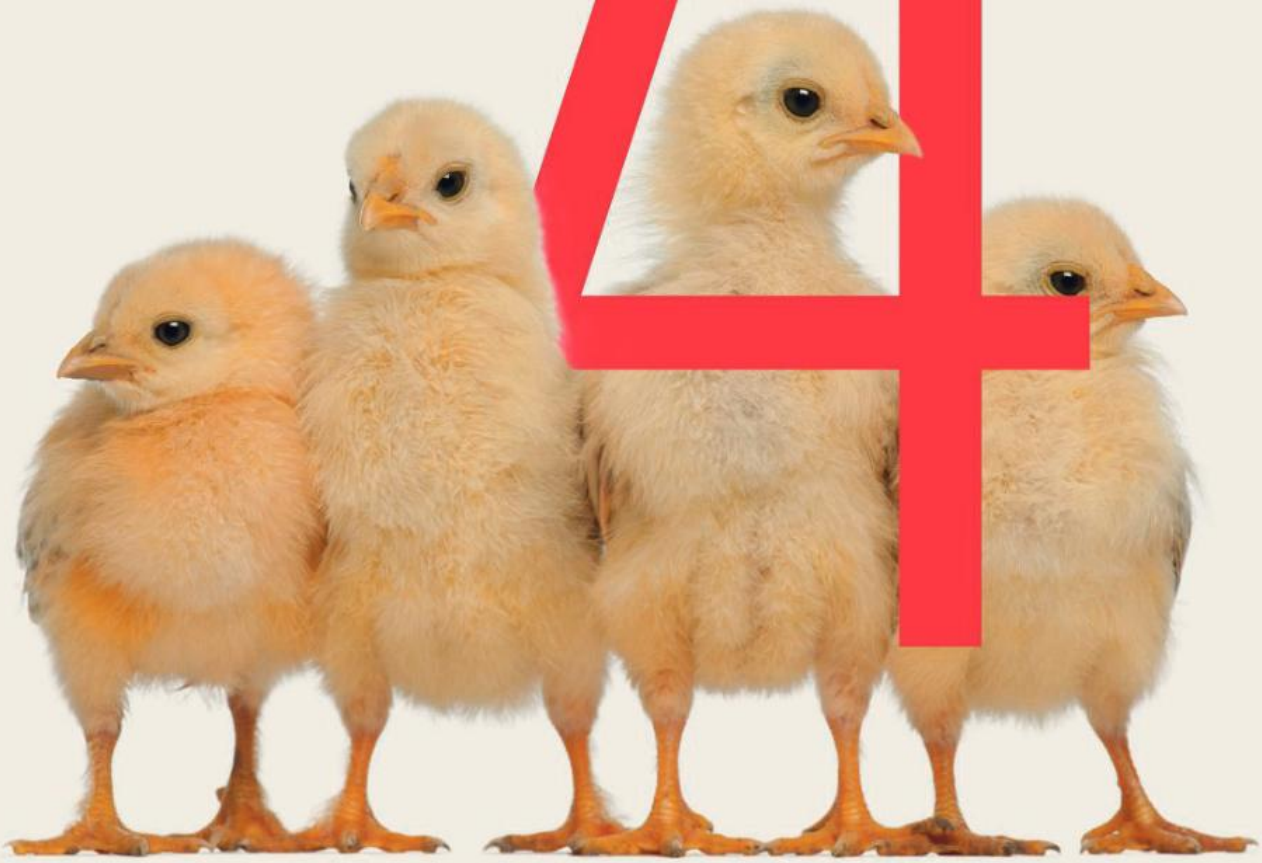
Student Book PYP

Oxford **Mathematics**

Primary Years Programme

4



Annie Facchinetti

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To the teacher

Oxford Mathematics PYP provides students with guided and independent work to support mathematical skills and understandings, as well as opportunities for problem-solving in real-world contexts. Teachers will find the supporting materials clear, comprehensive and easy to use. While the series offers complete coverage of the PYP mathematics scope and sequence, teachers can also use the topics that fit well with other areas of work to support student learning across the PYP curriculum.

Student Books

Each topic features:

- **Guided practice** – a worked example of the concept, followed by the opportunity for students to practise, supported by careful scaffolding
- **Independent practice** – further opportunities for students to consolidate their understanding of the concept in different ways, with a decreasing amount of scaffolding
- **Extended practice** – the opportunity for students to apply their learning and extend their understanding in new contexts.

Differentiation

Differentiation is key to ensuring that every student can access the curriculum at their point of need. In addition to the gradual release approach of the Student Books, the Teacher Books help teachers to choose appropriate pathways for students, and provide activities for students who require extra support or extension.

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Primary Years Programme

4

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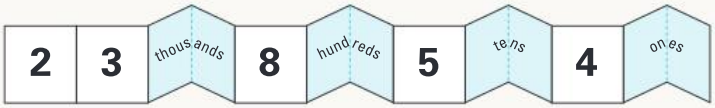

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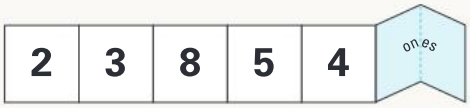
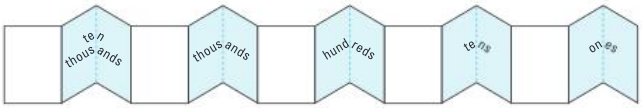
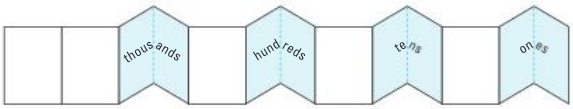


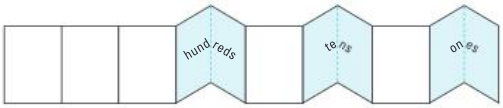
Guided practice

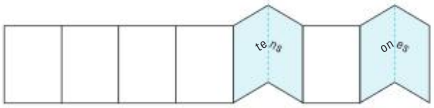
1 Show these numbers on the number expanders.

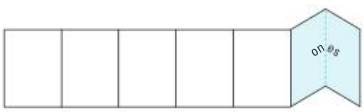
a 34 926



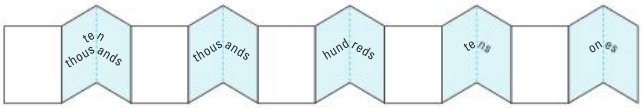


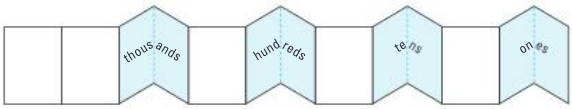


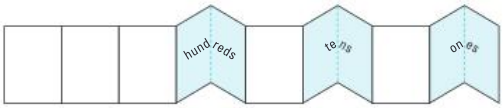


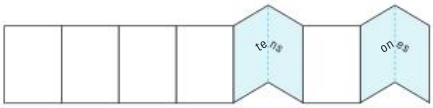


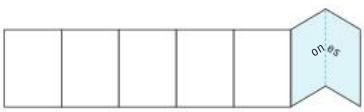
b 97 563







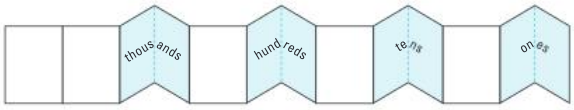


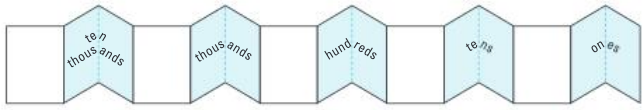


Independent practice

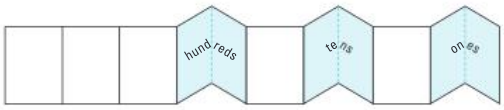
1 Write these numbers on the expanders.

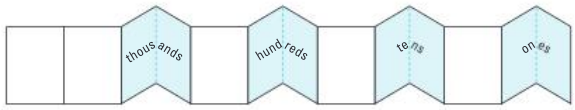
a 17 329



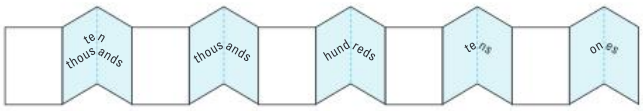


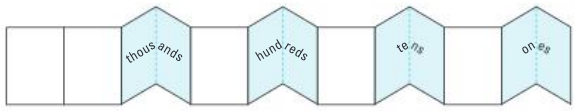
b 80 154



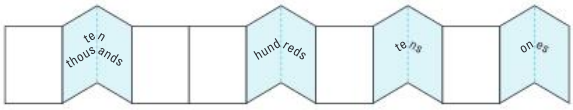


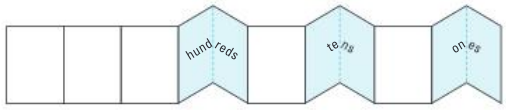
c 64 078



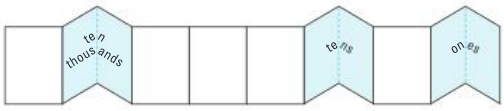


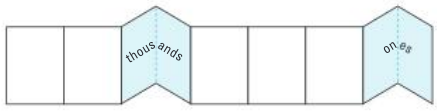
d 49 461





e 28 935





2 Expand each number by place value.

a 51 345 = 50 000 + 1000 + 300 + 40 + 5

b 40 772 = ☐ + ☐ + ☐ + ☐

c 87 024 = ☐ + ☐ + ☐ + ☐

d 17 316 = ☐ + ☐ + ☐ + ☐ + ☐

e 92 603 = ☐ + ☐ + ☐ + ☐

f 55 555 = ☐ + ☐ + ☐ + ☐ + ☐

3 Rewrite from smallest to largest.

WORLD COLLECTION RECORDS

Collection number	Description	Number of items
1	Pairs of earrings	37 706
2	"Do not disturb" signs	11 570
3	Smart phones	1563
4	Dinosaur eggs	10 008
5	Rat and mouse memorabilia	47 398
6	Number plates	11 345
7	Toenail clippings	24 999
8	Magazines	50 953
9	Key chains	47 200
10	Olympic postage stamps	15 183

Collection number	Number of items

How can you tell if one number is larger than another?

4 Write these numbers in words.

a 56 927 _____

b 80 401 _____

c 42 058 _____

5 Write the numerals for these numbers.

a Sixty-eight thousand, one hundred and forty-two _____

b Twenty-four thousand and seventy _____

c Ninety thousand and three _____

Extended practice

1 Round up or down to the nearest 10.

a 73 ____ **b** 28 ____ **c** 1364 _____ **d** 62 147 _____

2 Round up or down to the nearest 100.

a 591 _____ **b** 1603 _____ **c** 21 977 _____

3 Round up or down to the nearest 1000.

a 6099 _____ **b** 24 270 _____ **c** 93 804 _____

4 Round up or down to the nearest 10 000.

a 19 878 _____ **b** 41 997 _____ **c** 83 025 _____

5 Round up or down to the nearest 100 000.

a 498 531 _____ **b** 628 197 _____ **c** 240 799 _____

6 Write the numerals for:

a 1 hundred thousand, 4 ten thousands, 44 hundreds and 2 tens.

_____

b 120 hundreds and 81 ones. _____

c 61 thousands, 45 tens and 8 ones. _____

d 402 thousands, 32 tens and 5 ones. _____

e 49 thousands and 6 ones. _____

7 Rewrite the numbers from question 6 from smallest to largest.

_____

The last digit of a number tells us if it is odd or even.

23 657 is **odd**
because 7 is odd.

47 924 is **even**
because 4 is even.

Guided practice

1 Circle the last digit in each number, then write if it is odd or even.

a	573	_____	b	914	_____
c	1390	_____	d	8056	_____
e	23 474	_____	f	42 689	_____
g	95 005	_____	h	75 000	_____
i	10 101	_____	j	42 867	_____
k	57 838	_____	l	75 383	_____

2 If you added 1 to each number in question 1, would each one be odd or even?

a	_____	b	_____	c	_____
d	_____	e	_____	f	_____
g	_____	h	_____	i	_____
j	_____	k	_____	l	_____

Independent practice

1 7 2 6 3 5

Use these digits to make:

a the largest odd number possible. _____

b the smallest odd number possible. _____

c the largest even number possible. _____

d the smallest even number possible. _____

2 9 0 8 0 1

Use these digits to make:

a the largest even number possible. _____

b the largest odd number possible. _____

c the smallest even number possible. _____

d the smallest odd number possible. _____

3 4 5 0 6 7

Use these digits to make:

a the largest odd number with 7 in the tens place.

_____

b the smallest even number with 0 in the thousands place.

_____

c the largest even number with 5 in the ten thousands place.

_____

d the smallest odd number with 4 in the hundreds place.

_____

4 If you add an even number to an even number, the answer is always even. Fill in the other addition and subtraction rules.

Example	Operation	Answer
4 + 4 = 8	even + even	even
4 + 5 = 9	even + odd	
5 + 4 = 9	odd + even	
5 + 5 = 10	odd + odd	
8 – 2 = 6	even – even	
8 – 3 = 5	even – odd	
9 – 4 = 5	odd – even	
9 – 3 = 6	odd – odd	

5 If you multiply an even number by an even number, the answer is always even. Fill in the other multiplication rules.

Example	Operation	Answer
2 × 2 = 4	even × even	even
2 × 3 = 6	even × _____	
5 × 2 = 10	_____ × _____	
5 × 3 = 15	_____ × _____	

6 Write whether the answer will be odd or even.

a 23 + 72 _____

b 456 – 97 _____

c 768 + 310 _____

d 803 – 549 _____

e 1765 + 9261 _____

f 8639 – 6223 _____

g 48 × 72 _____

h 83 × 46 _____

You can use these rules to help check if your calculations are correct.

Extended practice

Can you think of any examples that don't fit these rules?

1 Solve the equations, then decide if the statements are true or false.

a ☐ ÷ 2 = 14 ☐ ÷ 2 = 17 ☐ ÷ 2 = 50

Only even numbers can be divided exactly by 2. True | False

b ☐ ÷ 3 = 5 ☐ ÷ 3 = 10 ☐ ÷ 3 = 100

Only odd numbers can be divided exactly by 3. True | False

c ☐ ÷ 4 = 10 ☐ ÷ 4 = 4 ☐ ÷ 4 = 9

Only even numbers can be divided exactly by 4. True | False

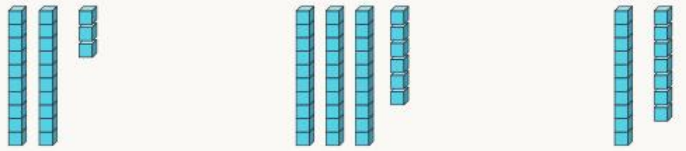
2 Use your knowledge of odd and even numbers to sort these larger numbers.

Odd	Even

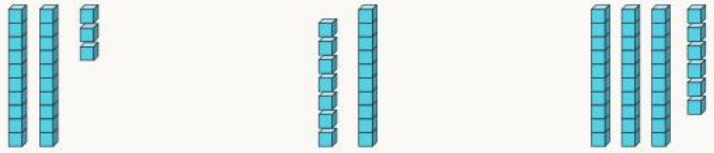
34 176 62 849
123 456 987 654
520 399 471 002
1 098 765 4 342 998
8 888 881 7 676 767

Rearranging numbers can make them easier to add mentally.

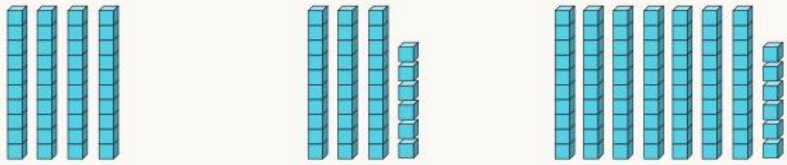
23 + 36 + 17

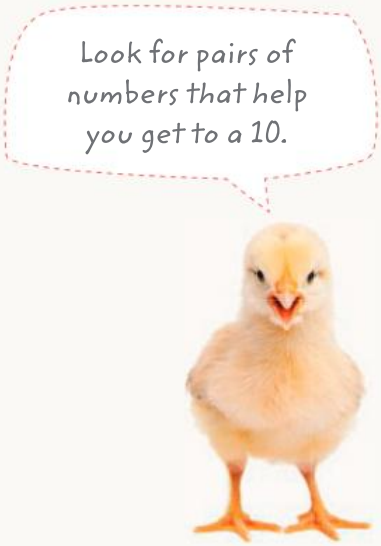


= 23 + 17 + 36



= 40 + 36 = 76





Guided practice

1 Rearrange the numbers to solve these sums.

a 2 + 35 + 18 = _____ + _____ + _____ = _____ + _____ = _____

b 13 + 46 + 7 = _____ + _____ + _____ = _____ + _____ = _____

c 38 + 51 + 32 = _____ + _____ + _____ = _____ + _____ = _____

d 42 + 53 + 8 = _____ + _____ + _____ = _____ + _____ = _____

e 16 + 92 + 4 = _____ + _____ + _____ = _____ + _____ = _____

f 45 + 22 + 125 = _____ + _____ + _____ = _____ + _____ = _____

g 17 + 42 + 13 + 28 = _____ + _____ + _____ + _____

= _____ + _____ = _____

h 19 + 44 + 16 + 21 = _____ + _____ + _____ + _____

= _____ + _____ = _____

Independent practice

1 Rearrange the numbers in your head to solve these sums.

a 29 + 23 + 1 = _____

b 21 + 34 + 6 = _____

c 62 + 17 + 23 = _____

d 25 + 17 + 75 = _____

e 86 + 243 + 14 = _____

f 27 + 119 + 13 = _____

g 21 + 28 + 9 + 32 = _____

h 35 + 18 + 22 + 35 = _____

2 Use the jump strategy on the empty number line to solve.

a 86 + 47 = _____

b 251 + 26 = _____

c 408 + 335 = _____

d 319 + 464 = _____

e 659 + 402 = _____

3 Split both numbers to solve.

a 572 + 215

= 500 + 200 + 70 + 10 + 2 + 5

= _____ + _____ + _____ = _____

b 163 + 576

= _____ + _____ + _____ + _____ + _____ + _____

= _____ + _____ + _____ = _____

c 815 + 462

= _____ + _____ + _____ + _____ + _____ + _____

= _____ + _____ + _____ = _____

d 1625 + 3134

= _____ + _____ + _____ + _____ + _____ + _____ + _____ + _____

= _____ + _____ + _____ + _____ = _____

e 4328 + 2454

= _____ + _____ + _____ + _____ + _____ + _____ + _____ + _____

= _____ + _____ + _____ + _____ = _____

4 Try solving these sums in your head.

a 172 + 23 = _____

b 445 + 341 = _____

c 532 + 229 = _____

d 178 + 615 = _____

e 340 + 555 = _____

f 147 + 281 = _____

g 758 + 205 = _____

h 873 + 224 = _____

Which of these addition strategies could you also use for subtraction?

Extended practice

1 Use a mental strategy of your choice to solve.

a 675 + 257 = _____

b 3457 + 2342 = _____

c 3466 + 4534 = _____

d 1138 + 4214 + 2312 = _____

2 The table below shows weekly supermarket sales in different categories.

Item	Cookies	Doughnuts	Cupcakes	Apples	Oranges	Bananas	Chocolate bars	Cake mixes
Number sold	2371	630	7963	9317	3204	2426	5234	429

Solve these questions using a mental strategy of your choice.

a What is the total of cookies, doughnuts and cake mixes sold?

_____

b What is the combined total of oranges and bananas sold?

_____

c Were more cookies and cupcakes or oranges and chocolate bars sold?

_____

d What is the total of the 2 items that sold the least?

_____

e What is the total of the 2 items that sold the most?

_____

Split strategy

For larger numbers, it can be easier to add the smaller place value columns first.

3647 + 2428 = (7+ 40 + 600 + 3000) + (8 + 20 + 400 + 2000)

= 7 + 8 + 40 + 20 + 600 + 400 + 3000 + 2000

= 15 + 60 + 1000 + 5000

= 6075

When using a vertical algorithm, you add the smaller place value columns first, too!

Guided practice

1 Solve using the split strategy starting with the ones.

a 2376 + 5162

= (____ + ____ + ____ + ____) + (____ + ____ + ____ + ____)

= ____ + ____ + ____ + ____ + ____ + ____ + ____ + ____

= _____ + _____ + _____ + _____

= _____

b 6284 + 8415

= (____ + ____ + ____ + ____) + (____ + ____ + ____ + ____)

= ____ + ____ + ____ + ____ + ____ + ____ + ____ + ____

= _____ + _____ + _____ + _____

= _____

Independent practice

1 Use the split strategy, starting with the ones.

a 4935 + 1742

= (_____ + _____ + _____ + _____) + (_____ + _____ + _____ + _____)

= _____ + _____ + _____ + _____ + _____ + _____ + _____ + _____

= _____ + _____ + _____ + _____

= _____

b 13 428 + 32 517

= (____ + ____ + ____ + ____ + ____) + (____ + ____ + ____ + ____ + ____)

= ____ + ____ + ____ + ____ + ____ + ____ + ____ + ____ + ____ + ____

= _____ + _____ + _____ + _____ + _____

= _____

c 25 019 + 28 746

= _____

= _____

= _____

= _____

d 44 754 + 35 632

= _____

= _____

= _____

= _____

Vertical addition

When using vertical addition, you have to trade if the total of a place value column is more than 10.

2 Now add the tens.
3 tens + 4 tens = 7 tens.
We also need to add the traded ten, so we end up with **8 tens**.

	T	O
	4 1	7
+	3	5
	8	2

1 Start with the ones.
7 + 5 = 12
Trade the 12 for **1 ten** and **2 ones**.

Guided practice

1 Solve using trading in the ones column.

a

	T	O
	3	4
+	2	8

b

	T	O
	7	6
+	7	9

c

	H	T	O
	5	3	5
+	2	4	7

2 Solve using trading in the tens column.

a

	H	T	O
		9	5
+		7	2

b

	H	T	O
	4	6	5
+	2	5	4

c

	Th	H	T	O
	6	5	4	3
+	2	3	7	1

3 Solve using trading in the hundreds or thousands column.

a

	Th	H	T	O
	5	8	0	4
+	2	6	9	3

b

	Th	H	T	O
	3	6	1	7
+	2	7	4	2

c

	Tth	Th	H	T	O
		9	2	5	6
+		7	4	4	3

Independent practice

Remember to place the numbers in their correct place value columns.

1 Rewrite as vertical addition and solve.

a 6379 + 2115

	Th	H	T	O
+				

b 3426 + 4832

	Th	H	T	O
+				

c 17 245 + 24 531

	Tth	Th	H	T	O
+					

d 30 856 + 23 933

	Tth	Th	H	T	O
+					

e 52 394 + 11 240

	Tth	Th	H	T	O
+					

f 48 001 + 35 986

	Tth	Th	H	T	O
+					

g 43 764 + 15 482

	Tth	Th	H	T	O
+					

h 28 047 + 36 706

	Tth	Th	H	T	O
+					

Extended practice

Every student in Year 4 has a blog page. Here is a list of the most visited pages.

Name	Rui	Mike	Torey	Frank	Waris	Alice	Vaheni	Patrick	Sara	Bronte
No. of page hits	27 004	9865	43 117	63 174	36 524	8428	42 963	5262	22 340	31 808

1 Use a written strategy of your choice to find the total page hits for:

a Alice and Patrick.

b Rui and Frank.

c Vaheni and Bronte.

d Rui, Torey and Sara.

e all the students with fewer than 10 000 page hits.

f all the students with more than 40 000 page hits.

2 Rewrite as vertical addition and solve.

a 28 476 + 9214

b 842 + 13 125 + 4702

Rounding numbers can make mental subtraction easier.

round up by 2 to get to 30 — add 2 back to get the answer

83 – 28 Think: 83 – 30 = 53 53 + 2 = 55

So 83 – 28 = 55.

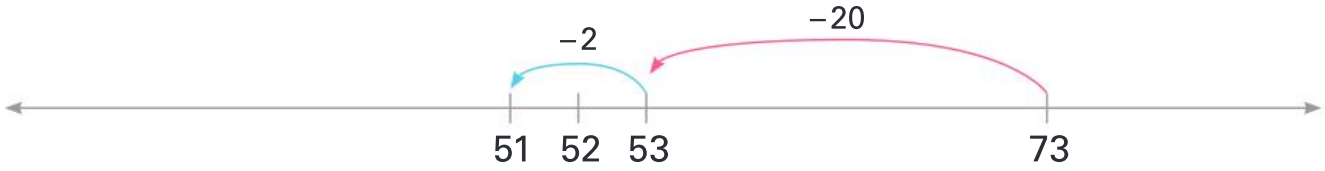
Guided practice

1 Solve using the compensation strategy.

a 85 – 19 Think: 85 – 20 = _____ _____ + 1 = _____

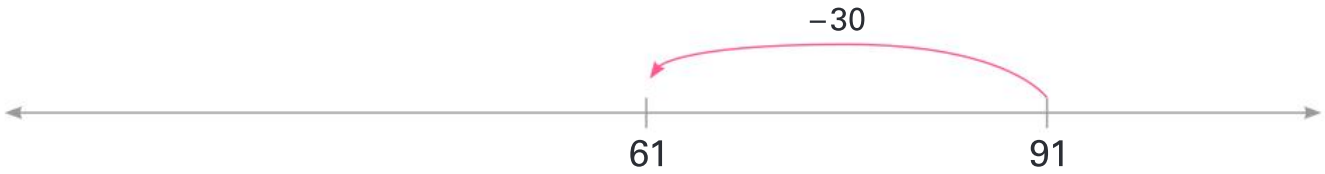
So 85 – 19 = _____.

b 73 – 22 Think: 73 – 20 = _____ _____ – 2 = _____



So 73 – 2 = _____.

c 91 – 32 Think: 91 – _____ = _____ _____ – 2 = _____



So 91 – 32 = _____.

