AUSTRALIAN Signpost MATHS

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What is Australian Signpost Maths?

Australian Signpost Maths is a mathematics program providing direction and support for teaching and learning. The series covers the content and skills presented in the Australian Curriculum (v9) Mathematics F–6.

A Student Book and an online Teacher Resource are provided for Foundation.

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 F–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.

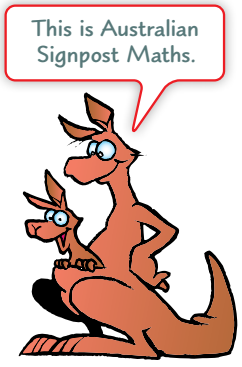
The Student Books are designed to support explicit teaching methods. Many group activities are provided in Activity, Investigation and Fun spots within the Student Books and the online Teacher Resource.

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



Structure of Australian Signpost Maths

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

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

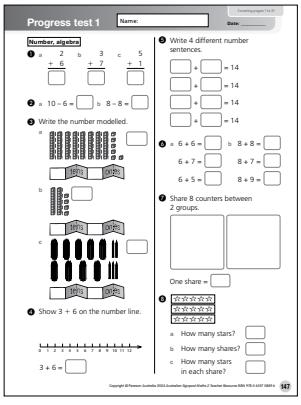
Within the program, explicit teaching, critical and creative thinking, language development and identification and treatment of weaknesses are given high priority.

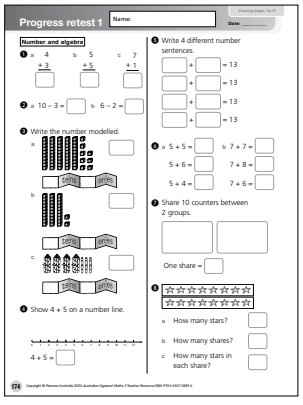
Identifying and addressing areas of need

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

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

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





Special features of Australian Signpost Maths

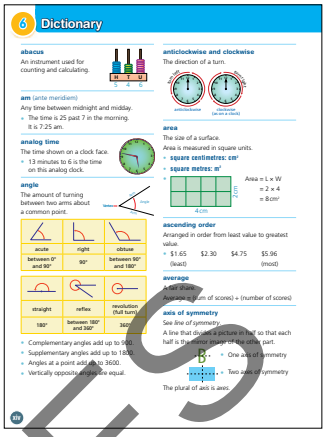
- **The traffic light icons**

  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.

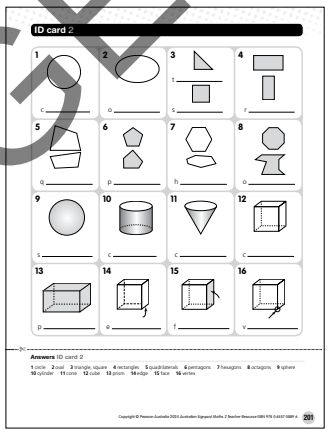
- **Dictionary**

  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–xxv of this book.



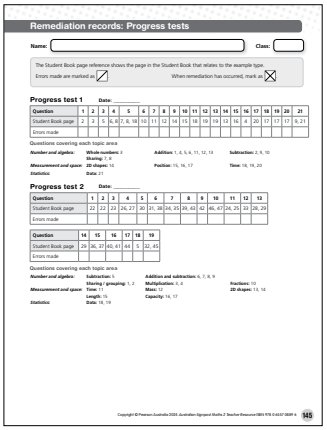
- **ID cards (Years 1 to 6)**

  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.



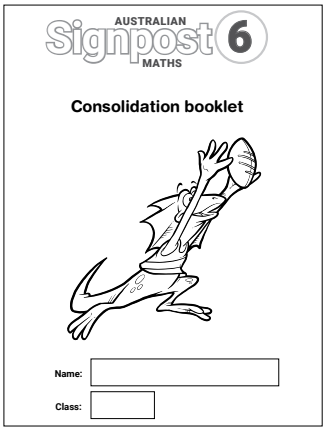
- **Progress tests**

  These allow the teacher to identify each student's strengths and needs. 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 6 Consolidation booklet**

  This 32 page 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 Teacher Resource suggestions provided for each student worksheet page.

- **Differentiation**

  Each student worksheet 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**

  Decimals, percentages, algorithms, space, compass directions, coordinates, probability, timetables and volume are supported.

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.

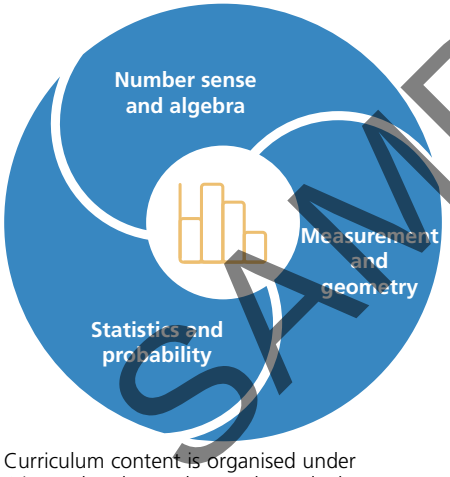
Activities provide **applications and enrichment**. These activities usually involve the use of concrete materials and partner or group work.

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.

Structure of the Australian Curriculum, F–6 (v9)

Numeracy elements



Curriculum content is organised under 6 interrelated strands: Number, Algebra, Measurement, Space, Statistics and Probability.

Sub-elements for Number sense and algebra

- Number and place value
- Counting processes
- Additive strategies
- Multiplicative strategies
- Interpreting fractions
- Number patterns and algebraic thinking
- Understanding money

Sub-elements for Measurement and geometry

- Understanding units of measurement
- Understanding geometric properties
- Positioning and locating
- Measuring time

Sub-elements for Statistics and probability

- Understanding chance
- Interpreting and representing data

The Curriculum strives to develop in students proficiency in Mathematics, highlighting Understanding, Fluency, Reasoning and Problem solving.

Mathematics content of the Australian Curriculum

- It is important that you download the **GENERAL CAPABILITIES** document from 'Downloads' in the top navigation bar of the website homepage. It contains the tables that list the progression level expectations for each year, F to 10. It also provides the content of all progression levels.
- The LEARNING AREAS download gives a summary of Content descriptions and Elaborations. CROSS-CURRICULUM PRIORITIES can also be found there.

Contents cross-reference

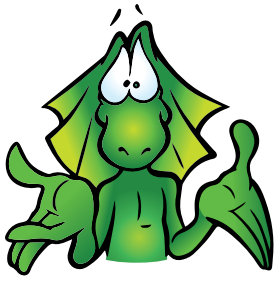
Number and algebra

Measurement and space

1	Measurement	Pages
	Length	83, 84, 85, 86, 87, 88, 90, 93, 94, 95, 118, 119, 169, 170
	Area and perimeter	89, 90, 93, 94, 95, 96, 105, 106
	Capacity and volume	97, 98, 175, 176, 177, 178
	Mass (weight)	100, 101, 102, 103, 104
	Time (duration), 24-hour time	91, 92, 107, 108, 109, 174
	Timetables, time lines	91, 92, 108, 109, 174
	Problem solving with measurement	83, 85, 86, 87, 90, 93, 94, 95, 98, 99, 100, 102, 104, 107, 117
2	**Space**	**Pages**
	2D shapes	110, 125, 165, 166, 171
	Angles, parallel and perpendicular lines	113, 114, 120, 121, 122, 123, 131, 162, 165, 171
	Symmetry, flip, slide, turn, tessellations	111, 130, 131, 132, 166, 171
	3D objects	110, 111, 112, 127, 128, 129, 167
	Position, coordinates, maps	47, 115, 116, 117, 118, 119, 124, 125, 126, 168, 169, 170

Statistics and probability

1	Data	Pages
	Collecting data and recording data	134, 144, 145, 146, 148, 149, 150, 151
	Analysing data displays	44, 84, 133, 134, 135, 139, 140, 141, 142, 143, 144, 150, 152
	Mode, median, range	139, 140, 141
	Chance and the language of chance	136, 137, 138, 145, 146, 147, 172, 173
	Chance experiments	145, 146, 147, 151



1:01 Large numbers

Billions			Millions			Thousands			Ones		
H	T	O	H	T	O	H	T	O	H	T	O
		2	7	0	6	4	5	6	3	2	9

CONCEPT

Two hundred and thirty-seven million, six hundred and forty-nine thousand, one hundred and five.

Hundred millions	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
2	3	7	6	4	9	1	0	5

Leave a space after the millions and after the thousands.

1 Use numerals to write:

a forty-nine million, seven hundred and sixty thousand, six hundred and twenty-one

b eighty-three million, one hundred and thirty-two thousand, five hundred and forty-nine

2 Write the value for each coloured digit.

a 37**4**68901 **b** 2**3**674768 **c** 431**6**9235

d **9**6347607 **e** 6**7**911213 **f** 165**2**73406

3 Arrange each group of numbers in ascending order.

a 26349721 62419637 43296714

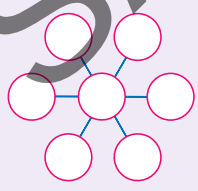
b 65375670 63497624 56811769

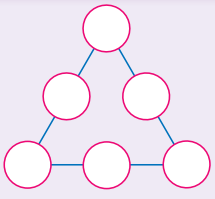
c 32693475 41623912 17634658

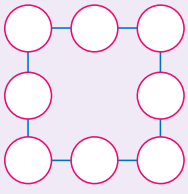
4 Is each number below closer to 30000000 or 40000000?

a 32645762 **b** 34177624 **c** 36396408

INVESTIGATION







5 **a** Use the digits 1, 2, 3, 4, 5, 6, 7. Write one digit in each space so that all the lines add up to the same sum.

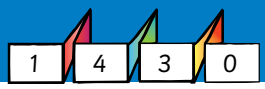
b Use the digits 1, 2, 3, 4, 5, 6. Write one digit in each space so that the sum of the numbers along each side is the same.

c Use the digits 1, 2, 3, 4, 6, 7, 8, 9. Write one digit in each space so that the sum of the numbers along each side is the same.

See *Extra Support 1* (Powers of ten).

Place value using powers of 10

1430
$1 \times 10^3 + 4 \times 10^2 + 3 \times 10^1$



CONCEPT

Ten thousands 10 000	Thousands 1000	Hundreds 100	Tens 10	Ones 1
$10 \times 10 \times 10 \times 10$ 10^4	$10 \times 10 \times 10$ 10^3	10×10 10^2	10 10^1	1 1
6	4	7	3	8

$64\,738 = (6 \times 10\,000) + (4 \times 1000) + (7 \times 100) + (3 \times 10) + 8$
$= (6 \times 10^4) + (4 \times 10^3) + (7 \times 10^2) + (3 \times 10^1) + 8$

6 ten thousands
4 thousands
7 hundreds
3 tens
8 ones

6 4 7 3 8

1 Write the numeral for:

a $(3 \times 10^4) + (7 \times 10^3) + (9 \times 10^2) + (5 \times 10^1) + 2$

b $(9 \times 10^4) + (6 \times 10^3) + (8 \times 10^2) + (3 \times 10^1) + 1$

c $(6 \times 10^4) + (2 \times 10^3) + (4 \times 10^2) + (7 \times 10^1) + 5$

d $(8 \times 10^4) + (9 \times 10^3) + (3 \times 10^2) + (5 \times 10^1) + 4$

2 Write the following in expanded notation using powers of ten.

a 6491

b 27 245

c 78 319

d 45 628

3 Write each number on the place-value chart.

a $(7 \times 10^4) + (9 \times 10^3) + (2 \times 10^2) + (3 \times 10^1) + 4$

b $(4 \times 10^4) + (6 \times 10^3) + (7 \times 10^2) + (9 \times 10^1) + 3$

c $(3 \times 10^4) + (5 \times 10^3) + (6 \times 10^2) + (8 \times 10^1) + 6$

d $(8 \times 10^4) + (3 \times 10^3) + (5 \times 10^2) + (6 \times 10^1) + 2$

Ten thousands	Thousands	Hundreds	Tens	Ones

4 Write the numeral for:

a 60 000 + 4000 + 900 + 50 + 8

b 90 000 + 6000 + 700 + 40 + 3

c 300 000 + 70 000 + 2000 + 500 + 90 + 8

d 700 000 + 80 000 + 5000 + 400 + 60 + 1

e 100 000 + 50 000 + 9000 + 300 + 50 + 6

See *Extra Support 1* (Powers of ten).

