Australian

Signpost MATHS NSW

5

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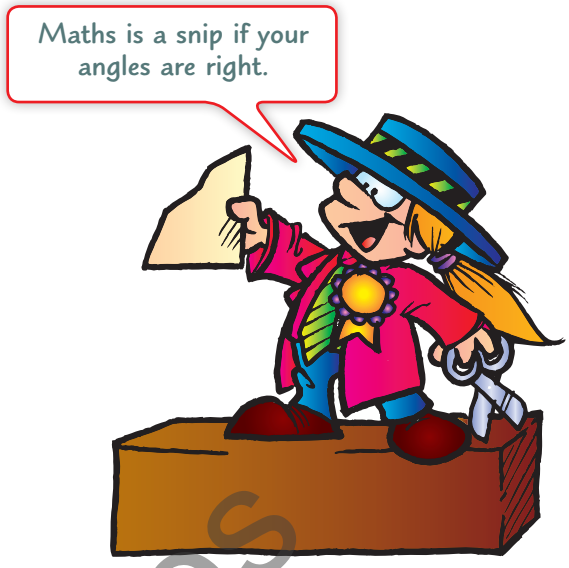
Short Contents



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Some of the images used in *Australian Signpost Maths NSW 5* might have associations with deceased Indigenous Australians. Please be aware that these images might cause sadness or distress in Aboriginal or Torres Strait Islander communities.

What is Australian Signpost Maths NSW?

Australian Signpost Maths NSW is a mathematics activity book series for students from Kindergarten to Year 6. The series has been written to meet the requirements of the Australian Curriculum: Mathematics in NSW.

The components of the series include Student Books, Teacher's Books, Mentals Books and an interactive Website. Teachers can select an appropriate program for every students from the rich and varied material provided.

The content has been carefully sequenced within each year level and across the series to take into account students' likely mathematical development.

Student Books

Teacher's Books

Mentals Books

Website

Structure of Australian Signpost Maths NSW

Australian Signpost Maths NSW emphasises the curriculum's syllabus content as well as problem-solving strategies, language development and the use of technology.

The syllabus is organised into three content strands and the Working Mathematically proficiency strand.

Content Strands

- Number and Algebra
- Measurement and Geometry
- Statistics and Probability

Working Mathematically

- Communicating
- Problem Solving
- Reasoning
- Understanding
- Fluency

Australian Signpost Maths NSW also provides opportunities to develop other general capabilities, such as personal and social competence and intercultural understanding.

To maximise the benefits of the program, the Student Book, Teacher's Book, Mentals Book and Website should be used together.

The structure of the **Student Book** allows teachers to determine both the order and the extent of content covered. Strands are organised separately so that the teacher, not the Student Book, decides the content of the next lesson. However, a suggested term program (see page xi of this book) and a detailed program (see the Teacher's Book and Website) are also provided.

The **Teacher's Book** also provides lesson plans for each page of the Student Book and blackline masters to assist teachers in implementing the program.

The **Mentals Book** mixes examples from all strands. It revises the content covered in the Student Book. Each content strand is thoroughly covered, with the proficiency strands incorporated within each section. A special feature woven throughout the Mentals Book is the tables program in the four operations.

The innovative **Website** helps teachers to bring mathematics alive with technology. The website provides interactive maths tools, games and practice opportunities as well as relevant resource masters and worksheets for all year levels. These can be used for whole-class, small-group and individual learning.

Student Book pages are colour-coded by section.

Number and Algebra A	Measurement and Geometry A	Statistics and Probability
Number and Algebra B	Measurement and Geometry B	Answers

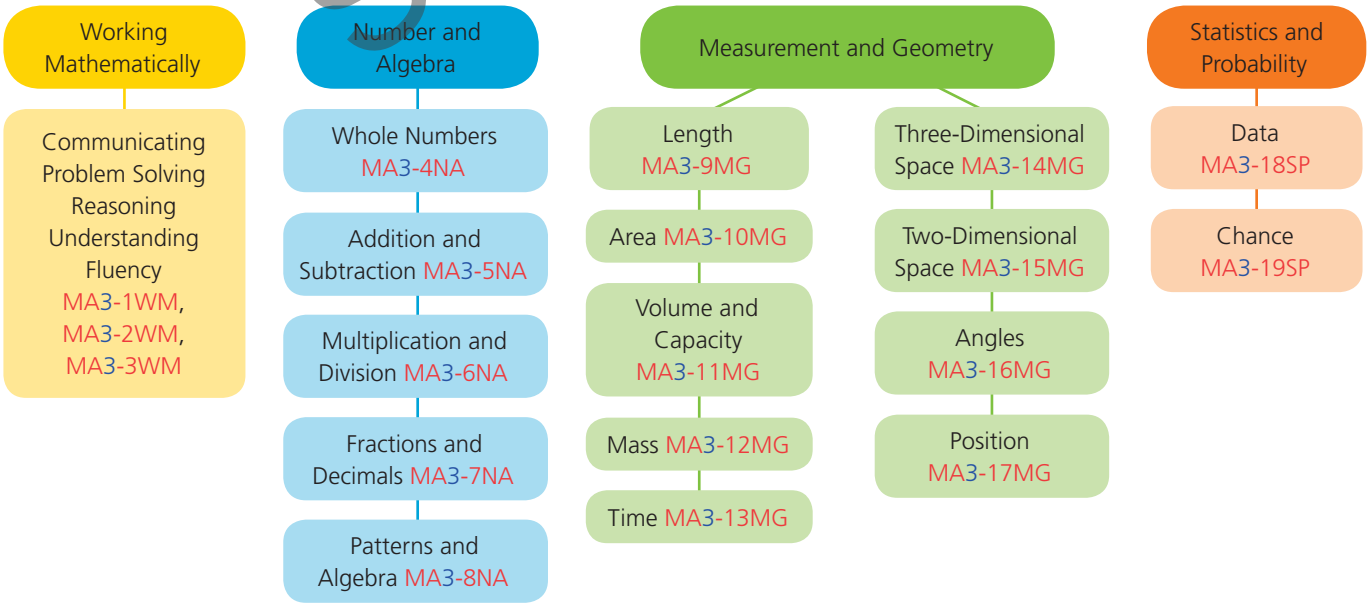
Structure of NSW Mathematics K–6, Australian Curriculum

The K–6 Mathematics Syllabus content is described in Early Stage 1, Stage 1, Stage 2 and Stage 3. Students develop at different rates, but Stage 2 describes the content expected to be covered in Years 5 and 6.

The outcome reference MA3-4NA refers to Mathematics Stage 3, Substrand 4 in the Number and Algebra strand. Relevant syllabus outcomes are shown in the Contents and Syllabus Overview on page vi, in the Teacher's Book and in the planning documents on the website.

The Working Mathematically strand pervades each of the other strands.

The syllabus strands and substrands covered in Stage 3 are shown below.