Independent practice

1 Use the compensation strategy to solve these sums mentally.

a 58 – 19 = _____

b 76 – 18 = _____

c 61 – 32 = _____

d 98 – 41 = _____

e 146 – 28 = _____

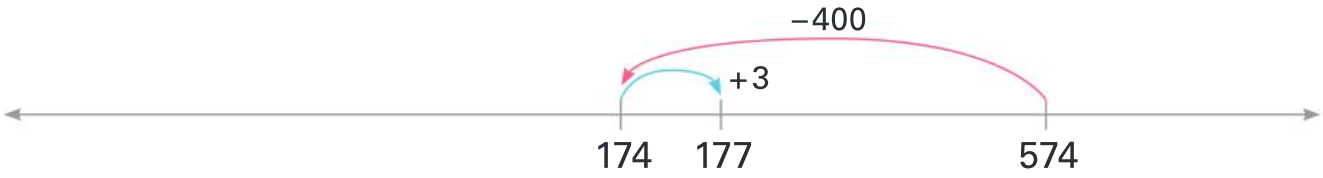
f 281 – 39 = _____

g 365 – 42 = _____

h 217 – 38 = _____

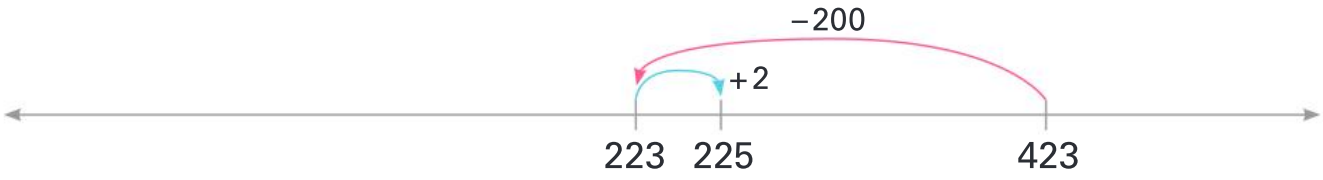
2 You can also round to the nearest hundred.

574 – 397 Think: 574 – 400 + 3 = 177

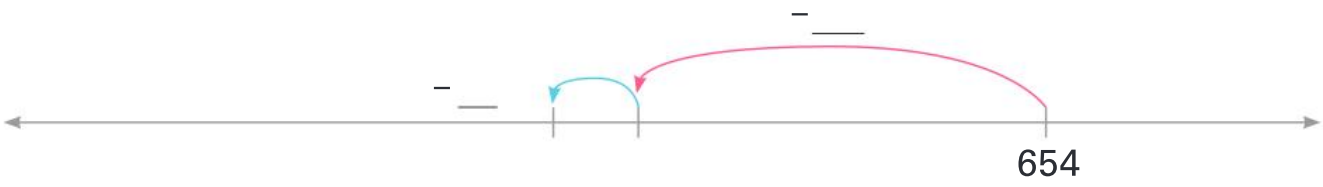


Try these.

a 423 – 198 Think: 423 – _____ + 2 = _____



b 654 – 305 Think: 654 – _____ – 5 = _____



c 526 – 297 Think: 526 – _____ + _____ = _____

d 793 – 207 Think: 793 – _____ – _____ = _____

e 478 – 197 Think: _____

f 642 – 304 Think: _____

3 Rounding can also help you check your answers.

583 – 296 = 187? Round to: 583 – 300 = 283

You would expect the answer to be close to 283, so the first answer needs checking!

Round to check if the answers are correct or incorrect.

a 457 – 198 = 259 Correct / Incorrect

b 782 – 305 = 477 Correct / Incorrect

c 893 – 497 = 196 Correct / Incorrect

d 631 – 296 = 335 Correct / Incorrect

4 When you are subtracting numbers that are close together, you can add on to find the difference.

1352 – 1348 Think: 1348 + ? = 1352 The answer is 4.

Add on to solve these sums mentally.

a 94 – 89 = _____

b 82 – 78 = _____

c 574 – 567 = _____

d 698 – 685 = _____

e 427 – 419 = _____

f 653 – 647 = _____

5 Addition and subtraction are linked. You can check subtraction by adding.

What is 37 – 14? My answer: 23. Check by adding: 23 + 14 = 37. Correct, 37 – 14 = 23!

a What is 67 – 45? _____ Check by adding: _____

b What is 175 – 59? _____ Check by adding: _____

c What is 3408 – 98? _____ Check by adding: _____

d What is 8995 – 2004? _____ Check by adding: _____

Extended practice

1 Year 4 were having a mathematics computer game championship. Sophia won with 3872 points.

Work out how many points the others had by using a mental strategy of your choice.

a Scarlet had 297 points less than Sophia. Score: _____

b Duy had 1306 points less than Sophia. Score: _____

c Aravinda had 3859 points less than Sophia. Score: _____

d Alexis had 58 points less than Sophia. Score: _____

e Harper had 601 points less than Sophia. Score: _____

2 Use the information in question 1 to work out the following.

a Who came second? _____

b Who came last? _____

c How many more points did Scarlet have than Duy?

_____

d How many points did Scarlet beat Harper by?

_____

e How many more points would Aravinda have needed to beat Duy?

_____

3 The Thomastown Tornadoes have 27 426 supporters. Below is the number of supporters who **did not** attend each game. Work out how many supporters did attend.

a Game 1: 4103 absent Attendance: _____

b Game 2: 26 995 absent Attendance: _____

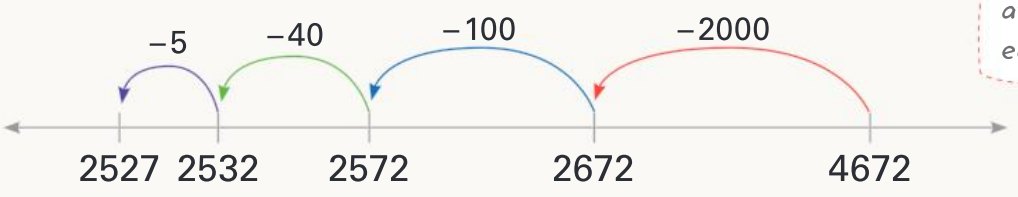
c Game 3: 597 absent Attendance: _____

d Game 4: 13 699 absent Attendance: _____

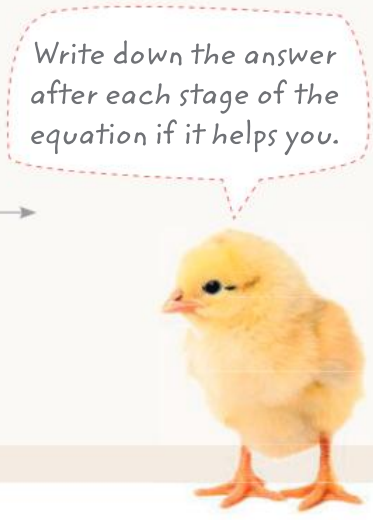
Split strategy

You can use the split strategy for written subtraction by splitting the number you are subtracting by place value.

4672 – 2145 = 4672 – 2000 – 100 – 40 – 5



= 2527



Guided practice

1 Solve using the split strategy.

a 6359 – 4243 = 6359 – _____ – _____ – _____ – _____

= _____

b 8946 – 3412 = 8946 – _____ – _____ – _____ – _____

= _____

c 7650 – 2517 = 7650 – _____ – _____ – _____ – _____

= _____

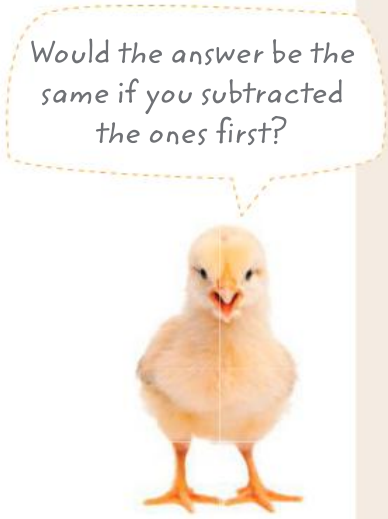
d 15 498 – 4057 = 15 498 – _____ – _____ – _____ – _____

= _____

e 28 575 – 14 324 = 15 498 – _____ – _____ – _____ – _____ – _____

= _____

Independent practice



1 Here is another way to set out the split strategy that works well for larger numbers.

3782 – 2431 = 3782 – 2000 = 1782

– 400 = 1382

– 30 = 1352

– 1 = 1351

Solve using this method.

a 7598 – 3471 = _____ – _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

b 15 537 – 13 116 = _____ – _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

c 58 926 – 32 604 = _____ – _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

d 94 589 – 62 719 = _____ – _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

– _____ = _____

Vertical subtraction

In vertical subtraction, you have to trade when the number you are subtracting is bigger than the number you are taking away from.

2 Now subtract the tens.
We traded 1 ten from the first number to the ones.
That leaves:
6 tens – 2 tens = 4 tens

	T	O
	~~7~~ 6	1 3
–	2	6
	4	7

1 Start with the ones.
You can't do 3 – 6.
Trade 1 ten from the tens column for 10 ones.
13 ones – 6 ones = 7 ones

What would you do if there were a zero in the column that you needed to trade from?

Guided practice

1 Solve using trading from the tens to the ones column.

a

	T	O
	4	1
–	2	4

b

	T	O
	8	5
–	3	8

c

	T	O
	7	4
–	6	5

2 Solve using trading from the hundreds to the tens column.

a

	H	T	O
	8	4	7
–	2	6	3

b

	H	T	O
	7	0	4
–	3	2	2

c

	Th	H	T	O
	3	6	6	2
–	1	2	8	0

3 Solve using trading from the thousands to the hundreds column.

a

	Th	H	T	O
	5	3	8	5
–	3	8	2	1

b

	Th	H	T	O
	7	6	5	6
–	2	9	2	6

c

	Tth	Th	H	T	O
	2	3	2	5	7
–	1	1	5	4	6

Independent practice

1 Rewrite as vertical subtraction and solve.

a 758 – 392

	H	T	O
–			

b 830 – 659

	H	T	O
–			

c 571 – 243

	H	T	O
–			

d 9949 – 1863

	Th	H	T	O
+				

e 8237 – 3523

	Th	H	T	O
+				

f 6845 – 4038

	Th	H	T	O
+				

g 53 259 – 21 832

	Tth	Th	H	T	O
–					

h 78 146 – 77 624

	Tth	Th	H	T	O
–					

i 66 752 – 24 938

	Tth	Th	H	T	O
–					

j 98 901 – 64 728

	Tth	Th	H	T	O
–					

Sometimes, you have to trade from 2 columns in the same equation.

Extended practice

1 Yann planned to ride 30 000 km to raise money for charity.

a Use a written subtraction method to work out how much further he has to go after each stop.

Day	Route	Total distance travelled so far	Distance left
1	Banebridge to Sale	922 km	
2–3	Sale to Melba to Newland	2526 km	
4–6	Newland to Pindale	5223 km	
7–9	Pindale to Broom	7463 km	
10–17	Broom to Windar to Blue Springs to Stan Cove	12 740 km	
18–22	Stan Cove to Brookefield	15 925 km	
23–26	Brookefield to Cooktown	18 755 km	
27–34	Cooktown to Hamsdale	22 747 km	

b Yann is aiming to raise $85 000. Complete the table to show much he has left to raise after each day.

Day	Total raised	Left to raise
1	$834	
9	$23 471	
22	$65 023	
34	$76 914	

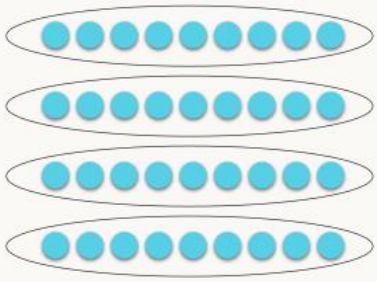
c Yann receives a large donation at the end of his ride and ends up raising a total of $123 564. How much over his target does he raise?

_____

d How much more does Yann have to raise if he wants to meet a target of $150 000?

_____

Multiplication and division are related.



This array shows that:
$4 \times 9 = 36$.

It also shows that:
$36 \div 9 = 4$.

Multiplication and addition are related as well.

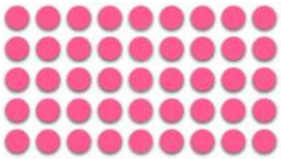
This array also shows that if you add 9 together four times, the answer is 36:
$9 + 9 + 9 + 9 = 36$.

Division and subtraction are also connected. The array shows that division is repeated subtraction. If you start with 36, you can take away 9 four times: $36 - 9 - 9 - 9 - 9$.

Guided practice

1 Write one multiplication fact and one division fact for each array.

a



____ × ____ = ____

____ ÷ ____ = ____

b

____ × ____ = ____

____ ÷ ____ = ____

c

____ × ____ = ____

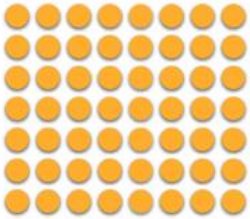
____ ÷ ____ = ____

d

____ × ____ = ____

____ ÷ ____ = ____

e



____ × ____ = ____

____ ÷ ____ = ____

Independent practice

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

1 Number patterns can help you to learn multiplication facts.

a Circle all the numbers counting by 6 to 100.

b Look at the last digit of each number. Write the 6s counting pattern.

_____

_____

c Use this to complete the 6 times table facts.

1 × 6 = _____ 2 × 6 = _____ 3 × 6 = _____ 4 × 6 = _____ 5 × 6 = _____

6 × 6 = _____ 7 × 6 = _____ 8 × 6 = _____ 9 × 6 = _____ 10 × 6 = _____

d Highlight all the numbers counting by 9 to 100 on the chart.

e Look at the last digit of each number. Write the 9s counting pattern.

_____

f Use this to complete the 9 times table facts.

1 × 9 = _____ 2 × 9 = _____ 3 × 9 = _____ 4 × 9 = _____ 5 × 9 = _____

6 × 9 = _____ 7 × 9 = _____ 8 × 9 = _____ 9 × 9 = _____ 10 × 9 = _____

g What are the next 3 numbers counting by 9 from 90?

_____

h What are the next 3 numbers counting by 6 from 60?

_____

2

a Use the array to help you complete the 4 times table facts.

1 × 4 = ____ 2 × 4 = ____ 3 × 4 = ____ 4 × 4 = ____ 5 × 4 = ____

6 × 4 = ____ 7 × 4 = ____ 8 × 4 = ____ 9 × 4 = ____ 10 × 4 = ____

b Write a turnaround fact for each 4 times table fact.

4 × 1 = 1 × 4 4 × 2 = ____ ____ = ____ ____ = ____

____ = ____ ____ = ____ ____ = ____

____ = ____ ____ = ____ ____ = ____

c Complete the matching division facts for each 4 times table fact.

4 ÷ 4 = 1 4 ÷ 1 = ____ 8 ÷ 4 = ____ 8 ÷ ____ = 4

12 ÷ ____ = ____ 12 ÷ ____ = ____ 16 ÷ ____ = ____

____ ÷ 4 = ____ ____ ÷ ____ = 4 ____ ÷ 4 = ____ ____ ÷ ____ = 4

____ ÷ 4 = ____ ____ ÷ ____ = 4 ____ ÷ 4 = ____ ____ ÷ ____ = 4

____ ÷ 4 = ____ ____ ÷ ____ = 4 ____ ÷ 4 = ____ ____ ÷ ____ = 4

3 Double the 4s facts to find the 8s facts.

a 8 × 4
= 4 × 4 doubled
= 16 doubled
= ____

b 8 × 6
= 4 × 6 doubled
= ____ doubled
= ____

c 8 × 9
= 4 × 9 doubled
= ____ doubled
= ____

Extended practice

1 Mia's cupcake trays hold 9 cupcakes each.

How many cupcakes can fit on:

a 4 trays? _____ **b** 40 trays? _____

c 7 trays? _____ **d** 17 trays? _____

2 How many trays will Mia need if she gets an order for:

a 90 cupcakes? _____ **b** 900 cupcakes? _____

c 54 cupcakes? _____ **d** 540 cupcakes? _____

3 The football factory makes boxes that hold 4, 6, 7 or 9 footballs.

Circle the box sizes that could be used to pack exactly:

a 63 footballs.

b 48 footballs.

c 360 footballs.

d 420 footballs.

Extended multiplication

Extended multiplication is a written strategy for multiplying larger numbers.

$4 \times 53 = ?$

	H	T	O
		5	3
×			4
		1	2
	2	0	0
	2	1	2

1 Start with the ones.
4 groups of **3 ones** or
$4 \times 3 = 12$.
Write **12** on the first answer line.

2 Now multiply the tens.
4 groups of **5 tens** or
$4 \times 50 = 200$.
Write the tens answer beneath the ones answer.

3 To get the final answer, add 12 to 200.
So **$4 \times 53 = 212$**.

Extended multiplication works the same way as the split strategy or the grid method. You multiply by each place value column in turn.

Guided practice

1 Solve using extended multiplication.

a

	T	O
	2	1
×		3

3 × 1
3 × 20

b

	T	O
	4	4
×		2

2 × 4
2 × 40

c

	T	O
	1	5
×		4

d

	H	T	O
		3	1
×			5

e

	H	T	O
		7	2
×			4

f

	H	T	O
		4	7
×			6

Independent practice

1 Rewrite as extended multiplication and solve.

a 5 × 28

	H	T	O
×			

b 6 × 43

	H	T	O
×			

c 9 × 67

	H	T	O
×			

d 7 × 66

	H	T	O
×			

e 8 × 34

	H	T	O
×			

f 6 × 89

	H	T	O
×			

g Payal earned $74 a week for 7 weeks. How much does she have?

	H	T	O
×			

h Tyler rode 35 km a day for 8 days. How far did he go?

	H	T	O
×			

Contracted multiplication

Contracted multiplication is a shorter way to multiply larger numbers.

$4 \times 53 = ?$

	H	T	O
		5 (1)	3
×			4
	2	1	2

1 Start with the ones.
4 groups of **3 ones** or **4 × 3 = 12**.
Trade the 12 for **1 ten** and **2 ones** and record the numbers in their place value columns.

2 Now multiply the tens.
4 groups of **5 tens** or **4 × 50 = 200**.
Also, add the traded ten to end up with **21 tens**, or 210.

This method is similar to the addition vertical algorithm. Start at the ones and work left.

Guided practice

1 Solve using contracted multiplication.

a

	T	O
	4	2
×		2

b

	T	O
	1	9
×		5

c

	T	O
	2	4
×		4

d

	H	T	O
		6	1
×			5

e

	H	T	O
		5	2
×			6

f

	H	T	O
		4	8
×			7

2 Solve using extended and then contracted multiplication.

9×84

	H	T	O
		8	4
×			6

	H	T	O
		8	4
×			9

Independent practice

1 Rewrite as contracted multiplication and solve.

a 4 × 32

	H	T	O
×			

b 7 × 41

	H	T	O
×			

c 6 × 54

	H	T	O
×			

d 5 × 52

	H	T	O
×			

e 9 × 46

	H	T	O
×			

f 8 × 68

	H	T	O
×			

g Namrita bought 8 games that each cost $99. How much did she spend?

	H	T	O
×			

h Antony bought 9 boxes of marbles with 47 in each. How many does he have altogether?

	H	T	O
×			

2 Match the equations with their answers.

45 × 7	86 × 7	53 × 6	45 × 8	92 × 4
602	368	315	318	360

Extended practice

1 Use a written multiplication strategy of your choice to solve. Show your working.

a Farmer Sam grew 48 carrots. Farmer Fred grew 6 times as many. How many did Farmer Fred grow?

Working-out space

b Farmer Sue harvested 32 carrots a day for 9 days. How many carrots did she have altogether?

Working-out space

c Which farmer had more – Fred or Sue? _____

2 Carlos was having 78 people to his party, including himself. Work out how many of each item he needs.

Item	Number per guest	Total needed
Hot dogs	4	
Carrot sticks	7	
Chocolate buttons	9	
Mini pizzas	5	

3 What if Carlos had 178 people, including himself? How many of each item would he need?

Item	Number per guest	Total needed
Hot dogs	4	
Carrot sticks	7	
Chocolate buttons	9	
Mini pizzas	5	

You can set out division problems like 64 ÷ 4 using this symbol: $4\overline{)64}$

The number you start with (64) is called the **dividend**. The number you divide by (4) is the **divisor**.

1 Start with the biggest place value column. **6 (tens)** divided by **4** is **1 (ten)** with **2 (tens)** left over.

2 Write the **1** on the answer line above the tens and trade the **2 tens** left over to the ones column.

$$\begin{array}{r} 1\ 6 \\ 4\overline{)6^{2}4} \end{array}$$

3 Now divide the ones by 4. **24 (ones)** divided by **4** is **6**.

4 Write the **6** on the answer line above the ones.

For division set out this way, start from the left and work your way right.

Guided practice

1 Solve the equations without trading.

a $5\overline{)55}$ b $4\overline{)84}$ c $2\overline{)68}$

d $3\overline{)69}$ e $2\overline{)46}$ f $3\overline{)93}$

2 Solve the equations with trading.

a $5\overline{)75}$ b $6\overline{)84}$ c $8\overline{)96}$

d $3\overline{)54}$ e $7\overline{)91}$ f $4\overline{)92}$

Independent practice

1 Rewrite and solve.

a 87 ÷ 3

)

b 98 ÷ 2

)

c 88 ÷ 8

)

d 84 ÷ 7

)

e 78 ÷ 3

)

f 95 ÷ 5

)

g 58 ÷ 2

)

h 80 ÷ 4

)

i 78 ÷ 6

)

2 Solve and rewrite.

a 6) 7 2

____ ÷ ____ = ____

b 5) 8 0

____ ÷ ____ = ____

c 4) 7 6

____ ÷ ____ = ____

d 4) 6 8

_____

e 7) 9 8

_____

f 3) 8 1

_____

g 2) 8 6

_____

h 3) 9 6

_____

i 4) 9 6

_____

3 Solve using a written division strategy.

a 84 students were staying in rooms of 3 on their school trip. How many rooms did they need?

Working-out space

b 95 sheep were divided equally into 5 pens. How many were in each?

Working-out space

c Audrey divided her 96 basketball cards into 4 equal piles. How many cards in each?

Working-out space

d How many cards in each pile if Audrey divided them into 3 equal piles?

Working-out space

e 78 people in the audience sat in rows of 6. How many rows were there?

Working-out space

f Could the 78 people sit in rows of exactly 7? Why or why not?

Working-out space

Extended practice

1 Circle the numbers that can be divided exactly by:

a	4	72	95	74	62	52	88
b	3	91	84	63	65	94	57
c	6	78	86	96	68	90	94
d	9	189	93	276	279	98	198

Remember to start from the left and write the answers above the correct place value columns.

2 Calculate the answers.

a $4\overline{)128}$ **b** $6\overline{)672}$ **c** $9\overline{)819}$

d $7\overline{)784}$ **e** $8\overline{)568}$ **f** $3\overline{)729}$

g $5\overline{)605}$ **h** $9\overline{)999}$ **i** $6\overline{)846}$

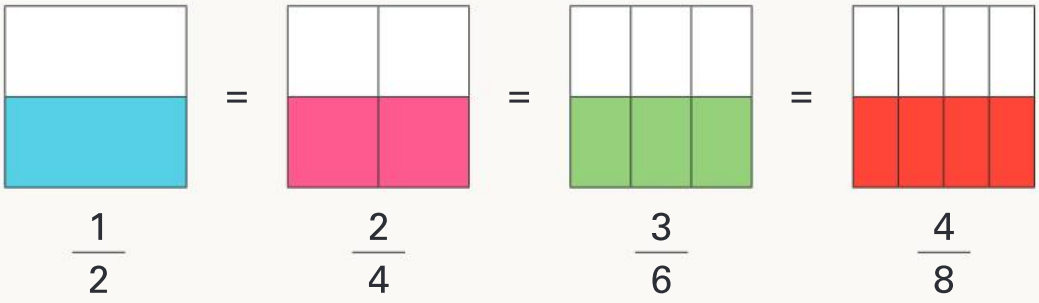
3 Rewrite and solve.

a Melinda was sharing 336 jelly beans into 6 bags. How many went in each?

_____

b Melinda realised she forgot to make a bag for herself. How many in each bag if she makes up another one?

_____



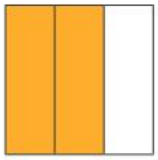
$\frac{1}{2}$ = $\frac{2}{4}$ = $\frac{3}{6}$ = $\frac{4}{8}$

Equivalent fractions are the same size, even though they have different names.