1:03 Percentages

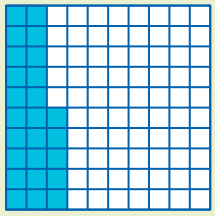
20% means 20 out of 100.

20	20	20	20	20

$20\% = \frac{20}{100} = \frac{1}{5}$

CONCEPT

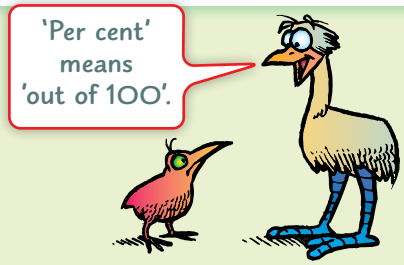
25%



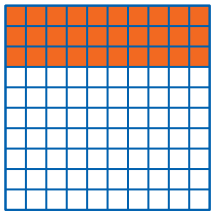
$\frac{25}{100}$

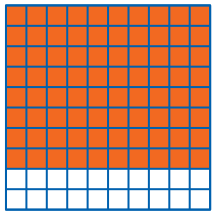
25 hundredths

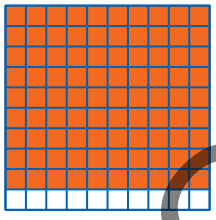
0·25

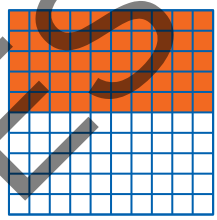


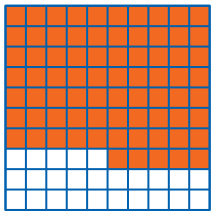
1 What percentage of each square is coloured?

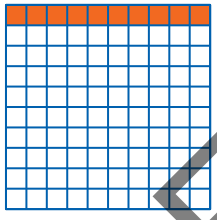
a 

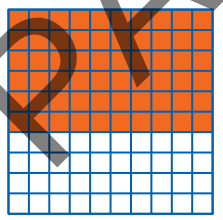
b 

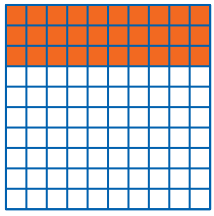
c 

d 

e 

f 

g 

h 

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

a ____ b ____ c ____ d ____

e ____ f ____ g ____ h ____

3 Complete the following.

a	0·25 = ___/100 = ___%	b	0·35 = ___/100 = ___%	c	0·65 = ___/100 = ___%
d	0·75 = ___/100 = ___%	e	0·15 = ___/100 = ___%	f	0·55 = ___/100 = ___%
g	0·90 = ___/100 = ___%	h	0·40 = ___/100 = ___%	i	0·80 = ___/100 = ___%

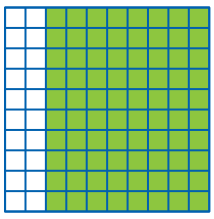
Percentages in the environment

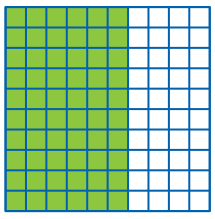
- Collect examples of percentages from newspapers and packets.
- Discuss the different ways in which percentages are used.

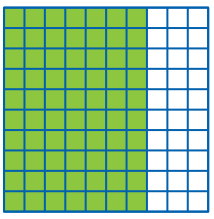
ACTIVITY

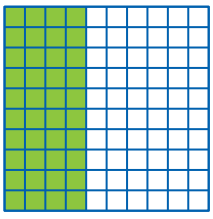
See *Extra Support 2* (Place value and decimals), *Extra Support 3* (Using decimals) and *Extra Support 4* (Percentages).

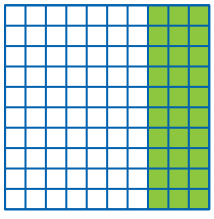
1 What percentage of each square is coloured?

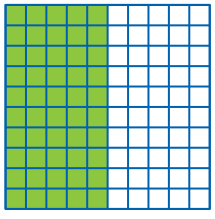
a 

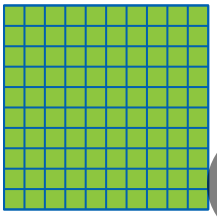
b 

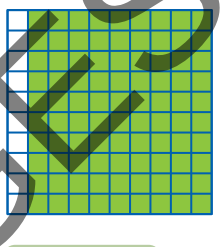
c 

d 

e 

f 

g 

h 

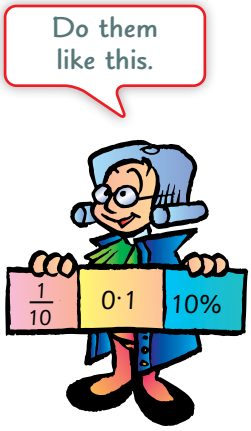
2 What percentage of each square is not coloured in Question 1?

a b c d

e f g h

3 Complete the following.

a	$\frac{25}{100}$	0·	%	b	$\frac{55}{100}$	0·	%	c	$\frac{75}{100}$	0·	%
d	$\frac{95}{100}$	0·	%	e	$\frac{65}{100}$	0·	%	f	$\frac{45}{100}$	0·	%
g	$\frac{9}{10}$	0·	%	h	$\frac{3}{10}$	0·	%	i	$\frac{7}{10}$	0·	%
j	$\frac{4}{10}$	0·	%	k	$\frac{5}{10}$	0·	%	l	1	·0	%



4 Draw lines to connect the equivalent numbers.

a	0·25	45%	b	0·7	55%	c	0·35	85%	d	0·3	65%
	0·5	60%		0·55	70%		0·1	90%		0·65	40%
	0·45	25%		0·8	95%		0·85	10%		0·4	30%
	0·6	50%		0·95	80%		0·9	35%		1	100%

See *Extra Support 2* (Place value and decimals), *Extra Support 3* (Using decimals) and *Extra Support 4* (Percentages).

1:05 Improper fractions, mixed numbers

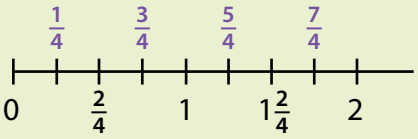
Improper: The top is larger than the bottom.

CONCEPT

$\frac{7}{4}$ is called an improper fraction.

$\frac{7}{4}$ can also be written as $1\frac{3}{4}$. We call this a mixed number.

$$\frac{7}{4} = 1\frac{3}{4}$$



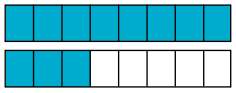
1 Write an improper fraction and mixed number for the coloured part in each model.

a

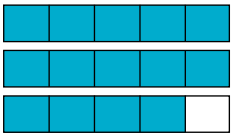
b

c

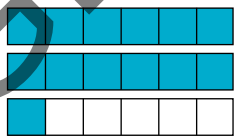
d

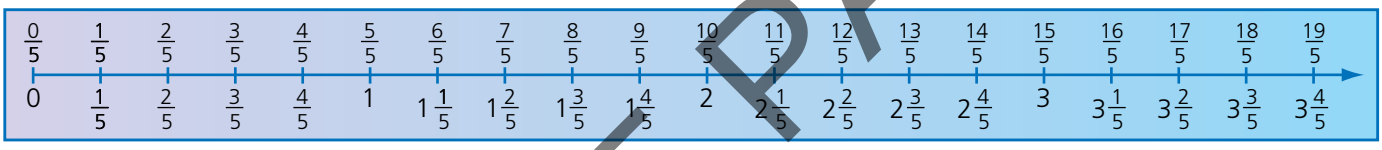


e



f





2 Use the number line above to write the mixed numeral for:

a $\frac{6}{5}$ **b** $\frac{11}{5}$ **c** $\frac{9}{5}$ **d** $\frac{13}{5}$ **e** $\frac{16}{5}$

f $\frac{12}{5}$ **g** $\frac{17}{5}$ **h** $\frac{7}{5}$ **i** $\frac{9}{5}$ **j** $\frac{8}{5}$

3 Use the number line to write the improper fraction for:

a $1\frac{4}{5}$ **b** $2\frac{3}{5}$ **c** $3\frac{2}{5}$ **d** $1\frac{1}{5}$ **e** $2\frac{2}{5}$

f $3\frac{1}{5}$ **g** $1\frac{2}{5}$ **h** $2\frac{1}{5}$ **i** $3\frac{4}{5}$ **j** $1\frac{3}{5}$

4 Write the mixed numeral for:

a $\frac{5}{4}$ **b** $\frac{13}{10}$ **c** $\frac{9}{8}$

d $\frac{7}{6}$ **e** $\frac{9}{4}$ **f** $\frac{17}{10}$

g $\frac{11}{8}$ **h** $\frac{13}{12}$ **i** $\frac{13}{8}$

j $\frac{11}{4}$ **k** $\frac{17}{6}$ **l** $\frac{17}{12}$

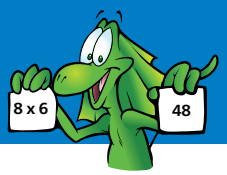
Divide the numerator by the denominator.

$$5\overline{)7} \quad 1 \text{ r } 2$$

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

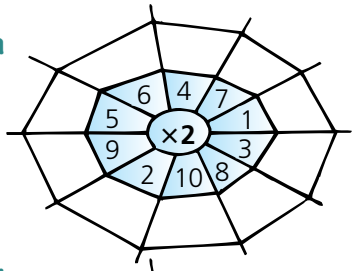
Multiplication review

Use cards to learn any you don't know.