Special Features of Australian Signpost Maths NSW

- **Traffic Light** system allows students to reflect on their work and highlight any units that they are having trouble understanding. They tick the red for units they feel they still don't understand, and green for those they feel they understand fully.
- Exercises are **well graded**. New work is reinforced in the Mentals Book.
- **Answers** are supplied in the back of this book as well as in the Teacher's Book.
- **Concept Check-In** diagnostic screener (on the Website) provides a snapshot of the class' conceptual understandings to aid in classroom management. It also allows teachers to measure progress over time.
- The eight **Diagnostic Tests** (now also in the back of this book) allow the teacher to discover each student's strengths and weaknesses, and the cross-references direct students to the pages where that work is introduced.
- The **Dictionary** at the beginning of this Student Book will help students to learn the language of mathematics.
- **ID Cards** (in the Mentals Book, Teacher's Book and Website) review the language of mathematics by asking students to identify common terms, shapes and symbols.
- Important **rules and concepts** are clearly highlighted.
- **Worked examples** and explanations are given throughout the Student Book where new ideas are introduced.
- The use of **colour** makes emphasis clear and is highly motivating.
- **Cartoons** give instruction and friendly advice.
- **Interactive activities** on the website are provided for whole-class, small-group and individual learning.

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.

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

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

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

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

This icon indicates the use of computers, calculators or other **information and communications technology**.

5 Contents and Syllabus Overview

KEY

- Number and Algebra
- Measurement and Geometry
- Statistics and Probability

Working Mathematically pervades all of the strands as indicated by the 'WM' outcomes.

Number and Algebra A			Content	Counting and numeration	Place value	Fractions	Decimals	Number patterns	Syllabus Outcomes	Suggested progress
Page	Unit	Title								
1	1:01	Numbers to One Million		●	●				MA3-1WM, -4NA	Term 1
2	1:02	Numbers Above One Million		●	●				MA3-1WM, -2WM, -4NA	
3	1:03	Using Large Numbers		●	●				MA3-1WM, -2WM, -4NA	
4	1:04	Hundredths				●	●		MA3-1WM, -7NA	
5	1:05	Fractions				●			MA3-1WM, -2WM, -7NA	
6	1:06	Unit Fractions				●			MA3-1WM, -7NA	T1, T2*
7	1:07	Tenths				●	●		MA3-1WM, -7NA	Term 2
8	1:08	Decimals				●	●		MA3-1WM, -7NA	
9	1:09	Place Value in Decimals			●	●	●		MA3-1WM, -7NA	
10	1:10	Place Value to Thousandths			●	●	●		MA3-1WM, -7NA	
11	1:11	Reading and Writing Decimals			●		●		MA3-1WM, -7NA	T3, T4*
12	1:12	Place Value to Thousandths			●	●	●		MA3-1WM, -7NA	
13	1:13	Comparing Decimals			●		●		MA3-1WM, -2WM, -7NA	
14	1:14	Addition of Fractions				●			MA3-1WM, -7NA	Term 3
15	1:15	Subtraction of Fractions				●			MA3-1WM, -7NA	
16	1:16	Addition and Subtraction of Fractions				●			MA3-1WM, -7NA	
17	1:17	Addition and Subtraction of Fractions				●			MA3-1WM, -2WM, -7NA	
18	1:18	Comparing Decimal Measurements					●		MA1-8NA, MA3-1WM, 3WM, -7NA, -13MG	T5, T6*
19	1:19	Using Decimals					●	●	MA3-1WM, -3WM, -7NA	
20	1:20	Patterns with Fractions and Decimals				●	●	●	MA3-1WM, -3WM, -7NA, -8NA	
21	1:21	Equivalent Fractions				●			MA3-1WM, -2WM, -7NA	
22	1:22	Percentages				●			MA3-1WM, -2WM, -7NA	Term 4
23	1:23	Using Percentages				●			MA3-1WM, -2WM, -7NA	T7, T8*