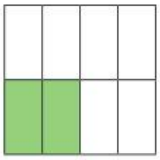
Guided practice

1 Circle the fraction that is equivalent to:

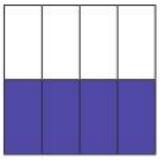
a $\frac{1}{4}$



$\frac{2}{3}$



$\frac{2}{8}$



$\frac{4}{8}$

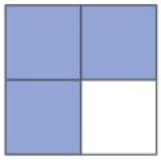
b $\frac{2}{3}$

$\frac{3}{4}$

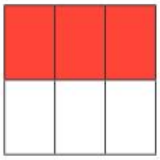
$\frac{1}{2}$

$\frac{4}{6}$

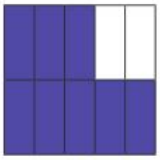
c $\frac{6}{8}$



$\frac{3}{4}$



$\frac{3}{6}$

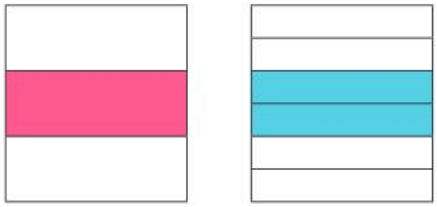


$\frac{8}{10}$

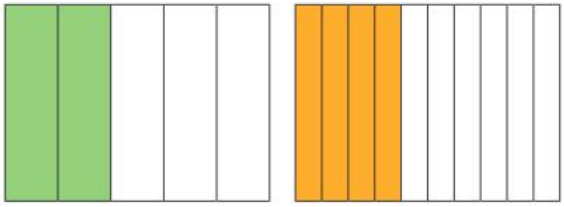
Independent practice

1 Label each pair of equivalent fractions.

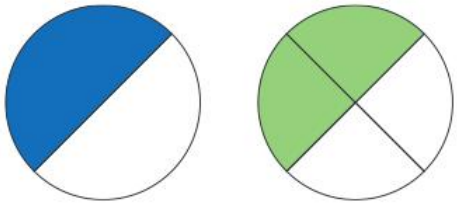
a



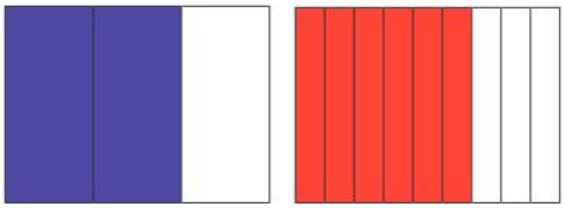
b



c

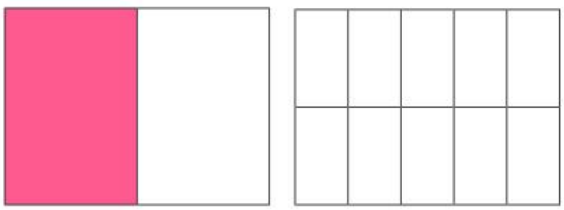


d



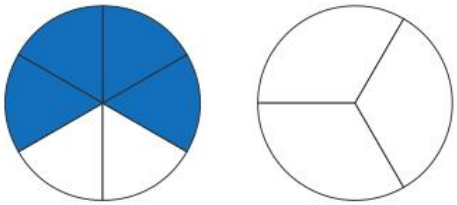
2 Colour and label an equivalent fraction for:

a



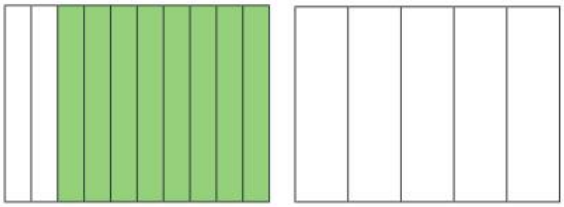
$\frac{1}{2}$

b



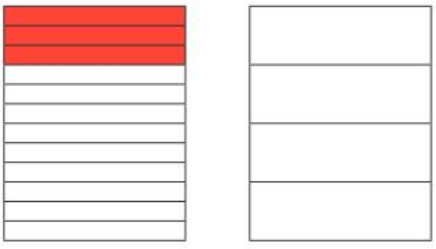
$\frac{4}{6}$

c

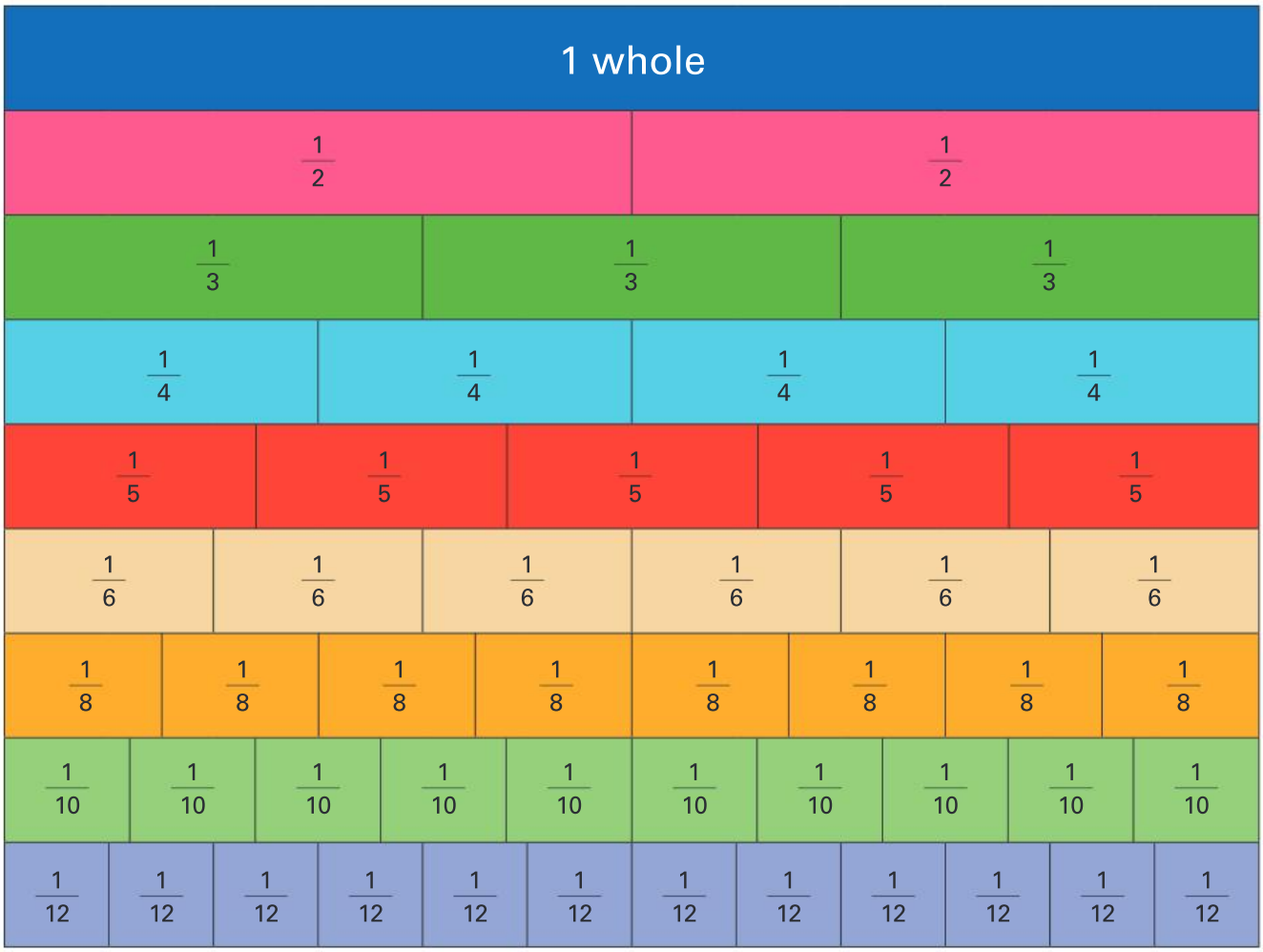


$\frac{8}{10}$

d



$\frac{3}{12}$



3 Use the fraction wall to find equivalent fractions for:

a $\frac{2}{5}$ ____

b $\frac{8}{12}$ ____ ____

c $\frac{4}{6}$ ____ ____

d $\frac{1}{4}$ ____ ____

e $\frac{8}{10}$ ____

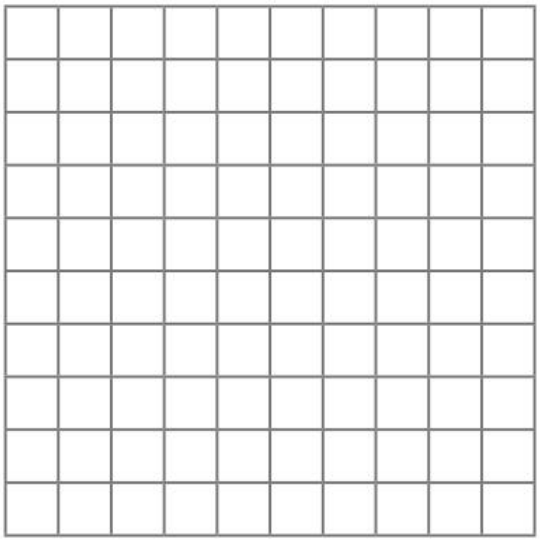
f $\frac{6}{8}$ ____ ____

g $\frac{1}{2}$ ____ ____ ____ ____ ____

h 1 ____ ____ ____ ____ ____ ____ ____ ____

What do you notice about all the fractions that are equivalent to $\frac{1}{2}$?

Extended practice

1 

This grid has 100 squares.

a Colour 10 squares and write the fraction.

_____

b What is the equivalent fraction in tenths?

_____

2 How many squares would you colour for:

a $\frac{4}{10}$? _____

b $\frac{8}{10}$? _____

c $\frac{7}{10}$? _____

d $\frac{1}{2}$? _____

3 Write an equivalent hundredths fraction for:

a $\frac{4}{10}$ _____

b $\frac{1}{2}$ _____

c $\frac{3}{10}$ _____

d $\frac{9}{10}$ _____

e $\frac{10}{10}$ _____

f $\frac{1}{4}$ _____

4 Write >, < or =.

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

b $\frac{3}{5}$ _____ $\frac{3}{10}$

c $\frac{5}{8}$ _____ $\frac{3}{4}$

d $\frac{8}{12}$ _____ $\frac{4}{6}$

When the numerator is bigger than the denominator, it is called an improper fraction.

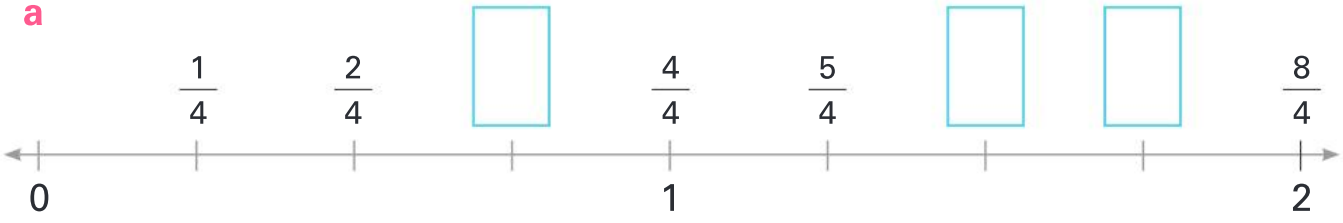
You can change an improper fraction to a mixed number.

$\frac{5}{3} = 1\frac{2}{3}$

Guided practice

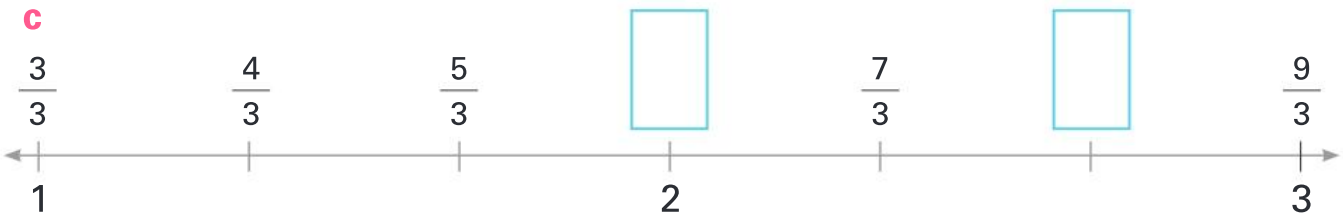
1 Fill in the gaps.

a



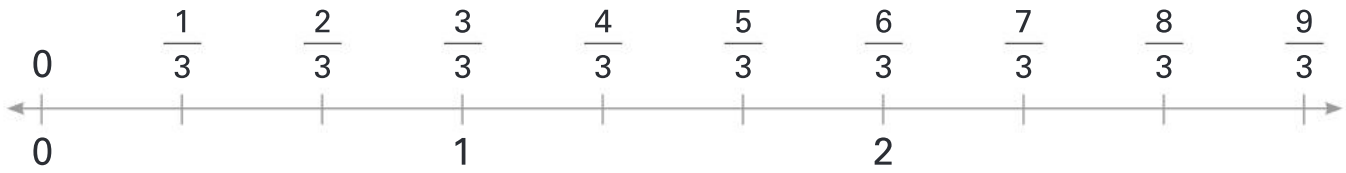
b

c

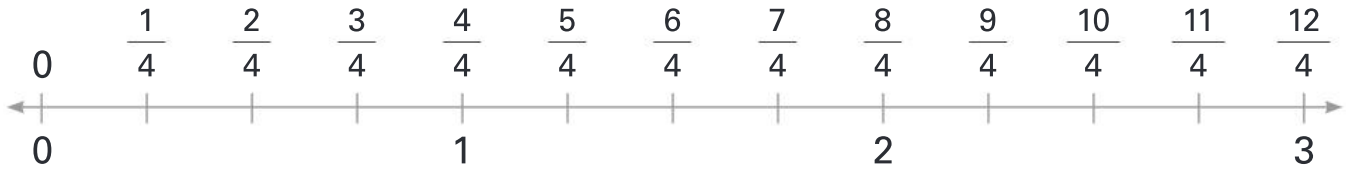


Independent practice

1 Change the improper fractions to mixed or whole numbers.



a $\frac{4}{3} =$ _____ **b** $\frac{7}{3} =$ _____ **c** $\frac{9}{3} =$ _____



d $\frac{6}{4} =$ _____ **e** $\frac{11}{4} =$ _____ **f** $\frac{9}{4} =$ _____

g $\frac{5}{2} =$ _____ **h** $\frac{9}{2} =$ _____ **i** $\frac{6}{2} =$ _____

2 Fill in the gaps.

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

b $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{3}$, $\frac{4}{3}$, _____, _____, _____, $\frac{8}{3}$, _____, $\frac{10}{3}$

c _____, $\frac{2}{4}$, $\frac{3}{4}$, 1, $1\frac{1}{4}$, _____, _____, _____

d 5, $4\frac{1}{2}$, 4, _____, _____, _____, 2, _____, _____

3 Mark on the number line.

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

4 Mark on the number line.

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

5 Mark on the number line.

a $\frac{5}{2}$ **b** $\frac{9}{2}$ **c** $\frac{8}{2}$ **d** $\frac{3}{2}$

6 Change the fractions in question 5 to mixed or whole numbers.

a _____ **b** _____ **c** _____ **d** _____

7 Circle the larger number in each pair.

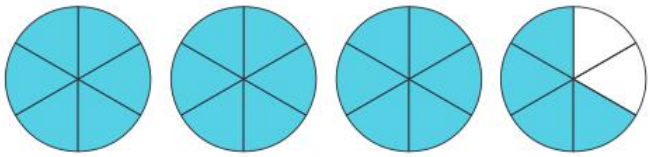
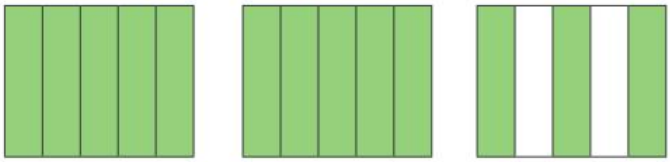
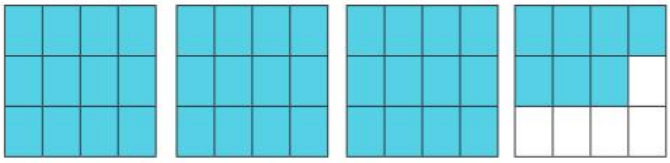
a $2\frac{1}{2}$ or $\frac{7}{2}$ **b** $1\frac{2}{3}$ or $\frac{4}{3}$ **c** $3\frac{1}{4}$ or $\frac{9}{4}$

d $2\frac{3}{4}$ or $\frac{12}{4}$ **e** $10\frac{1}{4}$ or $\frac{10}{4}$ **f** $\frac{7}{3}$ or $7\frac{1}{3}$

g $\frac{10}{2}$ or $5\frac{1}{2}$ **h** $\frac{9}{3}$ or $2\frac{1}{3}$ **i** $\frac{15}{4}$ or $4\frac{1}{4}$

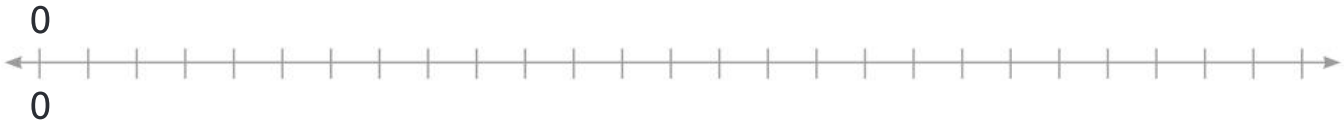
Extended practice

1 Write an improper fraction and a mixed number for the diagrams below.

		Fraction	Mixed number
a		_____	_____
b		_____	_____
c		_____	_____
d		_____	_____

2 Complete the number line counting by ninths with fractions and mixed numbers.

Fractions



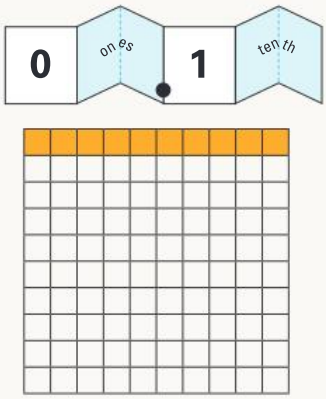
Mixed numbers

3 How many ninths in:

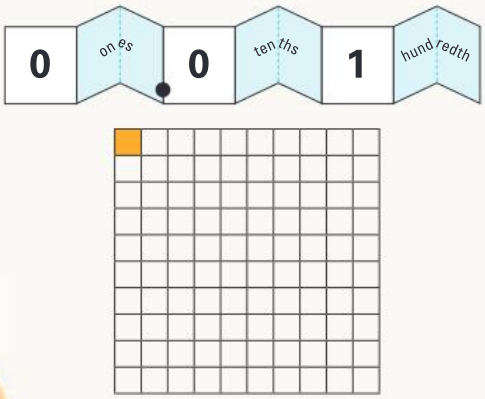
a 1? _____ **b** $2\frac{4}{9}$? _____ **c** $1\frac{8}{9}$? _____

d 4? _____ **e** $3\frac{5}{9}$? _____ **f** $5\frac{1}{9}$? _____

You can write $\frac{1}{10}$ as a decimal: 0.1



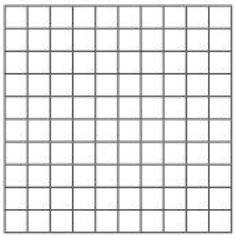
You can write $\frac{1}{100}$ as a decimal: 0.01

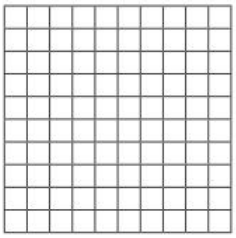


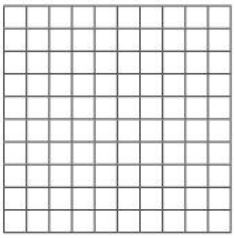
Hundredths are 10 times smaller than tenths, and tenths are 10 times smaller than ones.

Guided practice

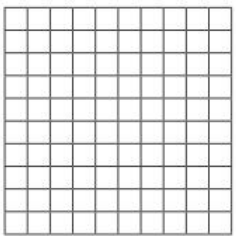
1 Shade the grids and write each tenths fraction as a decimal.

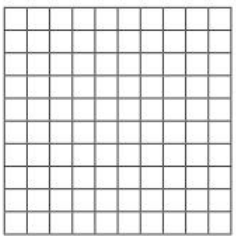
a  $\frac{2}{10}$ = _____

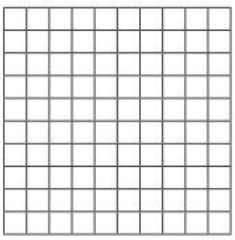
b  $\frac{5}{10}$ = _____

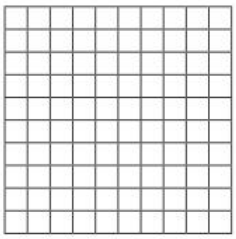
c  $\frac{8}{10}$ = _____

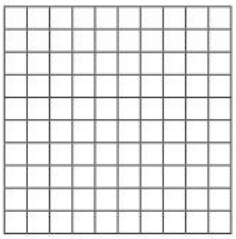
2 Shade the grids and write each hundredths fraction as a decimal.

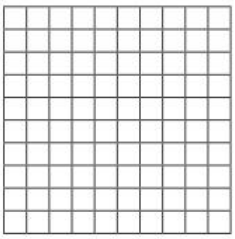
a  $\frac{45}{100}$ = _____

b  $\frac{26}{100}$ = _____

c  $\frac{53}{100}$ = _____

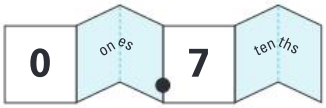
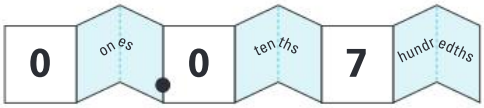
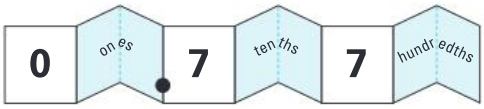
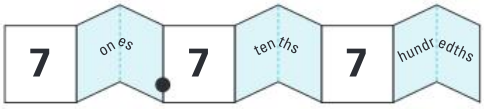
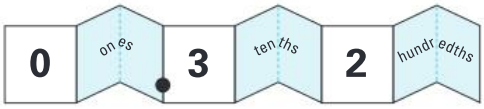
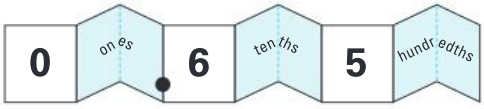
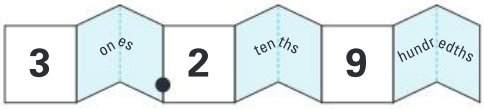
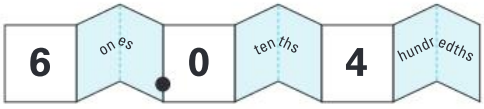
d  $\frac{82}{100}$ = _____

e  $\frac{99}{100}$ = _____

f  $\frac{60}{100}$ = _____

Independent practice

1 Write the numbers on the numeral expander as a decimal and a common fraction or mixed number.

		Decimal	Common fraction or mixed number
a		_____	_____
b		_____	_____
c		_____	_____
d		_____	_____
e		_____	_____
f		_____	_____
g		_____	_____
h		_____	_____

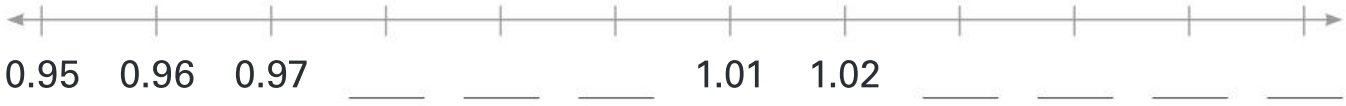
2 Complete the number lines.

a

b

c

d

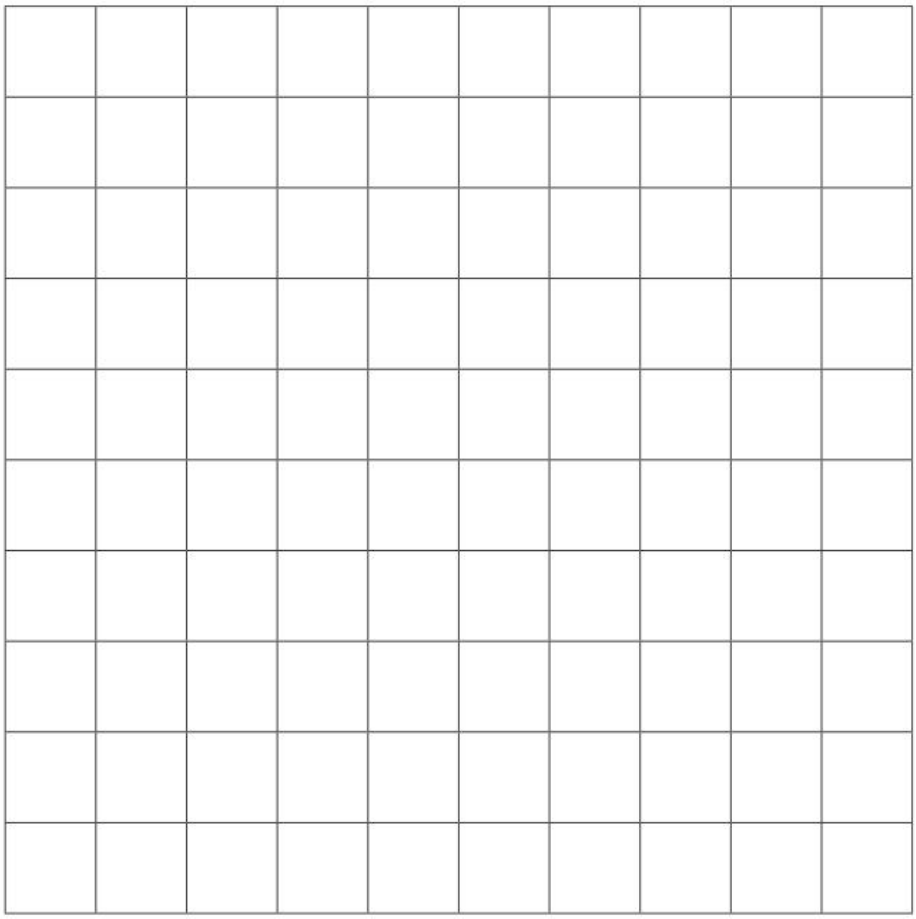


3 Write the numbers on the place value chart.

	Hundreds	Tens	Ones	.	Tenths	Hundredths
Thirty-six and four tenths						
Five hundreds and twenty-two hundredths						
Two hundred and twenty-two and twenty-two hundredths						
Fourteen and fifty-eight hundredths						
$103\frac{7}{10}$						
$628\frac{43}{100}$						
$946\frac{4}{100}$						

Extended practice

1 Use the hundred grid to help you circle the bigger number in each pair.



a 0.9 or 0.09

b 0.18 or 0.3

c 0.25 or 0.52

d 9.8 or 0.99

e 0.5 or 0.05

f 0.41 or 0.39

g 0.78 or 0.87

h 1 or 0.1

2 Mr Hoyne's class had a long jump competition. Reorder the results from shortest to longest jump.

Name	Jump length
Silva	3.26 m
Raff	4.07 m
James	5.21 m
Elara	4.7 m
Lily	4.28 m
Dan	3.9 m
Nick	5.02 m

Name	Jump length

Imagine there are no 1c and 2c coins and 5c coins have the lowest value. To give change in cash, everything is rounded to the nearest 5 cents.

