 1000			●				
6	1:06	Rounding to the nearest 10			●				
7	1:07	Rounding to the nearest 100			●				Week 10
8	1:08	Numbers to 1000		●	●	●			
9	1:09	Numbers to 1000		●				●	Term 2 — Week 11
10	1:10	Fractions of a group					●		
11	1:11	Fractions of a whole					●		Week 14
12	1:12	Numbers to 10 000		●	●				
13	1:13	Numbers to 10 000		●	●				Week 15
14	1:14	Fractions					●		
15	1:15	Fractions					●		
16	1:16	What's the rule?		●				●	Week 18
17	1:17	Number patterns		●	●			●	
18	1:18	Numbers to 10 000		●	●				Term 3 — Week 21
19	1:19	Place value to 10 000		●	●	●			
20	1:20	Fractions with circles					●		
21	1:21	Using fractions					●		Week 22
22	1:22	Numbers to 10 000		●	●				
23	1:23	Numbers to 10 000			●				Week 26
24	1:24	Expanded notation		●	●				
25	1:25	Fractions of a group					●		Week 32
26	1:26	Fractions of a whole					●		
27	1:27	Numbers to 10 000			●			●	
28	1:28	Numbers over 10 000		●	●				Week 34
29	1:29	Numbers over 10 000		●	●				

* The teacher will decide when testing occurs. The Progress tests are found in the online Teacher Resource.

* The first two units of the Mentals Book review the previous year and could be completed in Weeks 1 and 2.

Page	Unit	Title	Content	Addition	Subtraction	Multiplication	Division	Mental strategies	Number patterns	Money	Problem solving	Suggested program
		Operations and algebra										**Suggested program** This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.
30	2:01	Arrays				●						Term 1
31	2:02	Square numbers				●						Week 5
32	2:03	Addition and subtraction		●	●			●				
33	2:04	Number facts, x 2				●						Week 6
34	2:05	Number facts, x 5, x 10				●						
35	2:06	Multiplication facts				●						
36	2:07	2, 5 and 10 times tables				●			●			Week 7
37	2:08	Patterns in + and −		●	●			●	●		●	
38	2:09	Relating addition and subtraction		●	●							Week 8
39	2:10	Money		●						●		
40	2:11	Shopping		●						●		Week 9
41	2:12	Money		●						●		
42	2:13	Addition to 99		●								Term 2
43	2:14	Jump strategy		●	●			●				Week 12
44	2:15	Jump strategy		●	●							
45	2:16	Equalities			●							Week 13
46	2:17	Mental strategies		●				●				
47	2:18	Number facts, × 3 extension				●			●			Week 16
48	2:19	× 3 extension				●			●			
49	2:20	Multiplication facts				●						Week 17
50	2:21	Number facts, × 4				●			●			
51	2:22	Times tables				●						Week 19
52	2:23	Number facts, multiplication				●			●			
53	2:24	Problem solving		●	●	●					●	
54	2:25	Inverse operations, × and ÷				●	●					Term 3
55	2:26	Relating × and ÷				●	●					Week 23
56	2:27	× and ÷ fact families				●	●					
57	2:28	Relating × and ÷				●	●					Week 24
58	2:29	Linking × and ÷				●	●					
59	2:30	÷ facts from × facts				●	●					Week 25
60	2:31	× and ÷ tables				●	●					
61	2:32	Problem solving		●	●	●	●				●	
62	2:33	Addition strategies		●							●	Week 26
63	2:34	Subtraction strategies			●							
64	2:35	Levelling and constant difference		●							●	Week 27
65	2:36	Change from $2		●						●	●	
66	2:37	Problem solving		●								
67	2:38	Addition to 99, no trading		●								Week 28
68	2:39	Subtraction, no trading		●						●		
69	2:40	Addition to 99 with trading		●							●	
70	2:41	Addition with trading			●							Week 29
71	2:42	Addition with 2-digit numbers			●							
72	2:43	Addition, trading for 100			●							
73	2:44	Addition to 999 with one trade		●	●							Week 30
74	2:45	Addition, two trades		●				●			●	

Operations and algebra			Content	Addition	Subtraction	Multiplication	Division	Mental strategies	Number patterns	Money	Problem solving	Suggested program
Page	**Unit**	**Title**										This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.
75	2:46	Subtraction with trading to 99			●			●		●		Term 4
76	2:47	Subtraction with trading			●			●			●	Week 31
77	2:48	Subtraction with trading		●								Week 32
78	2:49	Checking subtraction by addition		●	●						●	

* The teacher will decide when testing occurs. The Progress Tests and Retests are found in the online Teacher Resource.

SAMPLE PAGES

Measurement

Page	Unit	Title	Content	Length	Area	Volume	Capacity	Mass	Telling the time	Duration	Problem solving	Suggested program
79	3:01	Revision of length		●								Term 1 / Week 7
80	3:02	Length and width		●								Week 7
81	3:03	Measuring with centimetres		●								Week 7
82	3:04	Clocks							●	●		Week 8
83	3:05	Analog time							●			Week 8
84	3:06	Analog time							●			Week 8
85	3:07	Capacity review				●	●					Week 9
86	3:08	Estimating the litre					●					Week 9
87	3:09	The litre				●	●					Week 9
88	3:10	Metres and centimetres		●								Term 2 / Week 11
89	3:11	Recording length		●								Week 11
90	3:12	Measuring distance		●								Week 12
91	3:13	Measuring length		●								Week 12
92	3:14	Time, minutes past							●			Week 15
93	3:15	Time, minutes to							●	●		Week 15
94	3:16	Time, minutes past and to							●	●		Week 15
95	3:17	The kilogram						●				Week 16
96	3:18	Comparing mass						●				Week 16
97	3:19	Using the kilogram						●				Term 3 / Week 21
98	3:20	Mass problem solving						●			●	Week 21
99	3:21	Area			●							Week 22
100	3:22	Area using square centimetres			●							Week 22
101	3:23	Square centimetres			●							Week 24
102	3:24	Area			●							Week 24
103	3:25	Using litres					●					Week 25
104	3:26	Capacity problem solving					●				●	Week 25
105	3:27	The square metre			●							Week 28
106	3:28	The square metre			●							Week 28
107	3:29	The millimetre		●								Term 4 / Week 31
108	3:30	Using the ruler		●								Week 31
109	3:31	Length problem solving		●							●	Week 31
110	3:32	The cubic centimetre				●					●	Week 33
111	3:33	The cubic centimetre				●						Week 33
112	3:34	Standard metric units		●			●	●				Week 35
113	3:35	Personal benchmarks		●	●	●	●	●				Week 35
114	3:36	The calendar								●		Week 36
115	3:37	The calendar								●		Week 36

Suggested program: This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.

* 'Money' can be found in Chapter 2.

* 'Angles' can be found in Chapter 4.

* The teacher will decide when testing occurs. The Progress Tests and Retests are found in the online Teacher Resource.