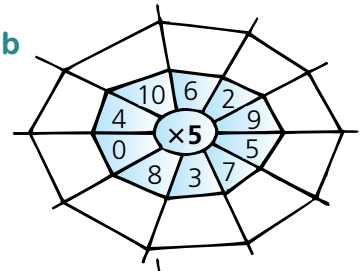


1 Complete these webs as quickly as you can. Learn any tables you get wrong.

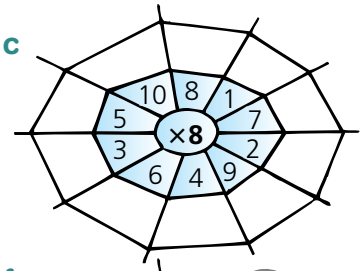
a



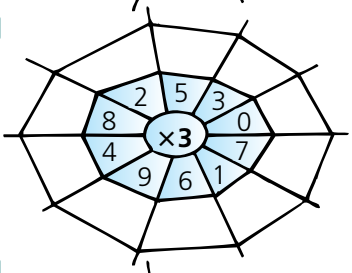
b



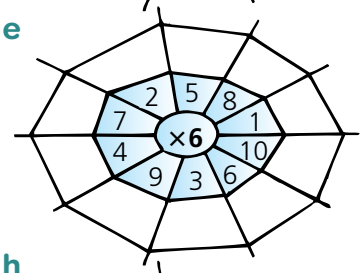
c



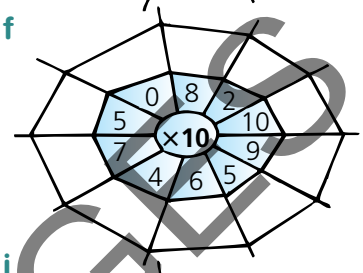
d



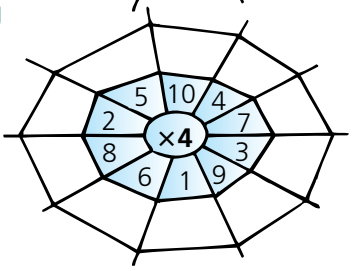
e



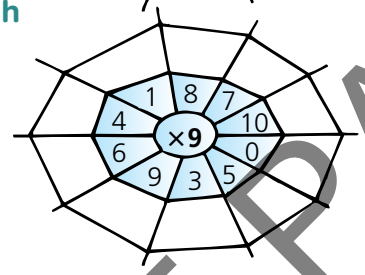
f



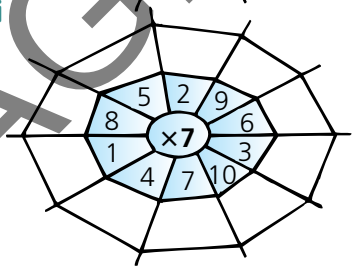
g



h



i

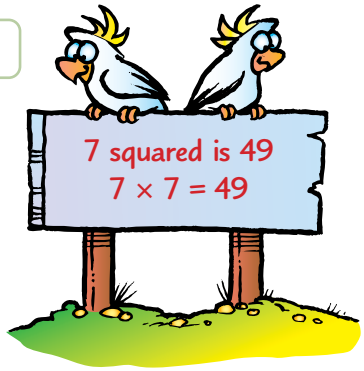


- A **multiple** is the answer when you multiply whole numbers.
- **Factors** of a number are whole numbers that multiply to give that number.
  The factors of 12 are 1, 12, 2, 6, 3 and 4.

2 Write down all the factors of:

a 18 ____ **b** 49 ____

c 24 ____ **d** 13 ____



3 Write down the first eleven multiples of:

a 4 ____

b 9 ____

4 Complete:

a 3 squared = ____ **b** 8 squared = ____ **c** 10 squared = ____

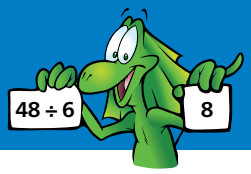
d 49 = ____ squared **e** 1 = ____ squared **f** 25 = ____ squared

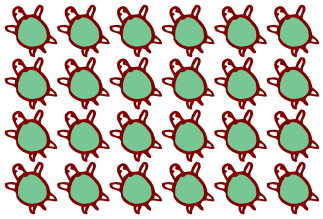
5 **True** or **false**?

a All the multiples of 3 that are less than 30 are odd numbers. ____

b All square numbers between 50 and 80 are even numbers. ____

Use 6 × 8 = 48
to do 48 ÷ 6 = 8.





1 Find a fair share if these turtles were shared among:

a 4 girls ☐ **b** 6 boys ☐ **c** 3 boys ☐ **d** 8 girls ☐

2 Find one share and the remainder if they are shared among:

a 5 ponds ☐ **b** 7 ponds ☐

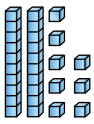
3 **a** How many groups of 3 turtles are there? ☐

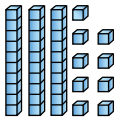
b How many groups of 4 turtles are there? ☐

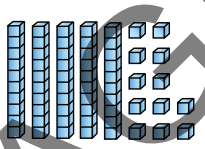
$7 \times 6 = 42$
so $42 \div 6 = 7$ and
$42 \div 7 = 6$

Division is related to multiplication.

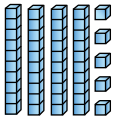
4 How many groups of 13 are there and how many are left over?

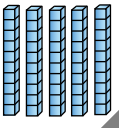
a  ☐ r ☐

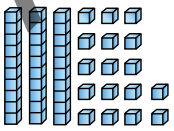
b  ☐ r ☐

c  ☐ r ☐

5 Share each between four people. How many are there for each person and how many are left?

a  ☐ r ☐

b  ☐ r ☐

c  ☐ r ☐

6 Use the first number sentence to complete the other two.

a $7 \times 8 = 56$

$56 \div 8 =$ ☐
$56 \div 7 =$ ☐

b $9 \times 6 = 54$

$54 \div 6 =$ ☐
$54 \div 9 =$ ☐

c $8 \times 6 = 48$

$48 \div 6 =$ ☐
$48 \div 8 =$ ☐

d $7 \times 9 = 63$

$63 \div 9 =$ ☐
$63 \div 7 =$ ☐

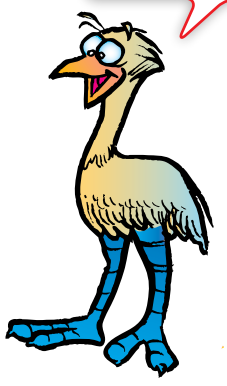
7 **a** $3 \times$ ☐ $= 27$ **b** $5 \times$ ☐ $= 35$ **c** $4 \times$ ☐ $= 32$ **d** $8 \times$ ☐ $= 16$

e ☐ $\times 7 = 28$ **f** ☐ $\times 9 = 63$ **g** ☐ $\times 8 = 64$ **h** ☐ $\times 6 = 48$

8

a $21 \div 3 =$ ☐	**b** $15 \div 5 =$ ☐	**c** $18 \div 6 =$ ☐
d $16 \div 4 =$ ☐	**e** $40 \div 8 =$ ☐	**f** $90 \div 9 =$ ☐
g $40 \div 10 =$ ☐	**h** $45 \div 9 =$ ☐	**i** $18 \div 3 =$ ☐
j $25 \div 5 =$ ☐	**k** $20 \div 4 =$ ☐	**l** $36 \div 6 =$ ☐
m $24 \div 4 =$ ☐	**n** $10 \div 10 =$ ☐	**o** $36 \div 4 =$ ☐
p $27 \div 9 =$ ☐	**q** $24 \div 3 =$ ☐	**r** $81 \div 9 =$ ☐
s $49 \div 7 =$ ☐	**t** $42 \div 6 =$ ☐	**u** $64 \div 8 =$ ☐

For 21 ÷ 3 think ☐ × 3 = 21.



456 + 138 + 172 + 2047
Estimate: 500 + 100 + 200 + 2000
= 2800

Of light trucks registered in our study, 89 were blue and 9193 were white. What was the total of these?

```
  1 1
  9 1 9 3
+     8 9
-------
  9 2 8 2
```

- Trade 10 ones for 1 ten.
- Trade 10 tens for 1 hundred.

CONCEPT

Test your knowledge of last year's work.

1 **a**
```
    1 4
  5 5 0
  2 4 8
+   9 3
```

b
```
  2 4 5
    7 6
  1 9 3
+ 1 5 7
```

c
```
  2 1 4
  1 0 6
    9 7
+ 2 3 3
```

d
```
    9
  2 0
  1 8 8
+ 6 2 4
```

2 **a**
```
  6 8 3 7
+   2 6 2
```

b
```
  3 0 8 6
+ 2 7 1 4
```

c
```
  5 3 0 7
+ 1 2 9 8
```

d
```
  3 8 4 6
+ 2 7 1 8
```

3 **a**
```
  3 0 7 6
    2 9 7
+ 4 8 1 4
```

b
```
  $ 2 0 . 0 8
  $ 6 0 . 1 1
+ $ 1 8 . 9 1
```

c
```
  6 3 0 4
    9 2 5
+ 1 0 4 5
```

d
```
  $ 2 1 . 8 6
  $ 1 9 . 3 7
+ $ 1 2 . 6 9
```

4 **a**
```
  1 0 8 6
    1 9 3
  2 7 4 5
+   8 2 7
```

b
```
  1 8 4 3
  3 0 7 6
  2 1 8 4
+ 1 9 4 7
```

c
```
  3 8 2 7
    9 3 8
  1 8 2 5
+   7 2 5
```

d
```
  4 3 8 6
    8 2 7
      9 9
+ 2 1 8 4
```

5 **a**
```
  3 0 7 4
+ 6 3 8 1
```

b
```
  6 0 3 8
+ 2 9 7 2
```

c
```
  3 1 8 6
+ 5 8 1 4
```

Use estimation to check all your answers.

6 **a** Of teenage drivers in our study, 1573 were female and 2679 were male. How many teenagers were there altogether?

b In the 80+ category, there were 2534 female drivers and 4683 male drivers. How many drivers were 80 or older?

2:04 Subtraction review

Estimate:
7000 – 400 = 6600

Estimate before you calculate.

Of $7000 received, $364 was paid in tax. How much was left?

9 9
6 ~~10~~ ~~10~~ 10
$ ~~7~~ ~~0~~ ~~0~~ ~~0~~
– $ 3 6 4
$ 6 6 3 6

OR

7000 = 6990 + 10

6 9 9 10
$ ~~7~~ 0 0 0
– $ 3 6 4
$ 6 6 3 6

CONCEPT

1 **a**
8 7 5
– 3 8

b
7 4 0
– 9 9

c
4 8 2
– 4 9

d
3 6 2
– 9 7

2 **a**
6 0 0
– 1 9 3

b
8 0 0
– 3 4 5

c
3 0 0
– 9 3

d
9 0 0
– 1 8 7

3 **a**
6 1 0 7
– 1 8 3 6

b
5 3 1 8
– 9 6 7

c
4 0 9 3
– 3 8 1 4

d
3 4 8 6
– 8 4 7

4 **a**
2 0 0 0
– 1 0 8 4

b
3 0 0 0
– 9 1 5

c
7 0 0 0
– 3 4 0 9

5 **a**
1 6 3 1
– 9 0 1

b
7 3 8 6
– 1 8 3 6

c
3 5 4 3
– 6 6 7

6 **a**
6 0 0 0
– 1 1 2 4

b
3 0 0 0
– 6 8 1

c
7 0 0 0
– 6 9 3 6

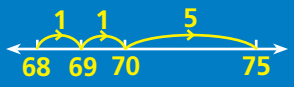
7 **a** Of 1560 runners who began a race only 1494 finished. How many dropped out?

– _____

b I have run 3285 m. How much further must I run to reach 4200 m?

– _____

2:05 Strategies for subtraction



75 – 68
= 1 + 1 + 5
= 7

1 Use counting on to answer these.

a 39 – 35		**b** 40 – 38	
c 88 – 84		**d** 97 – 93	
e 71 – 68		**f** 79 – 71	
g 68 – 63		**h** 45 – 39	
i 60 – 56		**j** 52 – 49	
k 91 – 86		**l** 63 – 56	

2 Use counting back to answer these.

a 78 – 22		**b** 95 – 45	
c 56 – 14		**d** 78 – 14	
e 344 – 31		**f** 365 – 31	
g 169 – 23		**h** 186 – 36	
i 281 – 12		**j** 102 – 4	
k 414 – 25		**l** 636 – 27	

Counting on

75 – 68 = ☐

Count on from 68:
'69, 70 and 5 more.'
The answer is 7.