Change from $10

$9.91 rounds down to $9.90, so you would get 10c change.

$9.94 rounds up to $9.95, so you would get 5c change.

Guided practice

1 Write the numbers 1, 2, 3, 4, 6, 7, 8 and 9 in the correct boxes below.

Rounds up to 0	Rounds down to 0	Rounds up to 5	Rounds down to 5

2 Complete the table.

Amount	Rounds up or down?	Rounds to
$1.62	down	$1.60
$3.58		
$7.86		
$15.32		
$23.01		
$99.99		
$85.43		
$48.04		
$59.97		

Independent practice

A 

$1.47

B 
$3.52

C 
$2.98

D 
$2.01

E 

$3.23

1

a How much change would you get from $5 for:

A? _____ B? _____ C? _____ D? _____ E? _____

b How much change would you get from $10 for:

A? _____ B? _____ C? _____ D? _____ E? _____

2 Choose 3 items from above.

a Calculate the total cost.

Items	Cost
	+
Total	

b Round the total to the nearest 5c.

_____

c How much change would you get from $20? _____

d How much change would you get from $100? _____

3 Would you round the total for each pair of items up or down?

a A and B _____ **b** C and E _____

c B and D _____ **d** A and D _____

4

$9.53

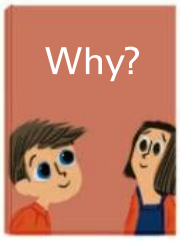
A

$5.68

B

$12.82

C



$9.39

D

$14.31

E

$17.63

F

Use a calculator to work out which 2 books together would give you:

a no change from $20. _____

b $1.10 change from $20. _____

c $1.50 change from $20. _____

d $23 change from $50. _____

e $22.85 change from $50. _____

5 You have $5 to spend at Dean's Ice-creams.

DEAN'S ICE-CREAMS

Ice-cream cones

1 scoop: $2.75

2 scoops: $3.50

Mix-ins

Crushed cookies: $1.14

Sprinkles: 32c

Honeycomb: $1.38

Choc chips: 95c

Crushed doughnut: $1.46

Caramel pieces: 64c

Strawberries: 89c

a Choose which ice-creams and mix-ins you want and calculate the total cost.

Working-out space

b How much change will you get?

_____

Extended practice

Many countries use decimal currency.

In South Africa, 1 Rand = 100 cents or R1 = 100c.

Coins come in the following denominations:

5c 10c 20c 50c R1 R2 R5

1 Round each amount to the nearest 5c.

a 33c _____ **b** R1.76 _____ **c** R5.63 _____

d R3.07 _____ **e** R8.99 _____ **f** R7.02 _____

2 How much change would you get from R10 for:

a R4.98 _____ **b** R2.51 _____ **c** R9.22 _____

d 45c _____ **e** R7.36 _____ **f** R5.74 _____

3 How many 50c coins in:

a R1? _____ **b** R2? _____ **c** R5? _____

4 How many of each item could you buy with R20?

a

_____

b

_____

c

_____

Recognising patterns can help to solve number problems.

What is the next number in this sequence?

1	2	3	4	5	6	7	8	9	10
12	17	22	27	32	37	42	47	52	?

Rule: Add 5.

Guided practice

1 Write the rule and find the 10th term.

a

1	2	3	4	5	10
7	9	11	13	15	

Rule: _____

b

1	2	3	4	5	10
99	88	77	66	55	

Rule: _____

c

1	2	3	4	5	10
50	47	44	41	38	

Rule: _____

d

1	2	3	4	5	10
13	23	33	43	53	

Rule: _____

e

1	2	3	4	5	10
9	18	27	36	45	

Rule: _____

Independent practice

1 Write the rule for each function machine.

a

Rule: _____

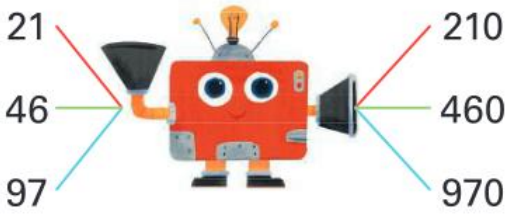
b

Rule: _____

c

Rule: _____

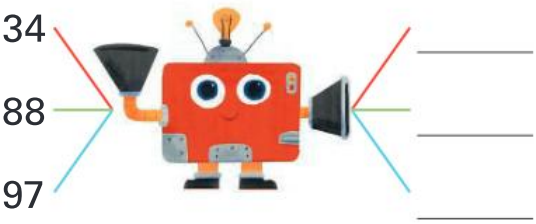
d



Rule: _____

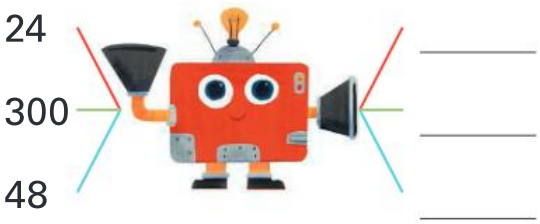
2 Find the outputs for each machine.

a



Rule: Add 12.

b



Rule: Divide by 3.

3 A multiple is the result of multiplying one number by another. The numbers 4, 6, 8 and 10 are multiples of 2.

a Circle all the multiples of 2 on the hundred chart.

b Shade the multiples of 4.

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

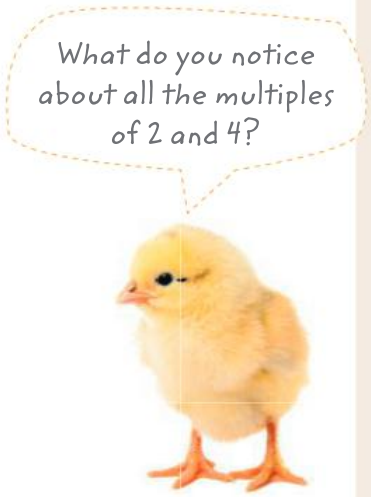
c Which numbers are both circled and shaded?

_____

d Tick the multiples of 8.

e How many of the ticked numbers are also circled and shaded?

_____



4

a Circle all the multiples of 5.

b Shade all the multiples of 2.

c What do you notice about numbers that are multiples of both 2 and 5?

_____

_____

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

d Which of those numbers are also multiples of 10?

_____

Extended practice

1 Write the rule and complete the pattern.

a

1	2	4	7	11			29		

Rule: _____

b

3	5	9	15	23			59		

Rule: _____

c

1	2	4	8	16			128		

Rule: _____

2

a Create your own rule for each function machine.

b Show 3 inputs and outputs for each rule.

Rule: _____ Rule: _____

In:		Out:	In:		Out:
_____		_____	_____		_____
_____		_____	_____		_____
_____		_____	_____		_____

3

a Write the first 10 multiples of 7. _____

_____

b Which of these are also multiples of 2? _____

c Which are also multiples of 5? _____

d Which are also multiples of 3? _____

When this number is subtracted from 30, the answer is the same as 16 plus 7. What is the number?

To solve a word problem:

1 Change the word problem into a number sentence. 30 – ☐ = 16 + 7

2 Then complete the calculation. 30 – ☐ = 23
The answer is 7.

You can check by doing opposites: 23 + 7 = 30 and 30 – 7 = 23. It's correct!

Guided practice

1 Change to number sentences and solve.

a When this number is added to 15, the answer is the same as 48 minus 12. What is the number?

Number sentence: 15 + ☐ = 48 – 12

Answer: _____

b When this number is added to 42, the answer is the same as 31 plus 27. What is the number?

Number sentence: 42 + ☐ = _____

Answer: _____

c When this number is subtracted from 73, the answer is the same as 26 + 23. What is the number?

Number sentence: _____

Answer: _____

Independent practice

1 Write number sentences to solve.

a What number subtracted from 100 gives the same answer as 31 added to 27?

b What number added to 56 gives the same answer as 108 minus 21?

c When this number is added to 98, the answer is the same as 200 minus 72. What is the number?

d There were 43 boys and 54 girls at the party. 72 guests chose pizza; the rest had burgers. How many had burgers?

e Of the total guests in question d, 18 left to play in a cricket match. Of those still there, 61 had cake. How many didn't have cake?

2 Fill in the gaps to complete the number sentences.

a $\square + 17 = 32$

b $58 - \square = 44$

c $\square - 23 = 61$

d $35 + \square = 89$

e $\square \times 8 = 48$

f $7 \times \square = 56$

g $63 \div \square = 9$

h $\square \div 5 = 11$

i $26 + 34 = 100 - \square$

j $78 - 46 = 19 + \square$

k $147 - \square = 96 + 15$

l $\square + 83 = 180 - 32$

3 Write number sentences to solve.

a Jeremy had 12 boxes with 6 eggs in each. How many eggs in total?

b Scarlet wrote a poem of 8 lines with 9 words in each line. How many words altogether?

c Ben collected 15 football cards. Cruz has 6 times more cards than Ben. How many cards does Cruz have?

d Each classroom shelf holds 7 books. If the teacher puts 49 books away, how many shelves has he filled?

e The chef made 54 grams of meringue mix. How many meringues can she make if each one is 6 grams?

f Maggie completes 28 pieces of a puzzle on Sunday and 32 on Monday. She still has 10 times as many pieces left. How many pieces has she got to go?

4 Write your own word problem for:

a $110 \div 11 = 10$

b $6 \times 32 = 192$

Extended practice

1 Li has a total of 106 green, red and blue marbles. How many of each colour might he have? Show 3 different options.

Option 1	Option 2	Option 3

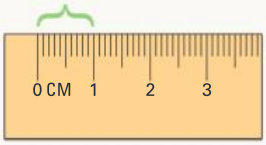
2 Marley has 48 cookies. Show different ways she could share them equally with her friends.

Working-out space

3 Enrica has $75. Show some different combinations of notes and coins that she could have.

Working-out space

10 millimetres = 1 centimetre



10 mm = 1 cm

100 centimetres = 1 metre

100 cm = 1 m

Perimeter is the distance around the edges of a shape.

If the spider crawled all around the rectangle, it would have gone around the perimeter.

Guided practice

1 Find the length of each worm in mm.

a

_____ mm

b

_____ mm

c 

_____ mm

d 

_____ mm

2 Use the worms in question 1 to work out:

a how much longer b is than a. _____

b how much longer c is than d. _____

c the combined length of b and c. _____

3 Find the length of each snake in cm.

a 

_____ cm

b 

_____ cm

c 

_____ cm

Independent practice

1 Would you use mm, cm or m to measure these items in real life?

a 

_____

b 

_____

c 

_____

d 

_____

e 

_____

f 

_____

2 How many mm in:

a 2 cm? _____ b 10 cm? _____ c $5\frac{1}{2}$ cm? _____

d 23 cm? _____ e 2.5 cm? _____ f 3.8 cm? _____

g 38 cm? _____ h 12 cm? _____ i 1.2 cm? _____

3 How many cm in:

a 2 m? _____ b 10 m? _____ c $5\frac{1}{2}$ m? _____

d 1.25 m? _____ e 3.5 m? _____ f 4.75 m? _____

g 30 mm? _____ h 35 mm? _____ i 100 mm? _____

4 How many m in:

a 100 cm? _____ b 500 cm? _____ c 250 cm? _____

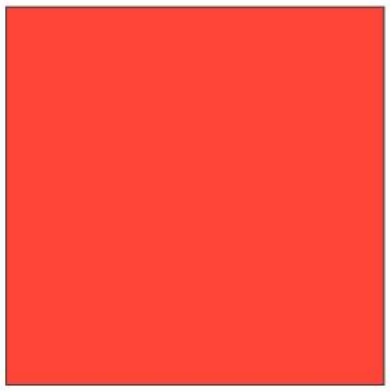
Perimeter is the total distance around the outside of a 2D shape.

5 Estimate which shape in question 6 has the greatest perimeter.

_____

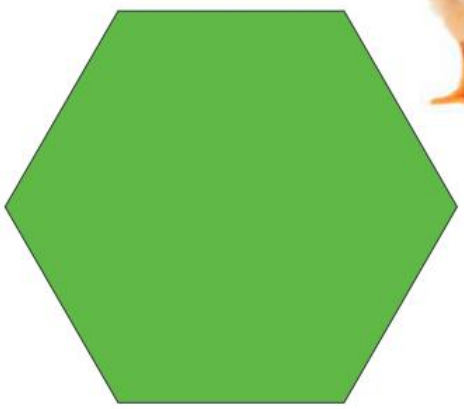
6 Find the perimeter of each shape in cm.

a



_____ cm

b



_____ cm

c

_____ cm

d

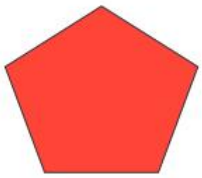
_____ cm

7 Find the perimeter of each shape in mm.

a

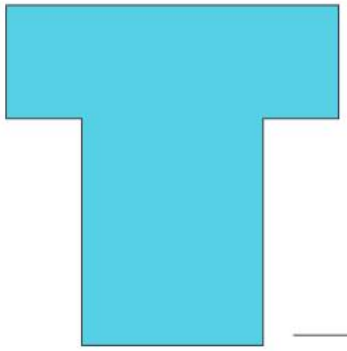
_____ mm

b



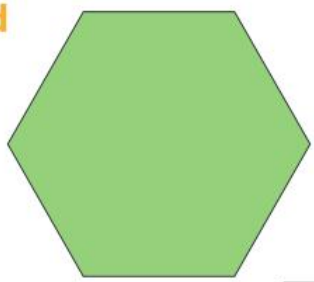
_____ mm

c



_____ mm

d



_____ mm

Extended practice

1 **a** Choose 2 objects in the classroom that you would measure in mm. Record them below.

b Estimate the length of each object.

c Measure and record the actual lengths.

d Calculate the difference between your estimate and the actual length.

e Repeat for cm and m.

Unit	Object	Estimated length	Actual length	Difference
mm				
cm				
m				

f Which of your items was the longest? _____

g Which of your items was the shortest? _____

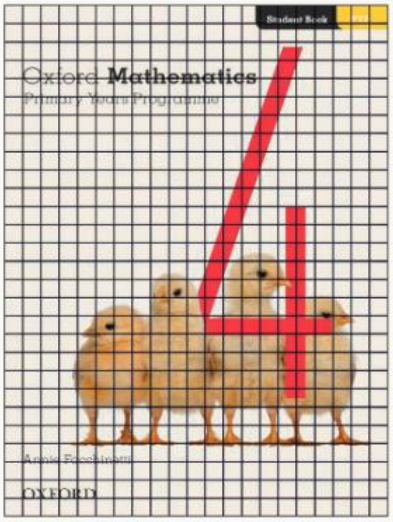
h What is the difference between the lengths of the two items you measured in mm? _____

i What is the difference between the lengths of the two items you measured in cm? _____

j What is the difference between the lengths of the two items you measured in m? _____

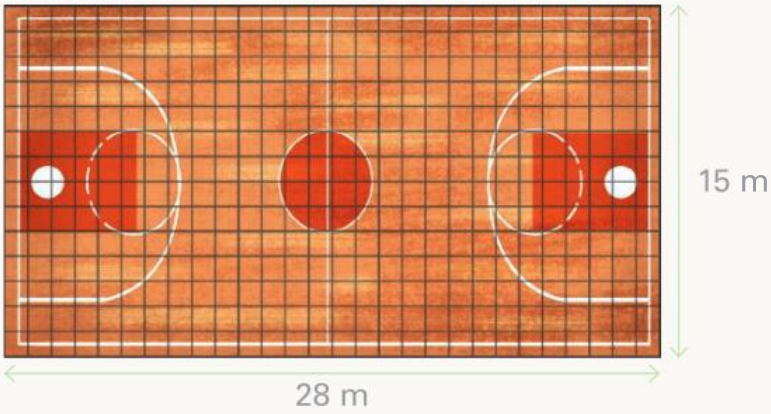
k What is the difference between the lengths of your longest item and your shortest item? _____

Square centimetres are used to measure smaller areas.



Area = 588 cm²

Square metres are used to measure larger areas.



Area = 420 m²

Does the book or the basketball court have the greater area?

Guided practice

1 Match the items with their likely areas in real life.

matchbox lid

netball court

smart phone

chopping board

table top

600 cm²	2 m²	19 cm²	465 m²	81 cm²

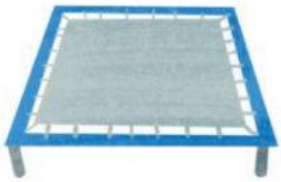
Independent practice

1 Circle the unit you would use to measure the area of each item or place in real life.

a

cm^2	m^2

b



cm^2	m^2

c

cm^2	m^2

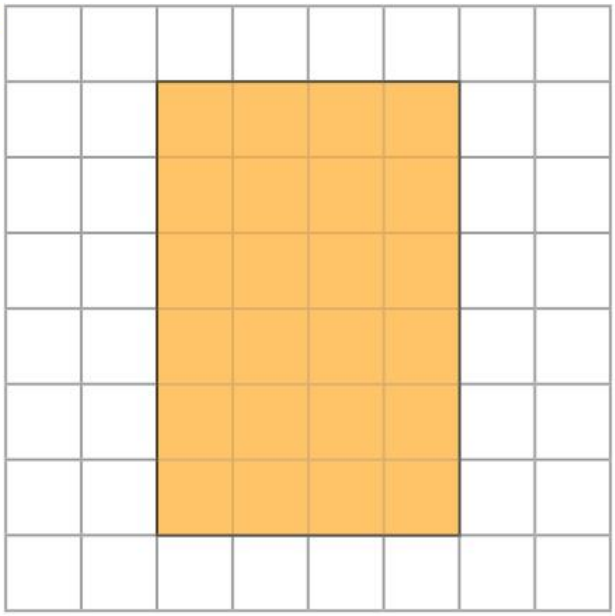
d

cm^2	m^2

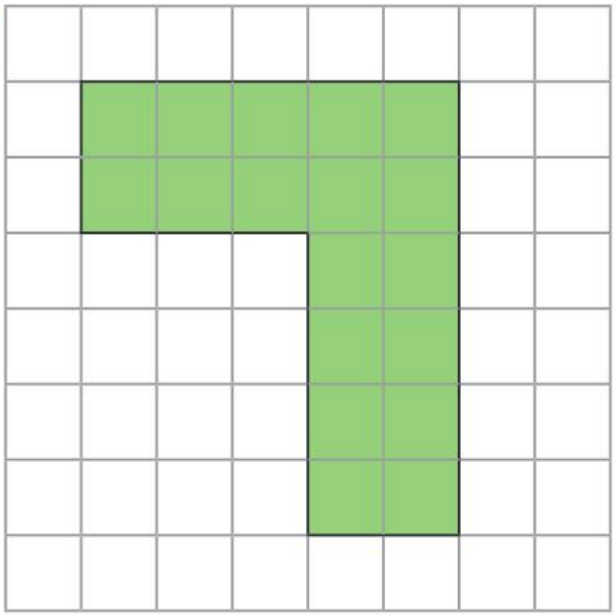
2 Use the grid paper to draw 4 different shapes with an area of 8 cm^2.

3 Record the area of each shape in cm^2.

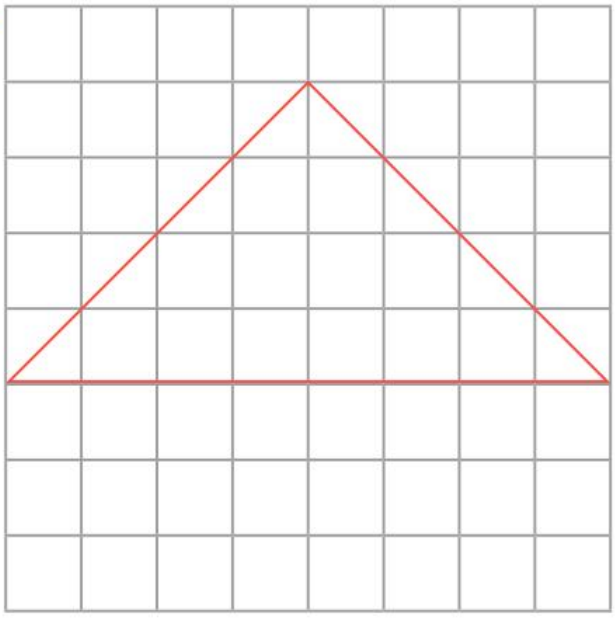
a



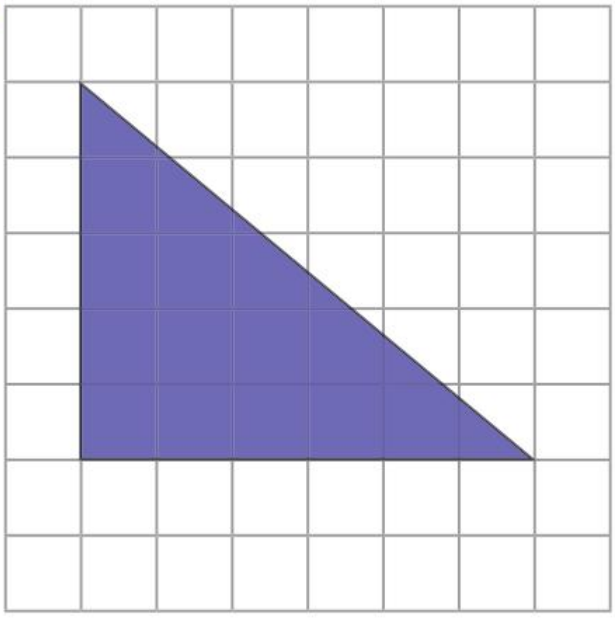
b



c



d



4 Choose 2 places in the school that you could measure in square metres.

a Estimate the area of each place.

b Measure and record the actual area.

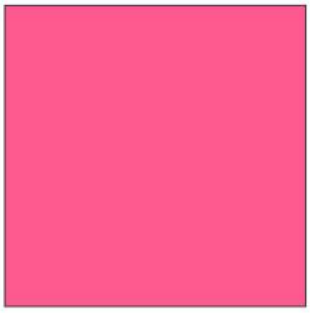
Place	Estimated area	Actual area

Extended practice

1 A quick way to find the area of a rectangle is to multiply the length by the width.

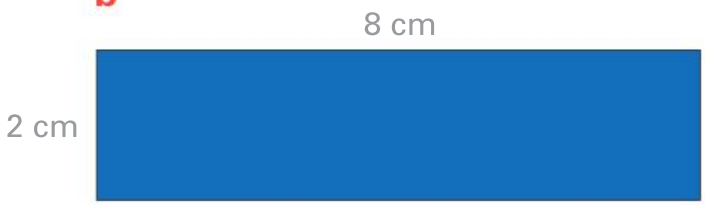
Find the area of each rectangle.

a



4 cm × 4 cm = _____ cm^2

b

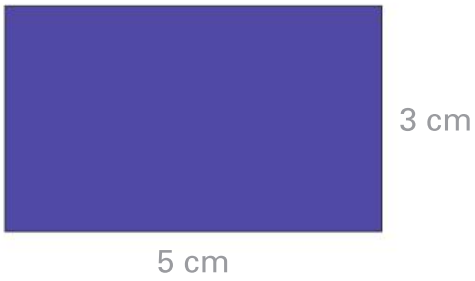


_____ × _____ = _____

c

_____

d



_____

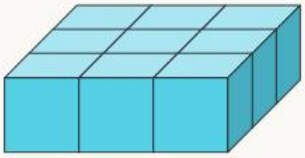
2 Draw a shape that:

a is 4 cm wide and has an area of 12 cm^2.

b has an area of 16 cm^2 and one side that is 5 cm long.