Space			Content	2D space	Angles, lines	Symmetry, turning	3D objects	Position, directions	Suggested program
Page	Unit	Title							This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.
116	4:01	Symmetry				●			Week 3 — Term 1
117	4:02	Properties of 2D objects		●					Week 4
118	4:03	Symmetry around us				●			Week 4
119	4:04	Properties of 3D objects					●		Week 5
120	4:05	Properties of 3D objects					●		Week 5
121	4:06	Position and giving directions						●	Week 13 — Term 2
122	4:07	Giving directions						●	Week 13
123	4:08	Regular and irregular shapes		●					Week 17
124	4:09	Parallel and perpendicular lines		●					Week 17
125	4:10	The rhombus and the kite		●					Week 18
126	4:11	Shapes revision		●					Week 18
127	4:12	Prisms and cylinders					●		Week 19
128	4:13	Pyramids					●		Week 19
129	4:14	Investigating angles			●				Week 20
130	4:15	Angles			●				Week 20
131	4:16	Right angles			●				Week 21 — Term 3
132	4:17	Angle turns			●				Week 22
133	4:18	Describing position						●	Week 23
134	4:19	Pathway between places						●	Week 23
135	4:20	Trapeziums and parallelograms		●					Week 27
136	4:21	Features of 2D shapes		●					Week 27
137	4:22	Spheres					●		Week 34 — Term 4
138	4:23	3D objects					●		Week 34
139	4:24	Using coordinates						●	Week 35
140	4:25	Creating maps						●	Week 35
141	4:26	3D models					●		Week 36
142	4:27	The net of a cube					●		Week 36
143	4:28	Flip, slide, turn		●					Week 37
144	4:29	Using flip, slide and turn		●					Week 37
145	4:30	Tessellations		●					Week 37

* The teacher will decide when testing occurs. The Progress tests are found in the online Teacher Resource.

Statistics and probability
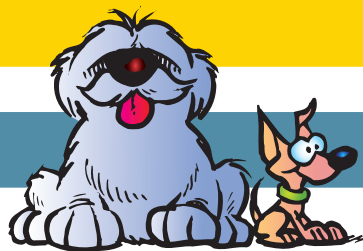
Page	Unit	Title	Content	Collecting data	Surveys	Creating data displays	Analysing data displays	Chance language	Chance experiments	Suggested program
										This weekly program aligns with the Mentals Book, e.g. Mentals Book, Unit 9 covers work taught in Weeks 7 and 8 of this book.
146	5:01	Dot plots				●	●			Week 3 — Term 1
147	5:02	Tables		●	●		●			Week 3
148	5:03	Tables and graphs		●		●	●			Week 13
149	5:04	Picture graphs		●		●	●			Week 13
150	5:05	Chance						●	●	Week 14 — Term 2
151	5:06	Chance outcomes						●	●	Week 14
152	5:07	Chance outcomes						●	●	Week 14
153	5:08	Making graphs		●	●	●				Week 17
154	5:09	Reading graphs and tables					●			Week 18
155	5:10	Dicey graphs		●		●			●	Week 19
156	5:11	Class investigation		●		●	●			Week 24 — Term 3
157	5:12	Predicting outcomes		●		●	●	●		Week 29
158	5:13	Ordering events				●	●			Week 29
159	5:14	Drawing graphs				●	●			Week 33 — Term 4
160	5:15	Surveys		●	●					Week 33
161	5:16	Carry out your own survey		●	●	●	●			Week 33
162	5:17	Researching data					●			Week 35
163	5:18	Repeating an experiment						●	●	Week 36

* The teacher will decide when testing occurs. The Progress tests are found in the online Teacher Resource.

Extra support pages

164	1	Addition and subtraction facts		2	Addition facts to 20		3	Subtraction facts to 20
167	4	Know your addition facts		5	Addition problems to 99		6	Addition to 999
170	7	Writing the addition algorithm		8	Addition of money			

Suggested program	Term 1	Term 2	Term 3	Term 4
Number and algebra	1:01 - 1:08	1:09 - 1:17	1:18 - 1:29	-
Operations and algebra	2:01 - 2:12	2:13 - 2:24	2:25 - 2:45	2:46 - 2:49
Measurement	3:01 - 3:09	3:10 - 3:18	3:19 - 3:28	3:29 - 3:37
Space	4:01 - 4:05	4:06 - 4:15	4:16 - 4:21	4:22 - 4:30
Statistics and probability	5:01 - 5:04	5:05 - 5:10	5:11 - 5:13	5:14 - 5:18
Total number of pages:	38	46	47	32

* See the Teacher Resource for a more detailed suggested program.

* The suggested program aligns with the Mentals Book, Progress tests and Retests.

Contents cross-reference

Measurement and space

Statistics and probability

abacus

An instrument used for counting and calculating.

- This abacus shows 546.
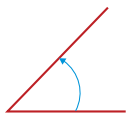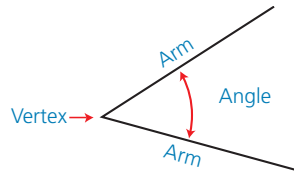
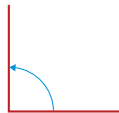| H	T	U
5	4	6
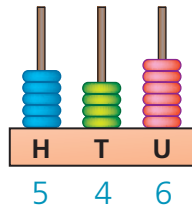
analog time

The time shown on a clock face.

- 13 minutes to 6 is the time on this analog clock.

angle

The turn between two lines that meet at a corner.
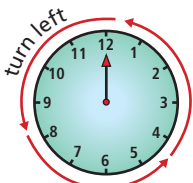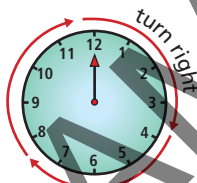
Vertex→ Arm Angle Arm

less than a right angle

right angle
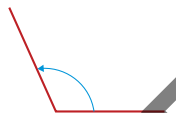
greater than a right angle

anticlockwise and clockwise

The direction of a turn.

Anticlockwise

Clockwise (as on a clock)

area

The measure of the amount of surface.
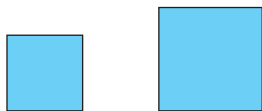
array

When objects are arranged in rows and columns they form an array.
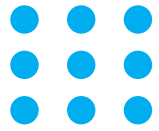
calendar

A chart that shows the days, weeks and months of a particular year.

November 2024						
Sun	Mon	Tues	Wed	Thurs	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

capacity

The amount that a container can hold.

- Less than 1 litre
- More than 1 litre

centimetre (cm)

A unit of length equal to one hundredth of a metre.

- 100 cm = 1 m

cents (c)

Our money system is made up of cents and dollars. 100 cents (100c) makes 1 dollar ($1).

chance

The chance (or probability) of something happening is its likelihood of happening.

