

AUSTRALIAN  
**Signpost**  
MATHS

NSW



STAGE 3

5

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## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 1

Week - Program	Page	Unit	Title	Strand	Syllabus Code/s	Syllabus sub-elements
Week 1	Mentals Unit 1					
Week 2	Mentals Unit 2					
Week 3	1	1:01	Numbers using millions	Number and algebra	MA3-RN-01	Represents numbers A (Counting, Number, Place value)
	2	1:02	Large numbers	Number and algebra	MA3-RN-01	Represents numbers A (Counting, Number, Place value)
	3	1:03	Using large numbers	Number and algebra	MA3-RN-01	Represents numbers A (Counting, Number, Place value, Rounding)
	27	2:01	Learning your multiplication tables	Operations and algebra	MA3-MR-02	Multiplicative relations A (Multiplication, Multiples, factors, divisibility)
Week 4	4	1:04	Fractions	Number and algebra	MA3-RQF-01 MA3-RQF-02	Representing quantity fractions A
	5	1:05	The order of unit fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	6	1:06	Mixed numbers	Number and algebra	MA3-RN-03 MA3-RQF-01	Representing quantity fractions A, Represents numbers A (Decimals)
	28	2:02	Division facts	Operations and algebra	MA3-MR-02	Multiplicative relations A (Division, Algebraic thinking)
	29	2:03	Division with remainders	Operations and algebra	MA3-MR-02	Multiplicative relations A (Division, Problem solving)
Week 5	7	1:07	Tenths and hundredths	Number and algebra	MA3-RN-02	Represents numbers A (Fractions, Decimals)
	8	1:08	Percentages	Number and algebra	MA3-RN-03	Represents numbers A (Fractions, Decimals, Percentages)
	9	1:09	Using percentages	Number and algebra	MA3-RN-03	Represents numbers A (Fractions, Decimals, Percentages)
	85	3:01	Kilometres	Measurement	MA3-GM-02	Geometric measure A (Length)
	86	3:02	Kilometres and metres	Measurement	MA3-GM-02	Geometric measure A (Length)
Week 6	10	1:10	Fractions	Number and algebra	MA3-RQF-01 MA3-RN-03	Representing quantity fractions A, Represents numbers A (Decimals, Percentages)
	11	1:11	Improper fractions, mixed numbers	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	87	3:03	Perimeter	Measurement	MA3-GM-02	Geometric measure A (Length)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 1 cont.

	88	3:04	Perimeter	Measurement	MA3-GM-02	Geometric measure A (Length)
Week 7	12	1:12	Addition of fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	13	1:13	Subtraction of fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	89	3:05	Calculating area	Measurement	MA3-2DS-02	Two-dimensional spatial structure A (Area, Problem solving)
	90	3:06	Square metres	Measurement	MA3-2DS-02	Two-dimensional spatial structure A (Area, Problem solving)
	133	5:01	Reading graphs	Statistics	MA3-DATA-02	Data A (Analysing data displays)
Week 8	14	1:14	Place value to thousandths	Number and algebra	MA3-RN-02	Represents numbers A (Place value, Decimals)
	15	1:15	Place value and decimals	Number and algebra	MA3-RN-02	Represents numbers A (Place value, Decimals)
	91	3:07	Area	Measurement	MA3-2DS-02	Two-dimensional spatial structure A (Area)
	92	3:08	Problem solving	Measurement	MA3-NSM-02 MA3-2DS-02	Non-spatial measure A (Length, Capacity and volume, Temperature, Problem solving) Two-dimensional spatial structure A (Area, Problem solving)
	134	5:02	Drawing graphs	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
Week 9	30	2:04	Rounding	Operations and algebra	MA3-MR-01	Multiplicative relations A (Mental strategies)
	31	2:05	Strategies, + and –	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Subtraction)
	93	3:09	Time units	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration, Problem solving)
	94	3:10	24-hour time	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration)
	135	5:03	Drawing picture graphs	Statistics	MA3-DATA-01	Data A (Collecting/recording data)
Week 10	32	2:06	Addition to 999	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Mental strategies)
	33	2:07	Addition to 999	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Mental strategies)
	34	2:08	Using the addition algorithm	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Mental strategies, Problem solving)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 2

Week - Program	Page	Unit	Title	Strand	Syllabus Code/s	Syllabus sub-elements
Week 11	35	2:09	Subtraction with trading	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Mental strategies)
	36	2:10	Subtraction to 999	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Mental strategies)
	95	3:11	Using 12- and 24-hour time	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration)
	96	3:12	24-hour time calculations	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration, Problem solving)
Week 12	37	2:11	Multiples	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Multiples, factors, divisibility)
	38	2:12	Factors	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Multiples, factors, divisibility, Problem solving)
	39	2:13	Prime and composite numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiples, factors, divisibility)
	111	4:01	3D space	Space	MA3-3DS-01	Three-dimensional spatial structure A (3D objects)
	112	4:02	Prisms and pyramids	Space	MA3-3DS-01	Three-dimensional spatial structure A (3D objects)
Week 13	40	2:14	Addition of money	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Problem solving)
	41	2:15	Subtraction of money	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Problem solving)
	42	2:16	Shopping	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Subtraction, Problem solving)
	113	4:03	Triangles	Space	MA3-2DS-01	Two-dimensional spatial structure (2D space)
	114	4:04	Quadrilaterals	Space	MA3-2DS-01	Two-dimensional spatial structure (2D space)
Week 14	43	2:17	Division with remainders	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Division, problem solving)
	44	2:18	Division of 2-digit numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Division, problem solving)
	45	2:19	Using division facts	Operations and algebra	MA3-MR-02 MA3-MR-01	Multiplicative relations A (Division, problem solving)
	115	4:05	Nets	Space	MA3-3DS-01	Three-dimensional spatial structure A (3D objects)
	116	4:06	Describing position	Space	MA3-GM-01	Geometric measure A (Position, directions)



## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 2 cont.

Week 15	46	2:20	Subtraction to 999	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Mental strategies)
	47	2:21	Subtraction from hundreds	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Mental strategies, Problem solving)
	117	4:07	Using a protractor	Space	MA3-GM-03	Geometric measure A (Angles, lines)
	118	4:08	Angle types in degrees	Space	MA3-GM-03	Geometric measure A (Angles, lines)
Week 16	48	2:22	Addition to 9999	Operations and algebra	MA3-AR-01	Additive relations A (Addition)
	49	2:23	Addition to 9999	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Problem solving)
	119	4:09	Using a protractor	Space	MA3-GM-03	Geometric measure A (Angles, lines)
	120	4:10	Classifying angles	Space	MA3-GM-03	Geometric measure A (Angles, lines)
	136	5:04	Surveys	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
Week 17	50	2:24	Subtraction to 9999	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Problem solving)
	51	2:25	Subtraction from 1000s	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Problem solving)
	52	2:26	Subtraction from 1000s strategy	Operations and algebra	MA3-AR-01	Additive relations A (Subtraction, Mental strategies)
	121	4:11	Compass directions	Space	MA3-GM-01	Geometric measure A (Position, directions)
	122	4:12	Reading a map	Space	MA3-GM-01	Geometric measure A (Position, directions)
Week 18	53	2:27	Dividing 2-digit numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Division)
	54	2:28	Dividing 2-digit numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Division)
	123	4:13	Rotational symmetry	Space	MA3-2DS-01	Two-dimensional spatial structure (Symmetry, transformations)
	124	4:14	Measuring angles of rotation	Space	MA3-GM-03	Geometric measure A (Angles, lines)
	125	4:15	Rotational symmetry	Space	MA3-2DS-01	Two-dimensional spatial structure (Symmetry, transformations)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 2 cont.

Week 19	55	2:29	Dividing 2-digit numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Division, Problem solving)
	56	2:30	Dividing 3-digit numbers	Operations and algebra	MA3-MR-01	Multiplicative relations A (Division, Problem solving)
	137	5:05	Choosing at random	Probability	MA3-CHAN-01	Chance A (Chance experiments/language)
	138	5:06	Fair or unfair?	Probability	MA3-CHAN-01	Chance A (Chance experiments/language)
	139	5:07	Comparing the chances	Probability	MA3-CHAN-01	Chance A (Chance experiments/language)
Week 20	57	2:31	Multiplying tens	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Mental strategies)
	58	2:32	Multiplying tens or hundreds	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Mental strategies)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 3

Week - Program	Page	Unit	Title	Strand	Syllabus Code/s	Syllabus sub-elements
Week 21	16	1:16	Addition and subtraction of fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	17	1:17	Equivalent fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	126	4:16	Views and nets of 3D objects	Space	MA3-3DS-01	Three-dimensional spatial structure A (3D objects)
	127	4:17	Coordinates on the number plane	Space	MA3-GM-01	Geometric measure A (Position, directions)
	128	4:18	Using coordinates	Space	MA3-GM-01	Geometric measure A (Position, directions)
Week 22	18	1:18	Equivalent fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	19	1:19	Equivalent fractions	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	97	3:13	Using measurement scales	Measurement	MA3-GM-02 MA3-NSM-01 MA3-3DS-02	Geometric measure A (Length), Non-spatial measure A (Mass, Temperature), Three-dimensional spatial structure A (Capacity and volume)
	98	3:14	Millimetres	Measurement	MA3-GM-02	Geometric measure A (Length)
	99	3:15	Converting length measurements	Measurement	MA3-GM-02	Geometric measure A (Length)
Week 23	20	1:20	Comparing decimals	Number and algebra	MA3-RN-02	Represents numbers A (Counting, number, Place value, Decimals)
	21	1:21	Comparing decimals	Number and algebra	MA3-RN-02	Represents numbers A (Place value, Decimals)
	100	3:16	24-hour time	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration)
	101	3:17	Problems involving time	Measurement	MA3-NSM-02	Non-spatial measure A (Time/duration, Problem solving)
	140	5:08	Dot plots	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
Week 24	59	2:33	Dividing 3-digit numbers by 10	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Division, Mental strategies, Problem solving)
	60	2:34	Dividing with zero in the answer	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Division, Problem solving)
	61	2:35	Divisibility	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiples, factors, divisibility)
	102	3:18	Grams and kilograms	Measurement	MA3-NSM-01	Non-spatial measure A (Mass)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 3 cont.

	103	3:19	Measuring mass	Measurement	MA3-NSM-01	Non-spatial measure A (Mass, Problem solving)
Week 25	62	2:36	Factors and multiples	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiples, factors, divisibility)
	63	2:37	Using factors in multiplication	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Multiples, factors, divisibility, Mental strategies)
	64	2:38	Averages	Operations and algebra	MA3-MR-01	Multiplicative relations A (Addition, Division, Problem solving)
	104	3:20	Perimeter	Measurement	MA3-GM-02	Geometric measure A (Length)
	105	3:21	Exploring perimeter and area	Measurement	MA3-GM-02 MA3-2DS-02	Geometric measure A (Length, Problem solving), Two-dimensional spatial structure A (Area, Problem solving)
	141	5:09	More line graphs	Statistics	MA3-DATA-02	Data A (Analysing data displays)
Week 26	65	2:39	Averages	Operations and algebra	MA3-MR-01	Multiplicative relations A (Addition, Division, Problem solving)
	66	2:40	Mental strategies for multiplication	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies)
	106	3:22	Measuring volume in mL	Measurement	MA3-3DS-02	Three-dimensional spatial structure A (Capacity and volume)
	107	3:23	Capacity and volume	Measurement	MA3-3DS-02	Three-dimensional spatial structure A (Capacity and volume)
	108	3:24	Measuring capacity	Measurement	MA3-3DS-02	Three-dimensional spatial structure A (Capacity and volume)
Week 27	67	2:41	Multiplying 2-digit numbers	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication)
	68	2:42	The extended form of multiplication	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies)
	69	2:42	The extended form of multiplication	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Problem solving)
	142	5:10	Reading line graphs	Statistics	MA3-DATA-02	Data A (Analysing data displays)
	143	5:11	Drawing line graphs	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
	144	5:12	Matching graphs with stories	Statistics	MA3-DATA-02	Data A (Analysing data displays)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 3 cont.

Week 28	70	2:44	The contracted form of multiplication	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication)
	71	2:45	The contracted form of multiplication	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication)
	72	2:46	Problems involving change of units	Operations and algebra	MA3-AR-01 MA3-MR-02	Additive relations A (Addition, Subtraction, Mental strategies, Problem solving), Multiplicative relations A (Multiplication, Division, Mental strategies, Problem solving)
	109	3:25	Hectares	Measurement	MA3-2DS-02	Two-dimensional spatial structure A (Area)
	110	3:26	Square kilometres	Measurement	MA3-2DS-02	Two-dimensional spatial structure A (Area)
Week 29	73	2:47	Estimation by rounding	Operations and algebra	MA3-AR-01 MA3-MR-02	Additive relations A (Addition, Subtraction, Problem solving), Multiplicative relations A (Multiplication, Division, Problem solving)
	74	2:48	Estimation by rounding	Operations and algebra	MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies)
	145	5:13	Chance, as a fraction	Probability	MA3-CHAN-01	Chance A (Chance language, Chance experiments)
	146	5:14	Chance	Probability	MA3-CHAN-01	Chance A (Chance language, Chance experiments)
Week 30	147	5:15	Collecting chance data	Statistics and Probability	MA3-CHAN-01 MA3-DATA-01 MA3-DATA-02	Chance A (Chance language, Chance experiments) Data A (Collecting/recording data, Analysing data displays)
	148	5:16	Collecting data	Statistics and Probability	MA3-CHAN-01 MA3-DATA-01 MA3-DATA-02	Chance A (Chance language, Chance experiments) Data A (Collecting/recording data, Analysing data displays)

## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 4

Week - Program	Page	Unit	Title	Strand	Syllabus Code/s	Syllabus sub-elements
Week 31	22	1:22	Subtraction from whole numbers	Number and algebra	MA3-RQF-01	Representing quantity fractions A
	23	1:23	Using fractions	Number and algebra	MA3-RN-01	Represents numbers A (Fractions))
	24	1:24	Solving problems with fractions	Number and algebra	MA3-RQF-01 MA3-RQF-02	Representing quantity fractions A
	129	4:19	Drawing angles	Space	MA3-GM-03	Geometric measure A (Angles, lines)
	130	4:20	Angles greater than 180°	Space	MA3-GM-03	Geometric measure A (Angles, lines)
Week 32	25	1:25	Using decimals	Number and algebra	MA3-RN-01 MA3-RN-02	Represents numbers A (Counting, number, Place value, Decimals)
	26	1:26	Patterns and percentages	Number and algebra	MA3-RN-03 MA3-RN-02 MA3-RQF-01	Represents numbers A (Decimals, Percentages), Representing quantity fractions A
	75	2:49	Using your income	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Subtraction, Problem solving)
	76	2:50	Making a budget	Operations and algebra	MA3-AR-01	Additive relations A (Addition, Problem solving)
Week 33	77	2:51	Using operations to solve problems	Operations and algebra	MA3-AR-01 MA3-MR-02 MA3-MR-01	Additive relations A (Addition, Subtraction, Problem solving), Multiplicative relations A (Multiplication, Problem solving)
	78	2:52	Estimating products	Operations and algebra	MA3-MR-01	Multiplicative relations A (Multiplication, Mental strategies)
	79	2:53	Strategies for multiplication	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies)
	149	5:17	Data collected over time	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
	150	5:18	Data investigation	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
	151	5:19	Using spreadsheets	Statistics	MA3-DATA-02 MA3-DATA-01	Data A (Collecting/recording data, Analysing data displays)
Week 34	80	2:54	Multiplication by 2-digit numbers	Operations and algebra	MA3-MR-02 MA3-MR-01	Multiplicative relations A (Multiplication, Mental strategies Problem solving)
	81	2:55	Multiplication by 2-digit numbers	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies, Problem solving)