Volume

1 cubic centimetre or 1 cm^3



9 cm^3

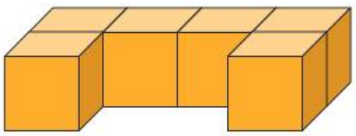
Capacity

5 millilitres or 5 mL

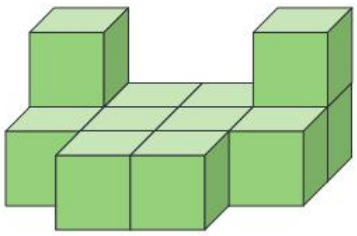
5 litres or 5 L

Guided practice

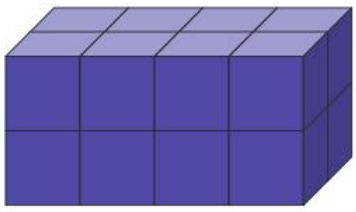
1 Write the volume of each object in cm^3.

a 

_____

b 

_____

c 

_____

2 Which has the greatest volume? _____

3 Colour the containers to show:

a 3 L

b 100 mL

c 350 mL

4 Which container has the smallest capacity? _____

Independent practice

1 **a** Make and draw a cube with a volume of 8 cm^3.

b How many layers? _____

c How many cm^3 in each layer? _____

2 **a** Make and draw a cube with a volume of 27 cm^3.

b How many layers? _____

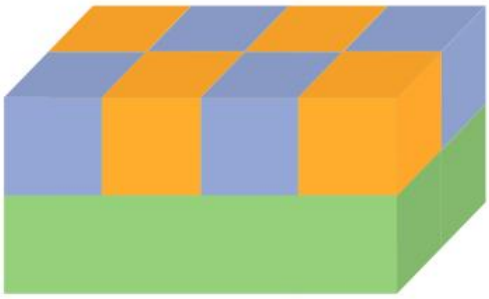
c How many cm^3 in each layer? _____

3 Estimate the volume of each object in cm^3.

a

_____

b

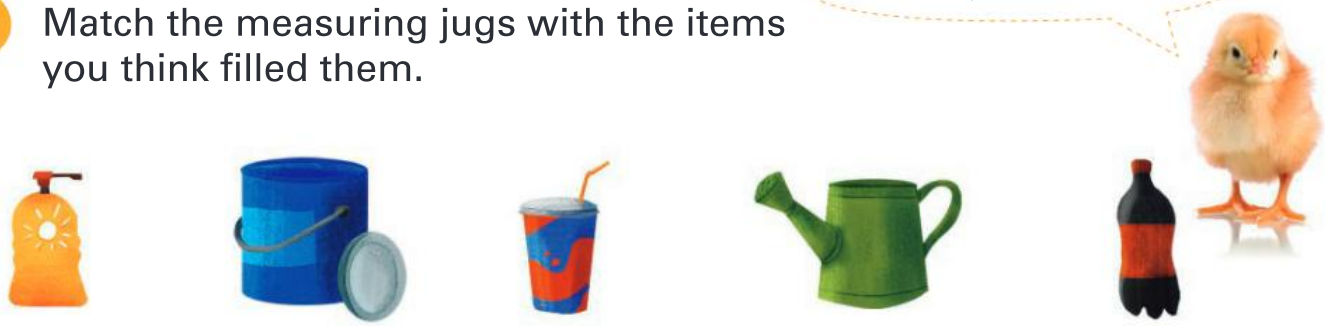


_____

4 Match the measuring jugs with the containers that filled them.

Which of the items do you think has a capacity that is closest to your drink bottle?

5 Match the measuring jugs with the items you think filled them.



A B C D E

6 **a** Which of the containers in question 5 have a capacity of less than 1 litre? _____

b What is the capacity of the largest container? _____

c How much larger is the capacity of the largest container than the smallest? _____

Extended practice

1 Each of these jugs had 1 litre of water in it before the rock was put in.

Order the rocks from smallest to largest based on the water they have displaced.

A B C D E

Smallest volume ☐ ☐ ☐ ☐ ☐ Largest volume

2 Rewrite as millilitres and litres.

a 1400 mL = _____ litre _____ millilitres

b 2500 mL = _____ litres _____ millilitres

c 3859 mL = _____

d 7643 mL = _____

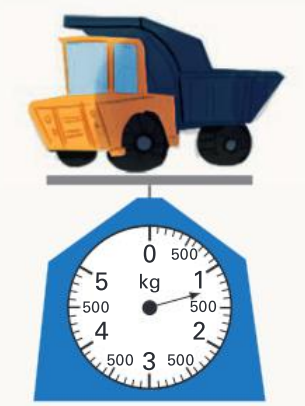
3 Rewrite in millilitres.

a 3 litres 25 millilitres = _____ mL

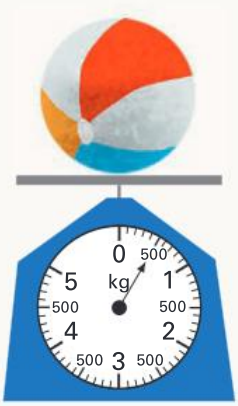
b 5 litres 340 millilitres = _____ mL

c 7 litres 654 millilitres = _____ mL

d 19 litres 999 millilitres = _____ mL



Mass =
1.25 kg or
1 kg and 250 g



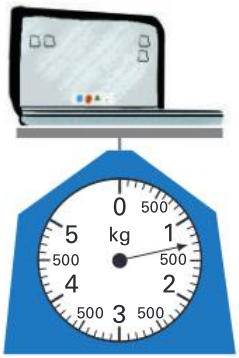
Mass =
$\frac{1}{2}$ kg or 500 g

Which of the 2 items has the smaller mass?

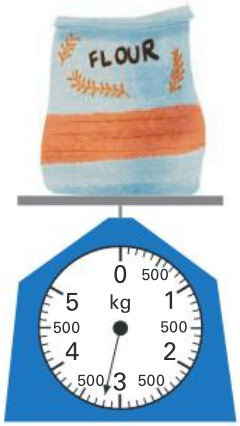
Guided practice

1 Write the mass of each item in 2 ways.

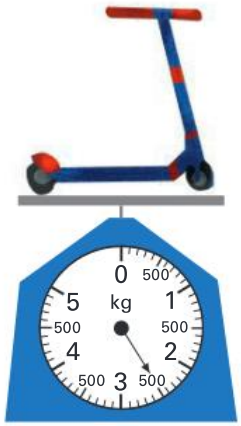
a



b



c



d

e

f

Independent practice

1 You will need a set of scales.

a Choose an item from the classroom for each category in the table below.

b Estimate the mass of each item.

c Use a scale to find the actual mass.

d Find the difference between your estimate and the actual mass.

Category	Item	Estimated mass	Actual mass	Difference
About 500 g				
About 1 kg				
About 2 kg				
More than 2 kg				

e Which of your items has the greatest mass? _____

f Which has the smallest mass? _____

g What is the difference between the mass of the heaviest and lightest items? _____

h What is the total mass of your items? _____

i Write the mass of your heaviest item in two different ways.

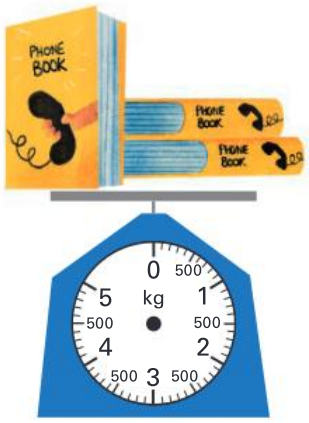
_____

j Write the mass of your lightest item in two different ways.

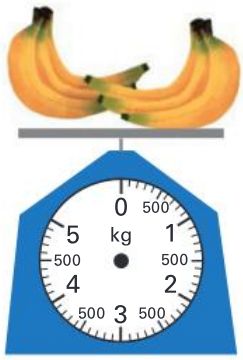
_____

2 Draw arrows on the scales to show the mass of each item.

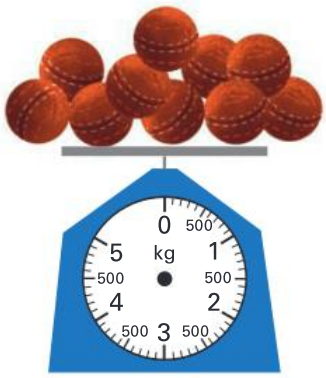
a 3.3 kg



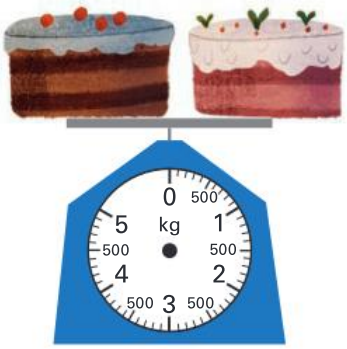
b 900 g



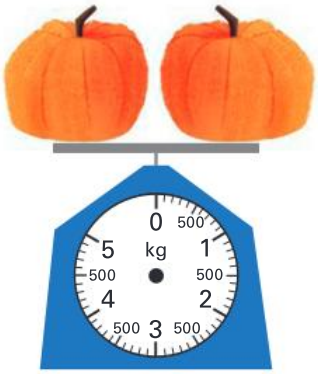
c 1.6 kg



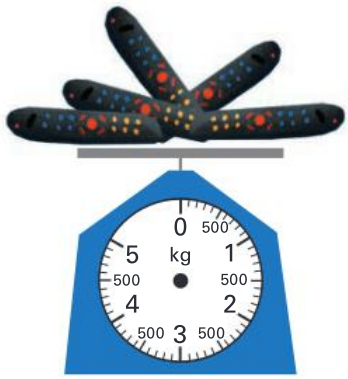
d 1 kg 200 g



e 3.7 kg



f 0.75 kg



How much heavier is the heaviest item than the lightest?

3 Use the scales in question 2 to work out the mass of:

a 1 phone book. _____

b 1 banana. _____

c 1 cricket ball. _____

d 1 cake. _____

e 1 pumpkin. _____

f 1 remote control. _____

Extended practice

1 Complete the table.

kg	kg and g	g
1.7 kg	1 kg 700 g	
	4 kg 500 g	
$3\frac{1}{4}$ kg		
		620 g
	7 kg 750 g	
5.03 kg		

2 **a** Write each amount in grams.

0.125 kg

_____ g

0.84 kg

_____ g

2 kg

_____ g

$1\frac{1}{2}$ kg

_____ g

1.65 kg

_____ g

$\frac{1}{4}$ kg

_____ g

b How much more is the mass of the eggs than the blueberries?

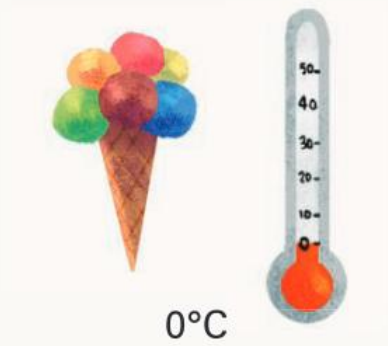
_____

c What is the total mass of the cooking ingredients? _____

d The recipe for blueberry muffins only needs 2 eggs.

What is their mass? _____

Temperature can be measured in degrees Celsius or (°C).



0°C

5°C

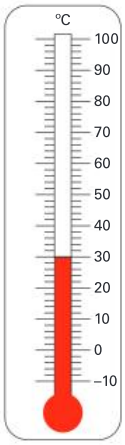
85°C

Can you think of something warmer than the margarine but colder than the soup?

Guided practice

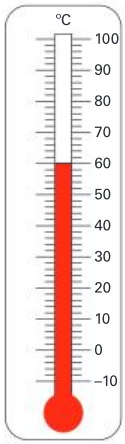
1 Record the temperature shown on each thermometer.

a



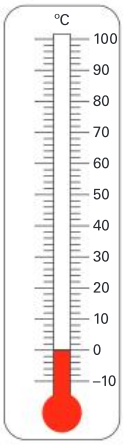
_____ °C

b



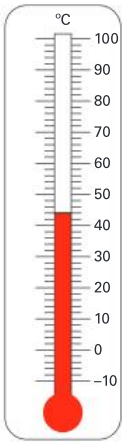
_____ °C

c



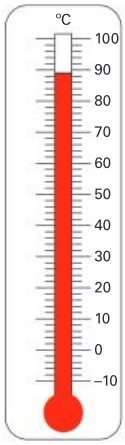
_____ °C

d



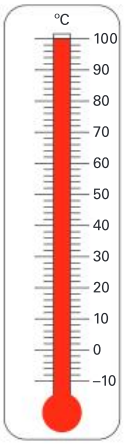
_____ °C

e



_____ °C

f

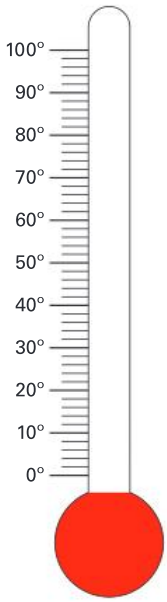


_____ °C

Independent practice

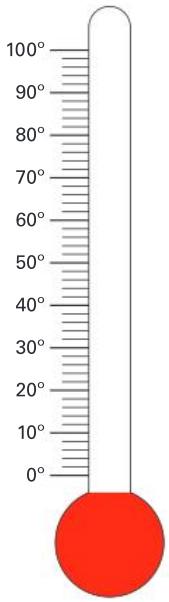
1 Mark the temperatures on the thermometers.

a



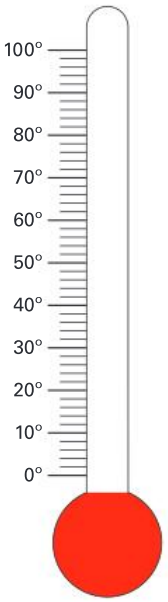
36°C

b



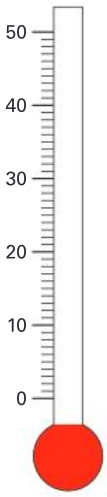
10°C

c



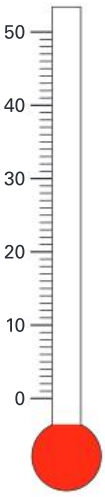
74°C

d



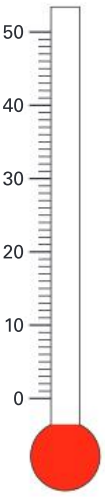
49°C

e



7°C

f



35°C

2

a Which temperature in question 1 is the highest? _____

b Which is the lowest? _____

c What is the difference between the highest and lowest temperatures? _____

d Which 2 temperatures have a difference of exactly 25°C? _____

e Which 2 temperatures have the smallest difference? _____

f Which temperature might be the maximum temperature for a winter's day where you live? _____

g Which temperature might be the maximum temperature for a summer's day where you live? _____

3 Circle the colder item or place in each pair.

a

b

c

d

Do you know what the temperature of the human body is?

4 Choose an adjective to describe each temperature.

a

b

_____

_____

c

d

_____

_____

icy
cold
cool
warm
hot
boiling

Extended practice

1 Match the items with their likely temperatures.





2°C 42°C 12°C 100°C 65°C

2

a Use a thermometer to find the temperature of the 2 places listed in the table.

b Find the temperature of 2 other places at school.

c Rank the 4 places from 1 (hottest) to 4 (coldest).

Place	Temperature	Ranking
Classroom		
Playground		

d What is the difference in temperature between the coldest and the hottest place you measured? _____

e Imagine the forecast for today is 25°C. By how much is your classroom hotter or colder than the forecast? _____

f By how much is the playground hotter or colder than the forecast? _____

To change minutes to seconds, multiply by 60.

5 minutes = 5 × 60
or 300 seconds

To change hours to minutes, multiply by 60.

10 hours = 10 × 60 or
600 minutes

Guided practice

1 How many:

a seconds in 1 minute? ☐

b minutes in 1 hour? ☐

c hours in 1 day? ☐

d days in 1 week? ☐

e days in 1 year? ☐

f weeks in 1 year? ☐

2 Fill in the gaps.

a 2 minutes = ☐ seconds

b 6 minutes = ☐ seconds

c 3 hours = ☐ minutes

d 5 hours = ☐ minutes

e $1\frac{1}{2}$ minutes = ☐ seconds

f $2\frac{1}{2}$ hours = ☐ minutes

g 48 hours = ☐ days

h 3 days = ☐ hours

i 49 days = ☐ weeks

j 5 weeks = ☐ days

Independent practice

1 Below are the race times for 6 students from a class in Year 4.

a Complete the times in the table.

b Rank the students from fastest (1) to slowest (6).

Name	Time in seconds	Time in minutes and seconds	Rank
Todd	75 seconds		
Harper		2 mins 20 seconds	
Jessica		1 min 40 seconds	
Mario	90 seconds		
Stirling	120 seconds		
Anthony		1 min 10 seconds	

2 Circle the longer time period in each pair.

a 3 weeks or 27 days

b 97 minutes or 2 hours

c 700 days or 2 years

d 660 minutes or $10\frac{1}{2}$ hours

e 3 days or 70 hours

f 10 years or 4000 days

g $3\frac{1}{2}$ hours or 200 mins

h 1 hour or 400 seconds

3 How many:

a days in 5 weeks? _____

b minutes in 5 hours? _____

c seconds in 5 minutes? _____

d months in 5 years? _____

e days in 2 years? _____

f hours in 2 days? _____

4 We use **am** for times before midday and **pm** for times after midday.

Write am or pm for each description.

a School starts at 9 _____.

b School ends at 3:15 _____.

c Lunch is at 1 _____.

d The mail arrived at 11 _____.

e I went to bed at 9:30 _____.

f An owl woke me up at 2 _____.

5 Rewrite the times in question 4 from earliest to latest in the day.

Earliest **Latest**

_____ _____ _____ _____ _____ _____

6 Mark the times on the clocks, and then write as am or pm time.

a 1 minute to 7 in the morning

:	

b 26 past 8 in the evening

:	

c 10 minutes past midnight

:	

d 47 minutes past midday

:	

Extended practice

1 Use the cinema timetable to answer the questions.

Movie	Morning session	Afternoon session	Evening session
Marshmallow Attack 90 mins	10:00 am	1:35 pm	8:15 pm
My Mother the Plumber 83 mins	11:15 am	2:00 pm	9:00 pm
Cop Capers 92 mins	9:45 am	12:30 pm	7:20 pm
Cakes on a Train 76 mins	10:30 am	1:45 pm	6:40 pm

a What time does the morning session of *Marshmallow Attack* finish? _____

b How much longer is *Cop Capers* than *Cakes on a Train*? _____

c How much later is the evening session of *Cop Capers* than the morning session? _____

d Which movie will finish at 3:23 pm? _____

e What time does the afternoon session of *Cakes on a Train* end?

_____

f Which movie is longer than $1\frac{1}{2}$ hours? _____

g Will the afternoon session of *Marshmallow Attack* or *Cakes on a Train* finish earlier? _____

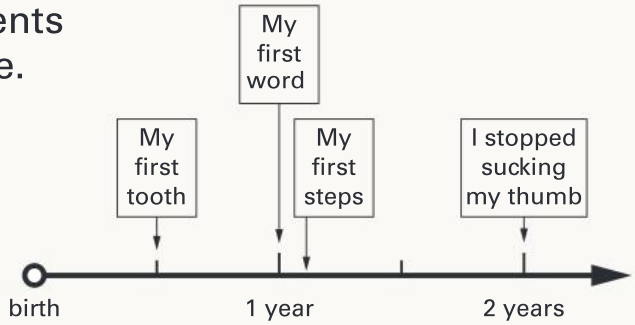
h On the clocks below, show the start and finish times for the evening session of *Cop Capers*.

Start: 

Finish: 

A timeline shows the order in which events occurred over a particular period of time. It could be a timeline for an hour, a day or a thousand years.

This timeline shows the first two years of Audrey's life. It shows that Audrey said her first word when she was one year old.



Periods of time need to be spaced evenly on a timeline.

Guided practice

1 Look at the timeline above.

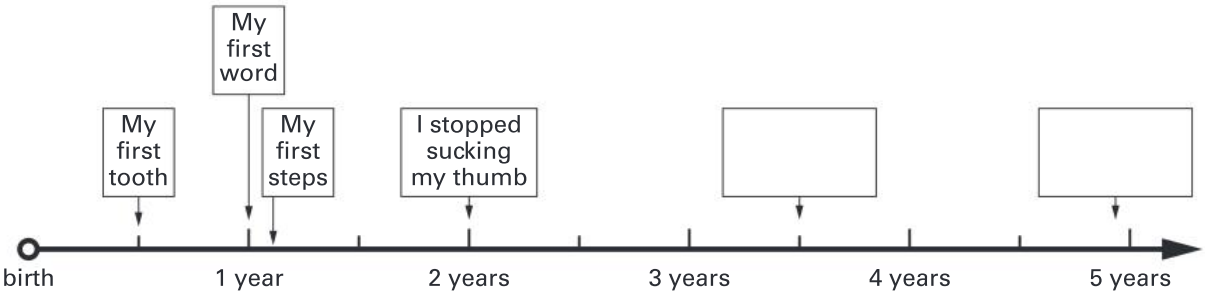
a Did Audrey start to walk before or after she said her first word?

_____

b How old was Audrey when she got her first tooth? _____

c For how long did Audrey suck her thumb? _____

2 This timeline shows the first five years of Audrey's life. Add the events to complete the timeline.



a Audrey broke her arm when she was three and a half.

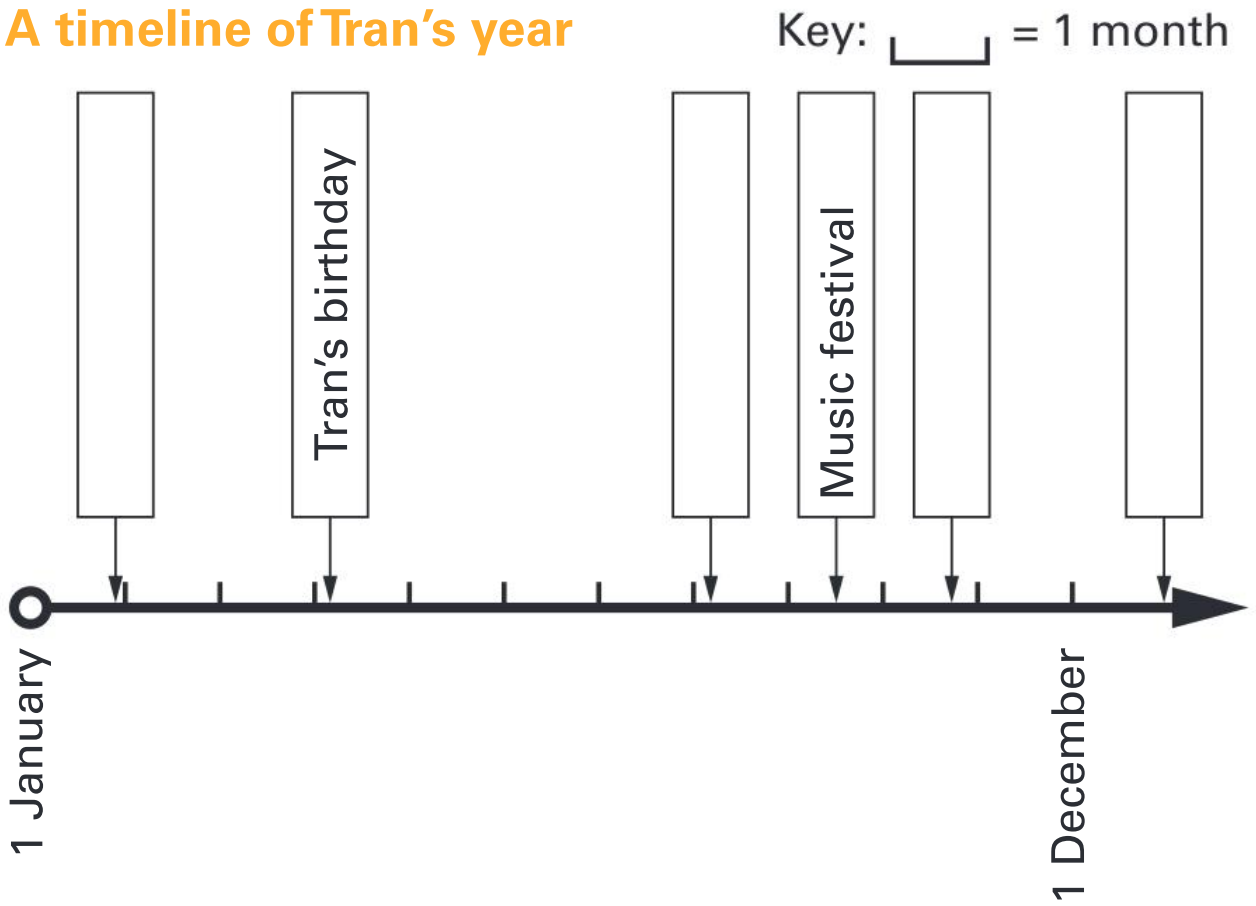
b Just before she turned five, Audrey started school.

c A year and a half after Audrey started to walk, she learned to swim.