We could say 68 + ☐ = 75.

Counting back

81 – 32 = ☐

Count back 30:
'71, 61, 51.'
Count back 2:
'50, 49.'
The answer is 49.

This is the jump strategy.

3

a 84 − 28	**b** 71 − 58	**c** 62 − 39	**d** 45 − 19
e 60 − 27	**f** 42 − 19	**g** 37 − 18	**h** 87 − 49

164 – 38
Subtract 40 and then add 2.

4

a 137 − 9	**b** 514 − 98	**c** 815 − 97	**d** 246 − 99
e 665 − 38	**f** 987 − 59	**g** 534 − 119	**h** 560 − 58

Use rounding to check your answers.

5

a There were 368 people in the hall. 98 were dancing. How many were not dancing? ☐

b We had 352 fireworks. We used 246. How many were not used? ☐

c Heather has 170 birds. How many finches has she if 134 birds are not finches? ☐

Politician's rating	I. Speakalot			U. Cantrustme		
	% Men	% Women	% of Total	% Men	% Women	% Total
Very good	22	20	21	8	12	10
Good	46	34	40	22	30	26
Unsure	18	36	27	20	10	15
Poor	12	9	10·5	40	36	38
Very poor	2	1	1·5	10	12	11

Opinion polls are often reported in newspapers. The data collected is categorical data.

1 What percentage of men rated I. Speakalot as very good? What fraction is this?

2 What percentage of women rated U. Cantrustme as good? What fraction is this?

3 What percentage of people rated I. Speakalot as poor?

4 What percentage of people rated U. Cantrustme as:
- **a** very good or good?
- **b** poor or very poor?

5 Which politician was the more popular?

6 Was I. Speakalot more popular with men or women?

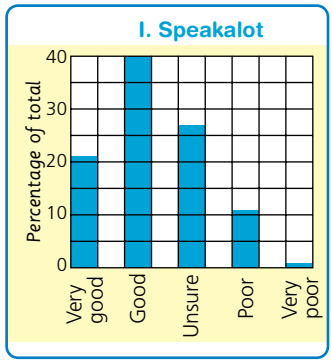
7 If these figures came from asking 1000 people their opinions about each politician, how many people said that U. Cantrustme was very good?

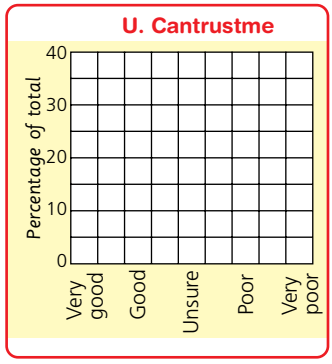
8 **a** Which part of the table above has been used to draw the I. Speakalot graph?

b Complete the second graph using the table.

c Which was the most common response for I. Speakalot?

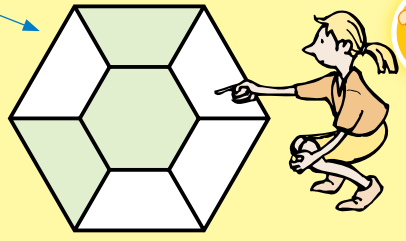
d Which was the least common response for U. Cantrustme?





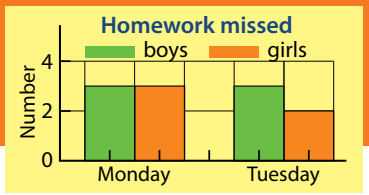
FUN SPOT

9 Pierre, Rachel and Kelly play a new version of handball. For a court they need two joined shapes from the space shown.

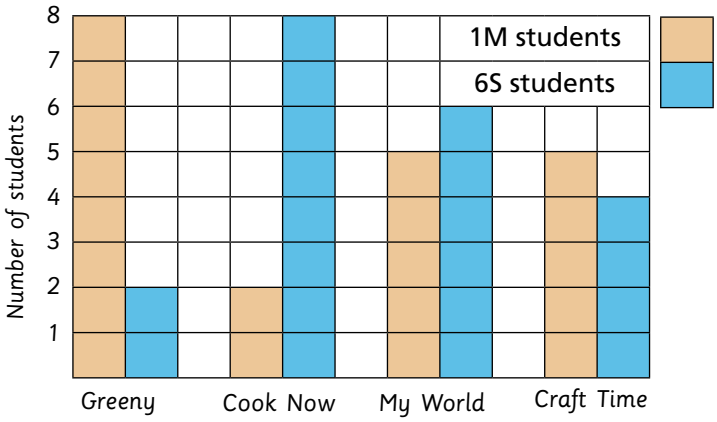


- **a** How many different courts could they choose?
- **b** How many courts can be used at the same time?
- **c** If **three** joined shapes were needed for a court, how many different courts could they choose?

5:02 Side-by-side column graphs



TV programs chosen by 1M and 6S students (20 from each class)



TV show chosen	1M	6S
Greeny		
Cook Now		
My World		
Craft Time		

1 **a** Use the graph to complete the table above.

b Which TV programs were more popular with 1M students?

c Which TV programs were more popular with 6S students?

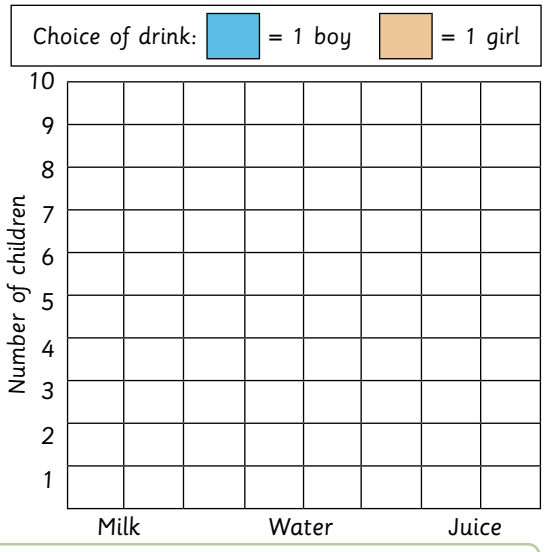
d Which TV program was most popular overall?

e Which TV program was most popular with 1M students?

f Why were the results of the classes so different?

2 Complete this two-way table by asking 10 boys and 10 girls which drink they like most out of milk, water and juice. Then use these results to complete the side-by-side column graph.

Drink chosen	Boys	Girls
Milk		
Juice		
Water		



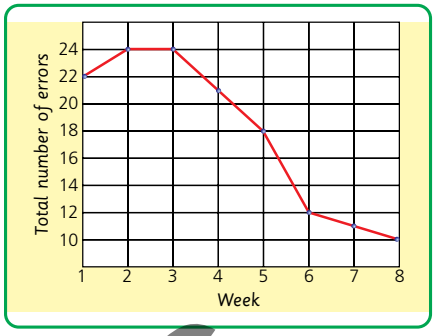
Give a report of your survey.

Is this an effective way to graph the data in the table? Why or why not?

5:03 Line graphs

These line graphs show trends, but the horizontal axis still shows categories.

1 The results of our weekly dictation test are graphed here. We were given the same test 8 weeks in a row.



a The vertical axis does not start at zero. What is the least number of errors that can be shown on this graph?

b How many errors were made in Week 4?

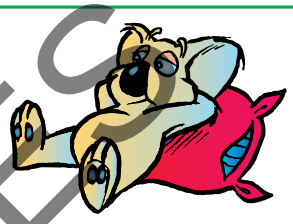
c How many errors were there altogether?

d When was the greatest number of errors made?

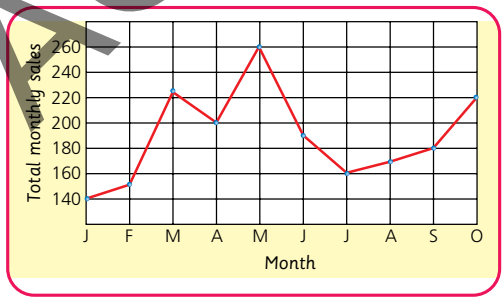
e How many more errors were there in Week 1 than in Week 8?

f On which week was the greatest improvement shown?

g Why do you think the results improved so much over time?



2 This graph shows the monthly sales of copiers.



a In which month were 152 copiers sold?

b How many sales were made in the last three months altogether?

c How many more copiers were sold in May than in July?

d How many more sales were made in the eighth month than in the first month?

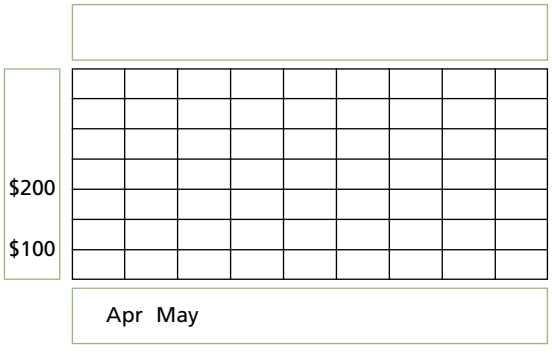
e Which three-month period had the most sales?

f How many sales would you predict for November?

3 Some of Tim's bank balances for last year were:

April	$100	May	$200
June	$200	July	$300
August	$350	September	$375
October	$325	November	$250

a Complete the labels and draw a line graph to show this information.



Garry's bank balances for the same period were:

April	$300	May	$300
June	$250	July	$400
August	$400	September	$400
October	$350	November	$350

b On the same axes, draw a line graph to show Garry's balances for the same period.

When we use the same axes to draw two or more line graphs, we call them stacked line graphs.

5:04 Chance as a fraction

impossible — even chance — certain

0 — unlikely — $\frac{1}{2}$ — likely — 1

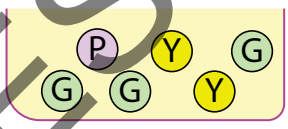
- The **probability** of something happening is its **chance** of happening.

$$\textbf{Probability of an event} = \frac{\text{the number of favourable outcomes}}{\text{the total number of outcomes}}$$

- In each case write **the probability** that the ball chosen will show:

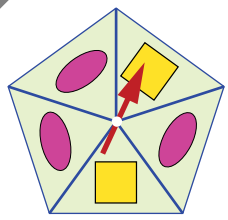
1) R $\frac{3}{8}$ 2) B $\frac{4}{8}$ 3) Y ? 4) not R $\frac{5}{8}$ 5) not Y ?

1 In each case write **the probability** that the ball chosen will be:



a P **b** G **c** Y **d** not P **e** not Y

2 In each case write **the probability** that the shape spun will be:



a ⬮ **b** ■ **c** not ⬮ **d** not ■

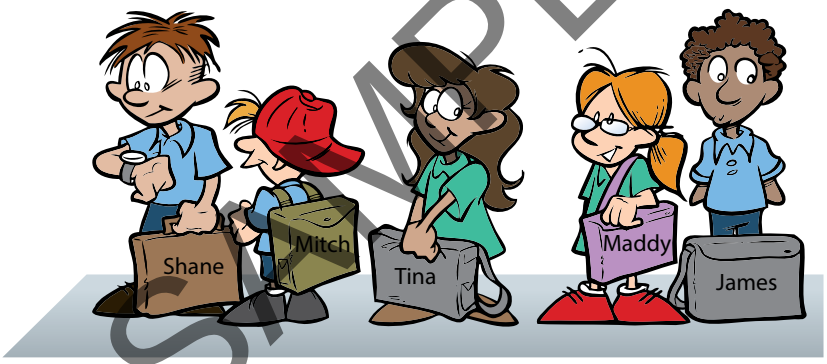
3 If I toss a dice, what is **the probability** that I would toss a:

a 1? **b** 4? **c** an even number? **d** a number less than 3?