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Number and Algebra B			Content	Addition	Subtraction	Multiplication	Division	Place value	Number patterns	Syllabus Outcomes	Suggested progress
Page	Unit	Title									
24	2:01	Number Facts, ×2, ×3, ×4, ×5, ×10				●				MA3-1WM, -4NA, -6NA	Term 1
25	2:02	Number Facts, ×6, ×7, ×8, ×9				●				MA3-1WM, -4NA, -6NA	
26	2:03	Learning your Multiplication Tables				●				MA3-1WM, -4NA, -6NA	
27	2:04	Division Facts					●			MA3-1WM, -2WM, -6NA	
28	2:05	Rounding						●		MA3-1WM, -5NA	
29	2:06	Addition to 999		●						MA3-1WM, -5NA	
30	2:07	Addition to 999		●						MA3-1WM, -5NA	
31	2:08	Subtraction Without Trading to 999			●					MA3-1WM, -5NA	
32	2:09	Writing the Addition Algorithm		●						MA3-1WM, -2WM, -5NA	
33	2:10	Subtraction with Trading to 999			●					MA3-1WM, -5NA	
34	2:11	Subtraction with Trading to 999			●					MA3-1WM, -2WM, -5NA	
35	2:12	Multiples				●				MA3-1WM, -2WM, -4NA, -6NA	
36	2:13	Factors				●	●			MA3-1WM, -2WM, -4NA, -6NA	T1, T2*
37	2:14	Addition of Money		●						MA3-1WM, -2WM, -5NA	
38	2:15	Subtraction of Money			●					MA3-1WM, -2WM, -5NA	
39	2:16	Shopping		●	●					MA3-1WM, -2WM, -5NA	Term 2
40	2:17	Using Strategies to Solve Problems				●	●		●	MA3-2WM, -3WM, -4NA, -5NA	
41	2:18	Division with Remainders					●			MA3-2WM, -5NA	
42	2:19	Division of 2-Digit Numbers					●			MA3-1WM, -2WM, -6NA	
43	2:20	Using Division Facts					●			MA3-1WM, -2WM, -6NA	
44	2:21	Remainders as Fractions and Decimals					●			MA3-1WM, -2WM, -3WM, -6NA	
45	2:22	Number Patterns		●	●				●	MA3-1WM, -2WM, -3WM, -8NA	
46	2:23	Subtraction with Trading to 999			●					MA3-1WM, -5NA	
47	2:24	Subtraction from Hundreds			●					MA3-1WM, -2WM, -5NA	
48	2:25	Addition to 9999		●						MA3-1WM, -5NA	
49	2:26	Addition to 9999		●						MA3-1WM, -2WM, -5NA	
50	2:27	Subtraction with Trading to 9999			●					MA3-1WM, -2WM, -5NA	
51	2:28	Four-Digit Subtraction from Thousands			●					MA3-1WM, -2WM, -5NA	
52	2:29	Subtraction from Thousands Strategy			●					MA3-1WM, -2WM, -5NA	
53	2:30	Mental Strategies		●	●					MA3-1WM, -2WM, -5NA	T3, T4*
54	2:31	Factors and Multiples				●	●			MA3-1WM, -2WM, -4NA, -6NA	
55	2:32	Factors and Multiples				●	●			MA3-1WM, -2WM, -3WM, -4NA, -6NA	
56	2:33	Dividing 2-Digit Numbers					●			MA3-1WM, -6NA	
57	2:34	Dividing 2-Digit Numbers					●			MA3-1WM, -2WM, -6NA	
58	2:35	Dividing 2-Digit Numbers					●			MA3-1WM, -2WM, -6NA	
59	2:36	Dividing 3-Digit Numbers					●			MA3-1WM, -2WM, -6NA	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Number and Algebra B			Content	Addition	Subtraction	Multiplication	Division	Place value	Number patterns	Syllabus Outcomes	Suggested progress
Page	Unit	Title									
60	2:37	Multiplying Tens				●				MA3-1WM, -6NA	Term 3
61	2:38	Multiplying Tens or Hundreds				●				MA3-1WM, -6NA	
62	2:39	Dividing 3-Digit Numbers by 10					●			MA3-1WM, -2WM, -6NA	
63	2:40	Division Involving Zeros in Answers					●			MA3-1WM, -2WM, -6NA	
64	2:41	Divisibility					●			MA3-1WM, -2WM, -6NA, -8NA	
65	2:42	Factors and Multiples				●	●			MA3-2WM, -3WM, -4NA, -6NA	
66	2:43	Averages		●			●			MA3-1WM, -2WM, -3WM, -6NA	
67	2:44	Averages		●			●			MA3-1WM, -2WM, -3WM, -6NA	
68	2:45	Using Factors in Multiplication				●				MA3-1WM, -2WM, -4NA, -6NA	
69	2:46	Mental Strategies for Multiplication				●				MA3-1WM, -2WM, -6NA	
70	2:47	Number Patterns							●	MA3-2WM, -3WM, -5NA, -8NA	
71	2:48	Number Patterns							●	MA3-2WM, -3WM, -5NA, -8NA	
72	2:49	Multiplying 2-Digit Numbers				●				MA3-1WM, -6NA	
73	2:50	Introducing Extended Multiplication				●				MA3-1WM, -2WM, -6NA	T5, T6*
74	2:51	The Extended Form of Multiplication				●				MA3-1WM, -6NA	
75	2:52	The Extended Form of Multiplication				●				MA3-1WM, -5NA, -6NA	
76	2:53	Estimating by Rounding		●	●			●		MA3-1WM, -2WM, -3WM, -5NA	
77	2:54	Estimating Products				●				MA3-1WM, -5NA, -6NA	
78	2:55	The Contracted Form of Multiplication				●				MA3-1WM, -6NA	
79	2:56	The Contracted Form of Multiplication				●				MA3-1WM, -6NA	
80	2:57	Using Algorithms to Solve Problems		●	●					MA3-1WM, -2WM, -3WM, -5NA	
81	2:58	Problems Involving Change of Units		●	●	●	●			MA3-5NA, -9MG, -11MG, -12MG	
82	2:59	Estimation by Rounding		●	●	●	●			MA3-1WM, -2WM, -3WM, -5NA	Term 4
83	2:60	Estimating Products				●				MA3-1WM, -3WM, -5NA, -6NA	
84	2:61	Making a Budget		●		●				MA3-2WM, -3WM, -5NA	
85	2:62	Shopping		●	●					MA3-2WM, -3WM, -5NA	
86	2:63	Using Operations to Solve Problems		●	●	●	●			MA3-1WM, -2WM, -5NA, -6NA	
87	2:64	Strategies for Multiplication				●				MA3-1WM, -3WM, -6NA	
88	2:65	Multiplication by 2-Digit Numbers				●				MA3-1WM, -2WM, -6NA	
89	2:66	Multiplication by 2-Digit Numbers				●				MA3-1WM, -2WM, -6NA	T7, T8*
90	2:67	Multiplication by 2-Digit Numbers				●				MA3-1WM, -2WM, -6NA	
91	2:68	Multiplication by 2-Digit Numbers				●				MA3-1WM, -2WM, -3WM, -6NA	
92	2:69	Finding Missing Numbers		●	●	●	●		●	MA3-1WM, -2WM, -5NA, -8NA	
93	2:70	Finding Missing Numbers		●	●	●	●		●	MA3-1WM, -5NA, -6NA, -8NA	
94	2:71	Using Number Sentences		●	●	●	●		●	MA3-1WM, -2WM, -3WM, -8NA	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Measurement and Geometry A			Content	Length	Area	Volume	Capacity	Mass	Time	Temperature	Syllabus Outcomes	Suggested progress
Page	Unit	Title										
95	3:01	Time Units							●		MA3-1WM, -13MG	Term 1
96	3:02	Kilometres		●							MA3-1WM, -3WM, -9MG	
97	3:03	Kilometres and Metres		●							MA3-1WM, -9MG	
98	3:04	Kilometres		●							MA3-1WM, -9MG	
99	3:05	Hectares			●						MA3-1WM, -2WM, -10MG	
100	3:06	Perimeter		●							MA3-1WM, -2WM, -3WM, -9MG	
101	3:07	Perimeter		●							MA3-1WM, -2WM, -9MG	T1, T2*
102	3:08	Calculating Area			●						MA3-1WM, -2WM, -10MG	Term 2
103	3:09	Square Kilometres			●						MA3-1WM, -2WM, -3WM, -10MG	
104	3:10	Cubic Centimetres				●					MA3-1WM, -2WM, -11MG	T3, T4*
105	3:11	Cubic Centimetres				●					MA3-1WM, -2WM, -11MG	
106	3:12	24-Hour Time							●		MA3-1WM, -13MG	Term 3
107	3:13	Using 12- and 24-Hour Time							●		MA3-1WM, -13MG	
108	3:14	Cubic Metres				●					MA3-1WM, -3WM, -11MG	
109	3:15	Millimetres		●							MA3-1WM, -2WM, -3WM, -9MG	
110	3:16	Perimeter		●							MA3-1WM, -2WM, -3WM, -9MG	T5, T6*
111	3:17	24-Hour Time							●		MA3-1WM, -2WM, -13MG	
112	3:18	Problems Involving Time							●		MA3-1WM, -2WM, -13MG	
113	3:19	Tonnes						●			MA3-1WM, -2WM, -12MG	Term 4
114	3:20	Grams and Kilograms						●			MA3-1WM, -2WM, -12MG	
115	3:21	Converting Measurements		●							MA3-1WM, -9MG	
116	3:22	Variation in Measurement		●						●	MA3-1WM, -3WM, -9MG	
117	3:23	Using Measurement Scales		●			●	●		●	MA3-1WM, -9MG, -11MG, -12MG	T7, T8*
118	3:24	Exploring Perimeter, Area and Volume		●	●	●					MA3-1WM, -2WM, -9MG	
119	3:25	Time Zones							●		MA3-1WM, -2WM, -3WM, -13MG	
120	3:26	Net Mass and Gross Mass						●			MA3-1WM, -2WM, -12MG	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Measurement and Geometry B			Content	2D Space	3D Space	Location	Transformations	Angles	Syllabus Outcomes	Suggested progress
Page	Unit	Title								
121	4:01	3D Space			●				MA3-1WM, -14MG	Term 1
122	4:02	Prisms and Pyramids			●				MA3-1WM, -14MG	
123	4:03	Translations, Reflections and Rotations		●			●		MA3-1WM, -15MG	
124	4:04	Translations, Reflections and Rotations		●			●		MA3-1WM, -15MG	
125	4:05	Nets			●				MA3-1WM, -14MG	T1, T2*
126	4:06	Describing Position				●			MA3-1WM, -16MG, -MG17	
127	4:07	Measuring Angles Using a Protractor						●	MA3-1WM, -16MG	
128	4:08	Angle Types in Degrees						●	MA3-1WM, -16MG	Term 2
129	4:09	Using a Protractor						●	MA3-1WM, -16MG	
130	4:10	Classifying Angles						●	MA3-1WM, -16MG	T3, T4*
131	4:11	Compass Directions				●			MA3-1WM, -17MG	
132	4:12	Reading a Street Directory				●			MA3-1WM, -3WM, -17MG	
133	4:13	Rotational Symmetry		●			●		MA3-1WM, -15MG	
134	4:14	Measuring Angles of Rotation		●			●		MA3-1WM, -15MG, -MG16	
135	4:15	Views and Nets of 3D Objects			●				MA3-1WM, -3WM, -14MG	
136	4:16	Reading a Street Directory				●			MA3-1WM, -17MG	
137	4:17	Using Coordinates				●			MA3-1WM, -17MG	Term 3
138	4:18	Drawing Angles						●	MA3-1WM, -16MG	
139	4:19	Enlargements and Reductions		●			●		MA3-1WM, -15MG	
140	4:20	Enlargements and Reductions		●			●		MA3-1WM, -2WM, -15MG	
141	4:21	Enlargements and Reductions							MA3-1WM, -2WM, -15MG	T5, T6*
142	4:22	Constructing Regular Shapes		●					MA3-1WM, -15MG	Term 4
143	4:23	Quadrilaterals		●					MA3-1WM, -3WM, -15MG	T7, T8*
144	4:24	Triangles		●					MA3-1WM, -15MG	
145	4:25	Rotational Symmetry		●			●		MA3-1WM, -15MG	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Statistics and Probability			Content	Chance	Investigation	Data representation	Syllabus Outcomes	Suggested progress
Page	Unit	Title						
146	5:01	Reading Graphs				●	MA3-1WM, -3WM, -18SP	Term 1
147	5:02	Drawing Graphs				●	MA3-1WM, -2WM, -3WM, -18SP	
148	5:03	Drawing Picture Graphs				●	MA3-1WM, -18SP	
149	5:04	Reading Line Graphs				●	MA3-1WM, -18SP	T1, T2*
150	5:05	Drawing Line Graphs				●	MA3-1WM, -18SP	
151	5:06	Dot Plots				●	MA3-1WM, -3WM, -18SP	Term 2
152	5:07	Using Dot Plots				●	MA3-1WM, -3WM, -18SP	
153	5:08	The Probability of an Event		●			MA3-1WM, -19SP	
154	5:09	Chance		●			MA3-1WM, -3WM, -19SP	
155	5:10	Questionnaires / Surveys			●	●	MA3-1WM, -3WM, -18SP	
156	5:11	Data Investigation			●		MA3-1WM, -2WM, -3WM, 18SP	T3, T4*
157	5:12	More Line Graphs				●	MA3-1WM, -2WM, -5NA, -18SP	Term 3
158	5:13	Information Collected Over Time				●	MA3-1WM, -3WM, -18SP	T5, T6*
159	5:14	Chance		●			MA3-1WM, -3WM, -19SP	
160	5:15	Chance Events		●			MA3-1WM, -3WM, -19SP	
161	5:16	Divided Bar Graphs – Extension				●	MA3-1WM, -3WM, -18SP	Term 4
162	5:17	Sector (or Pie) Graphs – Extension				●	MA3-1WM, -3WM, -18SP	
163	5:18	Comparing Types of Graphs				●	MA3-1WM, -3WM, -18SP	
164	5:19	Selecting the Best Graph to Present Data				●	MA3-1WM, -3WM, -18SP	
165	5:20	Collecting Data from Experiments			●		MA3-1WM, -3WM, -18SP, -19SP	
166	5:21	Collecting Data			●		MA3-1WM, -3WM, -18SP, -19SP	T7, T8*
167	5:22	Reasoning with Graphs			●	●	MA3-1WM, -3WM, -18SP	
168	5:23	Comparing Mobile Phone Plans			●	●	MA3-1WM, -2WM, -3WM, 18SP	