Independent practice

1 This timeline spans one year. Use it to complete the activities.

A timeline of Tran's year



a Write the first of each month on the timeline.

b Tran's birthday is on 7 April. His friend Ben has a birthday exactly three months after. Add Ben's birthday to the timeline.

c His first school day of the year is towards the end of January. Add this to the timeline.

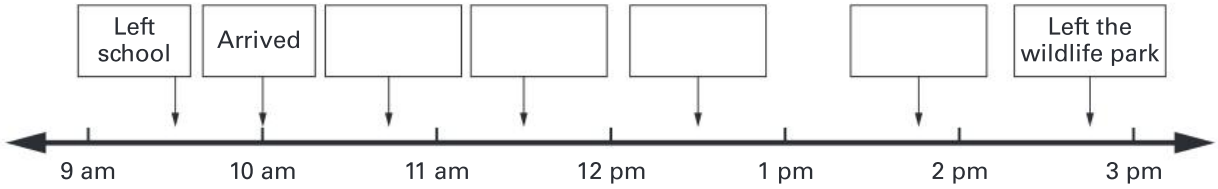
d Estimate the date of the music festival. _____

e The school play is two months before December 25. Add this to the timeline.

f On New Year's Eve, Tran and his family go to watch a fireworks show. Add this to the timeline.

g On 15 May, Tran received a special award at school. Add this to the timeline. You will need to draw a box and an arrow and write "Award".

2 Samira created this timeline after an excursion to a wildlife park.



a At what time did Samira and her class leave school? _____

b How long did it take to get to the wildlife park? _____

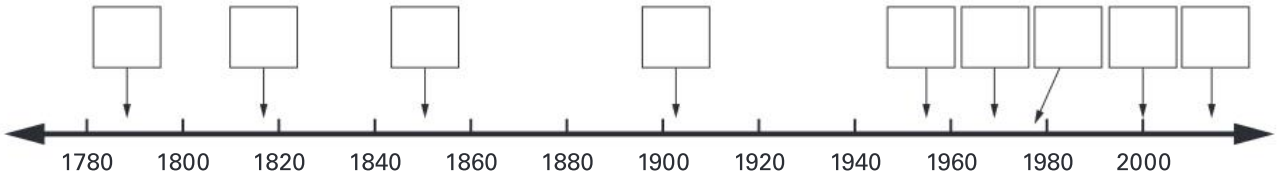
c They ate lunch at 12.30 pm. Add this to the timeline.

d At what time did they all leave the wildlife park? _____

e In the morning, Samira saw wombats followed by koalas. Add this to the timeline.

f The class went to the gift shop one hour before they left. Add this to the timeline.

3 This timeline of Australian history spans over 200 years.



Place these events on the timeline by writing the letter.

a 1851: Gold was discovered in Australia (A)

b 1956: The Olympic Games were held in Melbourne (B)

c 1977: The flag of the indigenous people of Australia was first flown (C)

d 1788: White settlement of Australia occurred (D)

e 1967: Indigenous people were allowed to become Australian citizens (E)

f 2000: The Olympic Games were held in Sydney (F)

g 1901: Australia became a nation (Federation)(G)

h 2008: The Australian Government said sorry to the indigenous people (H)

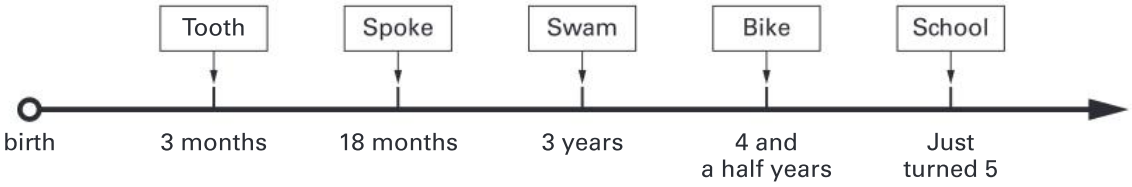
i 1817: Governor Macquarie recommended changing the name from New Holland to Australia (I)

Extended practice

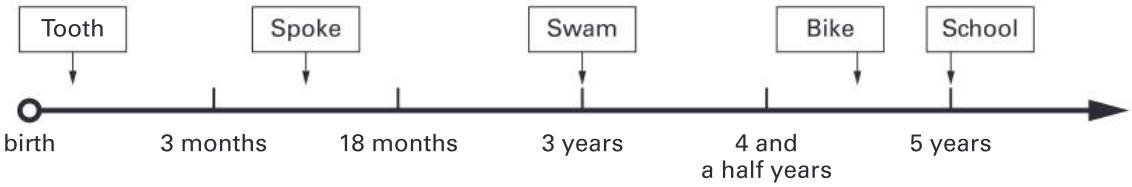
William got his first tooth when he was 3 months old. He started to talk at 18 months old. He learned to swim on his third birthday and rode a two-wheeler bike when he was four and a half. He started school just after his fifth birthday.

The information is shown on two different timelines.

Timeline A



Timeline B Scale: 3 cm = 1 year



1 Look at the timelines and answer the following questions.

a What is the problem with the position of the events on Timeline A?

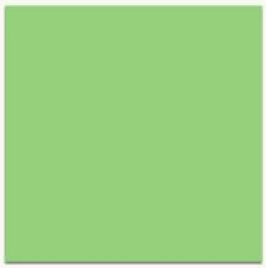
b In what way does Timeline B represent the information more accurately?

c Why is it important to have a scale for Timeline B?

2 Make a timeline of some important events in your life. Begin by deciding on a suitable scale. Use the line provided or create your timeline on a separate piece of paper.

A square:

- has 4 sides
- has 4 angles
- is regular.



This shape:

- has 4 sides
- has 4 angles
- is irregular.

Guided practice

A **regular** shape has sides of the same length and angles of the same size. An **irregular** shape does not.

1 Complete the table.

Shape	Sides	Angles	Picture
square	4	4	
octagon			
	5	5	
trapezium			
			
	6		

Independent practice

1

a What is the big shape?

_____

b What shapes is it split into? _____

c Draw a line to split the shape into a parallelogram and a triangle.

d Draw a line to split the shape into 2 triangles.

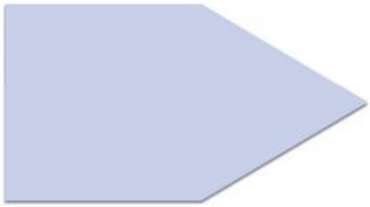
2

a Split the parallelogram into 3 shapes.

b What shapes is it split into? _____

c Draw a line to split the shape into 2 triangles.

3



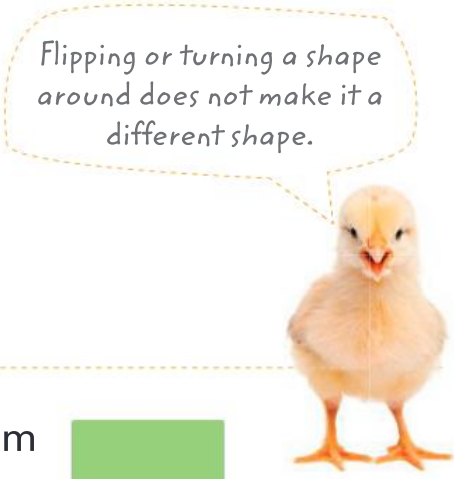
a Draw a line to show how this shape is made from 1 square and 1 triangle.

b Use a different colour to show how it can be made into 3 triangles.

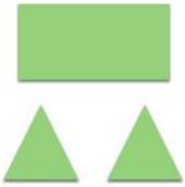
4 **a** Draw a new shape that can be made from 4 right-angled triangles.

b Name the shape.

_____



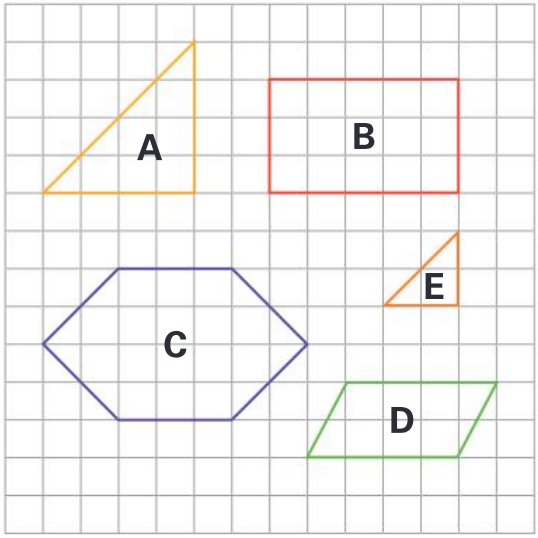
5 **a** Draw a new shape that can be made from 1 rectangle and 2 equilateral triangles.



b Name the shape.

_____

6 **a** Complete the table.



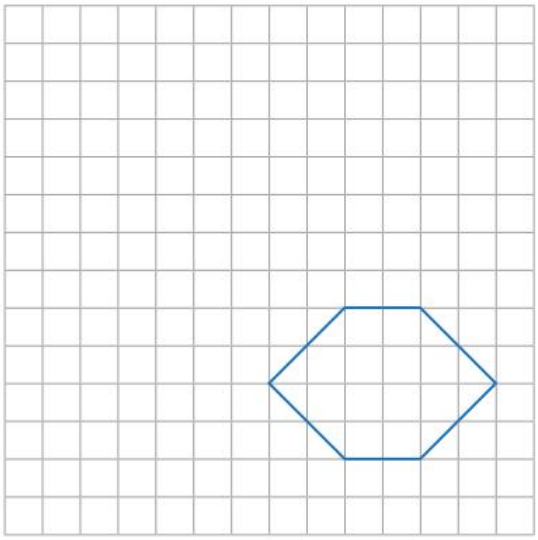
	Name	Angles	Area
A	Triangle		
B			15 cm^2
C			
D		4	
E			

b Which two shapes are similar?

_____

Extended practice

1



a Draw a regular shape with an area of 9 cm^2.

b Name your shape.

_____

c What is the area of the hexagon? _____

d Is it regular or irregular?

_____

e Divide the hexagon into 2 triangles and 1 rectangle.

f What is the area of each triangle? _____

---

2 2D shapes can be used to construct 3D shapes.

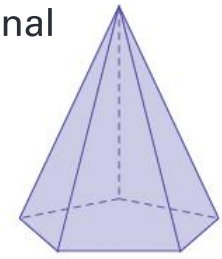
Which 2D shapes do you need to make:

a a rectangular prism?

_____

_____

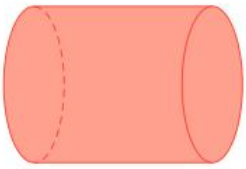
b a pentagonal pyramid?



_____

_____

c a cylinder?

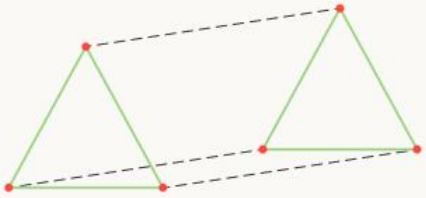


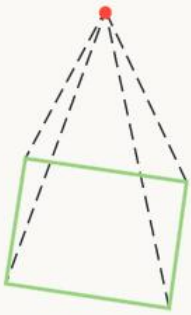
_____

_____

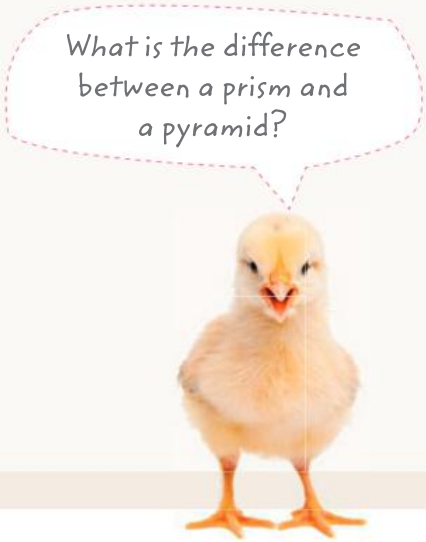
To draw prisms or pyramids:

1 Start with the **bases**.





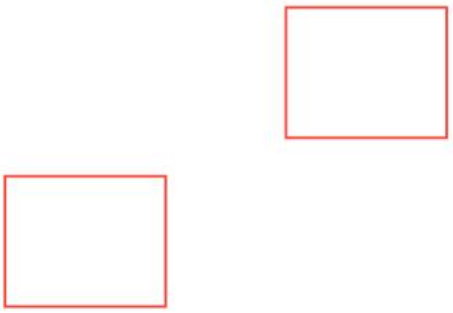
2 Then draw **lines** to join the **corners** of the prism bases, or the pyramid point with the base corners.



Guided practice

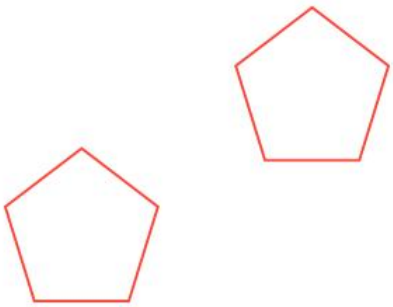
1 Join the corners to complete the prisms. Then name them.

a



_____

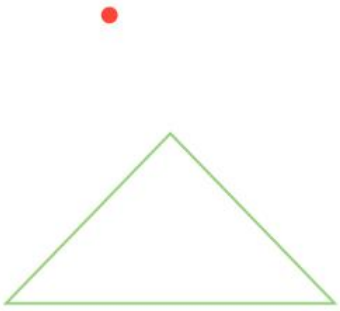
b



_____

2 Join the base corners to the point of the pyramids. Then name them.

a



_____

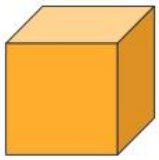
b

_____

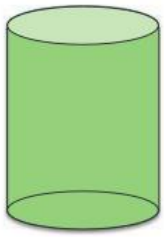
Independent practice

1 Try drawing these 3D shapes on your own.

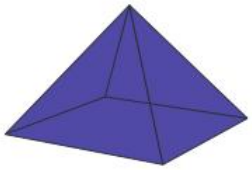
a



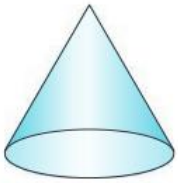
b



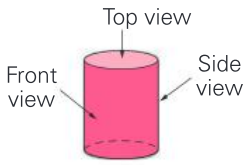
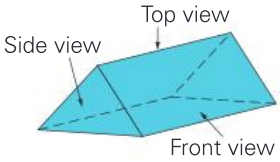
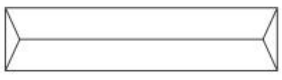
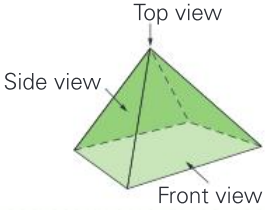
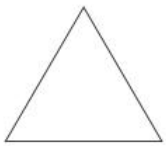
c



d



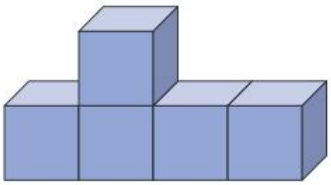
2 Complete the top, front and side views of the 3D shapes.

		Top view	Front view	Side view
a				
b				
c				

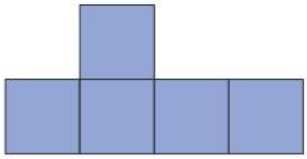
To see the front and side views, it helps to view the shape at eye level.

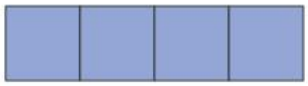
3 Label the top, front and side views of the 3D shapes.

a



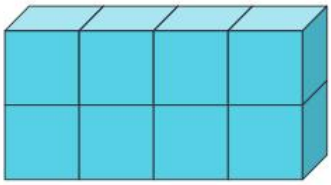
Shape 1



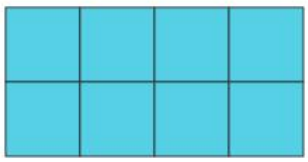


_____ view _____ view _____ view

b

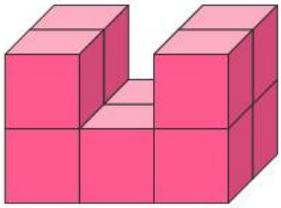


Shape 2

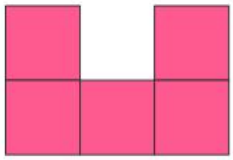


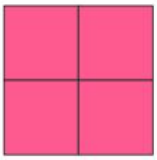
_____ view _____ view _____ view

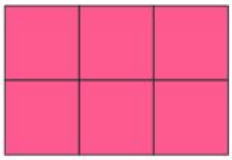
c



Shape 3



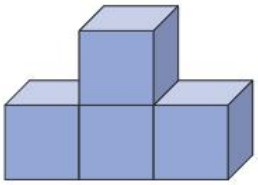




_____ view _____ view _____ view

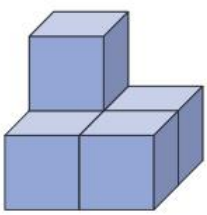
4 Draw top, front and side views.

a



Top view	Front view	Side view

b



Top view	Front view	Side view

Extended practice

1 Draw and name the 3D shapes with the properties described below.

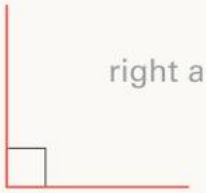
Description	Drawing	Name
2 rectangular bases 8 corners 12 edges		
1 triangular base 4 corners 6 edges		
2 hexagonal bases 12 corners 18 edges		

2 Make 2 different 3D shapes using 8 cubes.

a Draw each shape.

b Show top, front and side views.

Shape 1	Top view	Front view	Side view
Shape 2	Top view	Front view	Side view

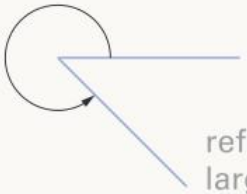


right angle

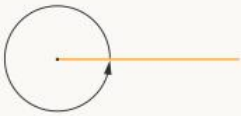
straight angle

acute angle – smaller than a right angle

obtuse angle – larger than a right angle, smaller than a straight angle



reflex angle – larger than a straight angle



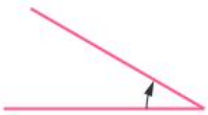
revolution

Can you explain what a right angle is?

Guided practice

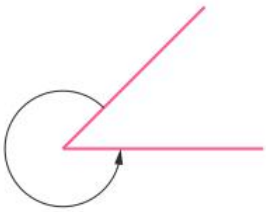
1 Circle the size of each angle and record its name.

a



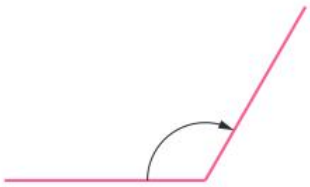
greater / smaller than a right angle

b



greater / smaller than a straight angle

c

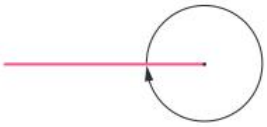


greater / smaller than a right angle

d

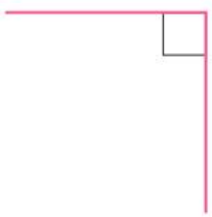
greater / smaller than a right angle

e



greater / smaller than a straight angle

f



greater / smaller than a straight angle

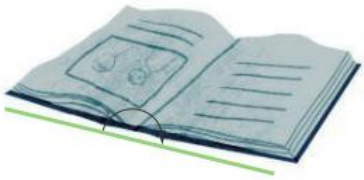
Independent practice

1 Match the angle names with the pictures.

acute angle	right angle	obtuse angle	straight angle	reflex angle







2 Use a known right angle (such as a the corner of a book) to find and draw:

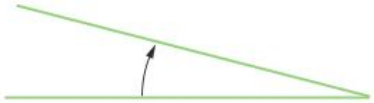
a 3 items with angles smaller than a right angle.

b 3 items with angles greater than a right angle.

3 Reorder the angles from smallest to greatest.

A B C D E F

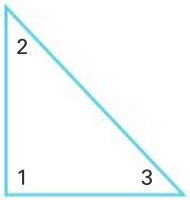
Smallest ☐ ☐ ☐ ☐ ☐ ☐ Greatest



I know the corner of this book is a right angle. So I can tell that this angle is smaller than a right angle.

4 Name the angle types.

a

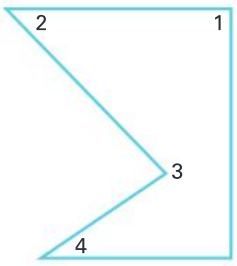


1 _____
2 _____
3 _____

b

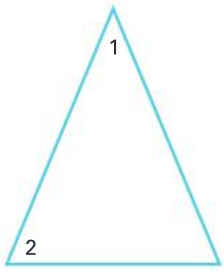
1 _____
2 _____

c



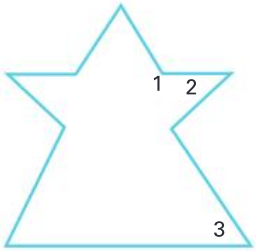
1 _____
2 _____
3 _____
4 _____

d



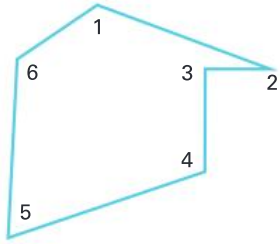
1 _____
2 _____

e



1 _____
2 _____
3 _____

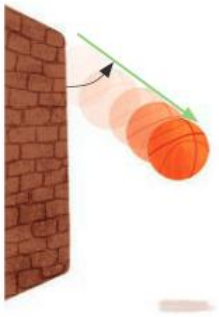
f



1 _____
2 _____
3 _____
4 _____
5 _____
6 _____

Extended practice

Sometimes, you can only see one arm of an angle and you have to imagine where the invisible arm is.



You can see the wall as one angle arm but the rebound angle is invisible.

1 Draw a line to show where the door handle could end up if it is turned to make:

a an acute angle.

b a right angle.

c an obtuse angle.

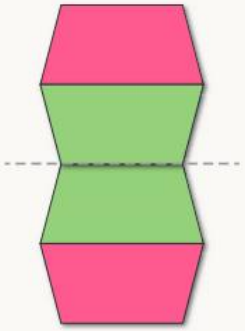
2 Find, draw and classify 2 invisible arm angles in your classroom.

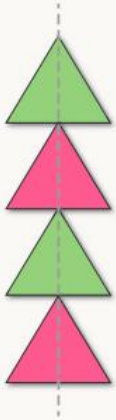
Type of angle: _____

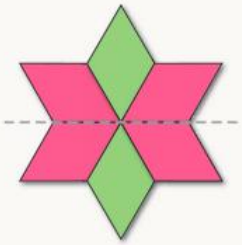
Type of angle: _____

You can make symmetrical patterns by:

reflecting translating or rotating.



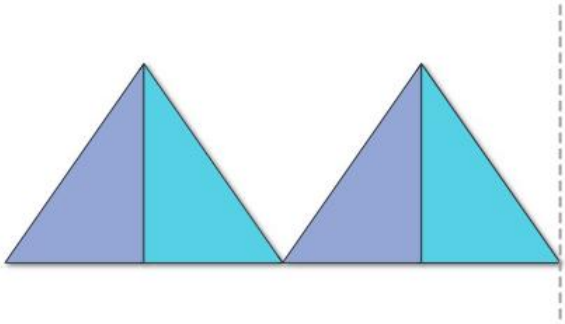




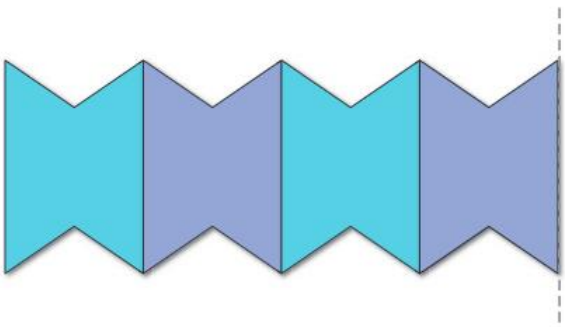
Guided practice

1 Finish the symmetrical patterns.

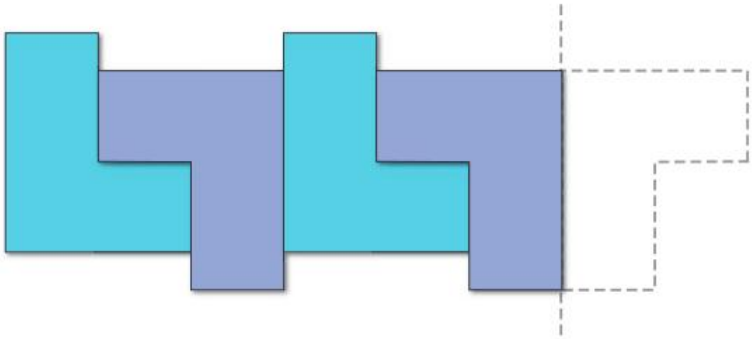
a



b



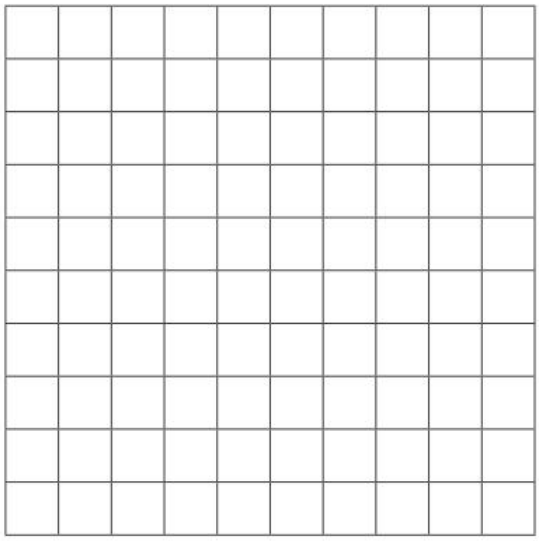
c



Independent practice

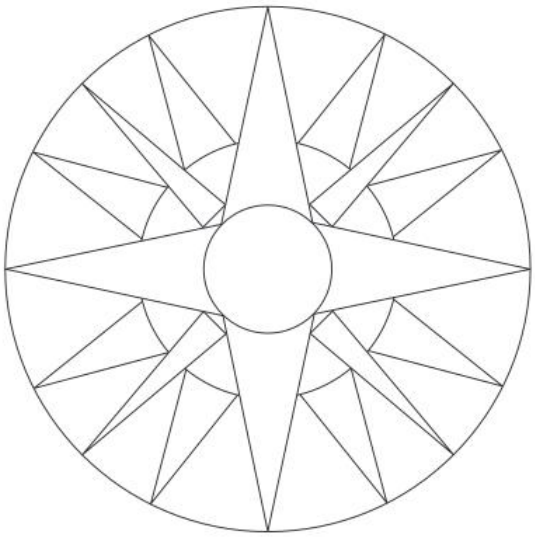
1 **a** Colour the squares to make a symmetrical pattern using 3 colours.

b Draw a line of symmetry on your pattern.