4 If I toss a coin, what is **the probability** that I will toss:

a a tail? **b** not a tail? **c** either a head or a tail?

5



One of these students will be chosen at random. What is the chance that:

a a boy is chosen?

b a girl is chosen?

c Maddy or James is chosen?

d Tina is not chosen?

6 Mario must choose one of these items at random. He drew a picture of each on identical cards. He then placed the cards in a hat and chose a card from the hat without looking.

a Has he chosen an item at random?

What is his chance of picking a:

b melon? **c** banana? **d** apple?

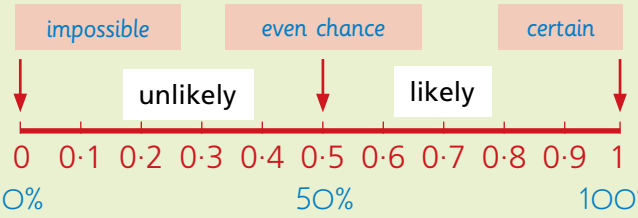
See *Extra Support 20* (Tree diagrams) and *Extra Support 21* (Probability).

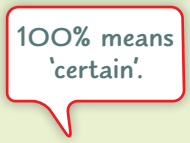
5:05

Chance as a percentage or decimal

0 = 0·0 or 0%
$\frac{1}{2}$ = 0·5 or 50%
1 = 1·0 or 100%

CONCEPT





A 30% chance of winning means $\frac{30}{100}$ or $\frac{3}{10}$ chance of winning.

1 Use the scale 0% to 100% to rate the chance of the following events happening.

	Event	Chance
a	My first toss of a coin will be a tail.	
b	My first throw of a dice will be a three.	
c	I will be one year old next birthday.	
d	I will not go to school on New Year's Day.	
e	I will have homework next week.	

≒ means 'is approximately equal to'.

The chance of rolling a five:
≒ $\frac{1}{6}$
= 1 ÷ 6
≒ 0·166....
≒ 17%

2 Write the probability as a fraction, a decimal and as a percentage of spinning green.

a 

b 

c 

d 

Write the probability, as a decimal and as a percentage, of spinning yellow.

e % f % g % h %

Write the probability, as a decimal and as a percentage, of spinning red.

i % j % k % l %

ACTIVITY

Make a list of three events that may happen next week, as a decimal and as a percentage. Use the scale of 0 to 1 to rate the probability of each happening.

1 %
2 %
3 %

AUSTRALIAN

Signpost MATHS

For Australian Curriculum V 9.0 2022

Mentals

6

Alan McSeveny Rachel McSeveny Diane McSeveny-Foster

Learn more at pearson.com.au/asm

Introduction

Using the Mentals Books

This book reviews content from the Signpost Student Book. It is used most effectively when it aligns with the suggested program in the Student Book contents.

Each unit of the Mentals Book is programmed to review Student Book content for the previous two weeks. (The Suggested Program overview can be found in the Teacher Resource.) For example, Unit 15 of the Mentals Book can be set as homework to review weeks 13 and 14 of the Student Book while week 15 is being taught. Units 1 and 2 review work taught in the previous year.

Mixed-topic questions

The units present questions in a mixed-topic format to encourage thorough understanding and continuous review.

Graded questions

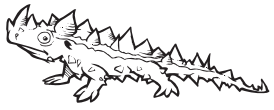
- Column 1: easier
- Columns 2 and 3: harder
- Column 4: Extension and Challenge

Presentation

- Number facts are reinforced to encourage instant recall.
- Essential skills are explained.
- The Arithmetic card (page 5) is a useful teaching tool for practising basic number skills.
- ID cards (pages 6 to 9) review the mathematical terms students need to learn.
- Measurement benchmarks and Tables of number and measurement (pages 84 and 85) are provided so that students can learn important facts and estimate measurements effectively.

Motivation

- There are two lizards hidden on each page for students to find.
- The header allows students to record their score.



Extra activities

- Problem-solving **strategies** are introduced in a carefully planned sequence throughout the series.

- Important concepts from **Number and algebra** and **Measurement and geometry** are explored.

- **Measurement** concepts and activities are introduced and investigated.

- **Statistics and probability** concepts (Data and chance) are presented for revision and extension.

- A **tables** program for each of the four operations is included.
- It is important for students to learn addition and multiplication tables by heart.

6 Contents

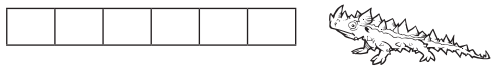
Teaching ideas using headers

Unit	Content	Extra Activity
1:1/2 **1:3/4**	+ 3, + 5 Personal measurements	+ tables Measure
2:1/2 **2:3/4**	− 2, − 4 Language	− tables ID card D
3:1/2 **3:3/4**	× 8, × 5 Rounding money	× tables Concept
4:1/2 **4:3/4**	× 2, × 4 + 4, + 6	× tables + tables
5:1/2 **5:3/4**	Percentages Equivalent fractions	Concept Concept
6:1/2 **6:3/4**	Order of operations Square numbers / Multiples	Concept Concept
7:1/2 **7:3/4**	Problem solving Reflections	Strategy time Concept
8:1/2 **8:3/4**	Square numbers Order of operations	Concept Concept
9:1/2 **9:3/4**	Language ÷ 2, ÷ 4	ID card B ÷ tables
10:1/2 **10:3/4**	Language −13, −17	ID card B − tables
11:1/2 **11:3/4**	× 3 × 6 Multiplication	× tables × tables
12:1/2 **12:3/4**	÷ 5, ÷ 10 Scale drawing	÷ tables Concept
13:1/2 **13:3/4**	÷ 3, ÷ 6 × 6 × 9	÷ tables × tables
14:1/2 **14:3/4**	Language Language	ID card C ID card C
15:1/2 **15:3/4**	Averages × 7, × 8	Concept × tables
16:1/2 **16:3/4**	÷ 9 Profit and loss	÷ tables Concept
17:1/2 **17:3/4**	Money Chance	Strategy time Chance
18:1/2 **18:3/4**	÷ 7, ÷ 8 Money	÷ tables Strategy time
19:1/2 **19:3/4**	Problem solving Problem solving	Strategy time Strategy time

Unit	Content	Extra Activity
20:1/2 **20:3/4**	− 9, − 5 + 7, + 9	− tables + tables
21:1/2 **21:3/4**	Language Crossnumber puzzle	ID card C Concept
22:1/2 **22:3/4**	Magic squares Crossnumber puzzle	Concept Concept
23:1/2 **23:3/4**	− 3, − 5 − 9 Converting distances	− tables Measure
24:1/2 **24:3/4**	Problem solving Problem solving	Strategy time Strategy time
25:1/2 **25:3/4**	Estimating measurements Factors	Measure Concept
26:1/2 **26:3/4**	Fractions (subtraction) Fractions (subtraction)	Concept Concept
27:1/2 **27:3/4**	Fractions to decimals × 8, × 6	Concept × tables
28:1/2 **28:3/4**	Language Problem solving	ID card A Strategy time
29:1/2 **29:3/4**	Average speed Problem solving	Measure Strategy time
30:1/2 **30:3/4**	Problem solving Codes	Strategy time Concept
31:1/2 **31:3/4**	Order of operations Scale drawing	Concept Concept
32:1/2 **32:3/4**	× 6, × 7, × 8 ÷ 4	× tables ÷ tables
33:1/2 **33:3/4**	− 6, − 8 Roman numerals	− tables Concept
34:1/2 **34:3/4**	Scale drawing Coordinates	Concept Concept
35:1/2 **35:3/4**	Codes Factors	Concept Concept
36:1/2 **36:3/4**	Tally Divisibility	Chance Concept
37:1/2 **37:3/4**	Coordinates with 4 quadrants Personal measurements	Concept Measure
Answers	These can be found in the middle of this book on pages A1 to A16.	

1:1 ____ out of 18

1. 23 + 31 ____
2. 3 × 3 ____
3. 6 × $3 ____
4. 8 ÷ 2 ____
5. 5475 + 2573
6. Add 235 to 432. ____
7. Multiply 7 by 3. ____
8. 18 divided by 6. ____
9. 0·1 × 10 ____
10. 4253 × 2

11. 

    a $1 - \frac{5}{6} =$ ☐ **b** $1 - \frac{2}{6} =$ ☐

12. If 19·7 million is 19 700 000, what is:

    49·3 million? ____

13. $\frac{6}{8} - \frac{2}{8} =$ ☐ or ☐

14. **a** 0·48 = ____% **b** 0·29 = ____%

15. **a** 20, 24, 28, ____, ____, ____, ____

    b 15, 18, 21, ____, ____, ____, ____

    c 22, 27, 32, ____, ____, ____, ____

16. A cube has ____ edges.

17. **a** 256 cm = ____ m ____ cm

    b 46 mm = ____ cm

    c 4 kg = ____ g

    d 4750 g = ____ kg

18. The total value of these notes.

____

See page 85.

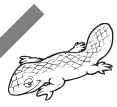
1:2 ____ out of 20

1. 64 ÷ 8 ____
2. 7 × $6 ____
3. 648 − 97 ____
4. $\frac{1}{2}$ of 86 ____
5. 8353 − 2647
6. 3 squared. ____
7. Halve $64. ____
8. 684 − 298 ____
9. 0·5 × 100 ____
10. 5308 × 5

11. Millilitres in $6\frac{1}{2}$ L. ____

12. Make the denominators equal, then subtract.

    $\frac{8}{12} - \frac{1}{3} =$ ☐ ☐ = ☐



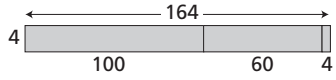
13. **a** 0·54, 0·53, 0·52, ____, ____, ____

    b The rule for this pattern is ____.