## Australian Signpost Maths NSW 5 (Stage 3) Suggested Program

### Term 4 cont.

	131	4:21	Mapping Australia	Space	MA3-GM-01	Geometric measure A (Position, directions)
	132	4:22	Using angles	Space	MA3-GM-03	Geometric measure A (Angles, lines)
Week 35	82	2:56	Multiplication by 2-digit numbers	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Problem solving)
	83	2:57	Multiplication by 2-digit numbers	Operations and algebra	MA3-MR-01 MA3-MR-02	Multiplicative relations A (Multiplication, Mental strategies, Problem solving)
	152	5:20	Bar and sector graphs	Statistics	MA3-DATA-02	Data A (Analysing data displays)
	153	5:21	Reasoning with graphs	Statistics	MA3-DATA-02	Data A (Analysing data displays)
Week 36	154	5:22	Selecting a graph to use	Statistics	MA3-DATA-01	Data A (Collecting/recording data)
	155	5:23	Comparing types of graphs	Statistics	MA3-DATA-01 MA3-DATA-02	Data A (Collecting/recording data, Analysing data displays)
Week 37	84	2:58	Finding missing numbers	Operations and algebra	MA3-AR-01 MA3-MR-02	Additive relations A (Addition, Subtraction, Algebraic thinking), Multiplicative relations A (Multiplication, Division, Algebraic thinking)

## Australian Signpost Maths NSW 5 (Stage 3) Syllabus Map

Strand	Substrand	New NSW Outcome	New Content Description	Australian Signpost Maths NSW Lessons
Number and Algebra	Represents Numbers A	<b>MA3-RN-01:</b> applies an understanding of place value and the role of zero to represent the properties of numbers	Create fractional parts of a length using techniques other than repeated halving	1:01 Numbers using millions 1:02 Large numbers 1:03 Using large numbers 1:23 Using fractions 1:25 Using decimals
			Model and represent unit fractions, and their multiples, to complete a whole on a number line	
		<b>MA3-RN-02:</b> compares and orders decimals up to 3 decimal places	Decimals and percentages: Recognise that the place value system can be extended beyond hundredths	1:07 Tenths and hundredths 1:14 Place value to thousandths 1:15 Place value and decimals 1:20 Comparing decimals 1:21 Comparing decimals 1:25 Using decimals 1:26 Patterns and percentages
			Decimals and percentages: Compare, order and represent decimals	
Number and Algebra	Additive Relations A	<b>MA3-RN-03:</b> determines percentages of quantities, and finds equivalent fractions and decimals for benchmark percentage values		1:06 Mixed numbers 1:08 Percentages 1:09 Using percentages 1:10 Fractions 1:26 Patterns and percentages
Number and Algebra		<b>MA3-AR-01:</b> selects and applies appropriate strategies to solve addition and subtraction problems	Apply efficient mental and written strategies to solve addition and subtraction problems	2:05 Strategies, + and – 2:06 Addition to 999 2:07 Addition to 999 2:08 Using the addition algorithm 2:09 Subtraction with trading 2:10 Subtraction to 999 2:14 Addition of money 2:15 Subtraction of money 2:16 Shopping 2:20 Subtraction to 999 2:21 Subtraction from hundreds 2:22-3 Addition to 9999 2:24 Subtraction to 9999 2:25 Subtraction from 1000s 2:26 Subtraction from 1000s strategy 2:46 Problems involving change of units 2:47 Estimating by rounding 2:49 Using your income 2:50 Making a budget 2:51 Using operations to solve problems 2:58 Finding missing numbers
			Use estimation and place value understanding to determine the reasonableness of solutions	

## Australian Signpost Maths NSW 5 (Stage 3) Syllabus Map

Number and Algebra	Multiplicative Relations A	<b>MA3-MR-01:</b> selects and applies appropriate strategies to solve multiplication and division problems	Determine products and factors	2:01 Learning your multiplication tables 2:02 Division facts 2:03 Division with remainders 2:04 Rounding 2:11 Multiples 2:12 Factors 2:13 Prime and composite numbers
			Use partitioning and place value to multiply 2-, 3- and 4-digit numbers by one-digit numbers	2:17 Division with remainders 2:18 Division of 2-digit numbers 2:19 Using division facts 2:27-29 Dividing 2-digit numbers 2:30 Dividing 3-digit numbers 2:31 Multiplying tens 2:32 Multiplying tens or hundreds
			Select and apply mental and written strategies to multiply 2- and 3-digit numbers by 2-digit numbers	2:33 Dividing 3-digit numbers by 10 2:34 Dividing with zero in the answer 2:35 Divisibility 2:36 Factors and multiples
			Represent and solve division problems with whole number remainders	2:37 Using factors in multiplication 2:38-9 Averages 2:40 Mental strategies for multiplication 2:41 Multiplying 2-digit numbers 2:42-3 The extended form of multiplication 2:44-5 The contracted form of multiplication
			Select and apply strategies to divide a number with 3 or more digits by a one-digit divisor	2:46 Problems involving change of units 2:47-8 Estimation by rounding 2:51 Using operations to solve problems 2:52 Estimating products 2:53 Strategies for multiplication 2:54-7 Multiplication by 2-digit numbers 2:58 Finding missing numbers
		<b>MA3-MR-02:</b> constructs and completes number sentences involving multiplicative relations, applying the order of operations to calculations	Use estimation and rounding to check the reasonableness of answers to calculations	
Number and Algebra	Representing Quantity Fractions A	<b>MA3-RQF-01:</b> compares and orders fractions with denominators of 2, 3, 4, 5, 6, 8 and 10	Recognise the role of the number 1 as representing the whole	1:04 Fractions 1:05 The order of fractions 1:06 Mixed numbers 1:10 Fractions 1:11 Improper fractions, mixed numbers
			Compare and order common unit fractions	1:12 Addition of fractions 1:13 Subtraction of fractions 1:16 Addition and subtraction of fractions
		<b>MA3-RQF-02:</b> determines $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{5}$ and $\frac{1}{10}$ of measures and quantities	Solve problems involving addition and subtraction of fractions with the same denominator	1:17-19 Equivalent fractions 1:22 Subtraction from whole numbers 1:24 Solving problems with fractions 1:26 Patterns and percentages

## Australian Signpost Maths NSW 5 (Stage 3) Syllabus Map

Measurement	Geometric Measure A	<b>MA3-GM-01:</b> locates and describes points on a coordinate plane	Position: Explore the Cartesian coordinate system	4:06 Describing position 4:11 Compass directions 4:12 Reading a map 4:17 Coordinates on the number plane 4:18 Using coordinates 4:21 Mapping Australia
		<b>MA3-GM-02:</b> selects and uses the appropriate unit and device to measure lengths and distances including perimeters	Length: Use metres and kilometres for length and distances	3:01 Kilometres 3:02 Kilometres and metres 3:13 Using measurement scales 3:14 Millimetres 3:15 Converting length measurements
			Length: Measure lengths to find perimeters	3:03-4 Perimeter 3:20 Perimeter 3:21 Exploring perimeter and area
		<b>MA3-GM-03:</b> measures and constructs angles, and identifies the relationships between angles on a straight line and angles at a point	Angles: Estimate, measure and compare angles using degrees	4:08 Angle types in degrees 4:10 Classifying angles 4:14 Measuring angles of rotation 4:19 Drawing angles 4:20 Angles greater than 180°
			Angles: Use a protractor to measure and identify types of angles	4:07 and 09 Using a protractor 4:10 Classifying angles
Space	Two-Dimensional (2D) Spatial Structure A	<b>MA3-2DS-01:</b> investigates and classifies two-dimensional shapes, including triangles and quadrilaterals based on their properties	2D shapes: Classify two-dimensional shapes and describe their properties	4:03 Triangles 4:04 Quadrilaterals 4:13 and 15 Rotational symmetry
		<b>MA3-2DS-02:</b> selects and uses the appropriate unit to calculate areas, including areas of rectangles	Area: Use hectares and square kilometres as units of measurement for area	
			Area: Calculate the areas of rectangles using familiar metric units	
		<b>MA3-2DS-03:</b> combines, splits and rearranges shapes to determine the area of parallelograms and triangles		
Space	Three-Dimensional (3D) Spatial Structure A	<b>MA3-3DS-01:</b> visualises, sketches and constructs three-dimensional objects, including prisms and pyramids, making connections to two-dimensional representations	3D objects: Compare, describe and name prisms and pyramids	
			3D objects: Connect three-dimensional objects with two-dimensional representations	
		<b>MA3-3DS-02:</b> selects and uses the appropriate unit to estimate, measure and calculate volumes and capacities	Volume: Choose appropriate units of measurement for capacity	
			Volume: Use displacement to investigate volumes of irregular solids	
			Volume: Connect decimal representations to the metric system	

## Australian Signpost Maths NSW 5 (Stage 3) Syllabus Map

Measurement	Non-Spatial Measure A	<b>MA3-NSM-01:</b> selects and uses the appropriate unit and device to measure the masses of objects	Mass: Choose appropriate units of measurement for mass	
			Mass: Connect decimal representations to the metric system	
		<b>MA3-NSM-02:</b> measures and compares duration, using 12- and 24-hour time and am and pm notation	Time: Compare 12- and 24-hour time systems and convert between them	
Statistics	Data A	<b>MA3-DATA-01:</b> constructs graphs using many-to-one scales	Collect categorical and discrete numerical data by observation or survey	
		<b>MA3-DATA-02:</b> interprets data displays, including timelines and line graphs	Choose and use appropriate tables and graphs	
			Describe and interpret different datasets in context	
Probability	Chance A	<b>MA3-CHAN-01:</b> conducts chance experiments and quantifies the probability	List outcomes of chance experiments involving equally likely outcomes and represent probabilities	

## What is Australian Signpost Maths NSW?

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

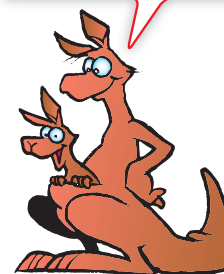


Mentals Books



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.

### Identification 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

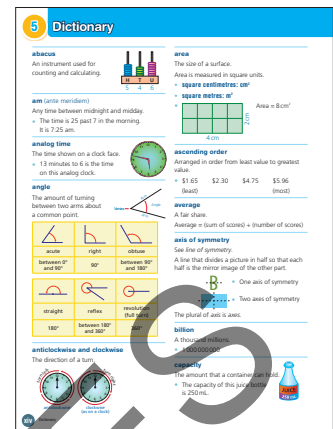
## The traffic light icons

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.

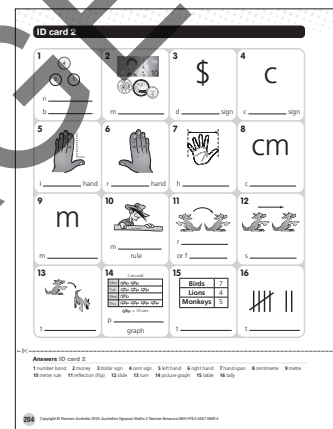
## Dictionary

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–xxiv of this book.



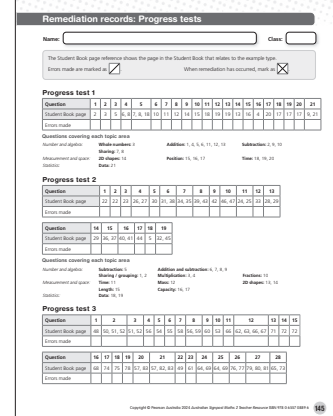
## ID cards (Years 1 to 6)

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 5 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.

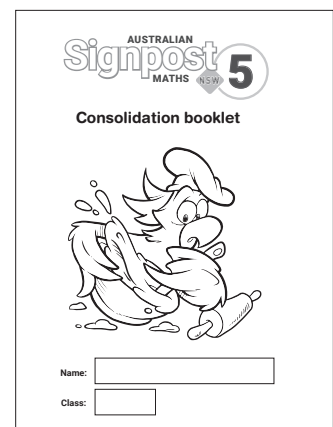
The Teacher Resource support pages provide additional learning activities for students who need remediation or extension activities. The Blackline Masters provide activities to support students of various learning abilities.

## Cartoons

Cartoons are used to motivate and instruct.

## Extra support pages

These pages provide support in decimals, multiplication facts, factors and multiples, extended multiplication, estimating products, number patterns, problem solving strategies, algebraic thinking and transformations.



## Australian Signpost Maths 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.



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



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



These activities involve the use of computers or other technology.



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

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 5 **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 Re-tests.

Each Mentals unit reviews the previous 2 weeks' content from the Student book suggested program.

# 5 Contents and syllabus overview

Contents cross-reference . . . . .	xii
Dictionary . . . . .	xiv
Chapter 1 Number and algebra . . . . .	1
Chapter 2 Operations and algebra . . . . .	27
Chapter 3 Measurement . . . . .	85
Chapter 4 Space . . . . .	111
Chapter 5 Statistics and probability . . . . .	133
Extra support . . . . .	156
Answers . . . . .	182



Number and algebra			Content	Counting, number	Place value	Rounding	Fractions	Decimals	Percentages	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.	
1	1:01	Numbers using millions	Number and algebra	●	●					Week 3	Term 1
2	1:02	Large numbers		●	●						
3	1:03	Using large numbers		●	●	●					
4	1:04	Fractions					●			Week 4	
5	1:05	The order of unit fractions					●				
6	1:06	Mixed numbers					●	●		Week 5	
7	1:07	Tenths and hundredths					●	●			
8	1:08	Percentages					●	●	●	Week 6	
9	1:09	Using percentages					●	●	●		
10	1:10	Fractions					●	●	●	Week 7	
11	1:11	Improper fractions, mixed numbers					●				
12	1:12	Addition of fractions					●			Week 8	
13	1:13	Subtraction of fractions					●				
14	1:14	Place value to thousandths			●			●		Week 8	
15	1:15	Place value and decimals			●			●			
16	1:16	Addition and subtraction of fractions	Number and algebra				●			Week 21	Term 3
17	1:17	Equivalent fractions					●				
18	1:18	Equivalent fractions					●			Week 22	
19	1:19	Equivalent fractions					●				
20	1:20	Comparing decimals			●	●		●		Week 23	
21	1:21	Comparing decimals			●			●			
22	1:22	Subtraction from whole numbers	Number and algebra				●			Week 31	Term 4
23	1:23	Using fractions					●				
24	1:24	Solving problems with fractions					●			Week 32	
25	1:25	Using decimals		●	●			●			
26	1:26	Patterns and percentages					●	●	●		

- 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.