* Suggested placement for Diagnostic Tests 1 to 8. (See the Teacher's Book.)

Suggested Program

	Weeks 1–10	Weeks 11–20	Weeks 21–30	Weeks 31–end
Number and Algebra A	1:01–1:06	1:07–1:13	1:14–1:21	1:22–1:23
Number and Algebra B	2:01–2:15	2:16–2:36	2:37–2:58	2:59–2:71
Measurement and Geometry A	3:01–3:07	3:08–3:11	3:12–3:18	3:19–3:26
Measurement and Geometry B	4:01–4:07	4:08–4:16	4:17–4:21	4:22–4:25
Statistics and Probability	5:01–5:05	5:06–5:11	5:12–5:15	5:16–5:23

The eight Diagnostic Tests are found in the Teacher's Book.

See the Contents and Syllabus Overview on pages vi–xi for suggested placement of each test.

Contents Cross-reference

Number and Algebra

		Pages
1	**Whole numbers**	
	Large numbers and place value	1, 2, 3
	Multiples and factors	24, 25, 26, 35, 36, 40, 54, 55, 64, 65, 68, 77, 86, 93
	Estimating and rounding	2, 3, 28, 29, 30, 31, 32, 33, 39, 44, 46, 49, 51, 67, 74, 75, 76, 77, 82, 83, 85, 91
2	**Addition**	
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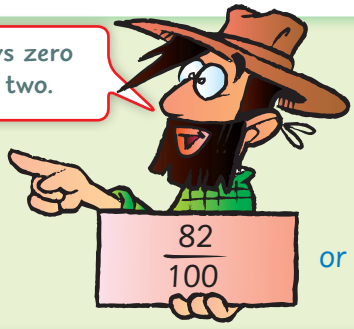
	Written strategies	29, 30, 32, 37, 39, 48, 49
	Problem solving	32, 37, 39, 49, 66, 67, 80, 81, 82, 83, 84, 85, 86, 92, 93, 94, 157, 168
3	**Subtraction**	
	Mental strategies	47, 52, 53, 76, 92
	Written strategies	31, 33, 34, 38, 39, 46, 47, 50, 51, 52
	Problem solving	31, 38, 49, 50, 51, 80, 81, 82, 85, 86, 92, 93, 94
4	**Multiplication**	
	Multiplication tables	24, 25, 26, 35, 40, 54, 55, 92
	Multiplication of large numbers by 1-digit numbers	60, 61, 65, 68, 69, 72, 73, 74, 75, 77, 78, 79
	Multiplication of large numbers by 2-digit numbers	68, 83, 87, 88, 89, 90, 91
	Mental strategies	60, 61, 68, 69, 72, 73, 87
	Problem solving	25, 36, 73, 75, 81, 82, 84, 86, 88, 89, 90, 91, 92, 93, 94, 95, 118, 157, 168
5	**Division**	
	Division facts	27, 43, 64, 92, 93
	Linking multiplication and division	27, 64
	Dividing by 1-digit numbers	27, 41, 42, 43, 44, 56, 57, 58, 59, 62, 63, 64
	Problem solving	41, 42, 43, 44, 57, 58, 59, 62, 63, 66, 67, 81, 82, 86, 92, 93, 94, 98

1:08 Decimals

Writing fractions as decimals

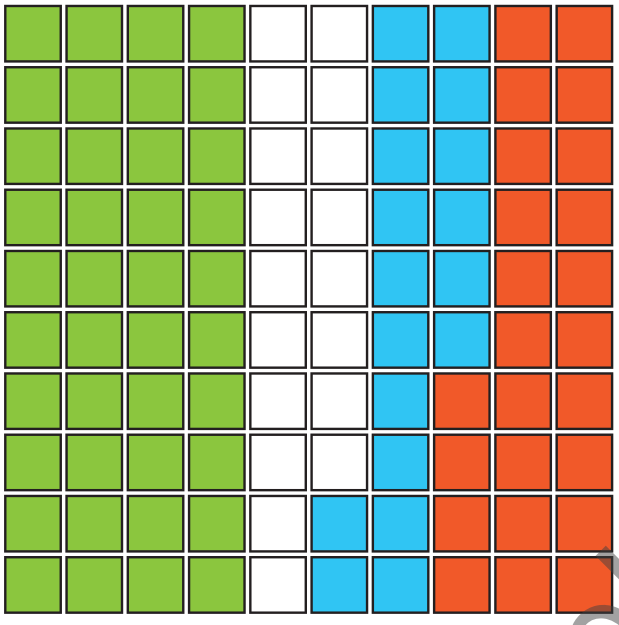
0·82

Decimal point



or 82%

CONCEPT



1 How many squares are grouped together? ☐

2 What part of the group of squares:

a is green?

out of 100 ☐/100 0·☐

b is white?

out of 100 ☐/100 0·☐

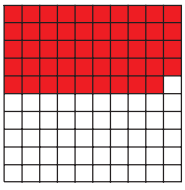
c is blue?