14. 4 × 164 = (4 × ____) + (4 × ____) + (4 × ____)

    = ____ + ____ + ____

    = ____



15. If apples cost 90c each, how much would 7 apples cost? ____

16. Find an estimate by rounding each number first.

    a 36 × 29 ____ **b** 64 × 17 ____

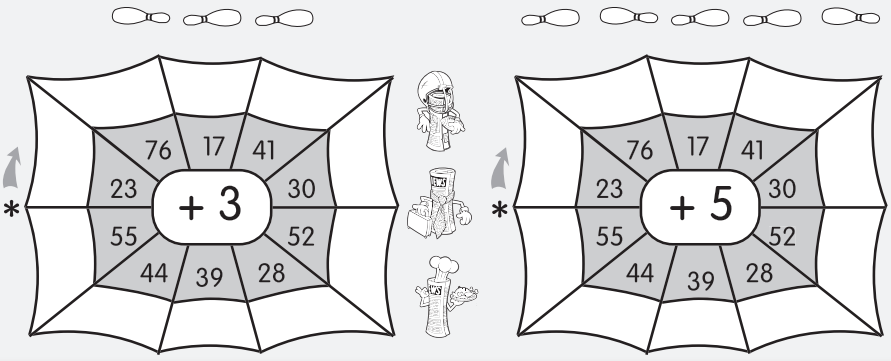
    c 53 × 31 ____ **d** 69 × 62 ____

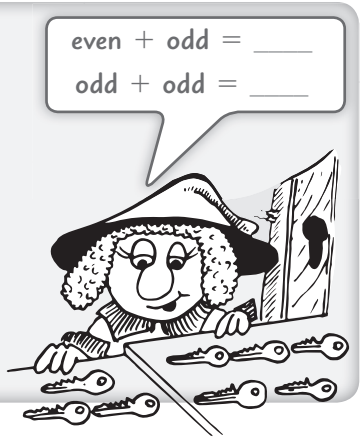
17. $5\frac{1}{6}, 5\frac{2}{6}, 5\frac{3}{6},$ ☐, ☐, ☐

18. 5 hours = ____ minutes

19. Write the fraction equal to zero point nine. ☐

20. I scored 68 out of 100 in a test.
    What percentage did I get correct? ____



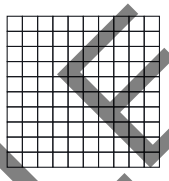


1:3 ____ out of 18

1. $8\overline{)864}$ 2. $6\overline{)762}$ 3. $5\overline{)835}$
4. 700 000 + 45 000 + 300 + 21 = _____
5. List the first 6 multiples of 7.

   _____, _____, _____, _____, _____, _____
6. Make the largest possible 8-digit number using 4, 2, 7, 4, 7, 9, 1 and 7. _____
7. In every space made by a row of 6 trees, we planted 8 flowers. How many flowers did we plant? _____
8. How many groups of 8 apples in 48? _____
9. Find the area of a rectangle with 4 m and 9 m sides. _____
10. 67 − 45 = 62 − _____
11. 500 ha = _____ square kilometres
12. What are the factors of 12?

    _____, _____, _____, _____, _____, _____
13. Colour 6 tenths red and 3 tenths blue. What fraction have you coloured? _____



14. **a** 255 more than 121. _____
    b 243 more than 456. _____
    c 372 more than 627. _____
15. Which of 9, 21, 32 and 36 is both 'even' and 'a multiple of 3'? _____
16. **a** 185, 175, 165, _____, _____, _____
    b 16, 24, 32, _____, _____, _____, _____
17. 17 + 4 + 8 + 13 + 9 + 6 + 20 _____
18. 81 pens shared equally by 9. _____

1:4 Extension ____ out of 8

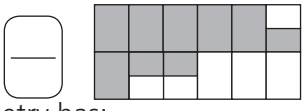
1. January 1st is the 1st day of the year.
   What day is May 15th, 2023? _____
2. Fill in the boxes.

   a
   $$\begin{array}{r} \square\square \\ \times\ 3 \\ \hline \square 9\ 2 \end{array}$$

   b $3\overline{)\square\square\square}$ (1 2 9)

3. 3 × 3 × 90 _____
4. **a** 108 more than 52. _____
   b 108 more than 352. _____
   c 108 more than 35 352. _____
5. I must choose an item from each square.
   How many groups are possible? _____

6. What fraction of this shape has been shaded?



7. How many axes of symmetry has:
   a a regular heptagon? (7 sides) _____
   b a regular nonagon? (9 sides) _____
8. How many diagonals has a:
   a pentagon? _____ **b** hexagon? _____

Challenge

Write facts you know about the number 43·828.

Fill out this table about yourself, a relative or a friend.

Name: _____ **Date:** _____

Age: _____	Mass: _____ kg	Shoe size: _____
Height: _____ cm	Waist: _____ cm	Neck size: _____ cm

2:1

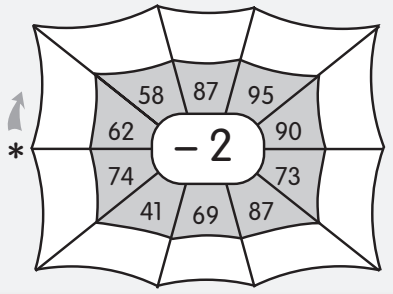
_____ out of 19

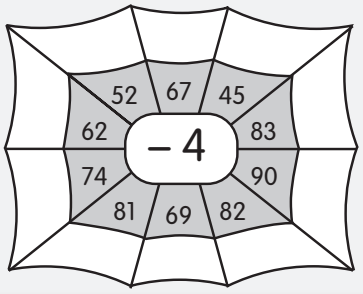
1. 2×3 _____
2. 9×2 _____
3. $35 + 45$ _____
4. $38 + 62$ _____
5. $\begin{array}{r} 7456 \\ +\ 1456 \\ \hline \end{array}$
6. 99 more than 123. _____
7. Multiply 0·1 by 100. _____
8. 7 times $4. _____
9. Divide 32 by 8. _____
10. $\begin{array}{r} 1432 \\ \times\ \ 5 \\ \hline \end{array}$
11. I scored 76 out of 100 in a test. How many more marks did I need to score 100? _____
12. Use am or pm to write 05:56. _____
13. A mango cost $3.10. Circle the best estimate for the cost of 5 mangos.
    $6 $12 $15 $20 $25
14. Estimate your height. _____
15. Write in order from largest to smallest.
    8 781 344, 8 768 367, 8 780 033
    _____
16. Round 46 354 to the nearest hundred. _____
17. How many tens can be taken from 354 838? _____
18. **a** 5000 mL = _____ L
    b 7·3 L = _____ mL
    c 7365 m = _____ km
    d 5 L 538 mL = _____ mL
19. **a** 18, 24, 30, _____, _____, _____, _____
    b 21, 28, 35, _____, _____, _____, _____

2:2

_____ out of 19

1. 4×8 _____
2. 6×5 _____
3. $45 \div 9$ _____
4. $35 \div 7$ _____
5. $\begin{array}{r} 6475 \\ -\ 3659 \\ \hline \end{array}$
6. $246 - 137$ _____
7. $673 - 264$ _____
8. Multiply $8 by 9. _____
9. 72 divided by 8. _____
10. $\begin{array}{r} 3751 \\ \times\ \ 3 \\ \hline \end{array}$
11. What is the probability, as a fraction, of tossing a 6 on a regular dice? —
12. Write 52 million. _____
13. What fraction of a dollar is 65c? —
14. Write 9 756 000 in words.
    _____
    _____
15. **a** On this square, shade 49 hundredths.
    b A batsman has scored 49 runs. How many more for a century? _____
16. Write $2\frac{63}{100}$ as a decimal. _____
17. **a** $\frac{1}{4}$ of 12 _____
    b $\frac{3}{4}$ of 12 _____
18. **a** $2\frac{1}{2}$ m = _____ cm **b** $2\frac{1}{2}$ cm = _____ mm
19. The distance around each square is 16 metres. How far is it around the rectangle?





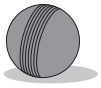
2:3 ☐ out of 12

1. $8\overline{)872}$ 2. $4\overline{)812}$ 3. $10\overline{)960}$

4. How many hundreds can be taken from 2 456 064? _____

5. Which is larger:
   - a 6·09 or 4·87? _____
   - b 17·25 or 19·3? _____

6. Our cricket team needed 260 runs to win the match. We scored only 123. How far short were we? _____



7. 9 o'clock, quarter past 12, half past 9, 3 o'clock. At which of the above times are the hour and minute hands at right angles?

   _____

8. What is the perimeter of the square that has an area of 16 cm^2? _____

9. What is the digital time 36 minutes after 15:27? _____

10. a What is the total capacity of these containers?

    _____

    b How many mL more would be needed to reach 2L? _____

11. 201·79 = _____ hundreds, _____ tens, _____ ones, _____ tenths, _____ hundredths

12. What fraction is:

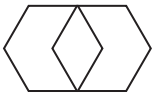
    a shaded? ☐ b not shaded? ☐

Extension

2:4 ☐ out of 6

1. How many axes of symmetry has:
   - a a regular decagon? _____
   - b a regular dodecagon? (12 sides) _____

2. This figure has hexagons of different size and shape. How many hexagons are there altogether? _____



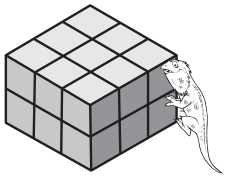
3. In how many different ways can you make 45 cents using only 5c, 10c and 20c coins? _____

4. A plane ticket to Armidale costs $174. What is the cost of:

   - a 5 tickets?
   - b 6 tickets?

5. a 435 + 297 = _____ + 300 = _____
   - b 824 − 392 = _____ − 390 = _____
   - c 725 − 409 = _____ − 410 = _____

6. If the length, breadth and height of this model are all multiplied by 3, how many cubes will be in the new model's:



   - a top view? _____
   - b total volume? _____

Challenge

Write number sentences that are equal to 36.

_____

_____

_____

_____

_____

Turn to ID card D on page 9.

Give the answers for these numbers.

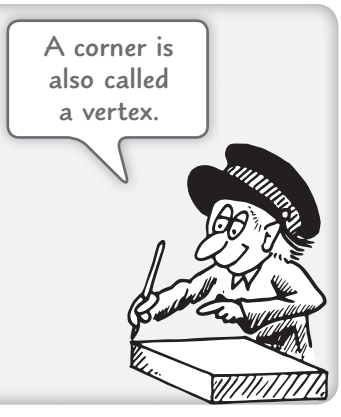
(1) _____ (2) _____

(3) _____ (12) _____

(13) _____ (14) _____

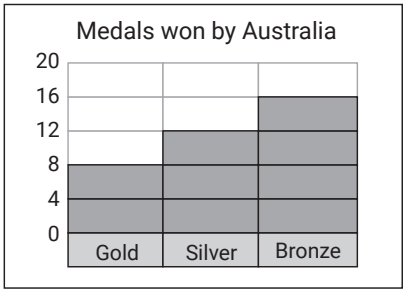
(15) net of a _____ (16) net of a _____

(17) net of a _____ (18) net of a _____



3:1 ____ out of 14

1. 4×5 ____
2. 5×3 ____
3. $6 \div 2$ ____
4. $12 \div 3$ ____
5. $6576 - 3657$
6. Halve 282. ____
7. Double 432. ____
8. $0{\cdot}4 \times 100$ ____
9. $\frac{1}{2}$ of \$124. ____
10. 8063×2

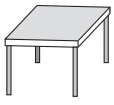
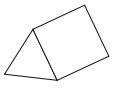
11. 

   a How many of each medal were won?
   G = ____ S = ____ B = ____

   b The type of medal won most. ____

   c How many more Bronze than gold were won? ____

12. In a 200 m race, I fell after running 154 m. How far was I from the finish line? ____

13. A  B  C  D 

   a Which of the objects has a top view that is a circle? ____

   b Which of the objects has a top view that is a square? ____

14. 7 000 000 + 50 000 + 300 + 21 = ____

3:2 ____ out of 18

1. $7 \times 9 - 38$ ____
2. $8 \times \$62$ ____
3. $21 \div 7$ ____
4. $32 \div 8$ ____
5. $5735 + 2545$
6. Halve 356. ____
7. Multiply \$7 by 8. ____
8. $\square \times 7 = 42$, $\square$ = ____
9. $\square \times 9 = 63$, $\square$ = ____
10. 6347×8