Operations and algebra			Content	Addition	Subtraction	Multiplication	Division	Multiples, factors, divisibility	Mental strategies	Algebraic thinking	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.	
27	2:01	Learning your multiplication tables				•		•				Week 3	Term 1
28	2:02	Division facts					•			•		Week 4	
29	2:03	Division with remainders					•				•	Week 9	
30	2:04	Rounding							•			Week 10	
31	2:05	Strategies, + and –	•	•					•			Week 11	
32	2:06	Addition to 999	•						•			Week 12	
33	2:07	Addition to 999	•						•			Week 13	
34	2:08	Using the addition algorithm	•						•		•	Week 14	
35	2:09	Subtraction with trading		•					•			Week 15	Term 2
36	2:10	Subtraction to 999		•					•			Week 16	
37	2:11	Multiples			•			•				Week 17	
38	2:12	Factors			•			•			•	Week 18	
39	2:13	Prime and composite numbers						•				Week 19	
40	2:14	Addition of money	•									Week 20	
41	2:15	Subtraction of money		•							•	Week 21	
42	2:16	Shopping	•	•							•	Week 22	
43	2:17	Division with remainders					•				•	Week 23	
44	2:18	Division of 2-digit numbers					•				•	Week 24	
45	2:19	Using division facts					•				•	Week 25	
46	2:20	Subtraction to 999		•					•			Week 26	
47	2:21	Subtraction from hundreds		•					•		•	Week 27	
48	2:22	Addition to 9999	•									Week 28	Term 3
49	2:23	Addition to 9999	•								•	Week 29	
50	2:24	Subtraction to 9999		•							•	Week 30	
51	2:25	Subtraction from 1000s		•							•	Week 31	
52	2:26	Subtraction from 1000s strategy		•					•			Week 32	
53	2:27	Dividing 2-digit numbers					•					Week 33	
54	2:28	Dividing 2-digit numbers					•					Week 34	
55	2:29	Dividing 2-digit numbers					•				•	Week 35	
56	2:30	Dividing 3-digit numbers					•				•	Week 36	
57	2:31	Multiplying tens			•				•			Week 37	
58	2:32	Multiplying tens or hundreds			•				•			Week 38	
59	2:33	Dividing 3-digit numbers by 10					•		•		•	Week 39	Term 4
60	2:34	Dividing with zero in the answer					•				•	Week 40	
61	2:35	Divisibility						•				Week 41	
62	2:36	Factors and multiples						•				Week 42	
63	2:37	Using factors in multiplication			•			•	•			Week 43	
64	2:38	Averages	•				•				•	Week 44	
65	2:39	Averages	•				•				•	Week 45	
66	2:40	Mental strategies for multiplication			•				•			Week 46	
67	2:41	Multiplying 2-digit numbers			•							Week 47	
68	2:42	The extended form of multiplication			•				•			Week 48	
69	2:43	The extended form of multiplication			•						•	Week 49	

- The teacher will decide when testing occurs. The Progress Tests and Re-tests are found in the online Teacher Resource.

## Operations and algebra

Page	Unit	Title
70	2:44	The contracted form of multiplication
71	2:45	The contracted form of multiplication
72	2:46	Problems involving change of units
73	2:47	Estimating by rounding
74	2:48	Estimating by rounding
75	2:49	Using your income
76	2:50	Making a budget
77	2:51	Using operations to solve problems
78	2:52	Estimating products
79	2:53	Strategies for multiplication
80	2:54	Multiplying 2-digit numbers
81	2:55	Multiplying 2-digit numbers
82	2:56	Multiplying 2-digit numbers
83	2:57	Multiplying 2-digit numbers
84	2:58	Finding missing numbers

Content	Addition	Subtraction	Multiplication	Division	Multiples, factors, divisibility	Mental strategies	Algebraic thinking	Problem solving	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.
	•	•	•	•		•		•	Week 28
	•	•	•	•				•	Week 29
			•			•			
	•	•						•	Week 32
	•							•	
	•	•	•					•	Week 33
			•			•		•	
			•			•		•	Week 34
			•			•		•	
			•			•		•	Week 35
			•			•		•	
	•	•	•	•			•		Week 37

Term 4

- The teacher will decide when testing occurs. The Progress Tests and Re-tests are found in the online Teacher Resource.

Measurement			Content	Length	Area	Capacity and volume	Mass	Temperature	Time, Duration	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.		
85	3:01	Kilometres	Term 1	●							Week 5	Term 1	
86	3:02	Kilometres and metres		●									Week 5
87	3:03	Perimeter		●									Week 6
88	3:04	Perimeter		●							●		Week 6
89	3:05	Calculating area				●					●		Week 7
90	3:06	Square metres				●					●		Week 7
91	3:07	Area				●							Week 8
92	3:08	Problem solving			●	●	●		●	●	●		Week 8
93	3:09	Time units								●	●		Week 9
94	3:10	24-hour time								●	●		Week 9
95	3:11	Using 12- and 24-hour time	Term 2						●	●	Week 11	Term 2	
96	3:12	24-hour time problems								●	●		Week 11
97	3:13	Using measurement scales	Term 3	●		●	●	●		●	Week 22	Term 3	
98	3:14	Millimetres		●									Week 22
99	3:15	Converting length measurements		●									Week 23
100	3:16	24-hour time								●			Week 23
101	3:17	Problems involving time								●	●		Week 24
102	3:18	Grams and kilograms						●					Week 24
103	3:19	Measuring mass						●			●		Week 25
104	3:20	Perimeter			●								Week 25
105	3:21	Exploring perimeter and area			●	●					●		Week 26
106	3:22	Measuring volume in mL					●						Week 26
107	3:23	Capacity and volume				●					Week 28		
108	3:24	Measuring capacity				●					Week 28		
109	3:25	Hectares			●						Week 28		
110	3:26	Square kilometres			●						Week 28		

- The teacher will decide when testing occurs. The Progress Tests and Re-tests are found in the online Teacher Resource.



Space			Content	2D space	Angles, lines	Symmetry, transformations	3D objects	Position, directions	Suggested program	
Page	Unit	Title								
111	4:01	3D space					●		Week 12	Term 1
112	4:02	Prisms and pyramids					●		Week 12	
113	4:03	Triangles		●					Week 13	
114	4:04	Quadrilaterals		●	●				Week 13	
115	4:05	Nets					●		Week 14	
116	4:06	Describing position		●		●		●	Week 14	
117	4:07	Using a protractor			●				Week 15	Term 2
118	4:08	Angle types in degrees			●				Week 15	
119	4:09	Using a protractor			●				Week 16	
120	4:10	Classifying angles			●				Week 16	
121	4:11	Compass directions						●	Week 17	
122	4:12	Reading a map						●	Week 17	
123	4:13	Rotational symmetry		●		●			Week 18	
124	4:14	Measuring angles of rotation			●	●			Week 18	
125	4:15	Rotational symmetry			●	●			Week 18	
126	4:16	Views and nets of 3D objects					●		Week 21	Term 3
127	4:17	Coordinates on the number plane		●			●	●	Week 21	
128	4:18	Using coordinates						●	Week 21	
129	4:19	Drawing angles			●				Week 31	Term 4
130	4:20	Angles greater than 180°			●				Week 31	
131	4:21	Mapping Australia						●	Week 34	
132	4:22	Using angles			●				Week 34	

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

Statistics and probability			Content	Collecting, recording data	Analysing data displays	Chance, language	Chance experiments	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.	
133	5:01	Reading graphs			●			Week 7	Term 1
134	5:02	Drawing graphs		●	●			Week 8	
135	5:03	Drawing picture graphs		●				Week 9	
136	5:04	Surveys		●	●			Week 16	Term 2
137	5:05	Choosing at random				●	●		
138	5:06	Fair or unfair?				●	●	Week 19	
139	5:07	Comparing the chances		●		●	●		
140	5:08	Dot plots		●	●			Week 23	
141	5:09	More line graphs			●			Week 25	
142	5:10	Reading line graphs			●				
143	5:11	Drawing line graphs		●	●			Week 27	
144	5:12	Matching graphs with stories			●				
145	5:13	Chance, as a fraction				●	●	Week 29	Term 3
146	5:14	Chance				●	●		
147	5:15	Collecting chance data		●	●	●	●	Week 30	
148	5:16	Collecting data		●	●	●	●		
149	5:17	Data collected over time		●	●			Week 33	Term 4
150	5:18	Data investigation		●	●				
151	5:19	Using spreadsheets		●	●				
152	5:20	Bar and sector graphs			●			Week 35	
153	5:21	Reasoning with graphs			●				
154	5:22	Selecting a graph to use		●				Week 36	
155	5:23	Comparing types of graphs		●	●				

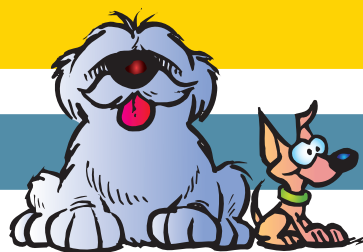
Extra Support pages						
156	1	Decimals	2	Place value in decimals	3	Reading and writing decimals
159	4	+ and – of fractions	5	Place value to thousandths	6	Comparing decimals
162	7	Number facts, $\times 2$ , $\times 3$ , $\times 4$ , $\times 5$ , $\times 10$	8	Number facts, $\times 6$ , $\times 7$ , $\times 8$ , $\times 9$	9	$\times 6$ , $\times 7$ , $\times 8$ , $\times 9$ tables
165	10	Factors and multiples	11	Prime and composite numbers	12	Extended multiplication
168	13	Estimating products	14	Number patterns	15	Using strategies to solve problems
171	16	Problem solving strategies	17	Problem solving	18	Using algorithms to solve problems
174	19	Algebraic thinking	20	Algebraic thinking	21	Algebraic thinking
177	22	Reflection, translation, rotation	23	Flip, slide, turn	24	Using transformations
180	25	Finding missing numbers	26	Decimals!		

- The teacher will decide when testing occurs. The Progress Tests and Re-tests are found in the online Teacher Resource.

Suggested Program	Term 1	Term 2	Term 3	Term 4
Number and algebra	1:01 - 1:15	-	1:16 - 1:21	1:22 - 1:26
Operations and algebra	2:01 - 2:08	2:09 - 2:32	2:33 - 2:44	2:45 - 2:58
Measurement	3:01 - 3:10	3:11 - 3:12	3:13 - 3:26	-
Space	-	4:01 - 4:15	4:16 - 4:18	4:19 - 4:22
Statistics and probability	5:01 - 5:03	5:04 - 5:07	5:08 - 5:16	5:17 - 5:23
Total number of pages:	36	45	44	30

- See the Teacher Resource for a more detailed suggested program.
- The suggested program aligns with the Mentals book, Progress Tests and Re-tests.

# Contents cross-reference



## Number and algebra

1	Numbers	Pages
	Counting, ordering whole numbers	1, 2, 3, 25, 169, 174, 175
	Place value	1, 2, 3, 7, 14, 15, 20, 21, 25, 157, 158, 160, 161
	Fractions	4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 16, 17, 18, 19, 22, 23, 24, 26, 156, 157, 159, 160
	Decimals	6, 7, 8, 9, 10, 14, 15, 20, 21, 25, 26, 156, 157, 158, 160, 161, 182
	Percentages	8, 9, 10, 25, 26, 157
	Rounding numbers, estimates	3, 20, 30, 32, 33, 35, 42, 60, 69, 70, 71, 73, 74, 75, 78, 168
2	Addition and subtraction	Pages
	Addition	31, 32, 33, 34, 40, 42, 48, 49
	Subtraction / difference	31, 35, 36, 41, 42, 46, 47, 50, 51, 52, 72, 73, 74, 75, 77, 78, 80, 82, 83, 173, 180
	Mental strategies (+ and -)	31, 32, 33, 34, 35, 36, 46, 47, 52, 73
	Algorithm strategy (+ and -)	31, 32, 34, 35, 36, 40, 41, 42, 46, 47, 48, 49, 50, 51, 52
	Problem solving (+ and -)	29, 34, 40, 41, 42, 47, 49, 50, 51, 64, 65, 72, 74, 75, 76, 77, 84, 167, 172, 173
	Money	40, 41, 42, 47, 48, 49
3	Multiplication and division	Pages
	Multiplication	27, 37, 57, 58, 63, 66, 67, 68, 69, 70, 71, 72, 74, 77, 78, 79, 80, 81, 82, 83, 84, 162, 163, 164, 167, 168, 170
	Division (sharing and grouping)	28, 29, 43, 44, 45, 53, 54, 55, 56, 59, 60, 64, 65, 72, 84
	Multiplication and division facts	28, 44, 45, 162, 163, 164
	Multiples, factors and divisibility	27, 28, 37, 38, 39, 61, 62, 63, 162, 163, 165, 166, 171
	Strategies ( $\times$ and $\div$ ), multiplication families	43, 57, 58, 59, 65, 66, 81, 83, 167
	Problem solving ( $\times$ and $\div$ )	38, 43, 44, 45, 54, 55, 56, 59, 60, 64, 65, 69, 72, 74, 76, 77, 80, 81, 82, 83, 84, 170
4	Algebra	Pages
	Multiplication and division (inverse operations)	29, 43, 45
	Finding unknown values in numerical equations	29, 59, 84, 180
	Algebraic thinking / problem solving	28, 84, 136, 170, 171, 172, 174, 175, 176, 180



## Measurement and space

1	Measurement	Pages
	Length	24, 25, 85, 86, 87, 88, 97, 98, 99, 104, 105
	Area	89, 90, 91, 92, 105, 109, 110
	Capacity and volume	25, 97, 106, 107, 108
	Mass (weight)	25, 97, 102, 103
	Temperature	97, 149, 150
	Time (duration)	93, 95, 96, 100, 101
	Clocks	94, 100
	Problem solving with measurement	72, 77, 88, 89, 90, 92, 93, 96, 97, 101, 103, 105
2	Space	Pages
	2D shapes	xxv, 113, 114, 116, 123, 127
	Angles, parallel and perpendicular lines	117, 118, 119, 120, 124, 125, 129, 130, 132
	Symmetry, flip, slide, turn, tessellations	116, 123, 124, 125, 175, 176, 177
	3D objects	xxv, 111, 112, 115, 126, 127
	Position, coordinates, maps	116, 121, 122, 127, 128, 131

## Statistics and probability

1	Data	Pages
	Collecting data and recording data	134, 135, 136, 139, 148, 149, 150, 151, 154, 155
	Analysing data displays	74, 133, 134, 136, 140, 141, 142, 143, 144, 149, 150, 151, 152, 153, 155
	Chance and the language of chance	137, 138, 139, 145, 146, 147, 148
	Chance experiments	137, 138, 139, 147, 148



CONCEPT



Zero is a place holder.

- The population of the United Kingdom in 2023 was 68 878 820

68 million			878 thousand			820		
100 000 000	10 000 000	1 000 000	100 000	10 000	1 000	100	10	1
6	8		8	7	8	8	2	0

One million is 1000 thousands.



- The population of the United States of America in 2023 was 336 406 770.

- Read these numbers and then write them in the place-value chart.

- A** eight hundred and sixty-nine thousand
- B** four million, eight hundred and one thousand, six hundred and forty-nine
- C** thirty-six million, three hundred and forty-one thousand, five hundred and seventy-five
- D** fifteen million, six hundred and fifty thousand

500K is sometimes used for 500 000.

	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
A								
B								
C								
D								

- Order the numbers, in **A**, **B**, **C** and **D** of this table, from smallest to largest.

- Write the numeral that is three million more than **D**.

- Write the numeral that is one million five hundred thousand more than **C**.

- Write the numeral for:

- $6\,000\,000 + 300\,000 + 70\,000 + 2\,000 + 800 + 40$

- 7 million 500 thousand

- 18 million 120 thousand 452

- $(3 \times 10\,000\,000) + (6 \times 1\,000\,000) + (7 \times 100\,000) + (5 \times 10\,000) + (2 \times 1\,000)$

- the 2023 population of Queensland (5 million 360 thousand)

- the 2023 population of Victoria (6 million 829 thousand)

One million has 6 zeros.





**CONCEPT**

- The population of the World in 2023 was over 8 billion people.

8 billion

One billion is 1000 millions

45 million

311 thousand

447

One billion is 1000 millions

Year	Population
1980	8 billion
2004	45 million
2005	311 thousand
2013	447
2014	10
2017	1

That's  
8045311447 people.



- 1** Read these numbers and then write them in the place-value chart.

Empty columns are filled with zeros.

- A** five hundred and sixty-four thousand and twenty-seven
- B** ten million, two hundred and fifteen thousand, nine hundred and eighty-two
- C** two hundred and fifty million, nine hundred and forty thousand
- D** thirty-six billion eighty hundred and fourteen million
- E** twelve billion six hundred and fifty-five million, seven hundred thousand



	Billions			Millions			Thousands			Ones		
	H	T	O	H	T	O	H	T	O	H	T	O
A												
B												
C												
D												
E												

1 million has  
6 zeros.