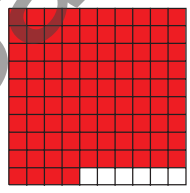
out of 100 ☐/100 0·☐

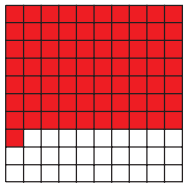
3 What part of the group of squares is red? 0·☐

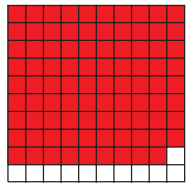
\$0.17 is 17 cents or $\frac{17}{100}$ of a dollar.

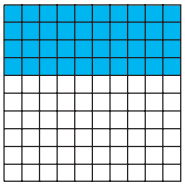
4 Write the fraction and decimal that is coloured.

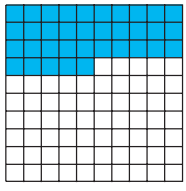
a  ☐ 0·☐

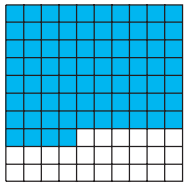
b  ☐ 0·☐

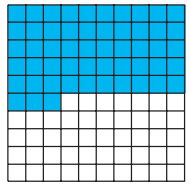
c  ☐ 0·☐

d  ☐ 0·☐

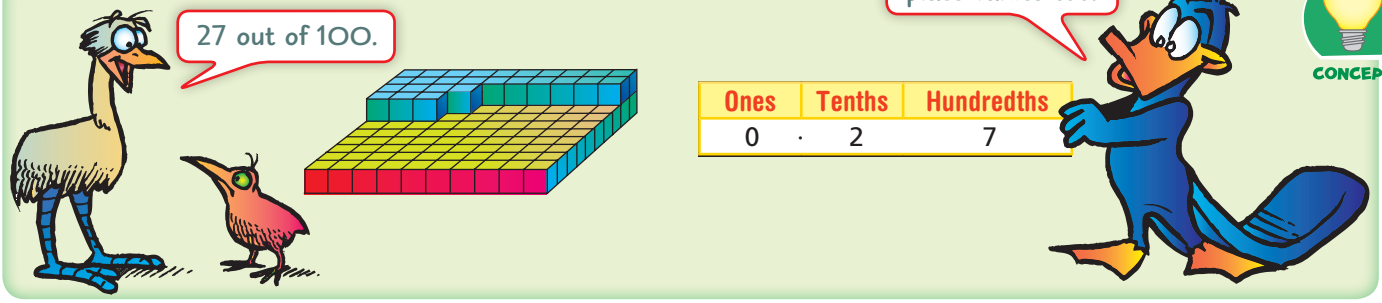
e  ☐ 0·☐

f  ☐ 0·☐

g  ☐ 0·☐

h  ☐ 0·☐

1:09 Place Value in Decimals

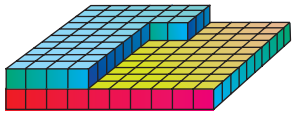


Ones	Tenths	Hundredths
0 ·	2	7

1 Complete the label for each model.

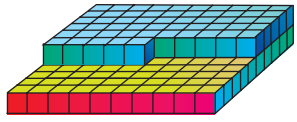
$1 + \frac{28}{100} = 1\frac{28}{100}$

a



Ones	Tenths	Hundredths
0 ·		

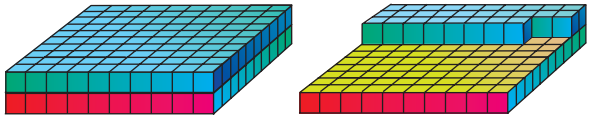
b



Ones	Tenths	Hundredths
0 ·		

This is one whole and twenty-eight hundredths.

c



Ones	Tenths	Hundredths
·		

2 Draw a line from each decimal to the correct fraction.

a

$1\frac{73}{100}$	0·17
$\frac{17}{100}$	1·73
$1\frac{53}{100}$	1·53

b

$2\frac{51}{100}$	1·35
$1\frac{35}{100}$	2·15
$2\frac{15}{100}$	2·51

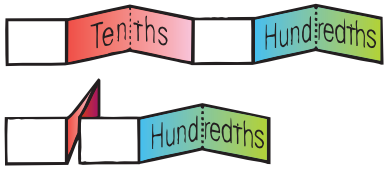
c

$\frac{10}{100}$	3·49
$2\frac{49}{100}$	0·1
$3\frac{49}{100}$	2·49

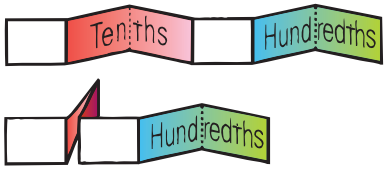
Use place-value blocks to show your answers to Question 2.