- If you toss a coin, there is an even chance of tossing a head.
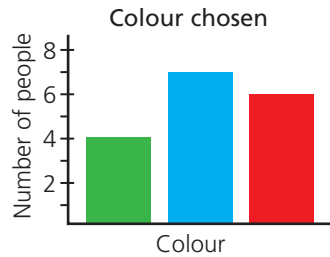
See also *probability*.

clockwise

See *anticlockwise*.

column graph

Groups are compared using the lengths of columns or bars.
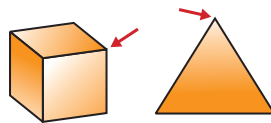The graph can be vertical or horizontal.

Colour chosen
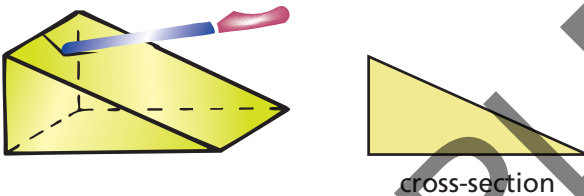
(Number of people: 8, 6, 4, 2 — Colour)

cone

See *3D objects*.

corner (vertex)

A corner is where sides or edges meet at a point.
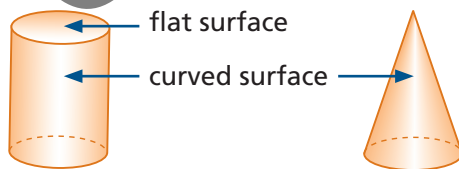
cross-section

The shape formed when an object is cut.

cross-section

cube

See *3D objects*.

curved surface

A curved surface on a 3D object is not flat. It allows an object to roll. A cylinder and cone each have one curved surface.
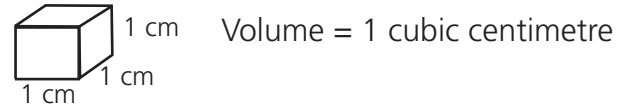
flat surface
curved surface

cylinder

See *3D objects*.

cubic centimetre

A unit for measuring volume that is equal to a cube (ones block) with sides of length 1cm.

1 cm   Volume = 1 cubic centimetre
1 cm 1 cm

data display

A data display shows categories of objects and allows us to compare them.

Graph:

Pets

Cats

Dogs

Table:

Dogs	Cats
4	2

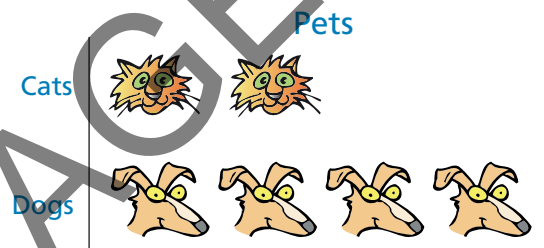## date

The date shows the day, the month and the year. For example, 30.5.23 means the 30th day of the 5th month (May) in the year 2023.

decimal notation

The decimal point separates the whole number from the fraction.

0·7 means 7 tenths.

6·5 means 6 ones and 5 tenths.

7·5

decimal point

difference

How many more?

The difference between 16 and 13 is 3.

For smaller numbers, line up each group in a row to find the difference.

For larger numbers, place the numbers on a number line to find the difference.

digital time

Time expressed using digits.

- This digital clock shows 24 minutes past 10.

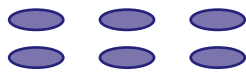## digits

Symbols used to write a number.

- 6   Six is a 1-digit number.
- 47   Forty-seven is a 2-digit number.

division (÷)

Breaking up groups into equal parts.
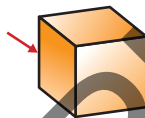
- 6 ÷ 3

  a Sharing 2 each

  b Grouping 2 groups

edge

Two faces of a 3D object meet at an edge.

even number

Any number that is a multiple of two and can be grouped in twos. They end in 0, 2, 4, 6 or 8.

- 16, 300, 4394
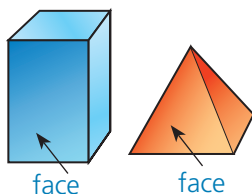
The other counting numbers are **odd**.

expanded notation

A way of writing numerals to show the place value of each digit.

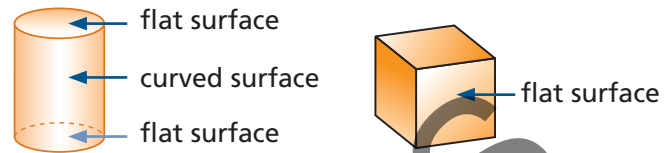- $137 = (1 \times 100) + (3 \times 10) + 7$
  $= 100 + 30 + 7$

face

A flat surface of a three-dimensional object.

face   face

flat surface

A cylinder has 2 flat surfaces, one on both ends, and one curved surface.

A cube has 6 flat surfaces.

flat surface

curved surface

flat surface

flat surface

fraction

Any part of a whole, group or object.

- 2 out of 6 shaded

- $\frac{1}{4}$ is shaded

gram (g)

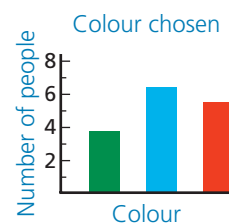A unit of mass used to measure how heavy something is.

- 1 kilogram = 1000 grams

graph

A diagram or drawing used to record a collection of data.

- **Column graph**

  Groups are compared using the lengths of columns or bars. The graph can be vertical or horizontal.

  Colour chosen

- **Picture graph**

  A picture is used as a unit to show how many.

  Gold stars earned

  David

  Alana

  Luke

  Naomi

- **Dot plot**

  A dot is used instead of a picture to show one item.

heft

To compare masses by lifting them with your hands.

The big one feels heavier.

hexagon

See *2D shapes*.

inverse operations

Adding 8 is the opposite (the inverse) of subtracting 8.
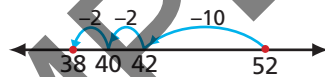
- $100 + 8 - 8 = 100$

Multiplying by 2 is the opposite (the inverse) of dividing by 2.

- $4 \times 2 \div 2 = 4$

jump strategy

Adding or subtracting numbers, jumping by tens or ones.

- $52 - 14 = 38$

$$-2 \quad -2 \qquad -10$$
$$38 \; 40 \; 42 \qquad\qquad 52$$

kilogram (kg)

The basic unit of mass, equal to 1000 grams.

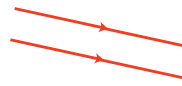- $1 \, kg = 1000 \, g$

left and right

- Left
- Right

line

straight line
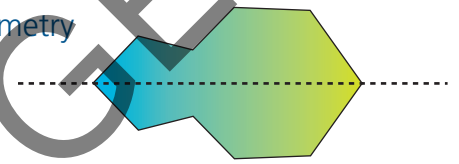
curved line

parallel lines

perpendicular lines

line of symmetry

A line that divides something in half so that each half is a mirror image of the other part.
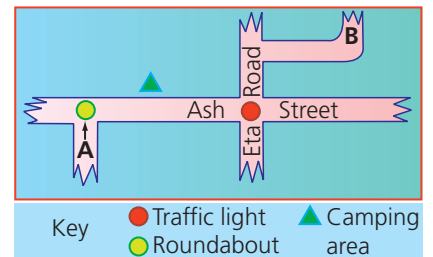
line of symmetry

litre (L)

A unit of capacity (or volume) used for the measurement of liquids.