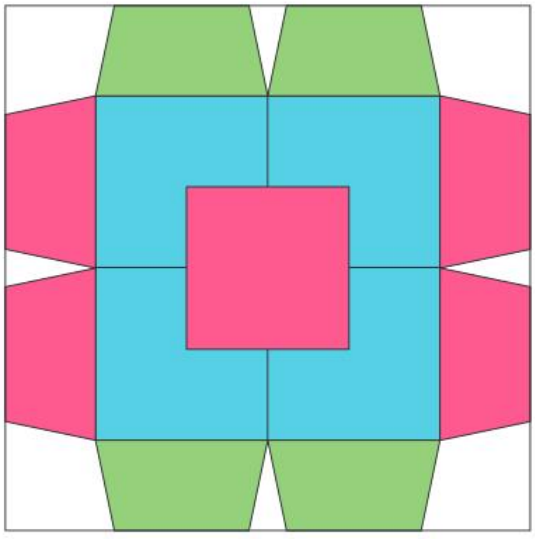
2 **a** Colour the shapes to make a pattern with 2 lines of symmetry.

b Draw in the lines of symmetry.



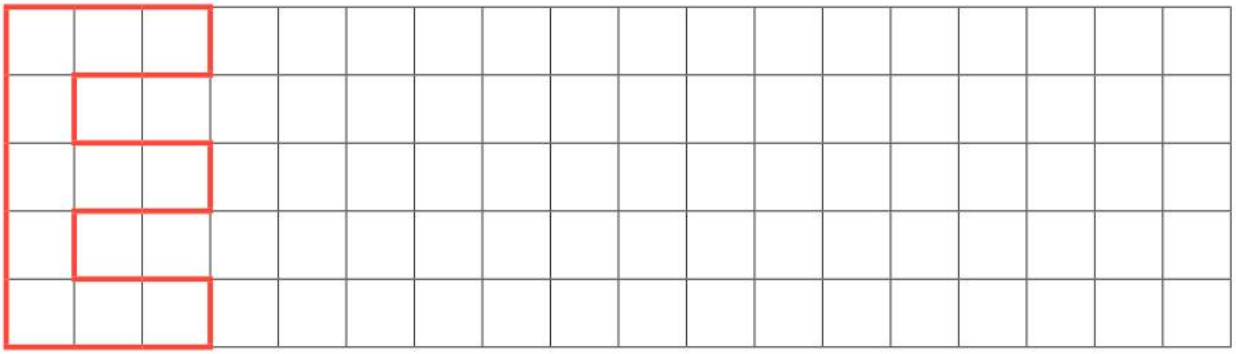
3 **a** Draw 4 lines of symmetry on this pattern.

b Circle the shape that shows reflection, translation and rotation.

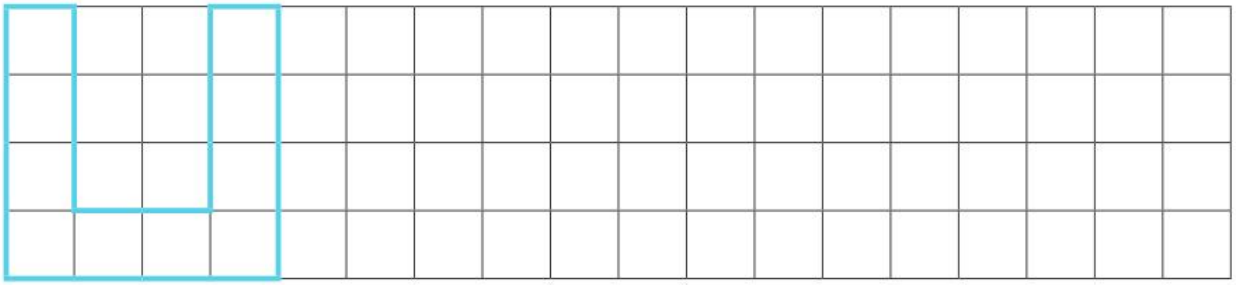


4 Make a pattern by rotating the shape:

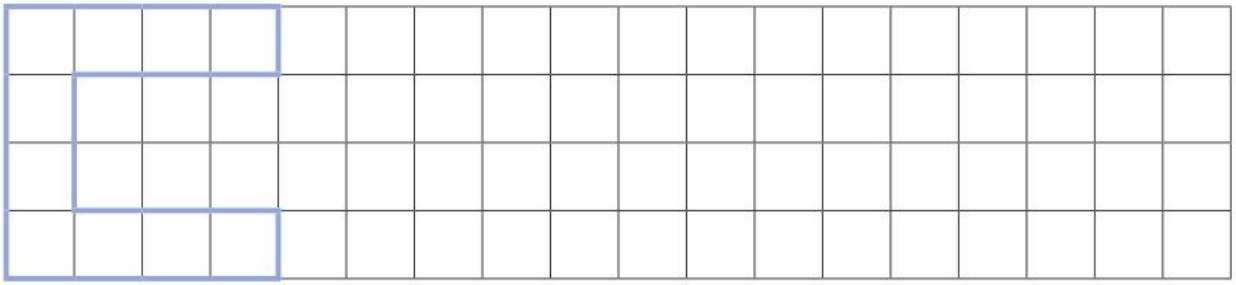
a a $\frac{1}{2}$ turn clockwise.



b a $\frac{1}{4}$ turn anticlockwise.

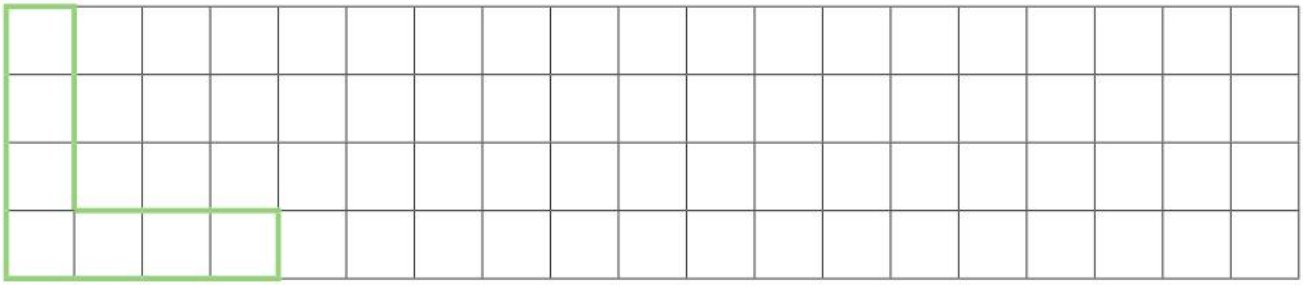


c a $\frac{1}{2}$ turn anticlockwise, then a $\frac{1}{4}$ turn clockwise.



d If you made a pattern by rotating a shape through a full turn, would it be the same as reflecting or translating the shape? _____

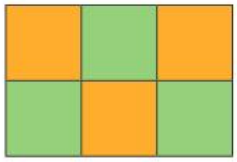
5 **a** Make your own rotating pattern.



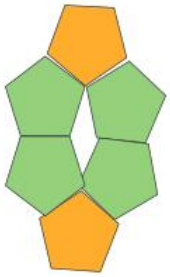
b Describe your pattern. _____

Extended practice

Shapes tessellate if they can be rotated, translated or reflected to fit together without any gaps.



Squares tessellate by themselves.



Regular pentagons do not tessellate by themselves.

1 Use diagrams to show which of these regular shapes tessellate by themselves.

a 

Tessellates? ☐

b 

Tessellates? ☐

c 

Tessellates? ☐

2 Make a tessellating pattern that has at least 1 line of symmetry.

Hillcrest Fairgrounds

The car parking area is about 40 metres long.
There is 1 ATM.
The horse pavilion is about 10 metres from the Grand Arena.

The scale tells you how big each cm on the map is in real life.

Guided practice

1 Use the map to find:

a the length of the main stage. _____

b the number of toilets at the Hillcrest Fairgrounds. _____

c where first aid is located. _____

d the width of the fairgrounds. _____

2

a Draw and label a 10 m by 15 m picnic area below the animal nursery.

b How far is your picnic area from the car parking area? _____

c Add your own police symbol to the legend.

d Choose a place to draw your police symbol on the map.

e Describe where your police station is. _____

Independent practice

This is O'Brien's Farm.

1 Using a scale of 1 cm = 5 m, draw and label:

a a field that is 30 m long and 20 m wide.

b a barn that is 10 m long and 5 m wide.

c a farmhouse that is 15 m wide and 20 m long.

d an orchard that is 15 m long and 10 m wide.

2 Create symbols in the legend and add the following items to the map.

a 5 trees

b 2 water tanks

c a windmill

d 7 cows

3 **a** Draw a track the length of the farm.

b How long is your track in metres? _____

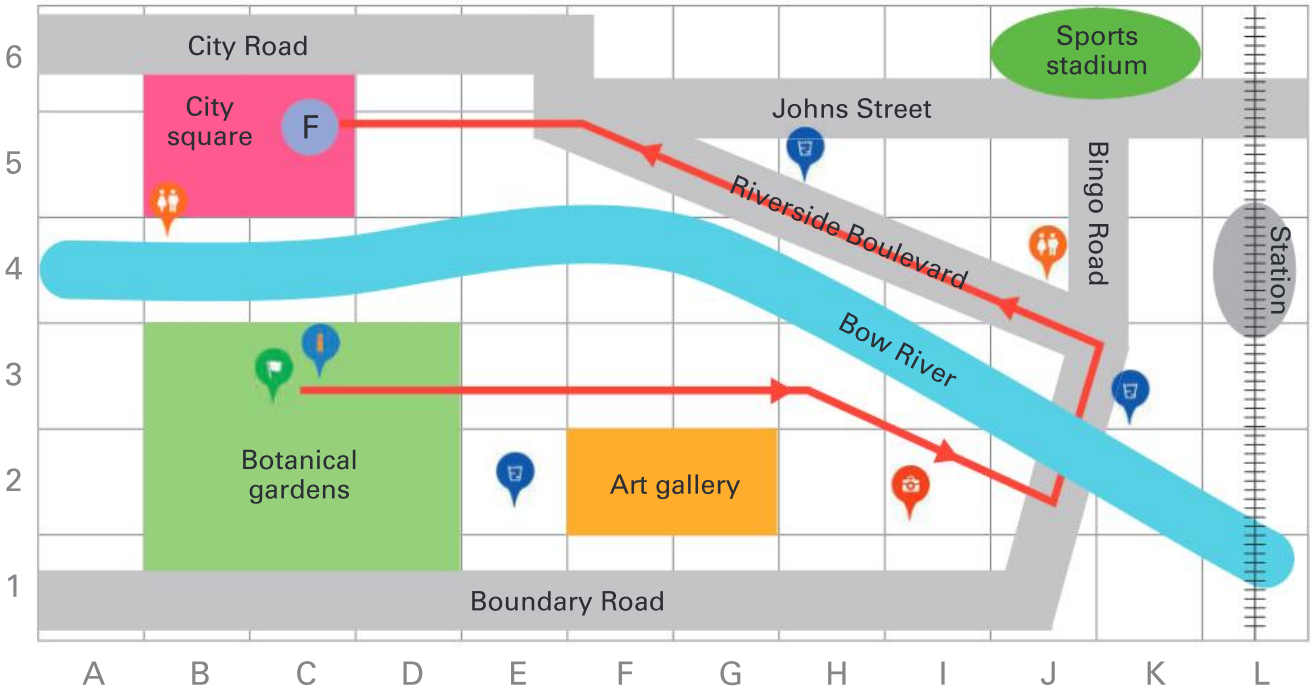
4 If the scale was 1 cm = 10 m, what would be the dimensions of:

a the field? _____ long and _____ wide

b the barn? _____ long and _____ wide

c the farmhouse? _____ long and _____ wide

City Fun Run course



Scale: 1 cm = 50 m

Legend:
Toilets
Fun run course
First aid
Start
Information
Water station

5 Use the map to answer the questions.

a About how long is the Fun Run course? _____

b Describe where the course goes. _____

_____

_____

c Write directions from the city square to the sports stadium.

_____

_____

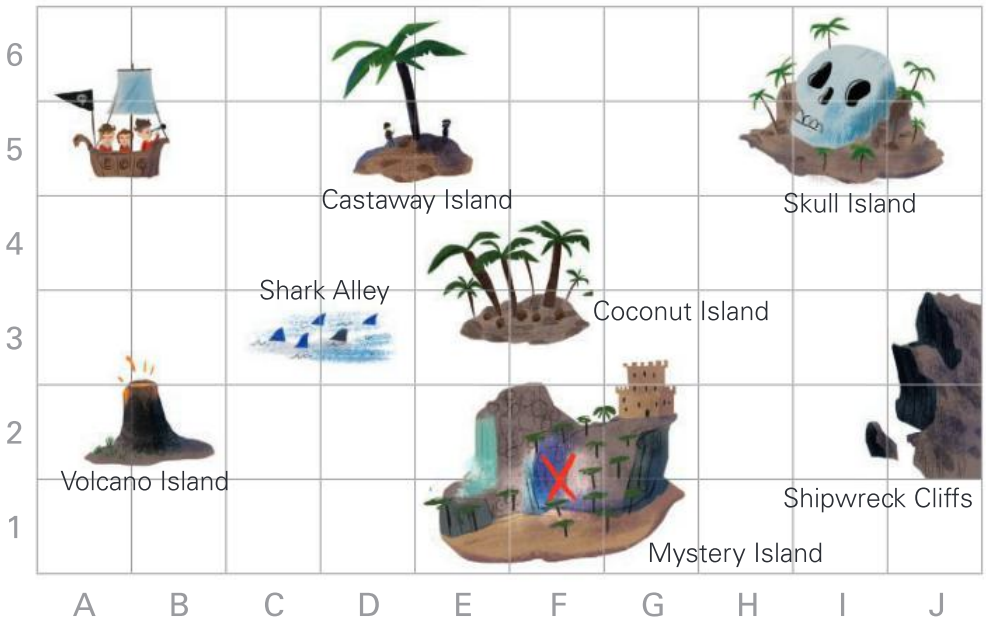
6 What is at:

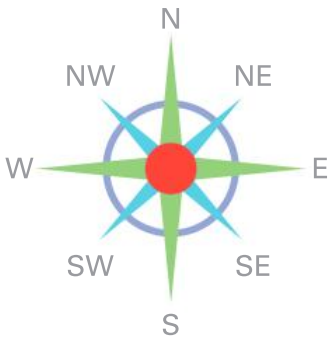
a E2? _____ **b** D4? _____ **c** C3? _____

7 What is the grid reference for:

a first aid? _____ **b** the station? _____ **c** the finish line? _____

Extended practice





1 What is:

a west of Coconut Island? _____

b southwest of Skull Island? _____

c northwest of Shipwreck Cliffs? _____

d northeast of Mystery Island? _____

2 **a** Draw the best way for the pirate ship to sail to the treasure.

b Describe the route using grid references.

_____

_____

c Describe the route using compass directions.

_____

_____

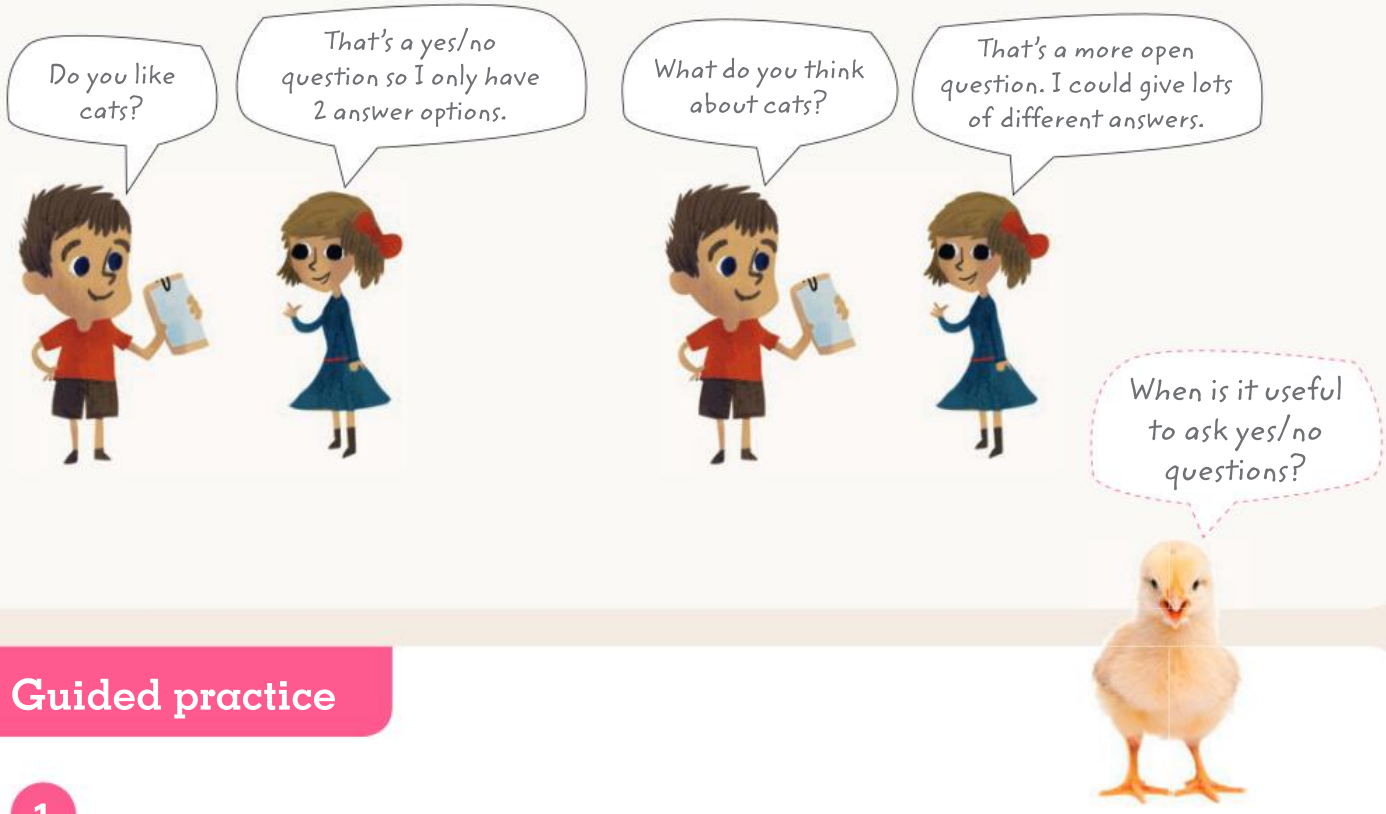
d Draw another way for the pirate ship to reach the treasure.

e Which route is longer? How can you tell?

_____

_____

Different survey questions give you different information.



Guided practice

1

a Write a survey question about sport that has a yes/no answer.

b Ask 10 people your question and record the answers with tally marks.

Yes	No

2 **a** Write a question about sport that doesn't give limited options.

b Ask 2 people your question and record their responses.

Independent practice

1 Tick the survey question that would be best to find out:

a how many people in your class like chocolate.

- ☐ When did you last eat chocolate?
- ☐ What chocolate do you like?
- ☐ What is your favourite dessert?
- ☐ Do you like chocolate?

b the most popular ice-cream flavour.

- ☐ Where do you buy ice-cream?
- ☐ How popular is ice-cream?
- ☐ What is your favourite ice-cream flavour?
- ☐ Do you like ice-cream?

2

a Write a survey question with the following possible responses.

1 = dislike a lot
2 = dislike a bit
3 = not sure
4 = like a bit
5 = like a lot

_____

_____

b What do you think will be the most common response from your class?

_____

c Ask 10 classmates your question and record their answers below.

Response	1	2	3	4	5
Number of people					

d What was the most common response?

_____

e Write a statement about how the results compared with what you expected.

_____

_____

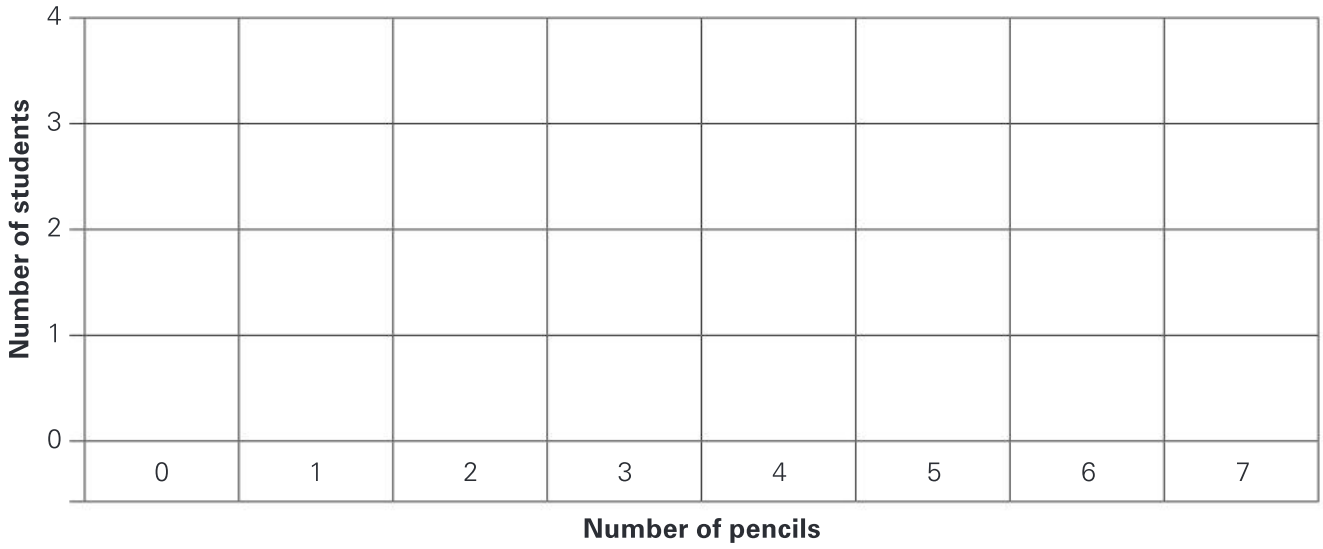
3 Nakeil checked the pencil cases of some of his friends and recorded how many pens they each had.

2	0	1	2	7	3	3	2	4	1	3	2

a Record the information in a table.

Number of pens	0	1	2	3	4	5	6	7
Tally								

b Make a bar graph with the data.



4 **a** Count the number of pens 6 classmates have and record this in a table.

b Make and label a bar graph of the results.

Extended practice

1 Write 3 survey questions about food.

1 _____

2 _____

3 _____

2 **a** Choose a question with limited options to ask 15 people.

b Record their responses.

What information will you need to record?

3 Make a pictograph or bar graph of the results.

Survey question: What do you think of peas?