1 billion has  
9 zeros

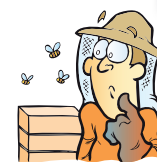
There are  
2 trillion bees  
worldwide.

- Order the numbers in this table from smallest to largest.

- 2** Write the numeral for:

- |                      |                      |                      |                      |
|----------------------|----------------------|----------------------|----------------------|
| <b>a</b> 860 million | <input type="text"/> | <b>b</b> 70 million  | <input type="text"/> |
| <b>c</b> 14 billion  | <input type="text"/> | <b>d</b> 2 billion   | <input type="text"/> |
| <b>e</b> 308 million | <input type="text"/> | <b>f</b> 100 billion | <input type="text"/> |

- g** the distance to the Sun, 150 million 238 thousand km
- h** the population of India in 2023, 1 billion 417 million 792 thousand 656
- i** the distance to the star, Proxima Centauri, 40 billion 208 million km
- j** The distance light travels in one hour, 1 billion 71 million 360 thousand km



2 000 000 000 000










CONCEPT



## Rounding to the nearest million

When rounding, look at the next figure.

If it is 5 or more, round up.

71 542 800 rounds to 72 000 000.

13 499 000 rounds to 13 000 000.

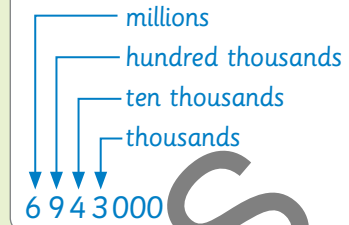
## Write 3 475 040 in expanded notation.

3 000 000 + 400 000 + 70 000 + 5000 + 40

## Complete: 167 000 = 150 000 +

167 000 = 150 000 + 17 000

Three million has 6 zeros.



## 1 Write the numeral for:

a 6 000 000 + 900 000 + 40 000 + 9000 + 200 + 70 + 1

b 10 000 000 + 7 000 000 + 300 000 + 2000 + 600 + 80 + 9

c 80 000 000 + 900 000 + 5000 + 700 + 80 + 4

d 90 000 000 + 9 000 000 + 900 000 + 90 000 + 9000

## 2 Write the following in expanded notation.

a 3 475 600

b 847 231

c 26 809 050

d 80 520 300

## 3 Round each to the nearest million.

a 76 397 495

b 32 681 340

c 96 476 80

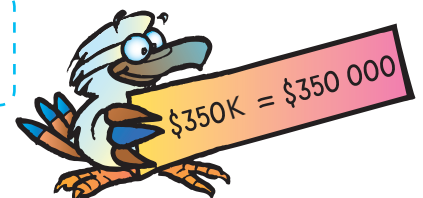
d 89 504 215

## 4 Complete:

a 157 350 = 150 000 +

b 266 423 = 250 000 +

This is called partitioning.



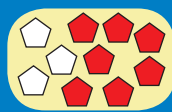
## 5 Use partitioning and doubling to answer these.

a 157 350 + 150 000 =

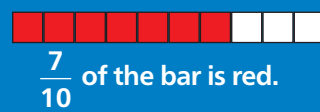
b 250 000 + 266 423 =

Find examples of large numbers on the internet.  
Investigate the size of large cities.





$\frac{7}{10}$  of this group is red.



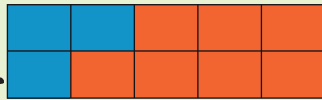
$\frac{7}{10}$  of the bar is red.



CONCEPT

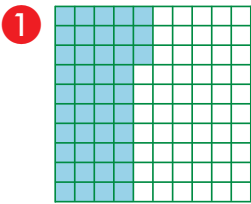
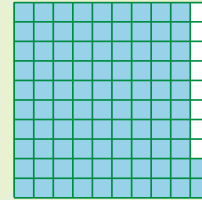


If  $\frac{7}{10}$  is red,  $\frac{3}{10}$  is not red,



$\frac{7}{10}$  ← numerator  
 $\frac{7}{10}$  ← denominator

If  $\frac{92}{100}$  is blue,  $\frac{8}{100}$  is not blue.



- a What is the denominator of  $\frac{43}{100}$  ?
- b What is the numerator of  $\frac{43}{100}$  ?
- c What fraction is not coloured?



- d What is the numerator of  $\frac{7}{10}$  ?
- e What is the denominator of  $\frac{7}{10}$  ?

2 Complete.

a  $\frac{1}{2}$  and  $\frac{1}{2}$  makes  whole.

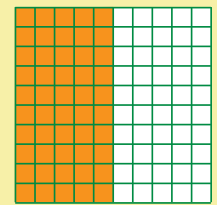
b  $\frac{1}{4}$  and  makes 1 whole.

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

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

e  $\frac{3}{8}$  and  makes 1 whole.

f  and  $\frac{4}{10}$  makes 1 whole.



$$\frac{50}{100} + \frac{50}{100} = 1$$

- 3 a If  $\frac{3}{4}$  of our class come to school by bus, what fraction does not come by bus?
- b If  $\frac{7}{10}$  of the class is present, what fraction is absent?
- c If a water tank is  $\frac{5}{8}$  full, what fraction of the water tank is empty?
- d  $\frac{3}{5}$  of a pizza is left. What fraction has been eaten?
- e  $\frac{9}{10}$  of my pavers have arrived. What fraction still needs to arrive?
- f If  $\frac{3}{8}$  of a cake has been eaten, what fraction is left?



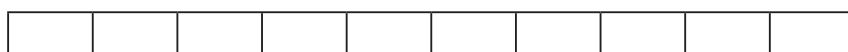
a Colour  $\frac{1}{4}$  of this bar. What is  $\frac{1}{4}$  of 12?



b Colour  $\frac{1}{3}$  of this bar. What is  $\frac{1}{3}$  of 12?

c Which fraction is larger,  $\frac{1}{4}$  or  $\frac{1}{3}$  ?

d Colour  $\frac{3}{10}$  of this bar red. Colour  $\frac{5}{10}$  of this bar blue.

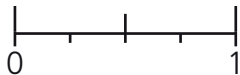




# The order of unit fractions

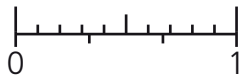
- 1 Use dots to show the fractions on the number line.  
Use  $<$  or  $>$  to complete the sentence.

a  $\frac{1}{2}$  and  $\frac{1}{4}$



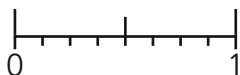
$\frac{1}{2}$    $\frac{1}{4}$

b  $\frac{1}{10}$  and  $\frac{1}{3}$



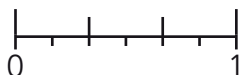
$\frac{1}{10}$    $\frac{1}{3}$

c  $\frac{1}{2}$  and  $\frac{1}{8}$



$\frac{1}{2}$    $\frac{1}{8}$

d  $\frac{1}{6}$  and  $\frac{1}{3}$



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

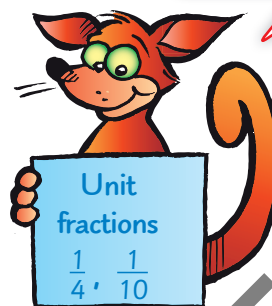
e  $\frac{1}{10}$  and  $\frac{1}{5}$



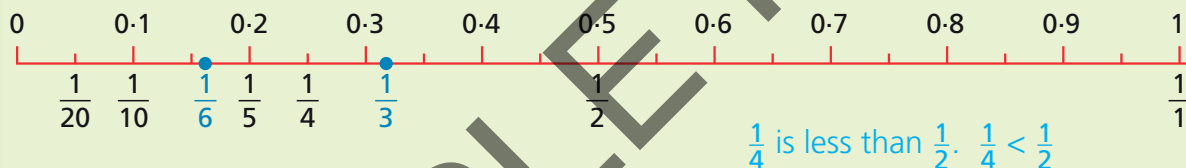
$\frac{1}{10}$    $\frac{1}{5}$

Unit fractions have 1 as the numerator.

$<$  means  
is less than.  
 $>$  means  
is greater than.  
 $2 < 7$     $9 > 4$



## The order of unit fractions



CONCEPT



- 2 Put each group of fractions in order, from smallest to largest.

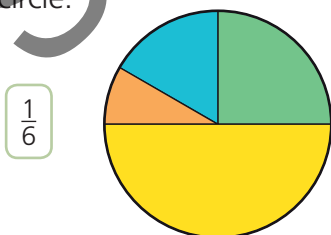
a  $\frac{1}{2}, \frac{1}{5}, \frac{1}{4}$

b  $\frac{1}{100}, \frac{1}{10}, \frac{1}{20}$

c  $\frac{1}{3}, \frac{1}{8}, \frac{1}{2}$

d  $\frac{1}{4}, \frac{1}{8}, \frac{1}{2}, \frac{1}{12}$

- 3 Match each fraction with a part of the circle.

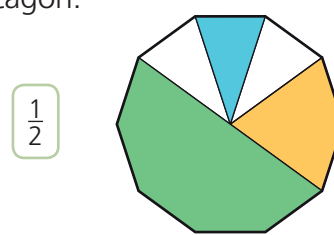


$\frac{1}{6}$

$\frac{1}{2}$

$\frac{1}{4}$

- 4 Match each fraction with a part of the decagon.



$\frac{1}{2}$

$\frac{1}{10}$

$\frac{1}{5}$

- 5 For unit fractions, the greater the denominator, the  the fraction.

6

$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} =$



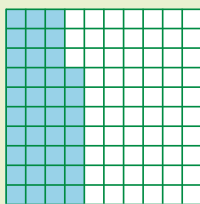
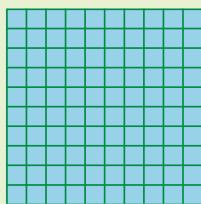
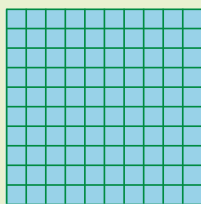


CONCEPT



Fraction

$$\frac{237}{100}$$



2 wholes and  $\frac{37}{100}$

Mixed number

$$2\frac{37}{100}$$

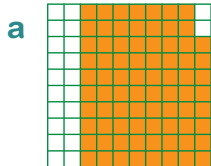
Decimal

$$2.37$$

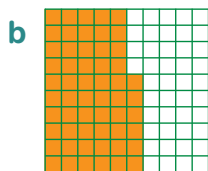


That's 2 ones, 3 tenths and 7 hundredths.

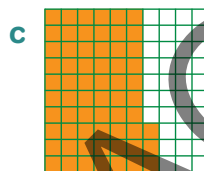
1 Write the fraction and the decimal shown in each hundred square.



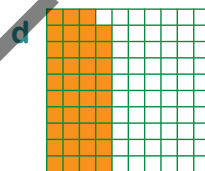
or



or

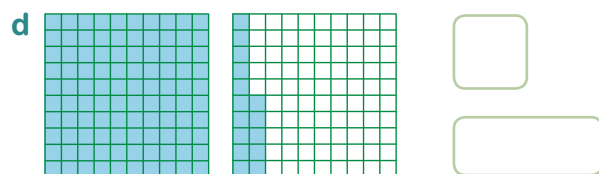
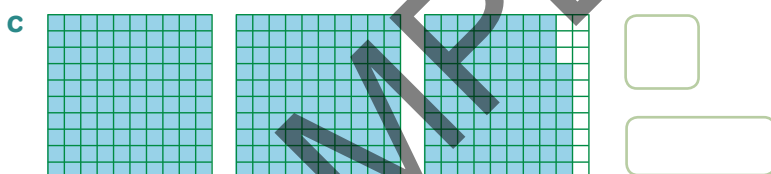
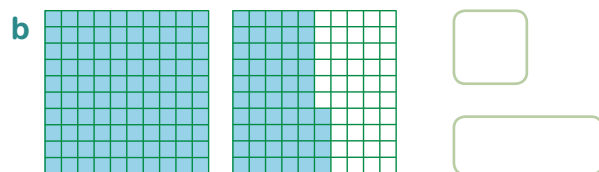
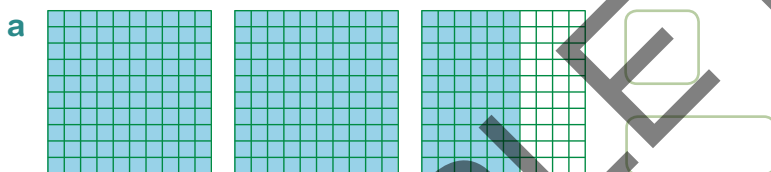


or



or

2 Write the mixed number and the decimal for each part.



3 Write each mixed number as a decimal.

a  $2\frac{37}{100}$

b  $1\frac{76}{100}$

c  $6\frac{8}{100}$

d  $9\frac{95}{100}$

e  $7\frac{81}{100}$

f  $5\frac{3}{100}$

Use a zero as a place holder.



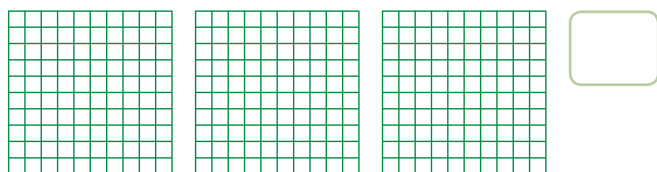
4 Write each decimal as a mixed number.

a 6.25

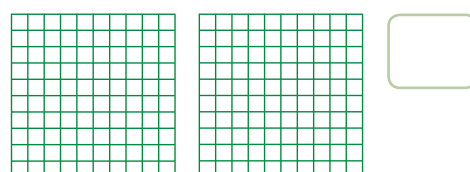
b 3.04

c 9.42

5 Colour 2.75 of these. Write the mixed number.



6 Colour 1.05 of these. Write the fraction.

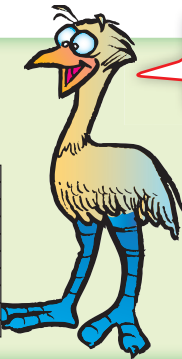
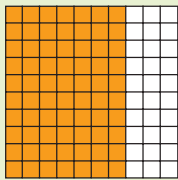




CONCEPT



$$\frac{7}{10}$$



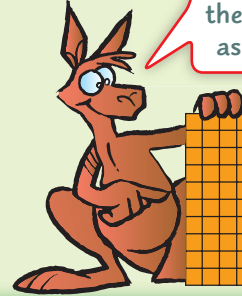
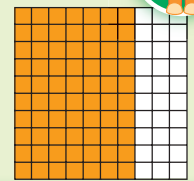
This is the same as 0.7.

ones	tenths
0	7

ones	tenths	hundredths
1	7	4

This is the same as 1.74.

$$1\frac{74}{100}$$



1 Use decimals to write:

- a** 8 tenths     **b** 3 tenths     **c** 9 tenths     **d** 4 tenths   
**e** zero point eight     **f** zero point three     **g** one point zero   
**h** 1 and 6 tenths     **i** 2 and 5 tenths     **j** 7 and 9 tenths

2 Match each fraction with the correct decimal.

- a**  $\frac{5}{10}$     0.5  
 $\frac{8}{100}$     0.2  
 $\frac{2}{10}$     0.08

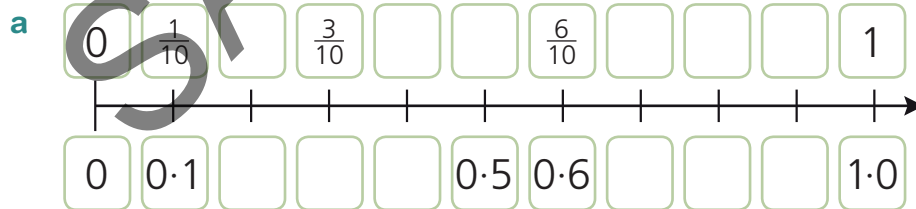
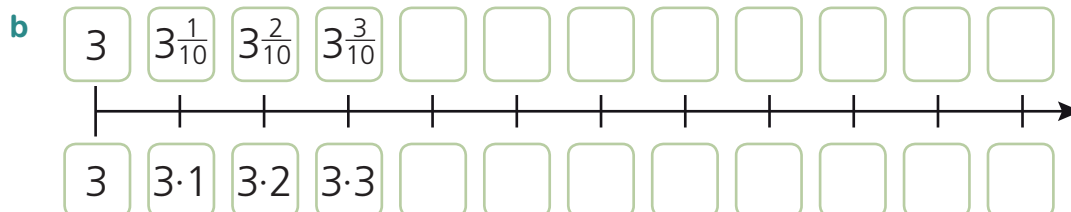
- b**  $2\frac{3}{10}$     2.03  
 $2\frac{93}{100}$     2.93  
 $2\frac{3}{100}$     2.3

- c**  $4\frac{6}{10}$     4.5  
 $4\frac{5}{100}$     4.6  
 $4\frac{5}{10}$     4.05

3 Write the decimal for:

- a**  $\frac{9}{10}$      **b**  $\frac{5}{10}$      **c**  $\frac{12}{100}$      **d**  $\frac{34}{100}$    
**e**  $\frac{4}{10}$      **f**  $1\frac{6}{10}$      **g**  $2\frac{8}{10}$      **h**  $1\frac{12}{100}$    
**i**  $2\frac{8}{100}$      **j**  $3\frac{2}{100}$      **k**  $6\frac{9}{10}$      **l**  $2\frac{87}{100}$

4 Complete the number lines.


0.1 and  $\frac{1}{10}$  occupy the same position on the number line.