11. Write a digital label for each time.

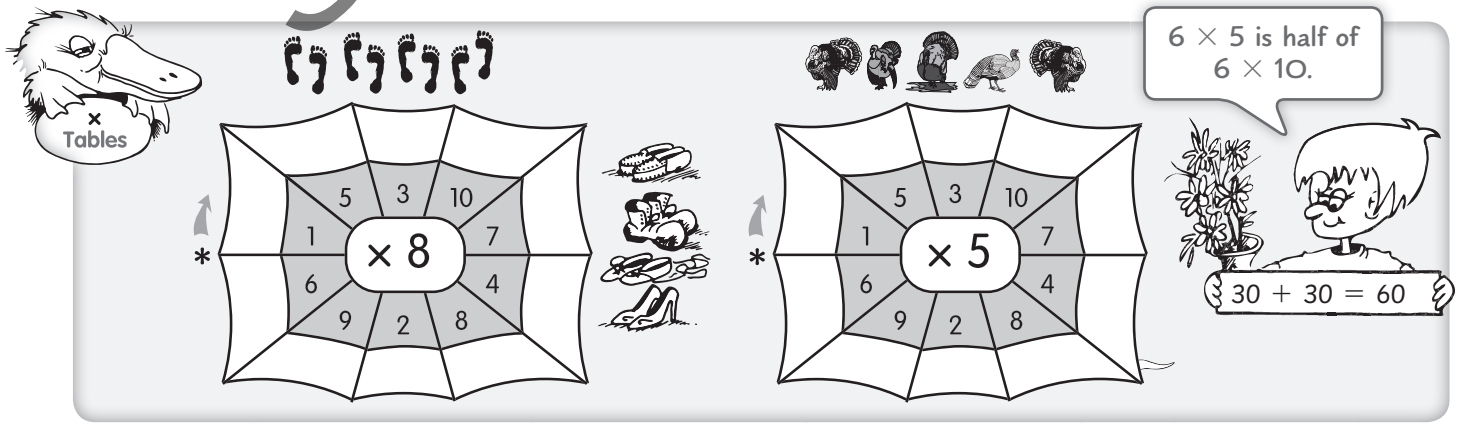
   a 
   morning ____ : ____

   b 
   evening ____ : ____

12. $2 \times 3 \times 6 =$ ____
13. $87 - 35 = 92 -$ ____
14. Use am or pm to write the time $1\frac{1}{2}$ hours before:
   a 16:32 ____ b 19:09 ____
   c 09:23 ____ d 05:58 ____
15. Complete this pattern:

Pentagons	1	2	3	4	5
Sides	5				

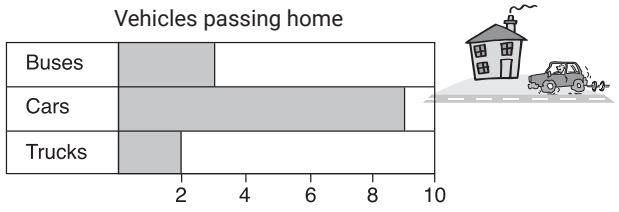
16. How many \$10 notes have the same value as \$150? ____
17. Alana is 27 years older than Flynn. How old will Alana be when Flynn is 18? ____
18. 167 + 354 = ____ + 350



3:3 ☐ out of 13

1. $5\overline{)830}$ 2. $7\overline{)825}$ 3. $9\overline{)846}$

4. 28 pants, 30 pairs of shoes.
How many more shoes than pants? _____

5. 

How many vehicles passed my home altogether? _____

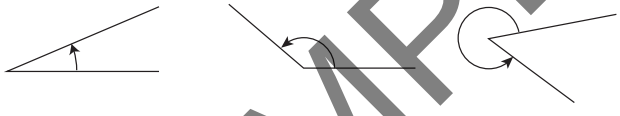
6. Rachel is 43 when Lachlan is 5. How old will Rachel be when Lachlan is 37? _____

7. What is the average of 14, 12, 16 and 23? _____

8. Write in order from largest to smallest:
0·67 1·2 0·8 0·99
_____

9. True or false?
$700 - 428 = 699 + 1 - 428$ _____

10. $8 + 8 + 8 + 8 + 8 + 8 + 8$ _____

11. Label each angle with obtuse, acute or reflex.

_____ _____ _____

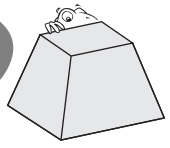
12. Write the numeral four thousand and two point two one. _____

13. Make the smallest possible 7-digit whole number using the digits 3, 6, 0, 4, 3, 2 and 9. _____

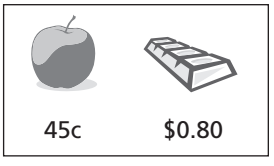
3:4 Extension ☐ out of 7

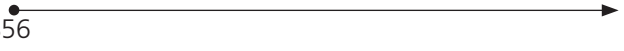
1. The average male elephant weighs 5465 kg and the average female elephant weighs 3221 kg. Use these facts to find the mass of 4 male elephants and 7 female elephants. _____

2. What is:
   a one third of half an hour? _____
   b two thirds of half an hour? _____

3. For this solid, calculate the number of corners plus the number of faces minus the number of edges. _____


4. I have 8 boxes. Each box has 4 or 5 books in it. There were 35 books altogether. How many boxes had 4 books? _____

5. I bought at least one of each of these items. The cost was $3.85. How many apples did I buy? _____


6. Use the jump strategy to find 856 + 425.


7. $567 + 286 - 186 + 297$ _____

Challenge

Write questions that are equal to:

a 748 + 268 **b** 274 + 377 **c** 2978 + 5382

= _____	= _____	= _____
= _____	= _____	= _____
= _____	= _____	= _____
= _____	= _____	= _____
= _____	= _____	= _____

To round off to the nearest 5 cents, give the closest answer that ends in 5 or 0.

a Is $37.47 closer to $37.45 or $37.50? _____

Round each of these to the nearest 5 cents.

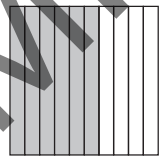
b $43.88 _____ **c** $29.99 _____ **d** $84.63 _____
e $117.12 _____ **f** $265.14 _____ **g** $630.97 _____
h $365.28 _____ **i** $289.09 _____ **j** $836.34 _____

4:1 ____ out of 22

1. 8 × 2 _____
2. 8 × 4 _____
3. 32 ÷ 8 _____
4. 16 ÷ 2 _____
5. 2564 + 5463
6. Take 4 from 800. _____
7. Multiply 5 by 6. _____
8. 0·5 × 100 _____
9. Double 423. _____
10. 6208 × 3

11. Write all the factors of 15. _____
12. The first 10 multiples of 6 are:
    _____
13. **a** 4 squared _____ **b** 8 squared _____
14. These 21 toys are equally shared between 7 children.
    One share = _____

15. **a** 3 × ____ = 27 **b** 6 × ____ = 42
16. 4 baskets with 20 eggs each. _____ eggs
17. How many days in 5 weeks? _____
18. Haley cut 15 cm from a 1 m ruler.
    How much of the ruler remained? _____
19. Is a population of 2 706 000 closer to 2 000 000 or 3 000 000? _____
20. Complete the labels for the shaded section.



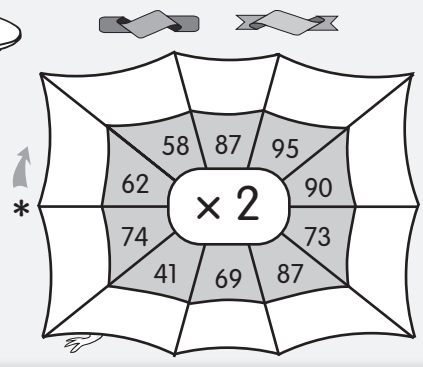
    _____ tenths or 0·____
21. Write fifty-one hundredths as a decimal. _____
22. How many thousandths in 0·364? _____

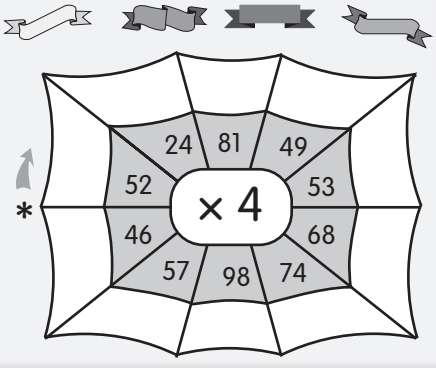
4:2 ____ out of 20

1. 5 squared _____
2. 6 × 8 − 46 _____
3. 48 ÷ 8 + 3 _____
4. 21 ÷ 7 × 9 _____
5. 8354 − 2746
6. Years in 4 decades. _____
7. Months in 6 years. _____
8. Minutes in 4 hours. _____
9. Years in 3 centuries. _____
10. 7463 × 8

11. 36 cards shared between 4 people.
    One share = _____
12. **a** 6 × ____ = 42 **b** 49 ÷ 7 = ____
13. How many 50c apples can be bought for $3.70?
    _____
14. I poured 375 mL out of a full 3 L container.
    How much was left in the container? _____
15. 18 shoes are in a shop window.
    How many pairs are there? _____
16. Each hat has 4 corks attached.
    a How many corks are on 6 hats? _____
    b How many hats could be made with 32 corks? _____

17. How many minutes in 8 hours? _____
18. How many are left over if 22 toys are shared by:
    a 3 girls? _____ **b** 4 girls? _____
19. Write 3 out of 10 as a:
    a decimal _____ **b** fraction —
20. Circle the numbers that are *not* multiples of 12. 3 24 4 36 6

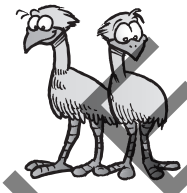




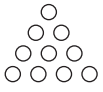
4:3 ☐ out of 13

1. $8\overline{)872}$ 2. $3\overline{)813}$ 3. $4\overline{)724}$
4. Scott was 44 when Felicity was 7.
   How old will Scott be when Felicity is 36? _____
5. Write all the factors of 24. _____
6. The first 10 multiples of 8 are:
   _____
7. **a** 3 squared _____ **b** 9 squared _____
8. I shared 36 bananas in bags of 6.
   How many bags of 6 bananas do I have? _____

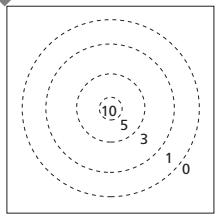
9. What is the smallest even number that is a multiple of 9? _____
10. **a** 8 × ____ = 56 **b** 49 ÷ 7 = ____
11. **a** Two emus were 1·75 m and 1·89 m tall. What was the difference between their heights? _____



   b The emus had a mass of 42·89 kg and 53·92 kg. What was their total mass? _____
12. How many different straight lines of 3 circles can be found on this picture? _____



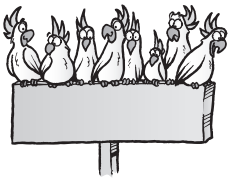
13. Two darts are thrown into this dartboard. Which totals (below 16) are impossible to obtain?
    _____



4:4 Extension ☐ out of 7

1. After opening a book, the sum of the two page numbers I could see was 145. What were the page numbers? _____
2. Halve the number that is 53 bigger than 177.
3. In one week, Chloe watched 14 h 30 min of TV. Jenna watched 10 h 45 min. How much did they watch altogether? _____

4. 12 boxes of pens held either 5 or 6 pens. There was a total of 64 pens. How many boxes held 6 pens? _____
5. Four of these cockatoos have an average mass of 536 g. The other four have an average mass of 723 g. What is the total mass using these facts. _____