3 Complete the numeral expanders for each decimal.

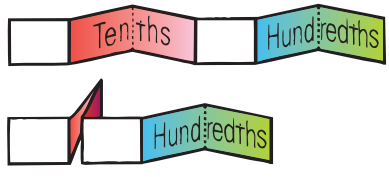
a 0·64



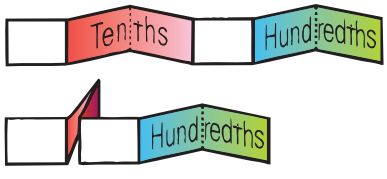
b 0·32



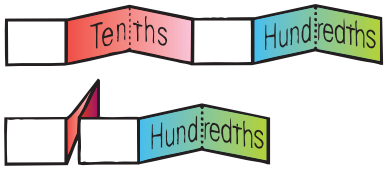
c 0·19



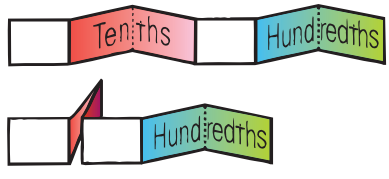
d 0·08



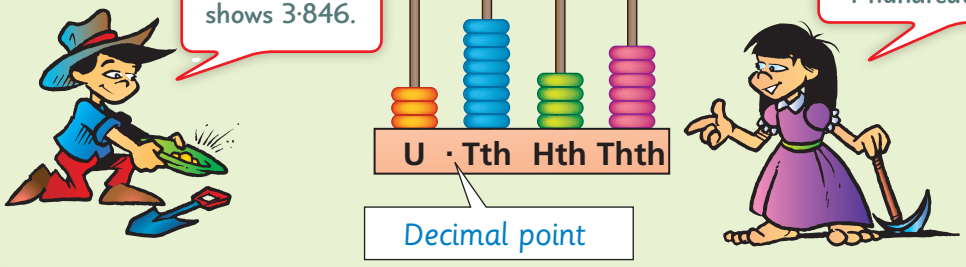
e 0·7



f 0·93



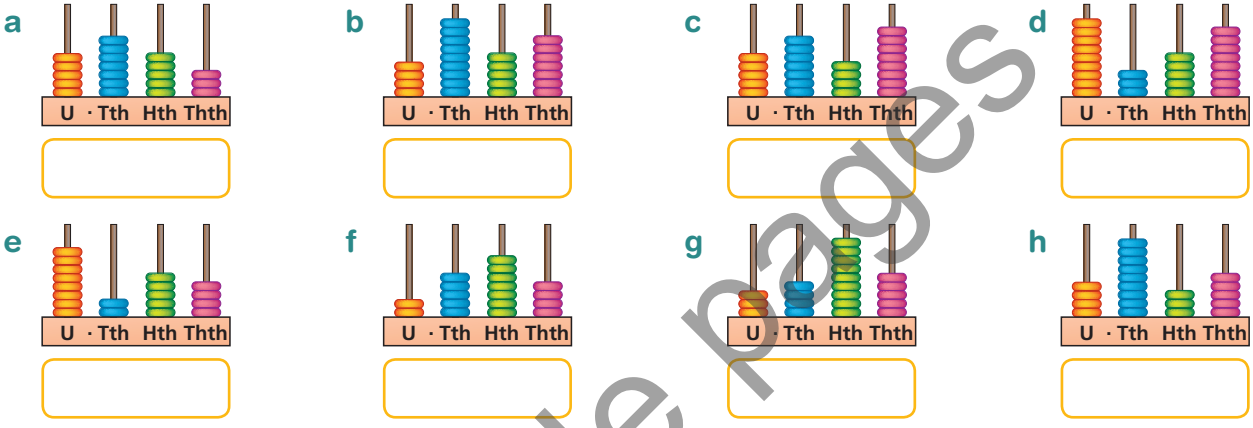
1:10 Place Value to Thousandths



CONCEPT

1 = 10 tenths or
100 hundredths or
1000 thousandths.

1 Write the numeral for the number shown on each abacus.



2 Write each number on the place-value chart.

- **a** three point one nine seven
- **b** five point six three eight
- **c** nine point two four nine
- **d** six point five four eight
- **e** eight point three five two
- **f** two point seven one nine

Units	·	10ths	100ths	1000ths
	·			
	·			
	·			
	·			
	·			
	·			

CONCEPT

ten 1000ths = one 100th	$\frac{10}{1000} = \frac{1}{100}$
ten 100ths = one 10th	$\frac{10}{100} = \frac{1}{10}$
ten 10ths = one unit	$\frac{10}{10} = 1$

Ten of one column gives one in the column on the left.

Make the Largest Number

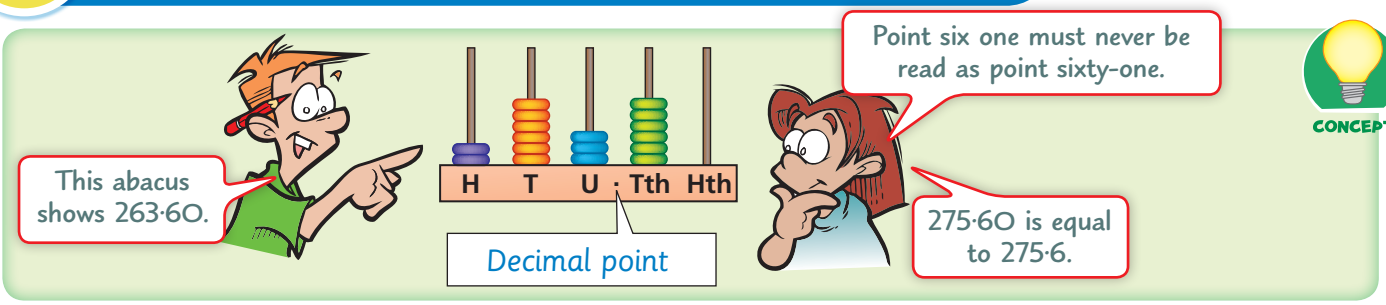
FUN SPOT

- Each player, in turn, rolls the dice and records the number in the column of their choice in the place-value card.
- The player rolls three more dice to fill the place-value card.
- The player with the largest 4-digit number wins the game.

$6{\cdot}421 = 6\frac{421}{1000}$

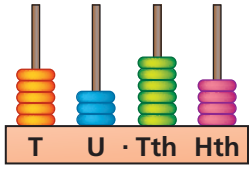
Units		Tenths	Hundredths	Thousandths
6	·	4	2	1

1:11 Reading and Writing Decimals

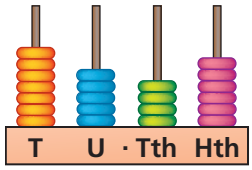


1 Write the numeral for the number shown on each abacus.

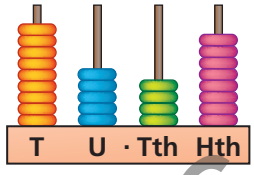
a



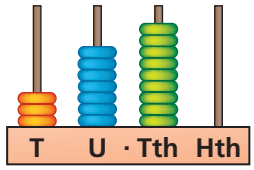
b



c



d



2 Use numerals to write:

a fifteen point seven five

b eighty point three six

c twenty-seven point nine two

d ninety point zero eight

e sixty-two point seven three

f seventy-one point nine nine

3 Complete the following.

a 0·91 = ☐ tenths and ☐ hundredth

b 0·40 = ☐ tenths and ☐ hundredths

c 0·09 = ☐ tenths and ☐ hundredths

4 Write the number represented by:

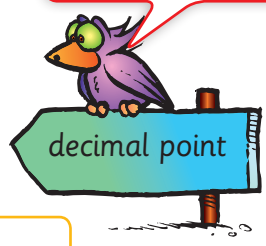
a 5 hundreds, 8 tens, 3 units, 2 tenths and 7 hundredths

b 6 hundreds, 0 tens, 3 units, 0 tenths and 2 hundredths

c 5 hundreds, 6 tens, 3 units and 8 tenths

d 4 hundreds, 1 ten, 0 units, 3 tenths and 9 hundredths

Each of these needs a decimal point.



e six and nine tenths

f four and two tenths

g five and three tenths

h nine and one tenth

5 Write the value for each coloured digit.

a 273·61 ☐ **b** 651·93 ☐ **c** 911·42 ☐ **d** 827·04 ☐

e 129·93 ☐ **f** 372·14 ☐ **g** 740·51 ☐ **h** 391·72 ☐

i 692·76 ☐ **j** 509·73 ☐ **k** 233·21 ☐ **l** 609·49 ☐

1:20 Patterns with Fractions and Decimals

1 Complete each pattern and write the rule.

a $\frac{7}{10}, \frac{9}{10}, \frac{11}{10}, \square, \square, \square, \square$ The rule is: ☐