See Extra Support 2 (Place value in decimals).

1.00

0.50

0.25



100% is one whole.

50% is one half.

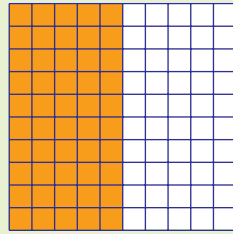
25% is one quarter.



50 out of 100

50 hundredths

50%



0.50

$\frac{50}{100}$

50% says  
50 per cent.



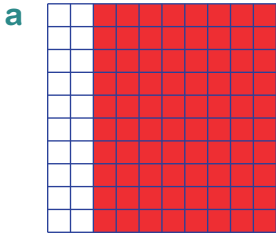
64%

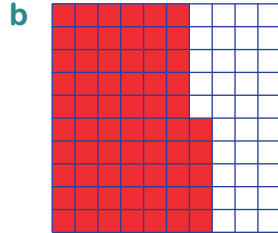


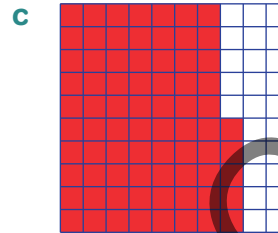
Phones use percentages to show charge remaining.

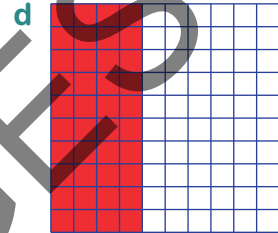


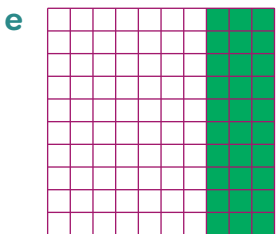
1 What percentage of each square is coloured?

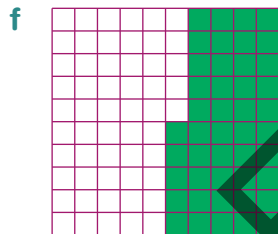


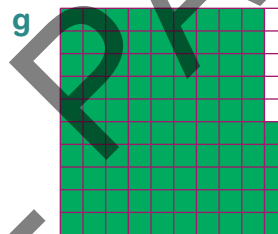


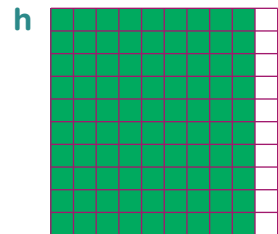













2 What percentage of each square in Question 1 is not coloured?

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

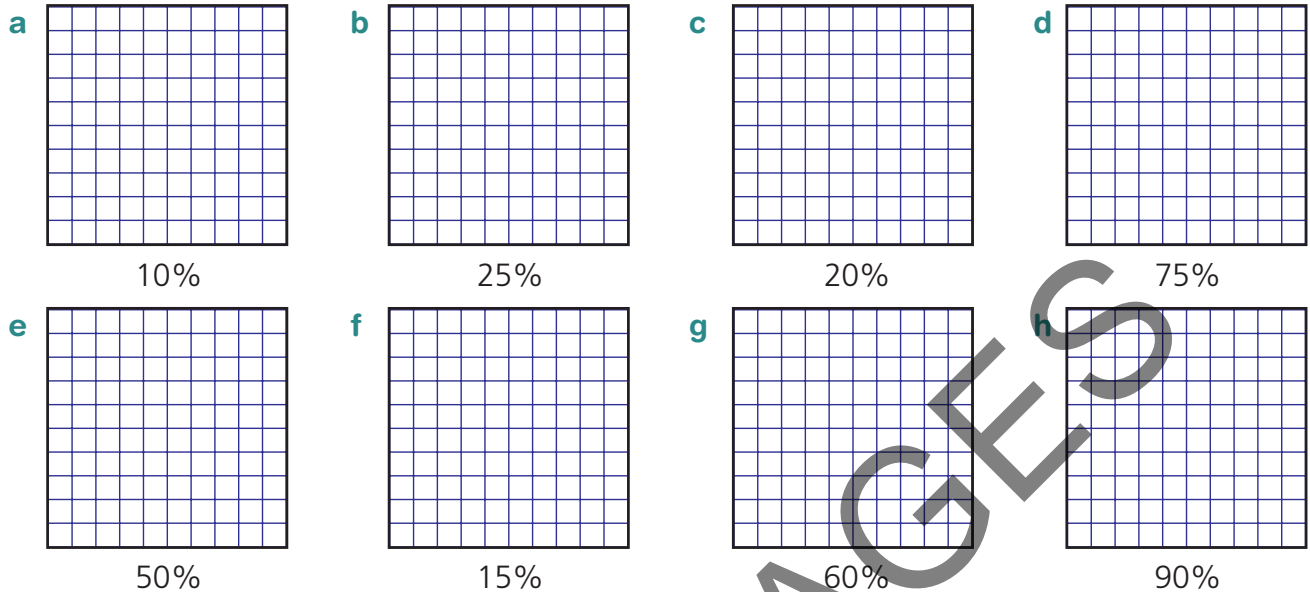
- Collect examples of percentages from newspapers and food packages.
- Discuss different ways in which percentages are used.



See Extra Support 2 (Place value in decimals).



1 For each square, colour the percentage shown.



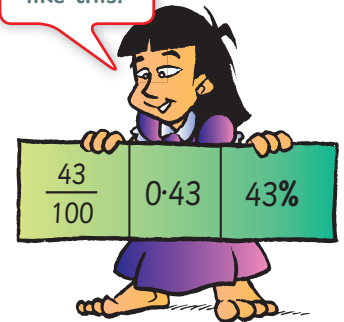
2 What percentage of each square in Question 1 should be not coloured?

a  b  c  d  e  f  g  h

3 Complete the following.

a <table border="1"><tr><td><math>\frac{17}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{17}{100}$	0.	%	b <table border="1"><tr><td><math>\frac{76}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{76}{100}$	0.	%	c <table border="1"><tr><td><math>\frac{27}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{27}{100}$	0.	%
$\frac{17}{100}$	0.	%									
$\frac{76}{100}$	0.	%									
$\frac{27}{100}$	0.	%									
d <table border="1"><tr><td><math>\frac{49}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{49}{100}$	0.	%	e <table border="1"><tr><td><math>\frac{98}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{98}{100}$	0.	%	f <table border="1"><tr><td><math>\frac{81}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{81}{100}$	0.	%
$\frac{49}{100}$	0.	%									
$\frac{98}{100}$	0.	%									
$\frac{81}{100}$	0.	%									
g <table border="1"><tr><td><math>\frac{31}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{31}{100}$	0.	%	h <table border="1"><tr><td><math>\frac{12}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{12}{100}$	0.	%	i <table border="1"><tr><td><math>\frac{34}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{34}{100}$	0.	%
$\frac{31}{100}$	0.	%									
$\frac{12}{100}$	0.	%									
$\frac{34}{100}$	0.	%									
j <table border="1"><tr><td><math>\frac{28}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{28}{100}$	0.	%	k <table border="1"><tr><td><math>\frac{63}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{63}{100}$	0.	%	l <table border="1"><tr><td><math>\frac{94}{100}</math></td><td>0.</td><td>%</td></tr></table>	$\frac{94}{100}$	0.	%
$\frac{28}{100}$	0.	%									
$\frac{63}{100}$	0.	%									
$\frac{94}{100}$	0.	%									

Do them like this.



## Converting fractions to decimals

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

e.g.  $\frac{35}{100}$  — numerator is  3  5  ÷  1  0  0  =  0.35  
— denominator

Now calculate:

a $\frac{65}{100}$ <input type="text"/>	b $\frac{15}{100}$ <input type="text"/>	c $\frac{95}{100}$ <input type="text"/>	d $\frac{45}{100}$ <input type="text"/>	e $\frac{75}{100}$ <input type="text"/>
f $\frac{25}{100}$ <input type="text"/>	g $\frac{5}{100}$ <input type="text"/>	h $\frac{60}{100}$ <input type="text"/>	i $\frac{80}{100}$ <input type="text"/>	j $\frac{40}{100}$ <input type="text"/>
k $\frac{10}{100}$ <input type="text"/>	l $\frac{37}{100}$ <input type="text"/>	m $\frac{91}{100}$ <input type="text"/>	n $\frac{20}{100}$ <input type="text"/>	o $\frac{100}{100}$ <input type="text"/>





Diane, Lyn and Alan shared two chocolate bars fairly as they played cards. What fraction of a whole chocolate bar did Alan eat?



Question:

What is  $2 \div 3$ ?

Alan ate one third of each bar, so he ate two thirds of a bar.

$$2 \div 3 = \frac{2}{3}$$

A fraction can be used as a division statement.



1 Students shared two chocolate bars fairly. How much chocolate would each eat if there were:

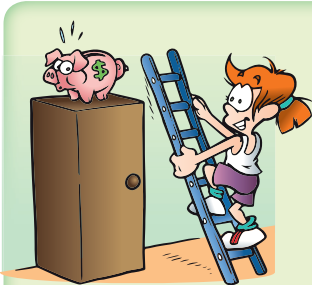
- a 6 students?  b 4 students?  c 2 students?  d 8 students?

2 Write each of these division questions as a fraction.

- a  $3 \div 4$   b  $5 \div 8$   c  $1 \div 2$   d  $4 \div 5$

3 Write each fraction as a division.

- a  $\frac{1}{2}$   b  $\frac{3}{4}$   c  $\frac{2}{5}$   d  $\frac{7}{8}$



Start

• Alfie is  of the way to the finish.

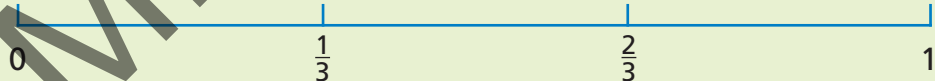


• Rona is  of the way to the finish.



• Niki is about  of the way up the ladder.

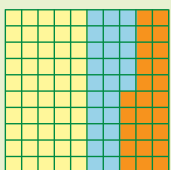
A fraction can be used to show part of a distance.



4 a What fraction of the race does Rona still have to travel?

b What fraction of the race does Alfie still have to travel?

5 Heather ate  $\frac{1}{4}$  of a cake and Tom ate  $\frac{1}{2}$  of another cake. Heather said she ate more cake than Tom. How can this be so? Discuss.



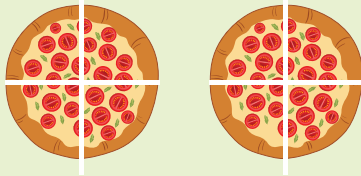
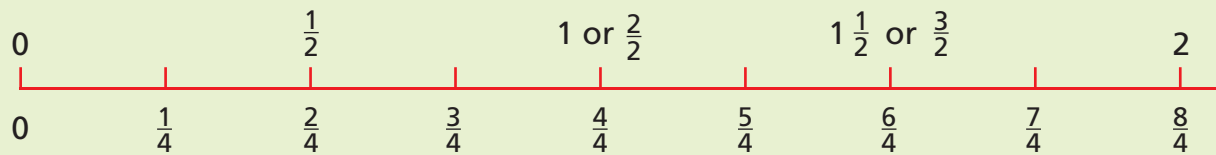
$$\frac{50}{100} = \frac{1}{2} = 0.50, 0.5 \text{ or } 50\%$$

$$\frac{25}{100} = \frac{1}{4} = 0.25 \text{ or } 25\%$$

$$\frac{75}{100} = \frac{3}{4} = 0.75 \text{ or } 75\%$$

$$\frac{1}{3} = 33\frac{1}{3}\%$$





$\frac{5}{4}$  means 5 quarters and is the same as  $1\frac{1}{4}$ .

$\frac{3}{2}$  means 3 halves and is the same as  $1\frac{1}{2}$ .

When the number has a whole number part and a fraction part, it is a **mixed number**.  $3\frac{1}{2}$

When the numerator is larger than the denominator, it is an **improper fraction**.  $\frac{7}{2}$

- To change a mixed number into an improper fraction, multiply the whole number by the denominator of the fraction part, then add the fractions.

$$3\frac{1}{4} = \frac{3 \times 4}{4} + \frac{1}{4} = \frac{13}{4}$$

$$2\frac{3}{10} = \frac{2 \times 10}{10} + \frac{3}{10} = \frac{23}{10}$$

- Change the mixed number into an improper fraction.

a $4\frac{1}{4}$ <input type="text"/>	b $1\frac{1}{4}$ <input type="text"/>	c $2\frac{1}{2}$ <input type="text"/>	d $3\frac{2}{5}$ <input type="text"/>
e $1\frac{4}{5}$ <input type="text"/>	f $2\frac{3}{4}$ <input type="text"/>	g $2\frac{2}{4}$ <input type="text"/>	h $2\frac{2}{3}$ <input type="text"/>
i $1\frac{7}{10}$ <input type="text"/>	j $3\frac{2}{10}$ <input type="text"/>	k $2\frac{5}{10}$ <input type="text"/>	l $4\frac{8}{10}$ <input type="text"/>



Multiply then add.

Four and a half pies!

- To change an improper fraction into a mixed number, divide the bottom into the top.

$$\frac{9}{5} = 9 \div 5 = 1\frac{4}{5}$$

$$\frac{9}{4} = 9 \div 4 = 2\frac{1}{4}$$

$$\frac{9}{2} = 9 \div 2 = 4\frac{1}{2}$$

- Change the improper fraction into a mixed number.

a $\frac{9}{4}$ <input type="text"/>	b $\frac{7}{3}$ <input type="text"/>	c $\frac{5}{2}$ <input type="text"/>	d $\frac{7}{4}$ <input type="text"/>
e $\frac{11}{3}$ <input type="text"/>	f $\frac{10}{4}$ <input type="text"/>	g $\frac{14}{5}$ <input type="text"/>	h $\frac{17}{2}$ <input type="text"/>
i $\frac{17}{10}$ <input type="text"/>	j $\frac{41}{10}$ <input type="text"/>	k $\frac{36}{10}$ <input type="text"/>	l $\frac{55}{10}$ <input type="text"/>



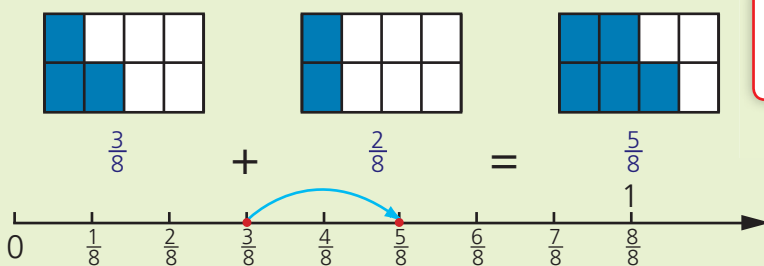
Divide bottom into top.