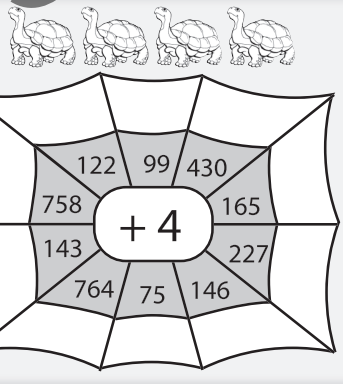
6. **a** What is the sum of the first four square numbers? _____
   b What is the product of the first three square number? _____
7. A book has 194 pages. How many times was the digit 8 used in numbering its pages? _____

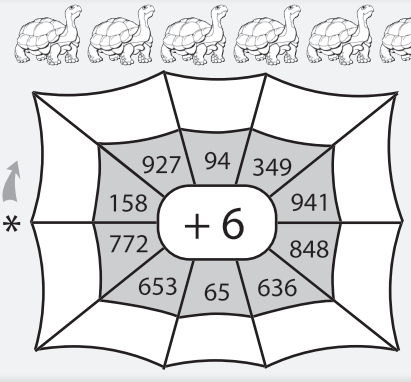
Challenge

Write questions that are equal to:

a 894 − 283 **b** 674 − 276 **c** 7685 − 4526

= _____ = _____ = _____
= _____ = _____ = _____
= _____ = _____ = _____
= _____ = _____ = _____
= _____ = _____ = _____





even + even = _____
odd + even = _____

5:1 ____ out of 21

1. 3×7 ____
2. $3 \times \$4$ ____
3. $24 \div 8$ ____
4. $50 \div 10$ ____
5. $2967 - 1974$
6. 2 squared. ____
7. 24 divided by 6. ____
8. Multiply 7 by 5. ____
9. $0{\cdot}7 \times 100$ ____
10. 2648×3

11. Write all the factors of 12. ____
12. How many groups of 4 in 12 apples.
13. Equal numbers of birds are put in four cages. If there are 24 birds, how many are in each cage?  ____
14. **a** $5 \times$ ____ $= 60$ **b** $32 \div 8 =$ ____
15. Write in ascending order. 31 673 316, 37 631 713, 33 761 301, 31 763 116

    ____

    ____
16. **a** The difference between 83 and 69. ____

    b The total of 465 and 39. ____

    c 34 less than 100. ____
17. Thomas drew 4 monsters. He gave each one 7 legs. How many legs altogether? ____
18. The numeral for 10^2? ____
19. Count on from 76 to find $85 - 76$. ____
20. What is 0·98 as a percentage? ____
21. $(7 \times 10^3) + (2 \times 10^2) + (7 \times 10^1) + 7$ ____

5:2 ____ out of 18

1. 6×9 ____
2. $\frac{4}{6} - \frac{1}{3}$ ____
3. $\$40 \div 8$ ____
4. $36 \div 4$ ____
5. $3967 + 4786$
6. 5 squared ____
7. Multiply 9 by 5. ____
8. Divide \$36 by 4. ____
9. $0{\cdot}9 \times 1000$ ____
10. 2945×6

11. The first 10 multiples of 7 are:

    ____
12. 

    For these trees, how many groups of:

    a 6 trees? ____ groups ____ left

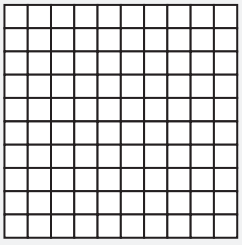
    b 5 trees? ____ groups ____ left
13. **a** $9 \times$ ____ $= 63$ **b** $81 \div 9 =$
14. What are the next two odd numbers after 30?

    ____
15. Round off each number to the nearest hundred, then use these to estimate:

    a $873 - 204$ ____ **b** $1907 - 743$ ____
16. A man's step is 60 cm long. How far does he walk in 7 steps? ____
17. Count on from 157 to find $165 - 157$. ____
18. Draw lines to join equivalent numbers.

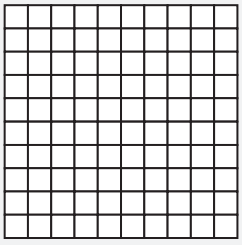
0·61	80%
0·49	61%
0·80	25%
0·10	49%
0·25	10%

a Colour 34% red.
Colour 27% blue.
Colour 19% yellow.
What percentage is left uncoloured?



____

b Colour 9% orange.
Colour 41% green.
Colour 38% purple.
What percentage is left uncoloured?



____

5:3 ____ out of 15

1. $5\overline{)720}$
2. $3\overline{)927}$
3. $7\overline{)719}$
4. $\begin{array}{r} 7465 \\ +\ 1598 \\ \hline \end{array}$
5. $\begin{array}{r} 4657 \\ \times\ \ 7 \\ \hline \end{array}$
6. 27 exercise books shared between 5 students.

   Books each = _____

   Remainder = _____

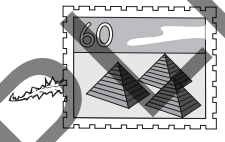
7. Write all the factors of 36.

   _____

8. **a** $6 \times$ ____ $= 42$ **b** $49 \div 7 =$ ____
9. Which of 1, 15, 23, 49, 60 are:

   a multiples of 5? _____

   b square numbers? _____
10. If one cake will serve 7 people, how many are needed to serve 100? _____
11. Carlos has a part-time job. He is paid $148 per week. From this amount $16 is deducted as tax. How much does he receive for 3 weeks work?
12. Elizabeth has 526 stamps. Max has 8 times as many.



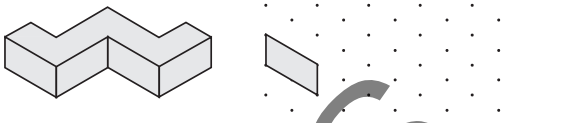
   a How many stamps does Max have? _____

   b How many do they have altogether? _____
13. Write a number sentence for 114 more than a certain number gives 539.

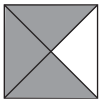
    _____
14. What percentage of a metre is 1 cm? _____
15. The value of 8 in 68 495 921. _____

5:4 Extension ____ out of 8

1. What is the smallest square number that is also a multiple of 8. _____
2. Which is larger: $2^2 + 3^2 + 4^2$ or $1^2 + 5^2$? _____
3. Copy the drawing on the left.



4. $\square \div 2 = 55$ $\square =$ ___
5. The shaded part has a value of 30. What is the value of the whole? _____



6. If 4 small squares make a quado and 2 quados make an octo, could 68 small squares make:

   a 7 quados and 5 octos? _____

   b 4 quados and 7 octos? _____
7. I am paid between $12 to $14 an hour. Which could be my pay for 6 hours of work: $70.50, $71.80, $83.10 or $84.10? _____
8. How many days in 42 weeks? _____

Challenge

List as many square numbers as you can using number sentences, e.g. $2 \times 2 = 4$, 2 squared = 4 or $2^2 = 4$.

_____

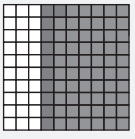
_____

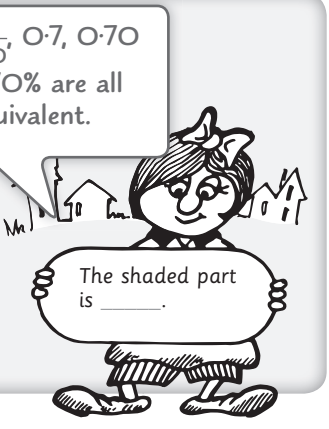
_____

_____

Complete this table for the shaded part.

	$\frac{\quad}{10}$	$\frac{\quad}{100}$	0·___	___%
	$\frac{\quad}{10}$	$\frac{\quad}{100}$	0·___	___%

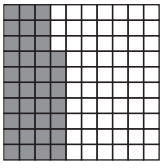




6:1 ____ out of 19

1. $5 \times 7 + 12$ _____
2. $6 \times 2 - 8$ _____
3. $20 \div 4 + 1$ _____
4. $36 \div (6 + 3)$ _____
5. $\begin{array}{r} 3574 \\ +\ 2768 \\ \hline \end{array}$
6. $36 - (6 + 3)$ _____
7. $41 - 16 + 8$ _____
8. $46 + \_\_\_\_ = 100$
9. $35 + \_\_\_\_ = 82$
10. $\begin{array}{r} 1423 \\ \times\ \ 3 \\ \hline \end{array}$

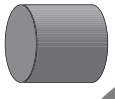
11. 81% means _____ out of _____.
12. Complete the labels for the shaded part.

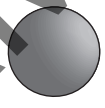


.	$\frac{\quad}{100}$	%

13. Arrange in descending order:
67 541 234, 67 647 324, 67 747 324
_____
14. Use numerals to write ninety-five million seven hundred and forty-seven thousand and thirteen.
_____
15. Is 35 465 798 closer to 35 000 000 or 36 000 000? _____
16. **a** $3 \times 4 \times 2$ _____ **b** $60 - 40 + 23$ _____
17. What 2D shape has 4 right angles and has its opposite sides equal? _____
18. Name these 3D shapes.

a **b**





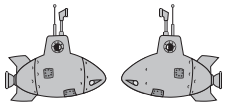
_____ _____

19. How many faces on three cubes? _____

6:2 ____ out of 19

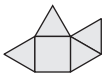
1. $9 \times 8 - 35$ _____
2. 6 squared _____
3. $7 \times \_\_\_\_ = 56$
4. $4 \times \_\_\_\_ = 24$
5. $\begin{array}{r} 4675 \\ -\ 2798 \\ \hline \end{array}$
6. $\frac{9}{12} - \frac{2}{6}$ _____
7. Increase 465 by 67. _____
8. $167 + 45 = \_\_\_\_ + 50$
9. $534 + \_\_\_\_ = 546 + 160$
10. $\begin{array}{r} 3647 \\ \times\ \ 4 \\ \hline \end{array}$

11. Write the value of the 6 in 35 674 725. _____
12. 76 out of 100 $= \frac{76}{100} =$ _____ . _____
$=$ _____ %
13. $(5 \times 10^4) + (3 \times 10^3) + (8 \times 10^2) + 3$ _____
14. Is this a reflection, translation or rotation? _____

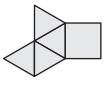


15. Write all the factors of 42.
_____
16. Is 72 576 098 closer to 72 000 000 or 73 000 000? _____
17. **a** $8 + (4 \times 3) - 8$ _____ **b** $5 \times 4 + 9$ _____
18. Which of these nets could not fold to make a solid shape like this?

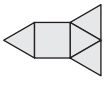
A



B



C



_____

19. Reflection, translation or rotation?
_____

Order of operations

❶ ( ) ❷ × and ÷ ❸ + and −

Example

$4 \times (11 - 9) + 20 \div 2$
Remove the ( ).
$= 4 \times 2 + 20 \div 2$
Do × and ÷, (left to right).
$= 8 + 10$
$= 18$

a $11 - (8 - 3)$ _____
b $14 - (20 - 10)$ _____
c $8 + 2 \times 4$ _____
d $16 - 2 \times 6$ _____
e $20 - 12 \div 4$ _____
f $15 + 6 \div 3$ _____
g $6 \div 3 \times 2$ _____
h $20 \div 5 \times 4$ _____
i $11 - 4 + 5$ _____
j $21 - 11 + 6$ _____
k $63 + 12 \div 6 - (8 + 12) \div (9 - 4 + 5)$ _____