- $1 \, L = 1000 \, mL$

1L Milk

map or plan

A picture of an area viewed from above.

B

Road

Ash Street

Eta

A

Key
- Traffic light
- Roundabout
- Camping area

mass

The amount of matter in an object, a measure of how heavy it is.

Meat 7kg

metre (m)

The basic unit of length, equal to 100 centimetres.
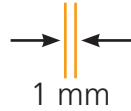
- $1 \, m = 100 \, cm$

millilitre (mL)

A unit of capacity (or volume) equal to one thousandth of a litre.

- $1000 \, mL = 1 \, L$

millimetre (mm)

A unit of length equal to one tenth of a centimetre, or one thousandth of a metre.
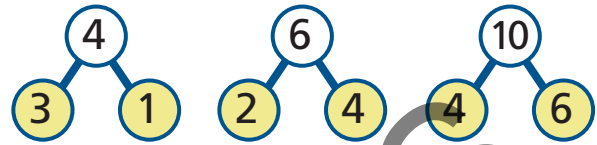
- 10 mm = 1 cm
- 1000 mm = 1 m

1 mm

money

multiple

The number you get when you multiply a certain number by a whole number.

Multiples of 5 are 10, 15, 20, 25, …

multiplication (×)

Combining equal groups.

- $3 \times 5 = 15$

net

A flat shape that can be folded to make a three-dimensional object.

net of a cube

number bonds

These show how a number can be broken up into parts (e.g. the top number, 4, can be broken up into 3 and 1).

4
3 1

6
2 4

10
4 6

number line

A line on which numbers are marked.

Number lines can be used to show operations.

- $2 + 2 + 2 = 6$

0 1 2 3 4 5 6 7
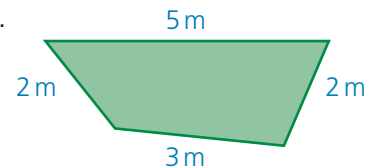
numeral expander

Breaks up a number into hundreds, tens and ones.

- 4 hundreds 3 tens 9 ones

This numeral expander shows 439.

perimeter

The distance around the outside of a shape; the boundary.

5 m
2 m   2 m
3 m

- Perimeter = 2 m + 3 m + 2 m + 5 m
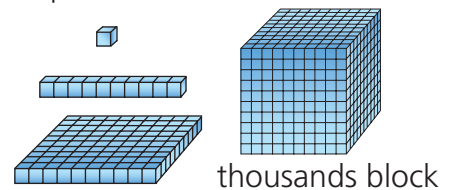
  = 12 m

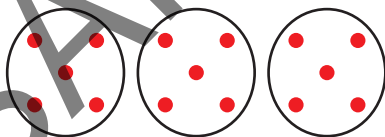## place-value blocks

These are used to represent numbers.

ones block

tens block

hundreds block

thousands block

42 shown as:

113 shown as:

prism

A three-dimensional object with a uniform cross-section. The ends are identical shapes and all other faces are rectangles. Prisms are named by the shape of their ends.

triangular prism   hexagonal prism

probability

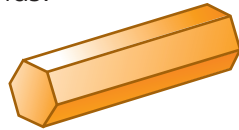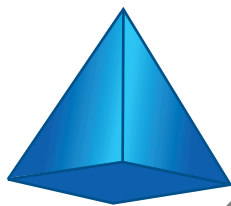The probability (or chance) of something happening is its likelihood of happening.

- **Chance language**

  possible, impossible, certain, more likely, less likely, least likely, outcome, event

pyramid

A three-dimensional object that has a polygon for a base and triangles for all other faces. Pyramids are named by the shape of their base.
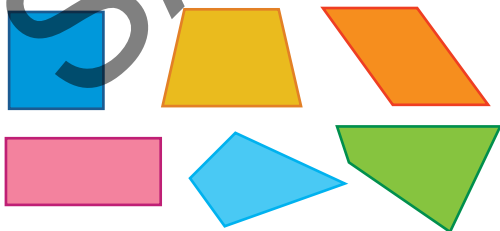
square pyramid   pentagonal pyramid

quadrilateral

A two-dimensional shape with four straight sides.

quarter of a whole or collection

One of four equal parts.

One quarter of the rectangle is coloured.

One quarter of the collection is coloured.

A quarter of 8 is 2. Another way to say this is 8 divided by 4 is 2. That is $8 \div 4 = 2$.

Three quarters of the rectangle is coloured.

Three quarters of the collection is coloured.

rectangle

See *2D shapes*.

regular and irregular shapes

Regular shapes have all sides and all angles equal. Irregular shapes do not.
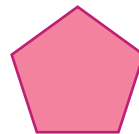
regular shape   irregular shape

right and left

- Left
- Right

rounding

We usually round to the nearest 10, 100 or 1000, ...

Money is rounded to the nearest 5 cents.

- 18 rounds to 20

  12   14   16   18   20   22   24

skip counting

Counting on, adding the same number each time.

- 5, 10, 15, 20, 25, ... is skip counting by 5.

sphere

See *3D objects*.

split strategy

Adding numbers by splitting them into their parts.

- $36 + 52 = 30 + 6 + 50 + 2$
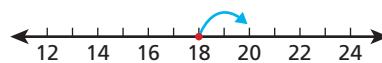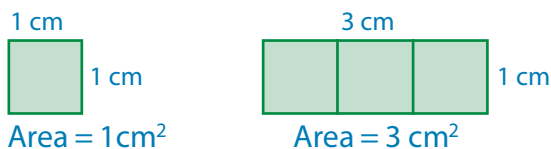 $= (30 + 50) + (6 + 2)$
  $= 80 + 8$
  $= 88$

square

See *2D shapes*.

square centimetre

A unit for measuring area that is equal to a square with sides of 1 cm.

1 cm	3 cm

1 cm

1 cm

Area = 1cm²   Area = 3 cm²

A square metre is a square of length 1 metre.

square number

The number we get when we multiply a whole number by itself.
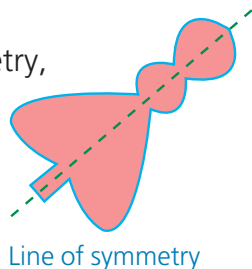
- 1, 4, 9, 16, 25, …

survey

A list of questions used to discover information.

symmetry

If a figure has a line of symmetry, it can be folded so that the two halves exactly overlap.

Each half is a mirror image of the other.

Line of symmetry

table

A simple way to display information in rows and columns.

Birds	12
Lions	2
Monkeys	6

tally

To keep count by making a mark for each item. To make counting easy, the marks are drawn in groups of five, with each fifth mark crossed over the other four marks.