- Circle the mixed numbers. Underline the improper fractions.

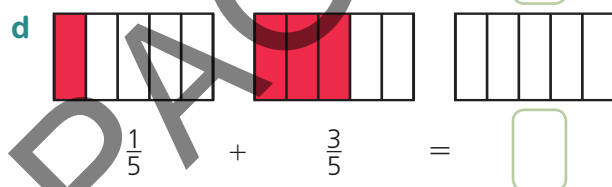
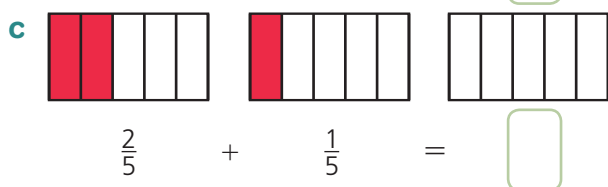
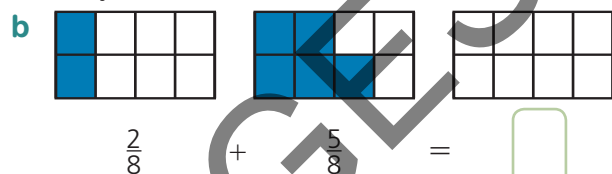
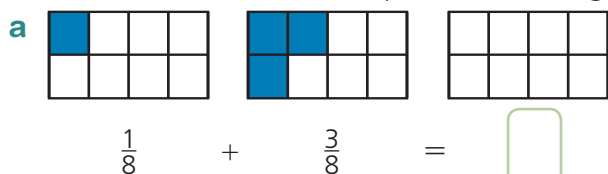
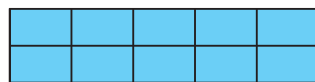
$\frac{7}{4}$     $\frac{9}{10}$     $\frac{17}{8}$     $\frac{2}{3}$     $1\frac{3}{8}$     $\frac{15}{6}$   
 $2\frac{1}{4}$     $1\frac{3}{4}$     $1\frac{7}{8}$    75%   0.5



CONCEPT


To add fractions,  
the same-sized  
whole must be used.


1 Add these fractions. Colour part of the last grid to match your answer.


2 Use the fraction card to find the answers. (Remember:  $\frac{4}{10} + \frac{6}{10} = \frac{6}{10} + \frac{4}{10}$ )


a  $\frac{1}{10} + \frac{5}{10} = \boxed{\phantom{00}}$

b  $\frac{3}{10} + \frac{4}{10} = \boxed{\phantom{00}}$

c  $\frac{2}{10} + \frac{7}{10} = \boxed{\phantom{00}}$

d  $\frac{6}{10} + \frac{3}{10} = \boxed{\phantom{00}}$

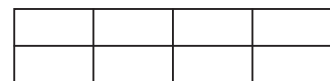
e  $\frac{5}{10} + \frac{2}{10} = \boxed{\phantom{00}}$

f  $\frac{4}{10} + \frac{5}{10} = \boxed{\phantom{00}}$

g  $\frac{7}{10} + \frac{1}{10} = \boxed{\phantom{00}}$

h  $\frac{1}{10} + \frac{8}{10} = \boxed{\phantom{00}}$

3 Use the fraction cards to find the answers.



a  $\frac{2}{8} + \frac{6}{8} = \boxed{\phantom{00}}$

b  $\frac{7}{8} + \frac{4}{8} = \boxed{\phantom{00}}$

c  $\frac{5}{8} + \frac{5}{8} = \boxed{\phantom{00}}$

d  $\frac{3}{8} + \frac{6}{8} = \boxed{\phantom{00}}$

For  $<$  and  $>$ , the  
arrow points to the  
smaller number,  
 $10 < 30$  and  $100 > 40$ .

 $<$  looks like an L  
so it means *less than*.

4 Answer true or false.

a  $\frac{6}{8} > \frac{3}{8}$  ☐

b  $\frac{7}{8} < \frac{6}{8}$  ☐

c  $\frac{8}{8} < \frac{5}{8}$  ☐

d  $\frac{5}{8} > \frac{9}{8}$  ☐

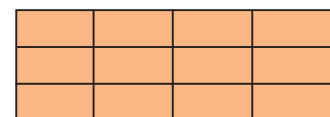
e  $\frac{9}{10} > \frac{6}{10}$  ☐

f  $\frac{5}{10} < \frac{9}{10}$  ☐

g  $\frac{13}{10} > \frac{11}{10}$  ☐

h  $\frac{8}{10} > \frac{12}{10}$  ☐

5 a Sharon ate  $\frac{3}{12}$  of a block of chocolate and Francis ate  $\frac{5}{12}$  of the same block. How much of the block did they eat?

b Ron used  $\frac{4}{10}$  of the paper. Eva used  $\frac{5}{10}$ . How much is left?




CONCEPT



$$\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$$

We must use fractions of the same whole.



$\frac{4}{5}$

—

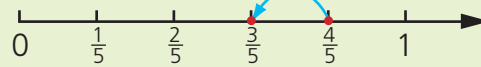


$\frac{1}{5}$

=



$\frac{3}{5}$



1 Subtract these fractions. Colour part of the grid to match your answer.

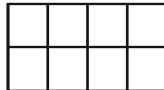


$\frac{5}{8}$

—

$\frac{1}{8}$

=



$\frac{7}{8}$

—

$\frac{2}{8}$

=



$\frac{6}{10}$

—

$\frac{3}{10}$

=



$\frac{9}{10}$

—

$\frac{4}{10}$

=



$\frac{5}{6}$

—

$\frac{2}{6}$

=

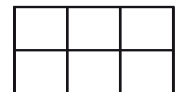


$\frac{4}{6}$

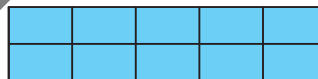
—

$\frac{1}{6}$

=



2 Use the fraction card to find the answers.



a  $\frac{3}{10} - \frac{1}{10} =$

b  $\frac{5}{10} - \frac{3}{10} =$

c  $\frac{7}{10} - \frac{2}{10} =$

d  $\frac{9}{10} - \frac{5}{10} =$

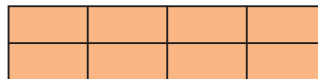
e  $\frac{8}{10} - \frac{7}{10} =$

f  $\frac{6}{10} - \frac{1}{10} =$

g  $\frac{4}{10} - \frac{3}{10} =$

h  $\frac{7}{10} - \frac{4}{10} =$

3 Use the fraction card to find the answers.



a  $\frac{7}{8} - \frac{3}{8} =$

b  $\frac{5}{8} - \frac{3}{8} =$

c  $\frac{6}{8} - \frac{2}{8} =$

d  $\frac{4}{8} - \frac{1}{8} =$

e Lyn ate  $\frac{1}{8}$  of a block of chocolate. How much was not eaten?

f Mum gave me  $\frac{3}{8}$  of the money she had in her purse. What fraction did she have left?

4 Answer true or false.

a  $\frac{2}{8} < \frac{5}{8}$

b  $\frac{6}{8} < \frac{5}{8}$

c  $\frac{7}{10} < \frac{5}{10}$

d  $\frac{6}{10} > \frac{3}{10}$

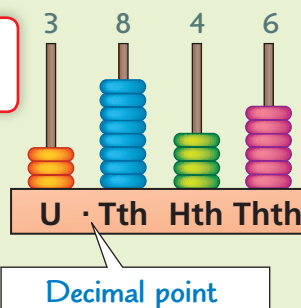
See Extra Support 4 (+ and - of fractions).

0.1 is 1 tenth  
 0.10 is 10 hundredths  
 0.100 is 100 thousandths

These are the same.



This abacus shows 3.846.



There are 3 units, 8 tenths, 4 hundredths and 6 thousandths.

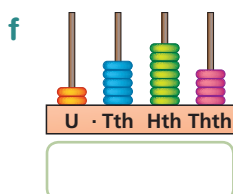
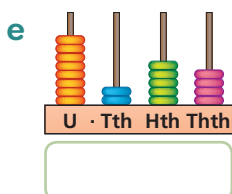
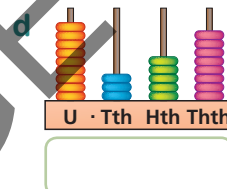
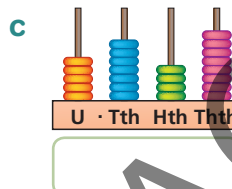
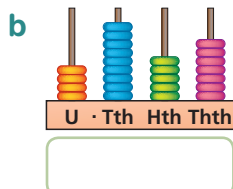
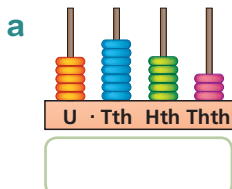


1 = 10 tenths or  
 100 hundredths or  
 1000 thousandths.

CONCEPT



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



Ones	Tenths	Hundredths	Thousandths
0	0	1	0
10 thousandths = 1 hundredth			
0	1	0	
10 hundredths = 1 tenth			
1	0		
10 tenths = 1 whole			

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
	.			
	.			
	.			
	.			
	.			
	.			
	.			

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.

CONCEPT



### Make the largest number

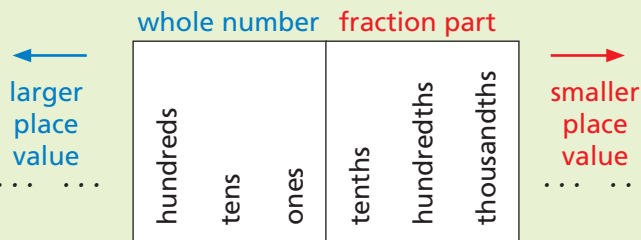

- Each player, in turn, rolls the dice and records the number in the column of their choice in the place-value card.
- The player rolls three more dice to fill the place-value card.
- The player with the largest 4-digit number wins the game.

$$6.421 = 6 \frac{421}{1000}$$

Units	.	Tenths	Hundredths	Thousandths
6	.	4	2	1

FUN SPOT



			0	•	3			
			2	•	7			
			0	•	9	4		
			0	•	0	8	5	
	8	0	8	•	6			
		6	8	•	3	7	5	
	1	7	8	•	8	4		
		\$7	0	•	9	5		

## Meaning

3 tenths
2 and 7 tenths
94 hundredths
85 thousandths
808 and 6 tenths
68 and 375 thousandths
178 and 84 hundredths
70 dollars and 95 cents

decimal point

68.375 is read sixty-eight point three seven five.

The decimal point separates the whole number part from the fraction part.



1 Write the decimal for:

- |                           |                      |                           |                      |                  |                      |
|---------------------------|----------------------|---------------------------|----------------------|------------------|----------------------|
| a 8 tenths                | <input type="text"/> | b 1 tenth                 | <input type="text"/> | c 5 tenths       | <input type="text"/> |
| d 7 and 5 tenths          | <input type="text"/> | e 4 and 1 tenth           | <input type="text"/> | f 9 and 3 tenths | <input type="text"/> |
| g 64 hundredths           | <input type="text"/> | h 33 hundredths           | <input type="text"/> | i 25 hundredths  | <input type="text"/> |
| j 805 thousandths         | <input type="text"/> | k 65 thousandths          | <input type="text"/> |                  |                      |
| l 215 and 5 tenths        | <input type="text"/> | m 90 and 8 tenths         | <input type="text"/> |                  |                      |
| n 11 and 125 thousandths  | <input type="text"/> | o 33 and 333 thousandths  | <input type="text"/> |                  |                      |
| p 296 and 48 hundredths   | <input type="text"/> | q 507 and 5 hundredths    | <input type="text"/> |                  |                      |
| r 90 dollars and 15 cents | <input type="text"/> | s 971 dollars and 6 cents | <input type="text"/> |                  |                      |

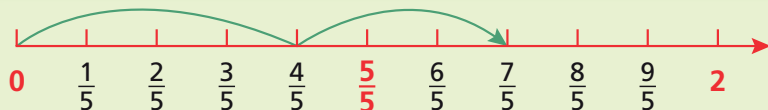
- 2
- Put blue dots on the number line, to show the positions of 5.6, 5.8, 5.9, 5.3, 5.1, 5.4.
  - Circle the decimals in part a that are closer to 6 than to 5.
  - Put red dots on the number line, to show the positions of 5.24, 5.27, 5.29, 5.21, 5.26.
  - Circle the decimals in part c that are closer to 5.2 than to 5.3.

$$\frac{5}{4} + \frac{5}{4} = \frac{10}{4} = \frac{5}{2}$$

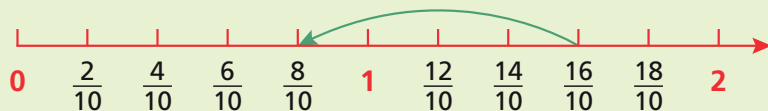
$$\frac{6}{10} + \frac{6}{10} = \frac{12}{10} = \frac{6}{5}$$



CONCEPT



$$\frac{4}{5} + \frac{3}{5} = \frac{7}{5}$$



$$\frac{16}{10} - \frac{8}{10} = \frac{8}{10}$$

1 Write the improper fraction for the mixed numbers.

a  $1\frac{2}{8} = \frac{\quad}{\quad}$

b  $1\frac{4}{5} = \frac{\quad}{\quad}$

c  $1\frac{3}{4} = \frac{\quad}{\quad}$

These are the same.

d  $3\frac{1}{2} = \frac{\quad}{\quad}$

e  $2\frac{3}{5} = \frac{\quad}{\quad}$

f  $1\frac{9}{10} = \frac{\quad}{\quad}$

2 Write the mixed number for the improper fractions:

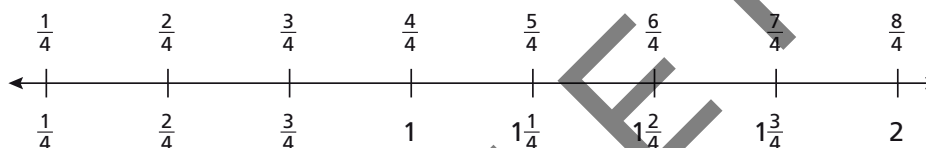
a  $\frac{8}{5} = 1\frac{\quad}{\quad}$

b  $\frac{4}{3} = 1\frac{\quad}{\quad}$

Note:  $\frac{6}{4} = 1\frac{2}{4}$ ,  $\frac{7}{4} = 1\frac{3}{4}$ 

c  $\frac{9}{4} = 2\frac{\quad}{\quad}$

d  $\frac{9}{8} = 1\frac{\quad}{\quad}$


Improper fraction:  $\frac{11}{8}$ 

Mixed number:  $1\frac{3}{8}$ 

3 Add these fractions.

a  $\frac{1}{8} + \frac{3}{8} = \frac{\quad}{\quad}$

b  $\frac{1}{4} + \frac{2}{4} = \frac{\quad}{\quad}$

c  $\frac{2}{10} + \frac{7}{10} = \frac{\quad}{\quad}$

d  $\frac{1}{5} + \frac{3}{5} = \frac{\quad}{\quad}$

e  $\frac{3}{5} + \frac{3}{5} = \frac{\quad}{\quad}$

f  $\frac{4}{5} + \frac{4}{5} = \frac{\quad}{\quad}$

g  $\frac{2}{5} + \frac{4}{5} = \frac{\quad}{\quad}$

h  $\frac{5}{5} + \frac{4}{5} = \frac{\quad}{\quad}$

i  $\frac{4}{10} + \frac{6}{10} = \frac{\quad}{\quad}$

j  $\frac{8}{10} + \frac{8}{10} = \frac{\quad}{\quad}$

k  $\frac{6}{10} + \frac{4}{10} = \frac{\quad}{\quad}$

l  $\frac{8}{10} + \frac{5}{10} = \frac{\quad}{\quad}$

m  $\frac{3}{8} + \frac{1}{8} + \frac{2}{8} = \frac{\quad}{\quad}$

n  $\frac{1}{5} + \frac{1}{5} + \frac{2}{5} = \frac{\quad}{\quad}$

o  $\frac{1}{10} + \frac{2}{10} + \frac{2}{10} = \frac{\quad}{\quad}$

p  $\frac{3}{10} + \frac{2}{10} + \frac{4}{10} = \frac{\quad}{\quad}$

4 Subtract these fractions.

a  $\frac{3}{4} - \frac{1}{4} = \frac{\quad}{\quad}$

b  $\frac{4}{5} - \frac{2}{5} = \frac{\quad}{\quad}$

c  $\frac{5}{10} - \frac{2}{10} = \frac{\quad}{\quad}$

d  $\frac{5}{8} - \frac{3}{8} = \frac{\quad}{\quad}$

e  $\frac{3}{5} - \frac{1}{5} = \frac{\quad}{\quad}$

f  $\frac{9}{8} - \frac{3}{8} = \frac{\quad}{\quad}$

g  $\frac{4}{3} - \frac{2}{3} = \frac{\quad}{\quad}$

h  $\frac{7}{4} - \frac{6}{4} = \frac{\quad}{\quad}$

i  $\frac{11}{10} - \frac{6}{10} = \frac{\quad}{\quad}$

j  $\frac{12}{10} - \frac{3}{10} = \frac{\quad}{\quad}$

k  $\frac{14}{10} - \frac{9}{10} = \frac{\quad}{\quad}$

l  $\frac{13}{10} - \frac{7}{10} = \frac{\quad}{\quad}$



$$\frac{1}{3} = \frac{3}{9}$$



These two fractions are at the same point on the number line.