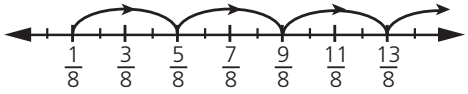
b $4, 3\frac{8}{10}, 3\frac{6}{10}, \square, \square, \square, \square$ The rule is: ☐

c 0·85, 0·87, 0·89, ☐, ☐, ☐ The rule is: ☐

d 1·6, 1·5, 1·4, ☐, ☐, ☐ The rule is: ☐

2 Write and continue the pattern made by the jumps on the number line. Write the rule for each.

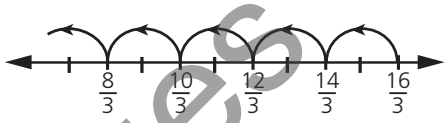
a



$\frac{1}{8}, \square, \square, \square, \square, \square, \square, \square$

The rule is: ☐

b



$\frac{16}{3}, \square, \square, \square, \square, \square, \square, \square$

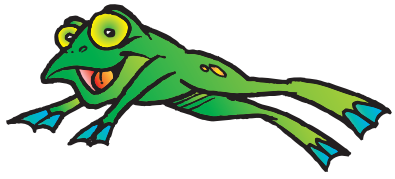
The rule is: ☐

3 Create your own decimal number pattern using jumps on the number line. Write the rule.

a

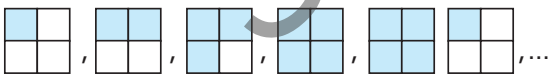
☐, ☐, ☐, ☐, ☐, ☐, ☐

The rule is: ☐



4 Write and continue the pattern shown in these diagrams. Write the rule for each.

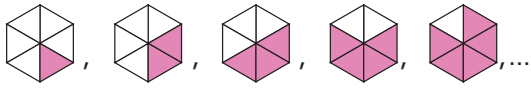
a



$\frac{1}{4}, \square, \square, \square, \square, \square, \square$

The rule is: ☐

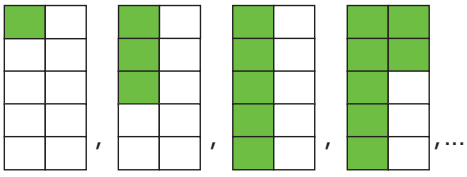
b



$\frac{1}{6}, \square, \square, \square, \square, \square, \square$

The rule is: ☐

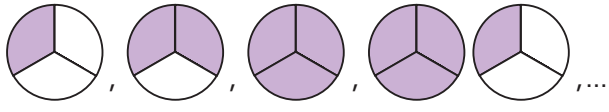
c



0·1, ☐, ☐, ☐, ☐, ☐, ☐

The rule is: ☐

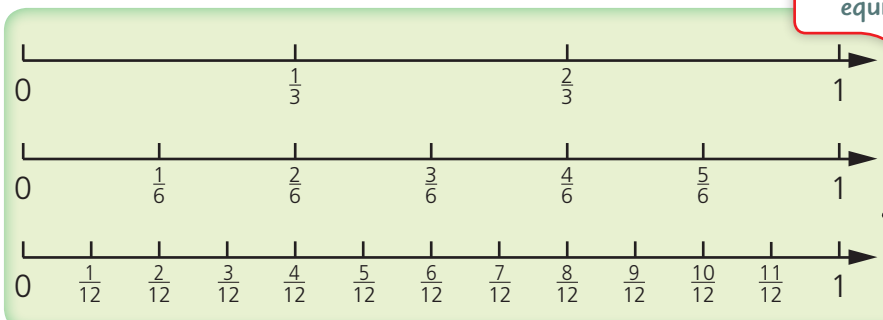
d



$\frac{1}{3}, \square, \square, \square, \square, \square, \square$

The rule is: ☐

1:21 Equivalent Fractions



CONCEPT

$\frac{1}{3} = \frac{2}{6}$

$\frac{1}{3} = \frac{4}{12}$

1 Use the number lines to write an equivalent fraction for:

a $\frac{1}{3}$ ☐ **b** $\frac{10}{12}$ ☐ **c** $\frac{4}{12}$ ☐ **d** $\frac{2}{3}$ ☐

e $\frac{2}{6}$ ☐ **f** $\frac{4}{6}$ ☐ **g** $\frac{12}{12}$ ☐ **h** $\frac{8}{12}$ ☐

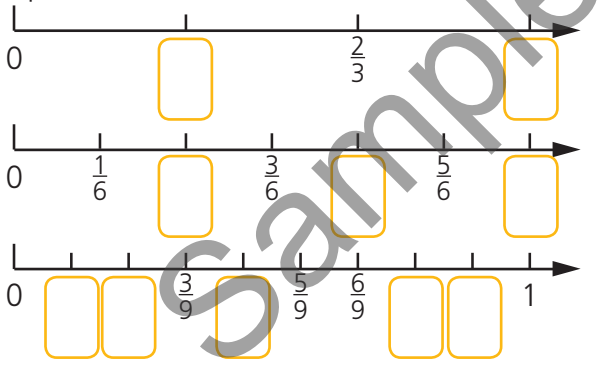
2 Use the number lines above to answer **true** or **false**.

a $\frac{1}{6} = \frac{2}{3}$ ☐ **b** $\frac{2}{3} = \frac{8}{12}$ ☐ **c** $\frac{2}{3} = \frac{4}{6}$ ☐ **d** $\frac{9}{12} = \frac{4}{6}$ ☐

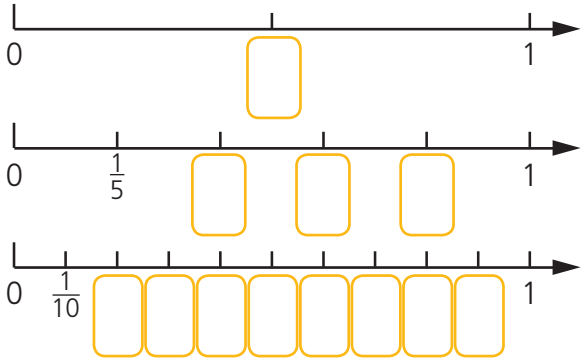
e $\frac{2}{12} = \frac{1}{6}$ ☐ **f** $\frac{3}{6} = \frac{5}{12}$ ☐ **g** $\frac{1}{3} = \frac{4}{12}$ ☐ **h** $\frac{5}{6} = \frac{5}{12}$ ☐

3 Complete the number lines.

a



b



4 Use the number lines above to answer **true** or **false**.

a $\frac{1}{5} = \frac{2}{10}$ ☐ **b** $\frac{2}{3} = \frac{4}{6}$ ☐ **c** $\frac{1}{3} = \frac{1}{6}$ ☐ **d** $\frac{2}{5} = \frac{4}{10}$ ☐

e $\frac{2}{3} = \frac{4}{6}$ ☐ **f** $\frac{3}{6} = \frac{2}{3}$ ☐ **g** $\frac{4}{5} = \frac{9}{10}$ ☐ **h** $\frac{3}{5} = \frac{8}{10}$ ☐

i $\frac{1}{5} = \frac{1}{10}$ ☐ **j** $\frac{2}{3} = \frac{6}{9}$ ☐ **k** $\frac{1}{2} = \frac{5}{10}$ ☐ **l** $\frac{5}{6} = \frac{2}{3}$ ☐

5 Use the number lines in Question 3 to write an equivalent fraction for:

a $\frac{1}{3}$ ☐ **b** $\frac{4}{6}$ ☐ **c** $\frac{1}{2}$ ☐ **d** $\frac{6}{9}$ ☐