- |||| |||| |||| ||| = 18

time words

Days			
Sunday	Monday	Tuesday	Wednesday
Thursday	Friday	Saturday	

Months			
January	February	March	April
May	June	July	August
September	October	November	December

Seasons			
Summer	Autumn	Winter	Spring

- clocks

analog clock   digital clock

- o'clock

When the minute hand (long hand) is pointing to 12, the time is an 'o'clock' time. The hour hand (short hand) points to the hour (e.g. the hour hand below is pointing to the 3 so it is 3 o'clock).

3 o'clock   3:00

- half past

When the minute (long) hand is pointing to the 6, the time is a 'half past'. The hour (short) hand on the clock points halfway between the 3 and the 4 so it is half past 3.

half past 3   3:30

● quarter past

When the minute (long) hand is pointing to the 3, then the time is 'quarter past'. The hour (short) hand on the clock is a quarter of the way from 6 to 7, so it is a quarter past 6.

quarter past 6   6:15

● quarter to

When the minute (long) hand is pointing to the 9, then the time is 'quarter to' the next hour. The hour (short) hand on the clock is a quarter of the way from the next number 7, so it is a quarter to 7.
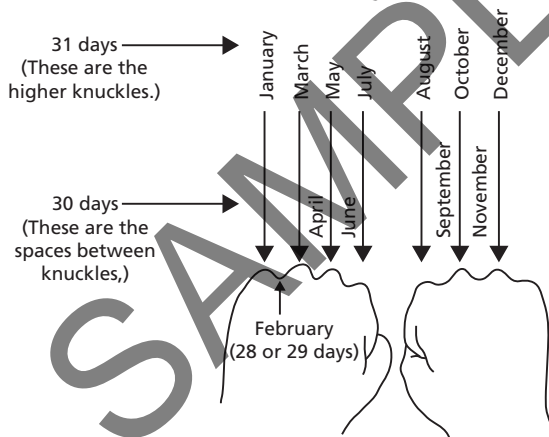
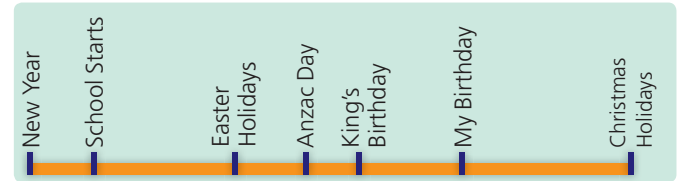quarter to 7   6:45

● The number of days in each month:

How to know the number of days in each month.

31 days (These are the higher knuckles.)

30 days (These are the spaces between knuckles,)

January March May July August October December

April June September November

February (28 or 29 days)

30 days has September, April, June and November. All the rest have 31, except February alone, which has 28 days clear and 29 days each leap year.
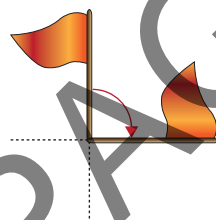
timeline

Shows a sequence of events in time.

New Year School Starts Easter Holidays Anzac Day King's Birthday My Birthday Christmas Holidays
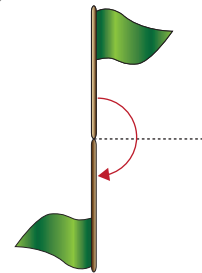
turn

Moving a shape in a clockwise or anticlockwise direction.
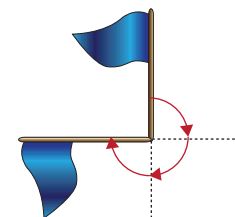
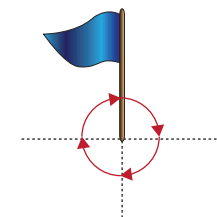● quarter turn   ● half turn

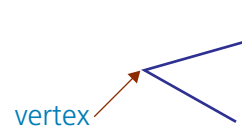● three-quarter turn   ● full turn

vertex

A point at which two or more lines meet to form a corner on a plane shape or object.

vertex   vertex

The plural of *vertex* is *vertices*.

volume

The amount of space an object takes up.

year

There are 365 days in a year and 366 days in a leap year (which is every 4th year). There are 12 months in a year.

2D (two-dimensional) shapes

Flat shapes are two-dimensional.
They have length and width.
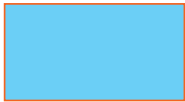
circle
1 curved side

triangle
3 sides
3 corners

square
4 equal sides
4 corners

rectangle
2 equal long sides
and 2 equal short sides,
like a stretched square

oval
1 curved side, like
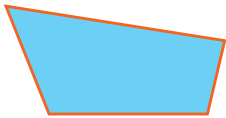a squashed circle

pentagon
5 sides
5 corners

hexagon
6 sides
6 corners
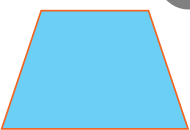
octagon
8 sides
8 corners

quadrilaterals
4 sides
4 corners

parallelogram
two sets of parallel lines
opposite sides equal

trapezium
one set of
parallel lines
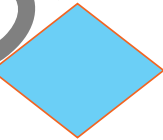
rhombus
all sides equal
(a diamond)
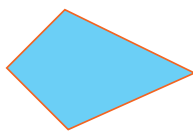
kite
two pairs of
equal sides

All of the blue shapes are quadrilaterals.

3D (three-dimensional) objects

Solid objects are three-dimensional.
They have length, width and height.

sphere
A sphere is curved and round.
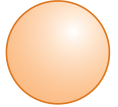
cube
A cube has 6 identical faces,
8 vertices and 12 straight edges.
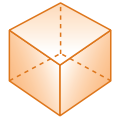
cylinder
A cylinder has 2 circular flat surfaces
and 1 curved surface.

cone
A cone has 1 circular flat surface
and 1 curved surface.

pyramid
A pyramid has triangular
faces joined around a base.

prism
A prism has rectangular faces
joining two identical bases.

Even numbers end in 0, 2, 4, 6 or 8.
Odd numbers end in 1, 3, 5, 7 or 9.

1 Use the hundred chart to answer the questions.

Hundred chart

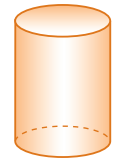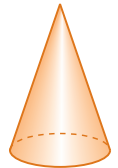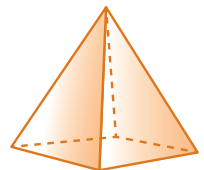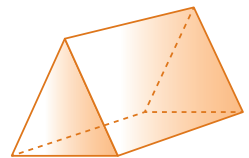| 1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

a Count by 2s. Colour these numbers yellow.

b Starting at 100, count backwards by 10s.
Draw a cross on these numbers.

c Circle every second even number up to 80.
What do you notice?

d Start at 8 and count on by tens until you reach 98. Write this pattern.