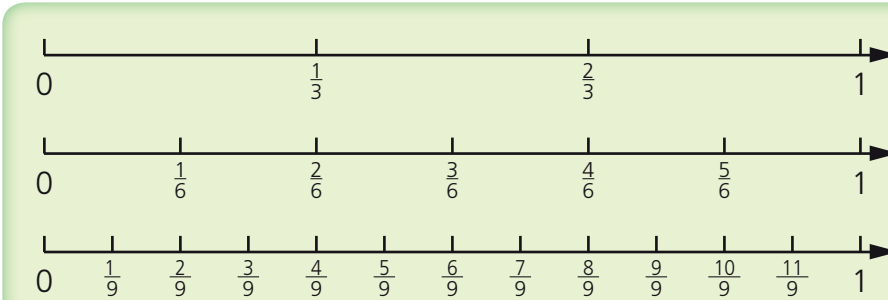


The number lines show equivalent fractions.



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

$$\frac{1}{3} = \frac{3}{9}$$



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

a  $\frac{1}{3}$

b  $\frac{9}{9}$

c  $\frac{3}{9}$

d  $\frac{2}{3}$

e  $\frac{2}{6}$

f  $\frac{4}{6}$

g  $\frac{6}{6}$

h  $\frac{6}{9}$

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

a  $\frac{1}{6} = \frac{2}{9}$

b  $\frac{2}{3} = \frac{6}{9}$

c  $\frac{2}{3} = \frac{4}{6}$

d  $\frac{6}{9} = \frac{4}{6}$

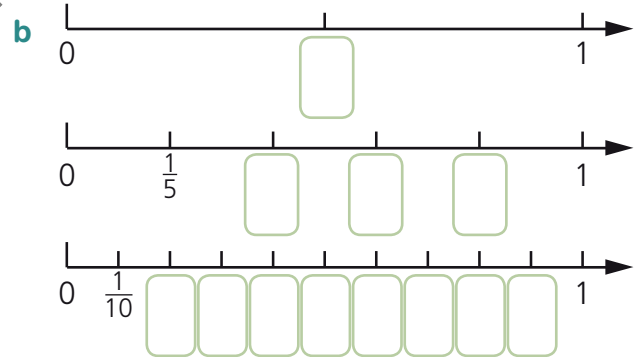
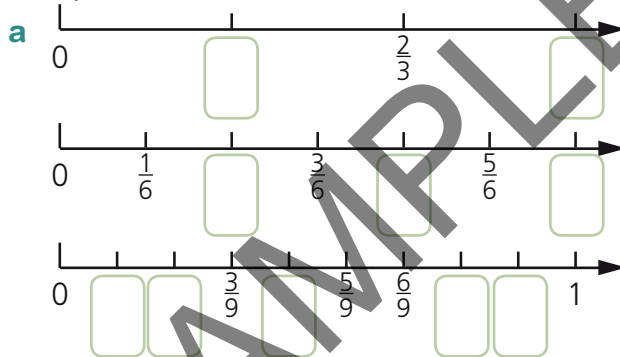
e  $\frac{3}{3} = \frac{9}{9}$

f  $\frac{3}{6} = \frac{5}{9}$

g  $\frac{1}{3} = \frac{3}{9}$

h  $\frac{5}{6} = \frac{2}{3}$

3 Complete the number lines.



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

a  $\frac{1}{5} = \frac{2}{10}$

b  $\frac{6}{9} = \frac{4}{6}$

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

d  $\frac{2}{5} = \frac{4}{10}$

e  $\frac{2}{3} = \frac{4}{6}$

f  $\frac{3}{6} = \frac{6}{9}$

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  $\frac{5}{6} = \frac{8}{9}$

5 Use the number lines above 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  $\frac{1}{5}$



$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$$



Equivalent fractions have the same value.



1									
$\frac{1}{2}$					$\frac{1}{2}$				
$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$		$\frac{1}{4}$	
$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{8}$
$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$		$\frac{1}{5}$	
$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$

We can make equivalent fractions by multiplying the numerator and denominator by the same number.

$$\frac{1}{2} = \frac{5}{10}$$

$$\frac{1}{2} \begin{matrix} (\times 5) \\ (\times 5) \end{matrix} = \frac{5}{10}$$

1 Complete these to make equivalent fractions.

a  $\frac{1}{4} = \frac{\square}{8}$

b  $\frac{2}{5} = \frac{\square}{10}$

c  $\frac{3}{4} = \frac{\square}{8}$

d  $\frac{1}{5} = \frac{\square}{10}$

e  $\frac{1}{2} = \frac{\square}{4}$

f  $\frac{3}{5} = \frac{\square}{10}$

g  $\frac{2}{4} = \frac{\square}{8}$

h  $\frac{4}{5} = \frac{\square}{10}$

i  $\frac{1}{2} = \frac{\square}{8}$

j  $1 = \frac{\square}{10}$

2 Complete these to make equivalent fractions.

a  $\frac{1}{4} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

b  $\frac{1}{2} \begin{matrix} (\times 4) \\ (\times 4) \end{matrix} = \frac{\square}{\square}$

c  $\frac{1}{5} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

d  $\frac{3}{5} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

e  $\frac{3}{4} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

f  $\frac{4}{5} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

g  $\frac{1}{2} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

h  $\frac{2}{5} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

i  $\frac{1}{3} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

j  $\frac{1}{6} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

k  $\frac{2}{3} \begin{matrix} (\times 4) \\ (\times 4) \end{matrix} = \frac{\square}{\square}$

l  $\frac{4}{6} \begin{matrix} (\times 2) \\ (\times 2) \end{matrix} = \frac{\square}{\square}$

3 Complete these to make equivalent fractions.

a  $\frac{1}{3} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{4}{\square}$

b  $\frac{3}{6} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{6}{\square}$

c  $\frac{2}{3} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{8}{\square}$

d  $\frac{2}{6} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{4}{\square}$

e  $\frac{4}{10} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{8}{\square}$

f  $\frac{3}{5} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{9}{\square}$

g  $\frac{3}{5} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{6}{\square}$

h  $\frac{1}{4} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{5}{\square}$

i  $\frac{2}{7} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{6}{\square}$

j  $\frac{7}{5} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{\square}{10}$

k  $\frac{11}{3} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{\square}{9}$

l  $\frac{5}{2} \begin{matrix} (\times \square) \\ (\times \square) \end{matrix} = \frac{\square}{8}$



Multiply the numerator and denominator by the same number.



$$\frac{1}{2} \frac{(\times 5)}{(\times 5)} = \frac{5}{10}$$



Multiplying by  $\frac{5}{5}$  is the same as multiplying by 1.



1 Write an equivalent fraction for each of these.

a  $\frac{1}{3} \frac{(\times 2)}{(\times 2)} = \frac{\square}{\square}$

b  $\frac{1}{4} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

c  $\frac{1}{2} \frac{(\times 5)}{(\times 5)} = \frac{\square}{\square}$

d  $\frac{1}{5} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

e  $\frac{2}{5} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

f  $\frac{2}{3} \frac{(\times 4)}{(\times 4)} = \frac{\square}{\square}$

g  $\frac{3}{4} \frac{(\times 2)}{(\times 2)} = \frac{\square}{\square}$

h  $\frac{3}{5} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

2 Complete these.

a  $\frac{1}{2} \frac{(\times 4)}{(\times 4)} = \frac{\square}{\square}$

b  $\frac{1}{5} \frac{(\times 2)}{(\times 2)} = \frac{\square}{\square}$

c  $\frac{1}{3} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

d  $\frac{1}{6} \frac{(\times 2)}{(\times 2)} = \frac{\square}{\square}$

e  $\frac{2}{3} \frac{(\times 2)}{(\times 2)} = \frac{\square}{\square}$

f  $\frac{1}{2} \frac{(\times 3)}{(\times 3)} = \frac{\square}{\square}$

g  $\frac{1}{5} \frac{(\times 4)}{(\times 4)} = \frac{\square}{\square}$

h  $\frac{1}{3} \frac{(\times 4)}{(\times 4)} = \frac{\square}{\square}$

3 Multiply both the numerator and the denominator by 2.

a  $\frac{1}{4} = \frac{\square}{\square}$

b  $\frac{1}{6} = \frac{\square}{\square}$

c  $\frac{1}{2} = \frac{\square}{\square}$

d  $\frac{1}{5} = \frac{\square}{\square}$

e  $\frac{1}{3} = \frac{\square}{\square}$

4 Multiply both the numerator and the denominator by 3.

a  $\frac{1}{6} = \frac{\square}{\square}$

b  $\frac{2}{3} = \frac{\square}{\square}$

c  $\frac{1}{3} = \frac{\square}{\square}$

d  $\frac{3}{4} = \frac{\square}{\square}$

e  $\frac{4}{5} = \frac{\square}{\square}$

5 Multiply both the numerator and the denominator by 4.

a  $\frac{1}{4} = \frac{\square}{\square}$

b  $\frac{1}{5} = \frac{\square}{\square}$

c  $\frac{1}{3} = \frac{\square}{\square}$

d  $\frac{3}{4} = \frac{\square}{\square}$

e  $\frac{2}{3} = \frac{\square}{\square}$

6 What number has been used to multiply the numerator and denominator in each pair of equivalent fractions below?

a  $\frac{1}{2} = \frac{4}{8}$   $\square$

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

c  $\frac{1}{3} = \frac{3}{9}$   $\square$

d  $\frac{1}{6} = \frac{2}{12}$   $\square$

e  $\frac{2}{3} = \frac{4}{6}$   $\square$

f  $\frac{3}{4} = \frac{6}{8}$   $\square$

g  $\frac{1}{5} = \frac{2}{10}$   $\square$

h  $\frac{3}{5} = \frac{6}{10}$   $\square$

i  $\frac{1}{2} = \frac{5}{10}$   $\square$

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

7 Complete these equivalent fractions.

a  $\frac{1}{2} = \frac{\square}{4} = \frac{\square}{6} = \frac{\square}{8} = \frac{\square}{10} = \frac{\square}{12}$

b  $\frac{1}{3} = \frac{\square}{6} = \frac{\square}{9} = \frac{\square}{12} = \frac{\square}{15} = \frac{\square}{18}$



hundreds	tens	ones	tenths	hundredths	thousandths
----------	------	------	--------	------------	-------------

		0	·	1	2	5
		0	·	4		
		0	·	3	5	
		0	·	0	7	9
	9	9	·	9		
	7	4	·	3	7	5
1	0	0	·	0	4	
	8	0	·	7	2	5

1 Order these from smallest to largest:

a 0.125, 0.4, 0.35, 0.079 (Use the diagram.)

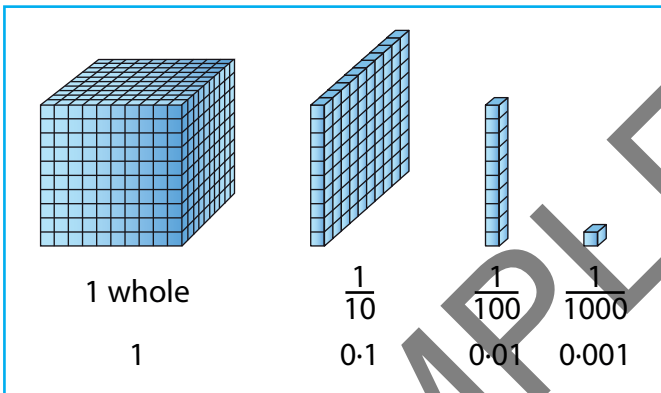
b 99.9, 74.375, 100.04, 80.725 (Use the diagram.)

c 3.5, 3.49, 3.52, 3.095, 4, 4.2

d 0.066, 0.139, 0.3, 0.51, 1, 0.1

e 12.12, 1.212, 121.2, 1212, 0.1212

For c, d and e, list the decimals, as in the diagram.



2 True or false?

a  $10 \times 0.001 = 0.01$

b  $10 \times 0.01 = 0.1$

c  $10 \times 0.1 = 1$

d  $1000 \times 0.001 = 1$

e  $100 \times 0.01 = 1$

f  $0.2 = 10 \times 0.02$

To round off a decimal to a given decimal place, we look at the next digit. If it is 5 or more, we round up. If it is less than 5, we round down.

3.128 rounds to 3.1 to 1 decimal place.

3 Round each decimal to 1 decimal place (that is, to the nearest tenth).

a 4.62

b 14.25

c 0.447

d 60.177

e 154.07

f 33.333

0.35 rounds to 0.4 to 1 decimal place.

4 Round each decimal to 2 decimal places (to the nearest hundredth).

a 9.627

b 14.253

c 0.145

d 35.288

e 65.043

f 0.415

3.128 rounds to 3.13 to 2 decimal places.

0.014 rounds to 0.01 to 2 decimal places.

$$60 \div 10 = 6$$

$$0.60 \div 10 = 0.06$$

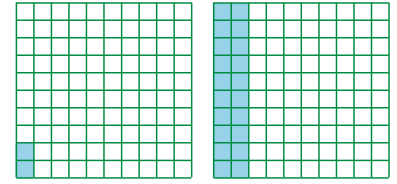
$$\text{so } 0.6 \div 10 = 0.06$$



100   10   1   •    $\frac{1}{10}$     $\frac{1}{100}$     $\frac{1}{1000}$

hundreds	tens	ones	tenths	hundredths	thousandths

- Hundredths are 10 times smaller than tenths.  $10 \times 0.02 = 0.2$
- Thousandths are 10 times smaller than hundredths.  $10 \times 0.002 = 0.02$



		0	•	1	0	0
		0	•	0	1	0
		0	•	0	0	1
			•			
			•			
			•			
			•			
			•			
			•			

0.1 = 100 thousandths
0.01 = 10 thousandths
0.001 = 1 thousandth
length of koala in cm
length of platypus in cm
length of lizard in cm
length of echidna in cm



length = 60 cm



length = 42.15 cm



length = 82.125 cm



length = 29.4 cm

1 a Write the length of each animal on the table above.

b Write the length of each animal to the nearest centimetre.