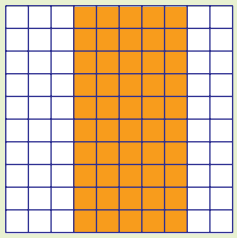
e $\frac{8}{10}$ ☐ **f** $\frac{3}{9}$ ☐ **g** $\frac{2}{3}$ ☐ **h** $\frac{1}{5}$ ☐

1:22 Percentages

50 out of 100

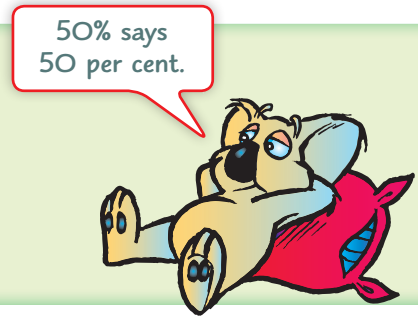
50 hundredths

50%



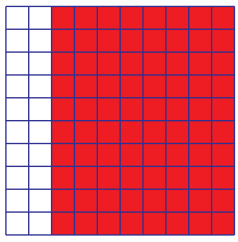
0·50

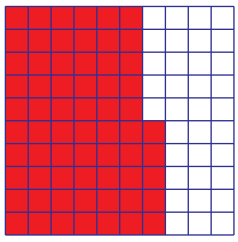
$\frac{50}{100}$

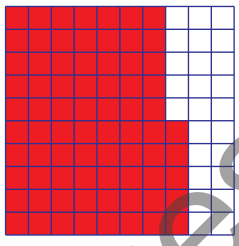


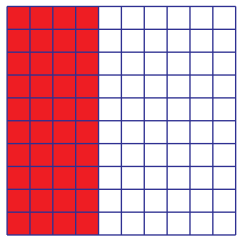
CONCEPT

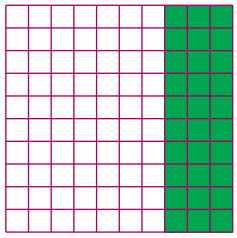
1 What percentage of each square is coloured?

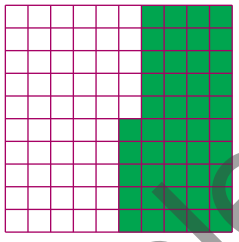
a 

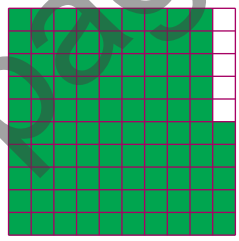
b 

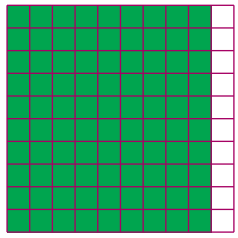
c 

d 

e 

f 

g 

h 

2 What percentage of each square in Question 1 is not coloured?

a ____ b ____ c ____ d ____ e ____ f ____ g ____ h ____

3 Complete these equivalents:

a	0·25	$\frac{\quad}{100}$	%
b	0·65		
c	0·45		
d	0·80		
e	0·50		
f	0·20		
g	0·60		
h	0·35		
i	0·75		
j	0·55		
k	0·95		
l	0·40		

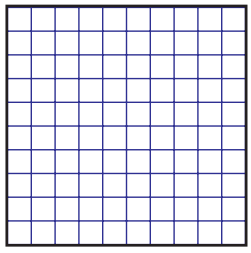
Percentages in the Environment

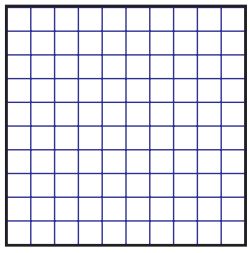
ACTIVITY

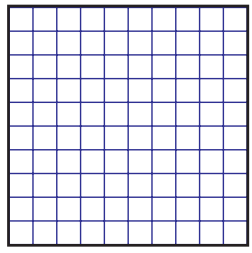
- Collect examples of percentages from newspapers and food packages.
- Discuss different ways in which percentages are used.

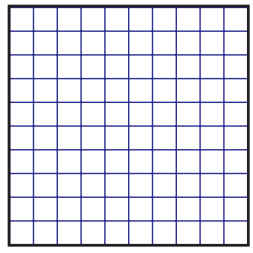
1:23 Using Percentages

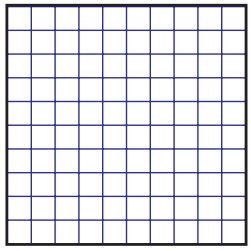
1 For each square, colour the percentage shown.

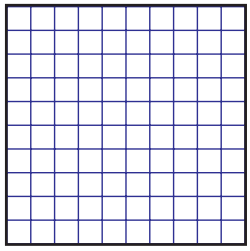
a 
10%

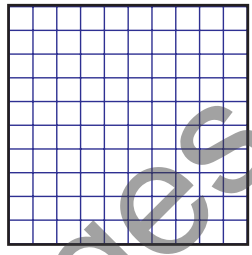
b 
25%

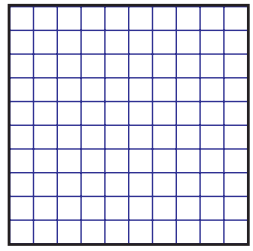
c 
20%

d 
75%

e 
50%

f 
15%

g 
60%

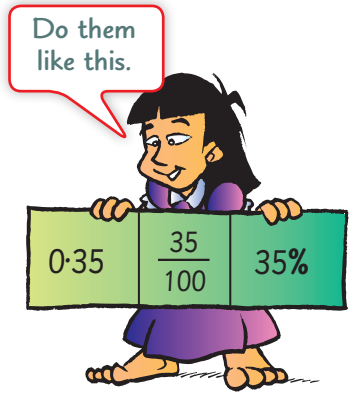
h 
90%

2 What percentage of each square in Question 1 should not be coloured?

a ☐ b ☐ c ☐ d ☐ e ☐ f ☐ g ☐ h ☐

3 Complete the following.

a	$\frac{15}{100}$	0· ☐ %	b	$\frac{75}{100}$	0· ☐ %	c	$\frac{25}{100}$	0· ☐ %
d	$\frac{45}{100}$	0· ☐ %	e	$\frac{95}{100}$	0· ☐ %	f	$\frac{85}{100}$	0· ☐ %
g	$\frac{35}{100}$	0· ☐ %	h	$\frac{10}{100}$	0· ☐ %	i	$\frac{30}{100}$	0· ☐ %
j	$\frac{20}{100}$	0· ☐ %	k	$\frac{60}{100}$	0· ☐ %	l	$\frac{90}{100}$	0· ☐ %



Converting Fractions to Decimals

ICT

4 Use a calculator to divide the denominator into the numerator.

e.g. $\frac{35}{100}$ ← numerator ← denominator is 3 5 ÷ 1 0 0 = 0·35

Now calculate:

a	$\frac{65}{100}$ ☐	b	$\frac{15}{100}$ ☐	c	$\frac{95}{100}$ ☐	d	$\frac{45}{100}$ ☐	e	$\frac{75}{100}$ ☐
f	$\frac{25}{100}$ ☐	g	$\frac{5}{100}$ ☐	h	$\frac{60}{100}$ ☐	i	$\frac{80}{100}$ ☐	j	$\frac{40}{100}$ ☐
k	$\frac{10}{100}$ ☐	l	$\frac{37}{100}$ ☐	m	$\frac{91}{100}$ ☐	n	$\frac{20}{100}$ ☐	o	$\frac{100}{100}$ ☐