2 When we count by 2s from zero, the numbers end in _____ .

3 When we count by 5s from zero, the numbers end in _____ .

4 When we count by 10s from zero, the numbers end in _____ .

5 Continue each pattern using the rule given. Use a calculator to check.

a Add 5.   5, 10, 15, ___ , ___ , ___ , ___ , ___

b Subtract 2.   18, 16, 14, ___ , ___ , ___ , ___ , ___

c Add 10.   147, 157, 167, ___ , ___ , ___ , ___ , ___

d Subtract 10. 174, 164, 154, ___ , ___ , ___ , ___ , ___

e Add 100.   100, 200, 300, ___ , ___ , ___ , ___ , ___

6 Show your answers to Questions 5**c** and 5**d** on the number lines.

a

147 157 167

The rule is _____ .

b

154 164 174

The rule is _____ .

Five **20c** coins make $1.
Ten **10c** coins make $1.
Twenty **5c** coins make $1.
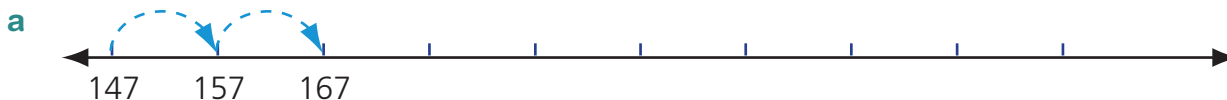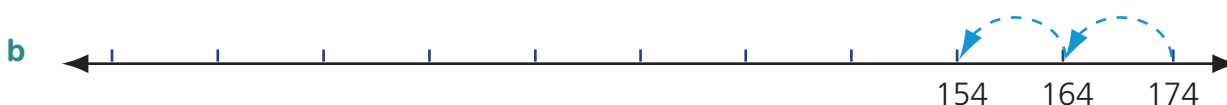
1 **a** Count on from 76 to 94 by 2s.

b Count backwards from 1000 by 100s.

c Count on from 645 to 690 by 5s.

d Count backwards from 500 to 400 by 10s.

You could use a calculator to check your answers.

2 Write the missing numbers.

a 865, 855, ⬚, ⬚, ⬚, 815, ⬚, ⬚, 785

b 625, 620, ⬚, ⬚, 605, ⬚, ⬚, ⬚, 585

c 412, 410, ⬚, ⬚, 404, ⬚, ⬚, ⬚, 396

3 Count by 2s and write the first 20 numbers you count. Circle every second number and discuss the pattern.

4 Count by 5s and write the first 20 numbers you count. Circle every second number and discuss the pattern.

5 If you have to count 300 ten-cent coins, what is the best counting strategy to make sure you count them correctly?

6 Show your answers to Questions 1**a** and 1**b** on the number line.

a

76   78   80

The rule is ⬚.

b

800   900   1000
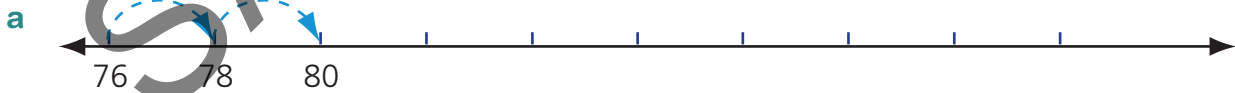
The rule is ⬚.

c Try to do Question 1**c** on your own number line.

This abacus shows 238.

These blocks show 238.

CONCEPT

U stands for units (ones).

H T U

1 Write the number shown by the place-value blocks or abacus.

a

b

c

d

e

f

g

h

i H T U

j H T U

k H T U

l H T U

The abacus was invented thousands of years ago.

2 Which number is larger?

a 169 or 346 ☐   **b** 723 or 481 ☐   **c** 962 or 503 ☐

d 375 or 634 ☐   **e** 257 or 572 ☐   **f** 491 or 914 ☐

3 Write these in order from smallest to largest.

a 137, 653, 446 ☐, ☐, ☐   **b** 974, 237, 491 ☐, ☐, ☐

c 819, 106, 567 ☐, ☐, ☐   **d** 683, 749, 250 ☐, ☐, ☐

SAMPLE PAGES

CONCEPT

This stands for 500.
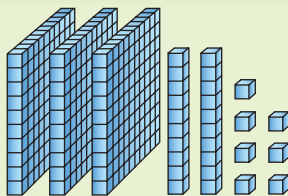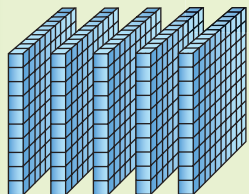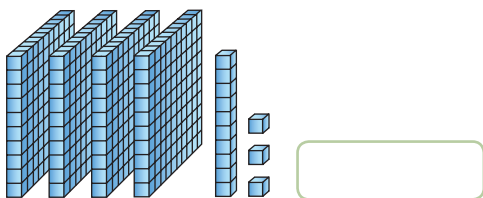
327

327 has 3 digits.

| 3 | hundreds | 2 | tens | 7 | ones |

three hundred and twenty-seven

327

❶ Write the numeral, fill in the numeral expander and write the number in words.

a

| | hundreds | | tens | | ones |

b
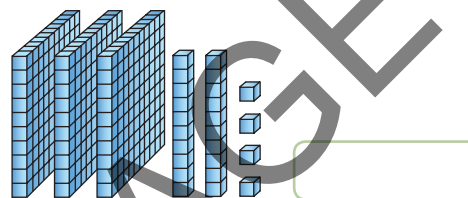
| | hundreds | | tens | | ones |

❷ How many digits are in each numeral?

a 39 ☐ **b** 256 ☐ **c** 970 ☐ **d** 56 ☐ **e** 498 ☐

f 13 ☐ **g** 7 ☐ **h** 520 ☐ **i** 1000 ☐ **j** 777 ☐

❸ Write these numbers as numerals.

a two hundred and sixty ☐   **b** one hundred and fifty-two ☐

c nine hundred and forty ☐   **d** seven hundred and eighteen ☐

e six hundred and seventy-nine ☐   **f** five hundred and thirty-four ☐

g eight hundred and sixty-eight ☐   **h** three hundred and six ☐

❹ Write the numbers before and after.

a ☐, 999, ☐   **b** ☐, 863, ☐   **c** ☐, 659, ☐

d ☐, 306, ☐   **e** ☐, 499, ☐   **f** ☐, 709, ☐

ACTIVITY

● Use place-value blocks to model these numbers.

● 216   ● 525   ● 848   ● 634   ● 967   ● 388

● 793   ● 364   ● 190   ● 572   ● 451   ● 1000

247 = 2 hundreds, 4 tens and 7 ones
= 2 hundreds and 47 ones
= 24 tens and 7 ones

CONCEPT

| 7 | 2 | 0 |

720 is the same as
7 hundreds and 2 tens
or 72 tens or 720 ones.

7 hundreds 2 tens 0 ones
7 2 tens 0 ones
7 2 0 ones

Numeral expanders help us understand the value of the numbers.