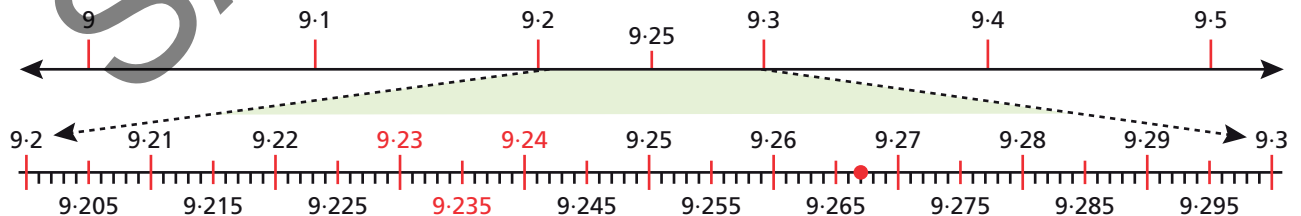
koala  platypus  lizard  echidna

c Write the length of each animal in centimetres correct to 1 decimal place.

koala  platypus  lizard  echidna

d Order the numbers 60, 42.15, 82.125 and 29.4, from smallest to largest.

2 A small part of the number line has been magnified.



a A dot has been drawn at 9.267. Draw dots at; 9.27, 9.24, 9.212, 9.4, 9 and 9.206.

b Write the number that is halfway between:

9.1 and 9.2  9.21 and 9.22  9.286 and 9.287



$$\frac{8}{8} - \frac{1}{8}$$

$$1 - \frac{1}{8}$$



1 whole is  $\frac{3}{3}$ .

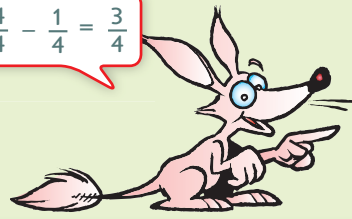


$$1 - \frac{1}{3} = \frac{2}{3}$$

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



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



$$2 - \frac{1}{4} = 1\frac{3}{4}$$

1 Complete, writing the answers as whole numbers or mixed numerals.

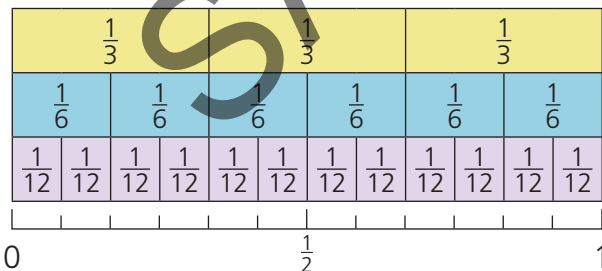
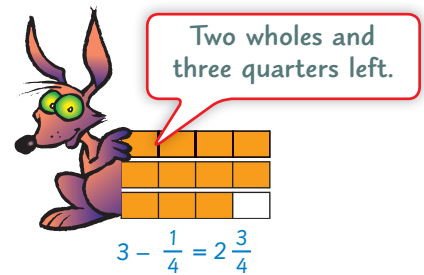
a $\frac{7}{8} + \frac{1}{8} =$ <input type="text"/>	b $\frac{4}{6} + \frac{2}{6} =$ <input type="text"/>	c $\frac{2}{3} + \frac{1}{3} =$ <input type="text"/>	d $\frac{3}{4} + \frac{1}{4} =$ <input type="text"/>
e $1\frac{1}{6} + \frac{5}{6} =$ <input type="text"/>	f $2\frac{5}{8} + \frac{3}{8} =$ <input type="text"/>	g $1\frac{7}{10} + \frac{3}{10} =$ <input type="text"/>	h $2\frac{3}{5} + \frac{2}{5} =$ <input type="text"/>
i $1\frac{3}{5} - \frac{3}{5} =$ <input type="text"/>	j $2\frac{7}{10} - \frac{4}{10} =$ <input type="text"/>	k $3\frac{3}{5} - \frac{1}{5} =$ <input type="text"/>	l $2\frac{7}{12} - \frac{3}{12} =$ <input type="text"/>

2 Complete.

a $1 - \frac{1}{6} =$ <input type="text"/>	b $1 - \frac{1}{10} =$ <input type="text"/>	c $1 - \frac{1}{8} =$ <input type="text"/>	d $1 - \frac{1}{12} =$ <input type="text"/>
e $1 - \frac{1}{5} =$ <input type="text"/>	f $1 - \frac{3}{4} =$ <input type="text"/>	g $1 - \frac{7}{10} =$ <input type="text"/>	h $1 - \frac{2}{5} =$ <input type="text"/>
i $1 - \frac{2}{3} =$ <input type="text"/>	j $1 - \frac{5}{6} =$ <input type="text"/>	k $1 - \frac{3}{8} =$ <input type="text"/>	l $1 - \frac{5}{12} =$ <input type="text"/>

3 Complete.

a $3 - \frac{1}{2} =$ <input type="text"/>	b $2 - \frac{1}{3} =$ <input type="text"/>	c $2 - \frac{1}{6} =$ <input type="text"/>
d $3 - \frac{1}{5} =$ <input type="text"/>	e $4 - \frac{1}{10} =$ <input type="text"/>	f $4 - \frac{1}{12} =$ <input type="text"/>
g $3 - \frac{1}{8} =$ <input type="text"/>	h $4 - \frac{1}{4} =$ <input type="text"/>	i $2 - \frac{3}{4} =$ <input type="text"/>



4 Use the diagram to show an equivalent fraction for:

a $\frac{2}{12} =$ <input type="text"/>	b $\frac{10}{12} =$ <input type="text"/>	c $\frac{4}{6} =$ <input type="text"/>
d $\frac{2}{3} =$ <input type="text"/>	e $\frac{8}{12} =$ <input type="text"/>	f $\frac{3}{6} =$ <input type="text"/>

5 Use the diagram in Question 4 to answer true or false.

a $\frac{1}{3} = \frac{4}{12}$ <input type="text"/>	b $\frac{8}{12} = \frac{4}{6}$ <input type="text"/>	c $\frac{2}{3} = \frac{6}{12}$ <input type="text"/>	d $\frac{10}{12} = \frac{5}{6}$ <input type="text"/>
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6 Using the diagram, explain your answers to Questions 4 and 5 to a friend.



- To order fractions, use equivalent fractions to give them the same denominator.

Order  $\frac{3}{8}$ ,  $\frac{3}{4}$ ,  $\frac{1}{2}$  and  $1\frac{1}{8}$  smallest first.

$$\frac{3}{8} \quad \frac{3 \times 2}{4 \times 2} = \frac{6}{8} \quad \frac{1 \times 4}{2 \times 4} = \frac{4}{8} \quad \frac{9}{8}$$

The order is:  $\frac{3}{8}$ ,  $\frac{1}{2}$ ,  $\frac{3}{4}$  and  $1\frac{1}{8}$ .



- To add or subtract fractions, give them the same denominator.

$$\begin{aligned} \frac{3}{8} + \frac{1}{4} &= \frac{3}{8} + \frac{1 \times 2}{4 \times 2} \\ &= \frac{3}{8} + \frac{2}{8} \\ &= \frac{5}{8} \end{aligned}$$



In both, we changed the denominators to eighths.

- 1 Order these numbers from smallest to largest.

a  $\frac{3}{4}$   $\frac{1}{2}$   $\frac{1}{4}$

b  $\frac{3}{4}$   $1\frac{1}{4}$   $\frac{5}{8}$   $\frac{1}{2}$

c  $\frac{1}{4}$   $1$   $\frac{9}{8}$   $\frac{1}{8}$

d  $\frac{3}{8}$   $\frac{1}{2}$   $\frac{3}{4}$   $\frac{1}{8}$

e  $\frac{7}{10}$   $1\frac{1}{10}$   $\frac{1}{5}$   $\frac{1}{2}$

f  $\frac{6}{10}$   $\frac{1}{5}$   $\frac{3}{2}$   $\frac{1}{10}$

- 2 Make the denominators the same before adding.

a  $\frac{1}{4} + \frac{3}{8} = \frac{\square}{8} + \frac{3}{8} = \square$

b  $\frac{1}{8} + \frac{1}{2} = \frac{1}{8} + \frac{\square}{8} = \square$

c  $\frac{1}{2} + \frac{1}{4} = \square$

d  $\frac{3}{4} + \frac{1}{2} = \square$

e  $\frac{3}{4} + \frac{1}{8} = \square$

f  $\frac{1}{10} + \frac{1}{5} = \square$

g  $\frac{1}{8} + \frac{1}{4} = \square$

h  $\frac{3}{5} + \frac{3}{10} = \square$

i  $\frac{1}{4} + \frac{7}{8} = \square$

j  $\frac{3}{5} + \frac{1}{10} = \square$

k  $\frac{3}{10} + \frac{2}{5} = \square$

l  $\frac{4}{5} + \frac{7}{10} = \square$



$\frac{7}{10} + \frac{7}{10} = \frac{14}{10}$  or  $1\frac{4}{10}$

- 3 Make the denominators the same before subtracting.

a  $\frac{3}{8} - \frac{1}{8} = \square$

b  $\frac{5}{8} - \frac{1}{4} = \frac{5}{8} - \frac{\square}{8} = \square$

c  $\frac{7}{8} - \frac{1}{2} = \frac{7}{8} - \frac{\square}{8} = \square$

d  $\frac{5}{8} - \frac{1}{2} = \square$

e  $\frac{9}{10} - \frac{1}{2} = \square$

f  $\frac{7}{10} - \frac{2}{5} = \square$

g  $\frac{3}{8} - \frac{1}{4} = \square$

h  $\frac{7}{10} - \frac{1}{2} = \square$

i  $\frac{6}{8} - \frac{1}{2} = \square$

j  $\frac{9}{8} - \frac{3}{4} = \square$

k  $\frac{9}{10} - \frac{1}{5} = \square$

l  $\frac{3}{4} - \frac{3}{8} = \square$

m  $\frac{7}{8} - \frac{3}{4} = \square$

n  $\frac{4}{5} - \frac{6}{10} = \square$

o  $\frac{3}{5} - \frac{1}{10} = \square$

p  $\frac{11}{10} - \frac{1}{2} = \square$

q  $\frac{9}{8} - \frac{1}{2} = \square$

r  $\frac{3}{2} - \frac{7}{10} = \square$

s  $\frac{7}{5} - \frac{1}{10} = \square$





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



- 1 Half of a hexagonal garden has been used to plant seeds. Another sixth of the garden has mature plants. The rest has not been used. What fraction of the garden has not been used?  of the garden

- 2 Our water tank was full yesterday, but my son left the tap running and one-quarter of the water was lost. How much of our water was left?  of the tank

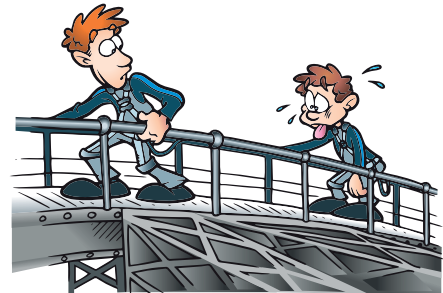
- 3 Three groups were allocated a section of the stage. We would all perform at the same time. Our group was allocated one-sixth of the stage. How much was left for the other groups to use?  of the stage

- 4 We had three strips of blue paper, each 12 cm long and 2 cm wide. Felicity used three-quarters of a strip. I used five-eighths of a strip. How much of the paper did we use?  strips



- 5 Luis and his brother Tom climbed to the top of the Sydney Harbour Bridge. When Tom was halfway up, Luis was only three-tenths of the way up. At that time, how much further up was Tom than Luis?  of the way up

Working



- 6 Jessica, Rhea and Lachlan entered the cross-country race. Yellow cones had been placed at the 1 km, 2 km and 3 km marks.

a How far from the start is Lachlan, when he is two-thirds of the way between the second and third cones?  km

b When Rhea had run three-quarters of a kilometre, Jessica had run one and a half kilometres. How far apart were they?  km

- 7 Rhonda bought 2 metres of tape. She used half a metre to make a one square-metre unit for measuring, and seven tenths of a metre to repair some books.

a How much tape did she use?  m

b How much tape was not used?  m





CONCEPT



We can use decimals to write large numbers in millions or billions.

- To write 64 500 000 as millions, put a decimal point after the 4 in the millions column.

**64.5 million** We don't need the zeros at the end of the decimals.

This is **sixty-four point five million**.

- To write 16 230 000 000 as billions, put a decimal point after the 6 in the billions column.

**16.23 billion** We don't need the zeros at the end of the decimals.

This is **sixteen point two three billion**.



Put the decimal point here for billions.

Put the point here for millions.

	Billions	Millions	Thousands	The rest
A		5	6 0 0	0 0 0
B		2 5	6 5 0	0 0 0
C		1 2 5	6 0 0	0 0 0
D		6 8	4 0 0	0 0 0
E	3	9 0 0	0 0 0	0 0 0
F	7	1 8 0	0 0 0	0 0 0
G	6 2	4 4 0	0 0 0	0 0 0
H	1 3 7	0 0 0	0 0 0	0 0 0

- 1 Write as millions using a decimal.

a A  million

b B  million

c C  million

d D  million

- 2 Write as billions using a decimal.

a E  billion

b F  billion

c G  billion

d H  billion

1 m = 1000 mm

1 L = 1000 mL

1 kg = 1000 g

1 km = 1000 m

4.29 m = 4290 mm

2.4 L = 2400 mL

9.22 kg = 9220 g

1.75 km = 1750 m

3750 mm = 3.75 m

3600 mL = 3.6 L

12 300 g = 12.3 kg

7700 m = 7.7 km

CONCEPT



- 3 Complete these conversions.

a 3.9 m =  mm

b 12.7 kg =  g

c 45.6 km =  m

d 8.2 L =  mL

e 10.2 km =  m

f 11.48 L =  mL

g 5300 mm =  m

h 1850 g =  kg

i 6640 m =  km

j 5800 m =  km

k 4300 mL =  L

l 2675 g =  kg

m 0.145 =  %

n 0.125 =  %

o 0.3333 =  %

See Extra Support 17 (Decimals!).



100% is one whole.  
200% is two wholes.

70% means 70 out of every 100.

70% of 100 = 70  
70% of 200 = 140



1 Complete each pattern and write the rule.

a 120%, 100%, 80%, , ,

The rule is:

b  $\frac{7}{10}$ ,  $\frac{9}{10}$ ,  $\frac{11}{10}$ , , , ,

The rule is:

c  $4, 3\frac{8}{10}, 3\frac{6}{10}$ , , , ,

The rule is:

d 0.85, 0.87, 0.89, , ,

The rule is:

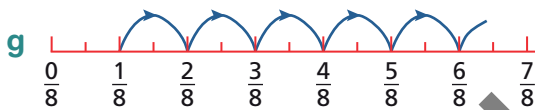
e 1.6, 1.5, 1.4, , ,

The rule is:

f , , , ...

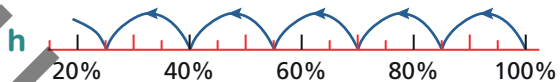
The rule is:

0.3, , , , , ,



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

The rule is:



100%, , , ,

The rule is:

i ,