❶ Complete the numeral expanders.

a 479 hundreds ____ tens ____ ones

____ tens ____ ones

____ ____ ones

b 568 hundreds ____ tens ____ ones

____ tens ____ ones

____ ____ ones

c 231 hundreds ____ tens ____ ones

____ tens ____ ones

____ ____ ones

d 307 hundreds ____ tens ____ ones

____ tens ____ ones

____ ____ ones
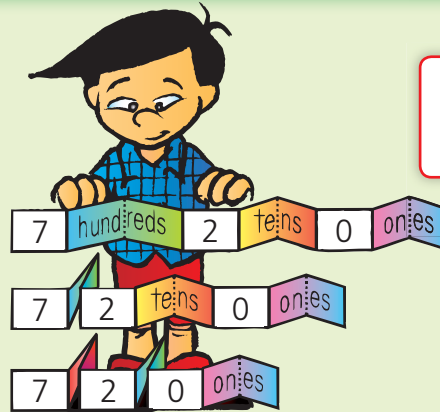
❷ Write each number as a numeral.

a six hundred and thirty-two ____

b eight hundred and seventeen ____

c four hundred and twenty-nine ____

d seven hundred and sixty-three ____

e two hundred and thirty-eight ____

f five hundred and sixty-two ____

g nine hundred and forty ____

h three hundred and fifty-one ____

❸ Write each number in words.

a 106 ____

b 607 ____

c 310 ____

d 841 ____

ACTIVITY

● Use concrete materials to show the numbers in Question 3.
Explain your answer to a partner.

H T U

If the number ends with 1, 2, 3 or 4, round down.

41
42
43
44
40

If the number ends with 5, 6, 7, 8 or 9, round up.

40
35
36
37
38
39
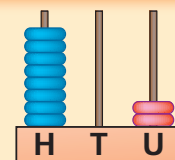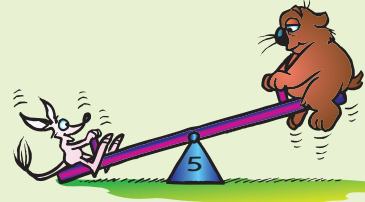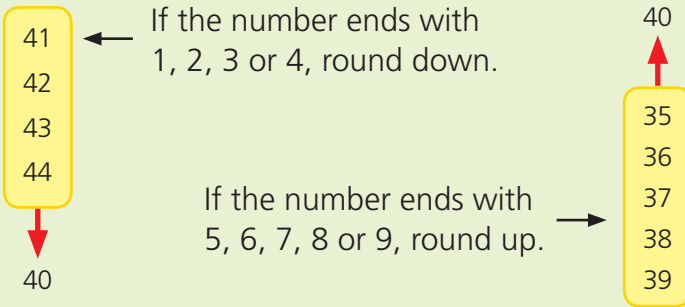
When rounding ask: 'Which 10 is this number closest to?'

CONCEPT

30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50

These are closer to 40.
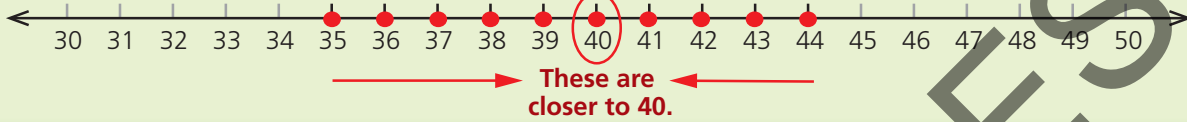
1 a Is 12 closer to 10 or 20? ☐   b Is 77 closer to 70 or 80? ☐

c Is 21 closer to 20 or 30? ☐   d Is 89 closer to 80 or 90? ☐

e Is 33 closer to 30 or 40? ☐   f Is 106 closer to 100 or 110? ☐

2 Round to the nearest 10.

a 24 ☐   b 36 ☐   c 63 ☐   d 47 ☐

e 92 ☐   f 74 ☐   g 59 ☐   h 81 ☐

i 103 ☐   j 115 ☐   k 123 ☐   l 127 ☐

3 a Circle the numbers that round to 60.

57   58   67   68   64

61   69   62   65   52   56

Digits below 5 are rounded down.

b Circle the numbers that round to 190.

199   187   186   197   194   183

193   185   189   188   191

4 Round off each number to the nearest 10. (77 + 41 becomes 80 + 40, and 92 − 38 becomes 90 − 40.)

a 56 + 23 ☐   b 42 − 17 ☐   c 133 − 26 ☐

d 72 + 69 ☐   e 118 − 34 ☐   f 241 − 55 ☐

g 54 + 78 ☐   h 665 − 46 ☐   i 447 − 118 ☐

1:07 Rounding to the nearest 100

closer to 100 | closer to 200
100   150   200

150 rounds up to 200.

We are looking at the numbers from 100 to 200.

Rounding off to the nearest 100.

The numbers below 150 are rounded down to 100.

124 is closer to 100.
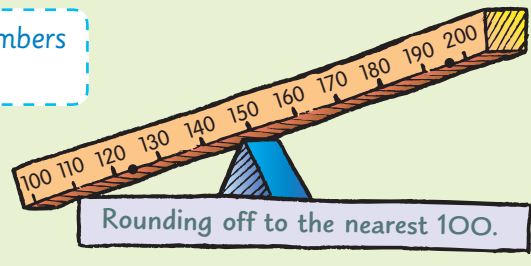
The numbers 150 and above are rounded to 200.

196 is closer to 200.

CONCEPT

1 a Is 186 closer to 100 or 200?

b Is 392 closer to 300 or 400?

c Is 529 closer to 500 or 600?

d Is 613 closer to 600 or 700?

e Is 435 closer to 400 or 500?

f Is 264 closer to 200 or 300?

g Is 756 closer to 700 or 800?

h Is 348 closer to 300 or 400?

2 Round these numbers to the nearest hundred.

a 127   **b** 386   **c** 535   **d** 479

e 216   **f** 794   **g** 890   **h** 607

i 173   **j** 456   **k** 375   **l** 928

m 409   **n** 249   **o** 652   **p** 580

To round to hundreds, look at the 10s digit.

3 a Circle the numbers that round to 200.

264   163   296   220   186
217   237   125   143   205

b Circle the numbers that round to 500.

569   467   416   456   575
483   590   532   439   521

4 Answer true or false for each statement.

a 974 rounds off to 900.

b 426 rounds off to 500.

c 396 rounds off to 400.

d 399 rounds off to 400.

e 37 tens is less than 371.

f 3 hundred is more than 305.

g 679 is less than 68 tens.

h 409 is more than 4 hundred.

5 Round off each number to the nearest 100, then add them to estimate the answer.

a 180 + 120 = 200 + 100 =

b 234 + 428 = =

c 319 + 193 = =

d 169 + 325 = =

Order from smallest (1) to largest (3).

421
42 tens
4 hundreds

1 Write the number shown by each abacus.
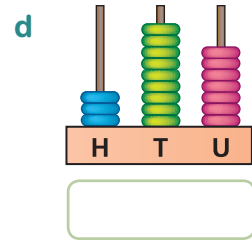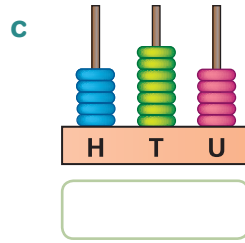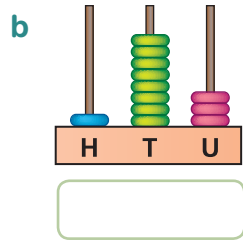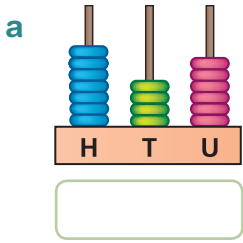
a

H T U

b

H T U

c

H T U

d

H T U

2 Write the numeral, fill in the numeral expander and write the number in words.

a

hundreds | tens | ones

b

hundreds | tens | ones

3 Complete the numeral expanders.

a 375

hundreds | tens | ones

tens | ones

b 198

hundreds | tens | ones
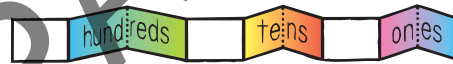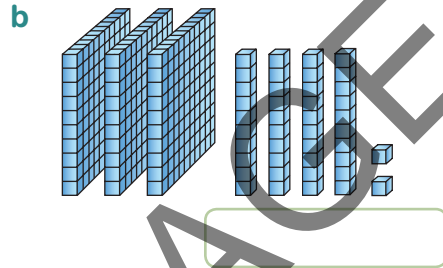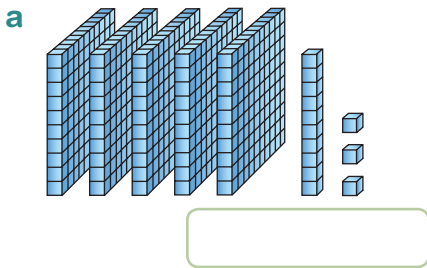
tens | ones
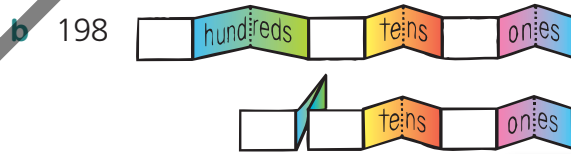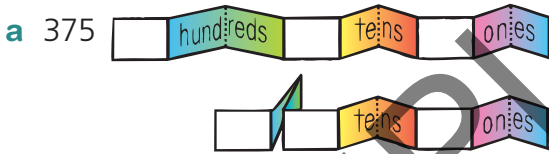
4 Round each number to the nearest hundred.

a 378

b 842

c 296

d 419

e 675

f 324

g 906

h 547

i 752

This rounds to 600.

567

Higher or lower

FUN SPOT

- One player records a secret 3-digit number and says the boundaries for the number, such as 'between 200 and 300'.

235

The secret number is higher.

- Other players mark the boundaries on number lines.
- Players take turns to guess the number. After each guess, the holder of the number says whether the secret number is **higher** or **lower** than the guess.
- Players mark this clue for the guess (**higher** or **lower**) on their number lines.
- The game continues until someone guesses the secret number exactly.

SAMPLE PAGES

1 Position these numbers where they belong on each number line.

a | 20 | | 40 |

5   10

b | 30 | | 60 |

5   10

c | 25 | | 50 |

5   10

d | 35 | | 70 |

5   10

How accurate can you be?
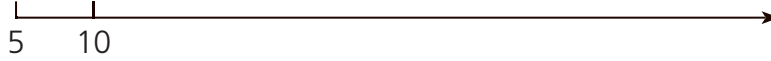
2 Complete each pattern and write the rule.

a 330, 340, 350, ____, ____, ____, ____, ____   Rule: ____

b 780, 770, 760, ____, ____, ____, ____, ____   Rule: ____

c 277, 377, 477, ____, ____, ____, ____, ____   Rule: ____

d 956, 856, 756, ____, ____, ____, ____, ____   Rule: ____

e 268, 278, 288, ____, ____, ____, ____, ____   Rule: ____

3 863 can be written as 86 tens and 3 ones. Partition these numbers in the same way.

a 472 ____   **b** 529 ____

c 836 ____   **d** 547 ____

637 can be partitioned and written as:

• 6 hundreds and 37 ones

| 6 | hundreds | 3 | 7 | ones |

• 63 tens and 7 ones

| 6 | 3 | tens | 7 | ones |

• 637 ones

| 6 | 3 | 7 | ones |

These are all the same value.

CONCEPT

4 Write these numbers in three different ways using partitioning.

a 561

____

____

____

b 937

____

____

____

$\frac{2}{4}$ **2 out of 4**

$\frac{3}{4}$ **3 out of 4**
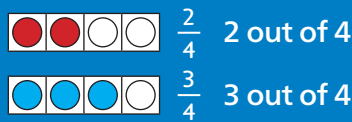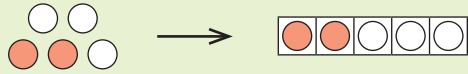
CONCEPT

We can put groups into a line to help us find the fraction of the group.
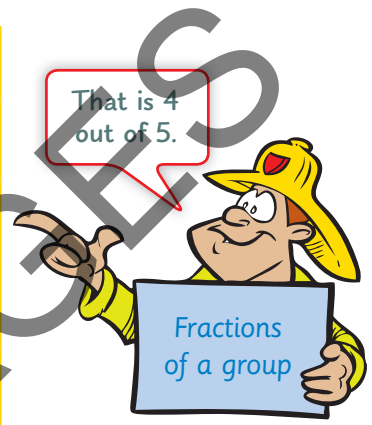
2 out of 5 are coloured. That's $\frac{2}{5}$.

3 out of 6 are coloured. That's $\frac{3}{6}$ or $\frac{1}{2}$.

1

Group	Number coloured	Total in group	Fraction coloured
			$\frac{4}{5}$

That is 4 out of 5.

Fractions of a group

2 **a**

fraction coloured ☐ fraction not coloured ☐

b

fraction coloured ☐ fraction not coloured ☐

c

fraction coloured ☐ fraction not coloured ☐

d

fraction coloured ☐ fraction not coloured ☐

e

fraction coloured ☐ fraction not coloured ☐

f

fraction coloured ☐ fraction not coloured ☐

3 Colour part of each group to match the fraction.

$\frac{2}{5}$ and $\frac{3}{5}$ makes 1 whole.

a $\frac{3}{4}$

b $\frac{7}{8}$

c $\frac{5}{6}$

d $\frac{2}{5}$

e $\frac{3}{3}$

4 What fraction of these groups in Question 3 is not coloured?

a ☐ **b** ☐ **c** ☐ **d** ☐

The whole group will be coloured in Question 3e.