Responses:

Table:

Dislike a lot	Dislike a little	Don't know	Like a little	Like a lot
8	24	1	10	12

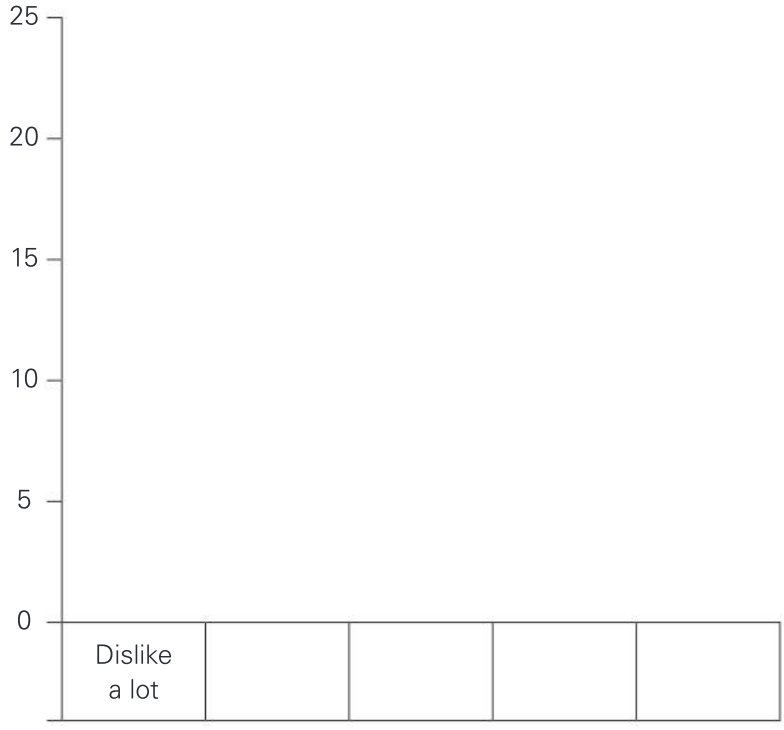
How many people does each face on the pictograph represent?

Pictograph:

Each face = 2

Guided practice

1 **a** Use the data above to complete the bar graph.



b Which response was the most popular?

_____

c Which was the least popular?

_____

d Do more people like or dislike peas overall?

_____

e How many more people dislike peas a little than like them a little?

_____

Independent practice

1 **a** Choose an appropriate way to display the data.

WHAT DO YOU THINK OF ACTION MOVIES?

Dislike a lot	Dislike a little	Not sure	Like a little	Like a lot
𝍸	𝍸 | | |	| | |	𝍸	𝍸 | | | |

b What type of display did you choose? _____

c Why? _____

2 Use your graph to answer these questions.

a What was the most popular response? _____

b How many people were surveyed? _____

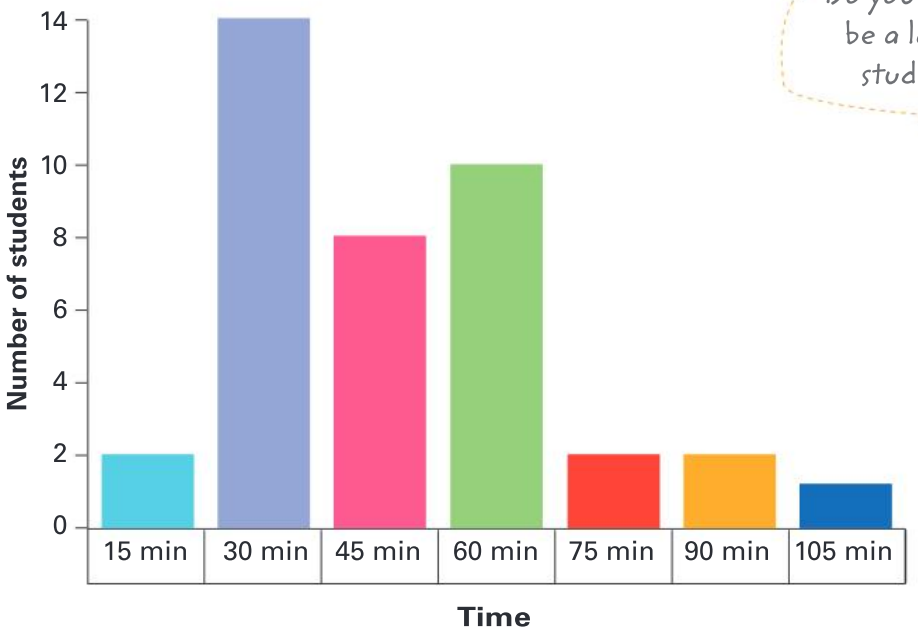
c How many people answered "Not sure"? _____

d Write two of your own statements about the data.

_____

_____

AVERAGE HOMEWORK TIME PER NIGHT IN YEAR 4



Do you think the results would be a lot different for Year 4 students at your school?

3 Write 3 questions that can be answered by the data.

1 _____

_____

2 _____

_____

3 _____

_____

4 Does the data tell you:

a how students feel about homework? _____

b how many students do more than 60 minutes of homework on average? _____

c who does the least homework? _____

d how many students responded to the question? _____

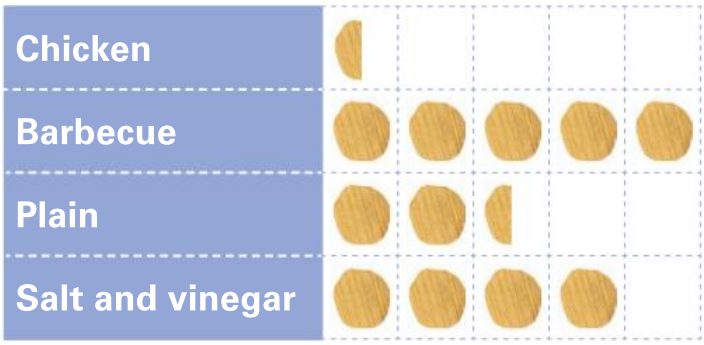
e the shortest average time spent on homework? _____

f the average age of the students? _____

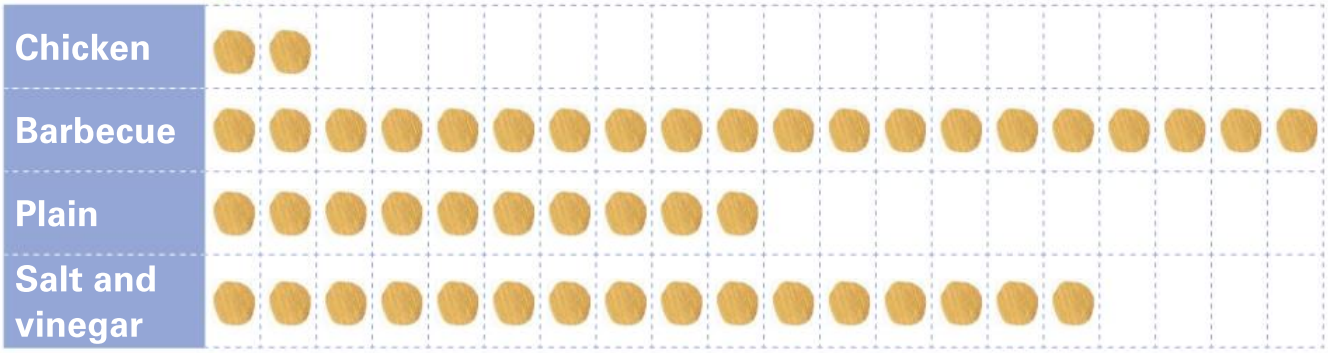
Extended practice

1 A survey was done about favourite crisp flavours. Two graphs were made from the same responses.

GRAPH 1 = 4



GRAPH 2 = 1



a Why do the results look different? _____

_____

b Looking at the first graph, would you say barbecue is:

☐ a lot more popular? ☐ a bit more popular? ☐ not popular?

c Looking at the second graph, would you say barbecue is:

☐ a lot more popular? ☐ a bit more popular? ☐ not popular?

d Which graph do you think the makers of barbecue crisps would prefer people to see? _____

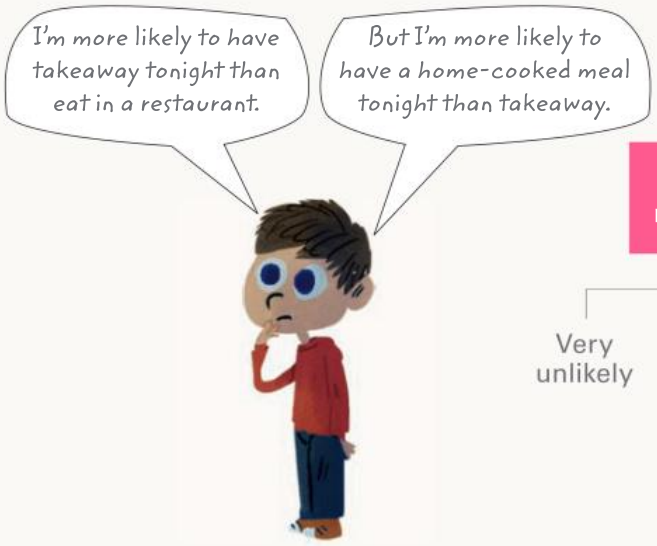
e Why?

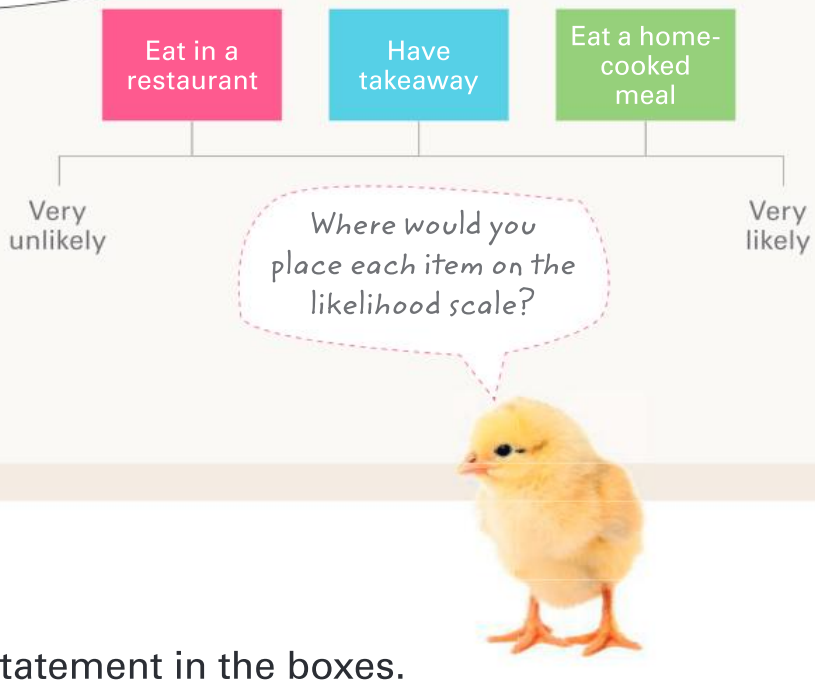
_____

_____

f How many people were surveyed in total? _____

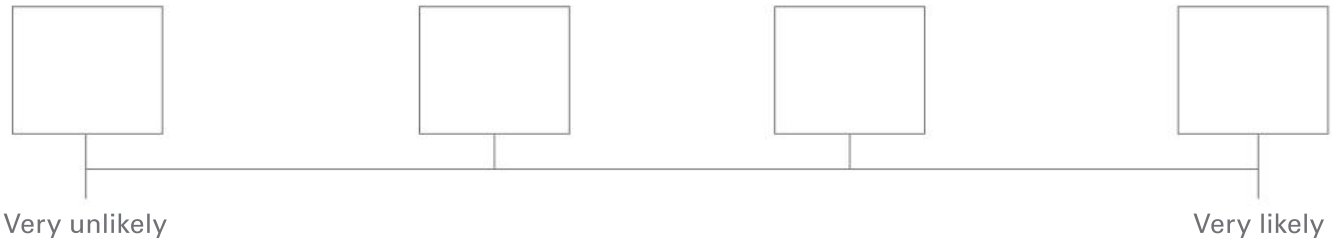
UNIT 10: TOPIC 1
Chance events





Guided practice

1 Write a letter for each statement in the boxes.



A I will write in my mathematics book today.

B I will be away from school today.

C We will have a fire drill today.

D I will spend time with my friends today.

2 Order the statements on the scale.

A I will have homework today.

B I will go shopping after school.

C I will have pasta for dinner.

D I will see the principal today.

Independent practice

1 Order the likelihood terms on the scale from very unlikely to most likely.

likely	equally likely	possible	impossible
most likely	very unlikely	unlikely	probable

2 Choose a word from question 1 to describe the likelihood of:

a you walking home from school today. _____

b you going on a plane tonight. _____

c you watching TV today. _____

d you drinking water today. _____

e your class going on an excursion this term. _____

f you having a sandwich for lunch. _____

g having school assembly today. _____

3 Write something that:

a is unlikely to happen to you today.

_____

b will probably happen to you today.

_____

4 Are you more likely, less likely or equally likely to:

a select a queen rather than a king from a full deck of cards? _____

b select a king after already selecting and removing a king from a full deck of cards? _____

c toss a coin and land on heads rather than tails? _____

d toss a coin a second time and land on heads rather than tails? _____

e draw a yellow marble from this bag without looking?

_____

5 Match the pairs of events that cannot happen at the same time.

A coin lands on heads.	Simon has a cold.	School is starting.	Simon is on a train.	Simon likes vegetables.

Simon is at home.	School is ending.	A coin lands on tails.	Simon dislikes beans and carrots.	Simon is well.

6 Finish the sentences with events that cannot happen at the same time.

a If I travel home by car, I can't _____.

b If I go to the park after school, I can't _____.

c If I do my homework at 4, I can't _____.

d If it is raining right now, it can't be _____.

e If I am playing cricket right now, I can't _____.

Extended practice

1 The students of Year 4 have put forward a proposal to build a minigolf course in the playground. Complete the sentences to show how you think different people respond to the idea.

a The Year 6 students will probably _____

because _____.

b The principal is likely to _____

because _____.

c The parents are unlikely to _____

because _____.

d It is possible the younger students will _____

because _____.

2 The statements below are about your Year 4 teacher.

a Order the statements from impossible to certain by placing the corresponding letter on the scale.

b Write 2 more of your own statements and add them to the scale.

Impossible — Certain

A Teaching Year 1 this year

B Male

C Likes movies

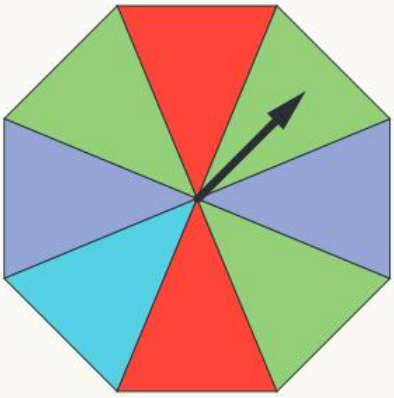
D Older than you

E Drives a car

F Likes mathematics

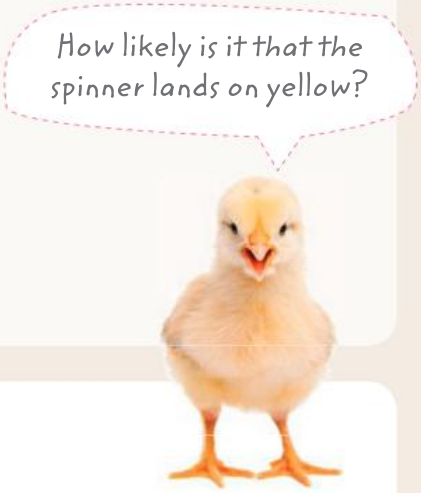
G _____

H _____



The spinner is:

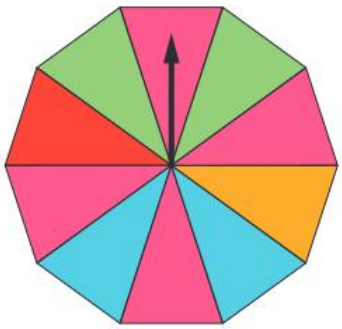
- most likely to land on green.
- equally likely to land on red as on purple.
- very unlikely to land on blue.



Guided practice

1 True or false?

The spinner is:



a most likely to land on red. _____

b equally likely to land on green as on blue. _____

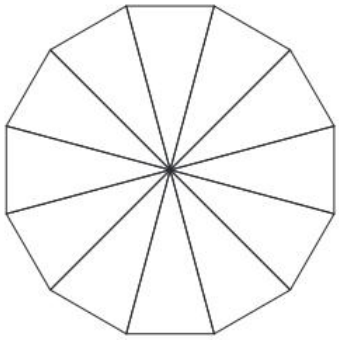
c unlikely to land on yellow. _____

d equally likely to land on red as on pink. _____

e unlikely to land on purple. _____

f very likely to land on green. _____

2 Colour this spinner so that it is:



a most likely to land on red.

b equally likely to land on green as on pink.

c impossible to land on orange.

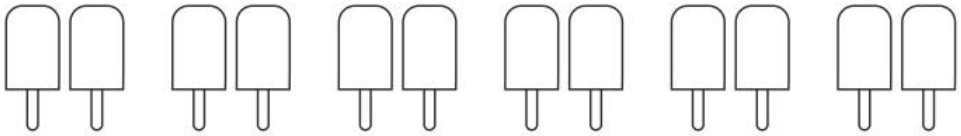
d unlikely to land on blue.

e more likely to land on green than on yellow.

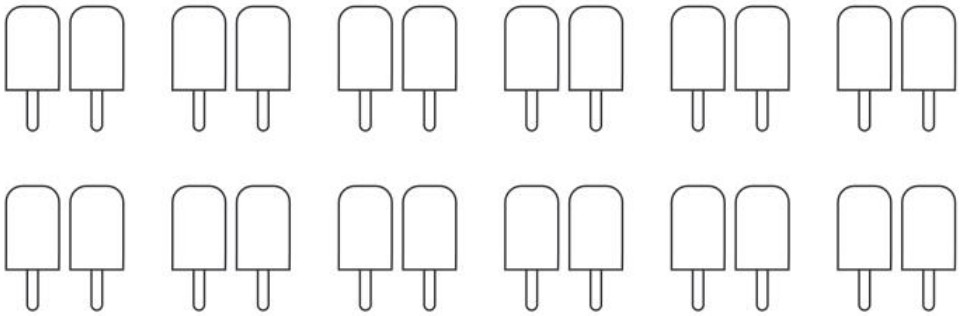
Independent practice

1

a There are 4 ice-creams in a box – red, green, yellow and blue. Colour the ice-creams to show the 6 possible outcomes if you draw out 2 and the order is not important.



b You decide that the first to come out is yours and the second is for your friend. Show the possible outcomes if the order matters.



c How would you describe the likelihood of drawing out:

i red and blue? _____

ii yellow and green? _____

iii pink and blue? _____

2 List the possible outcomes if you roll 2 dice and the order matters.

3 Put the following counters in a bag.

- 13 green
- 8 red
- 8 blue
- 1 yellow

a Which colour are you most likely to draw out? _____

b Which colour are you very unlikely to draw out? _____

c Which 2 colours are you equally likely to draw out? _____

4 Conduct 20 trials with your counters, drawing out 1 each time. Replace the counters in the bag after you draw them out.

a Record the results.

Green	
Red	
Blue	
Yellow	

b Which colour did you draw out most? _____

c Were red and blue drawn the same number of times? _____

Why do you think this is? _____

_____

d Which colour did you draw out least? _____

e Write 2 statements that show whether or not your results were as you expected.

_____

_____

_____

_____

Extended practice

1

a If you were to draw out 2 counters at a time from the bag of counters in the last activity, what are the possible outcomes if the order is not important?

_____ _____ _____

_____ _____ _____

_____ _____ _____

b List the possible outcomes across the top of the table. Conduct 20 trials drawing out 2 counters. Record the results, returning the counters to the bag after each trial.

Possible outcomes									
Results									

c Which outcome was most common? _____

d Which outcome was least common? _____

e Write 2 statements about your results.

_____

_____

_____

_____

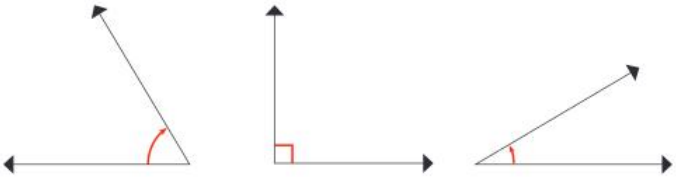
f If you conducted another 20 trials, do you think the results would be the same? Why or why not?

_____

_____

GLOSSARY

acute angle An angle that is smaller than a right angle or 90 degrees.



right angle

addition The joining or adding of two numbers together to find the total. Also known as *adding, plus* and *sum*. See also *vertical addition*.

★★★ + ★★ = ★★★★★

3 and 2 is 5

algorithm A process or formula used to solve a problem in mathematics.

Examples:

horizontal algorithms

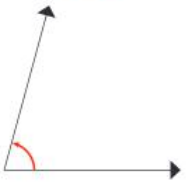
24 + 13 = 37

vertical algorithms

	T	O
	2	4
+	1	3
	3	7

analogue time Time shown on a clock or watch face with numbers and hands to indicate the hours and minutes.

angle The space between two lines or surfaces at the point where they meet, usually measured in degrees.

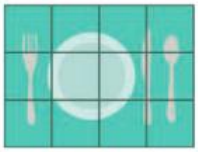


75-degree angle

anticlockwise Moving in the opposite direction to the hands of a clock.

area The size of an object's surface.

Example: It takes 12 tiles to cover this poster.



area model A visual way of solving multiplication problems by constructing a rectangle with the same dimensions as the numbers you are multiplying and breaking the problem down by place value.

$6 \times 10 = 60$

$6 \times 8 = 48$

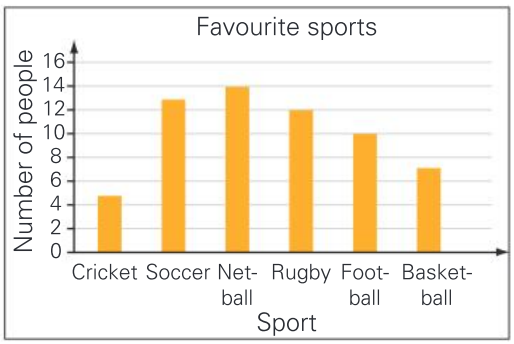
so

$6 \times 18 = 108$

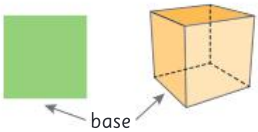
array An arrangement of items into even columns and rows to make them easier to count.

balance scale Equipment that balances items of equal mass; used to compare the mass of different items. Also called *pan balance* or *equal arm balance*.

bar graph A way of representing data using bars or columns to show the values of each variable.



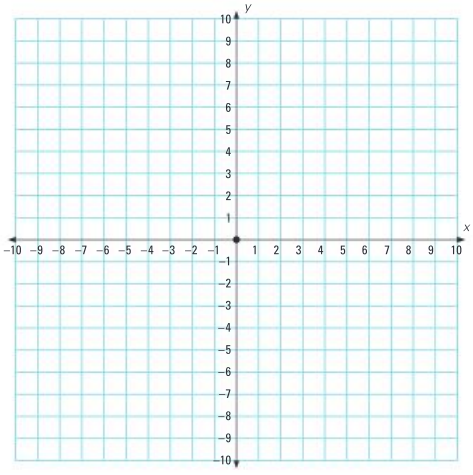
base The bottom edge of a 2D shape or the bottom face of a 3D shape.



capacity The amount that a container can hold.

Example: The jug has a capacity of 4 cups.

Cartesian plane A grid system with numbered horizontal and vertical axes that allow for exact locations to be described and found.



categorical variables The different groups that objects or data can be sorted into based on common features.

Example: Within the category of ice-cream flavours, variables include:

vanilla chocolate strawberry

centimetre or *cm* A unit for measuring the length of smaller items.

Example: Length is 80 cm.

circumference The distance around the outside of a circle.

clockwise Moving in the same direction as the hands of a clock.

common denominator Denominators that are the same. To find a common denominator, you need to identify a multiple that two or more denominators share.

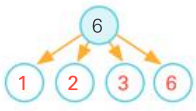
Example: $\frac{1}{2} + \frac{1}{4} + \frac{1}{8} = \frac{4}{8} + \frac{2}{8} + \frac{1}{8}$

$= \frac{7}{8}$

compensation strategy A way of solving a problem that involves rounding a number to make it easier to work with, and then paying back or "compensating" the same amount.

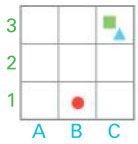
Example: 24 + 99 = 24 + 100 – 1 = 123

composite number A number that has more than two factors, that is, a number that is not a prime number.

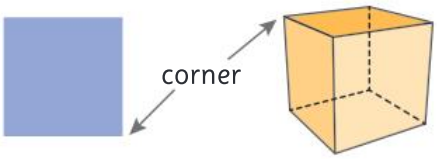


cone A 3D shape with a circular base that tapers to a point.

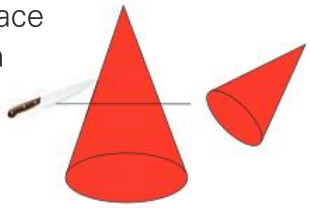
coordinates A combination of numbers or numbers and letters that show location on a grid map.



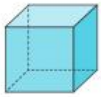
corner The point where two edges of a shape or object meet. Also known as a *vertex*.



cross-section The surface or shape that results from making a straight cut through a 3D shape.

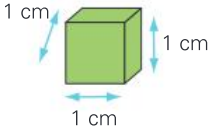


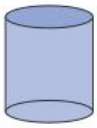
cube A rectangular prism where all six faces are squares of equal size.



cubic centimetre or *cm*³ A unit for measuring the volume of smaller objects.

Example: This cube is exactly 1 cm long, 1 cm wide and 1 cm deep.





cylinder A 3D shape with two parallel circular bases and one curved surface.

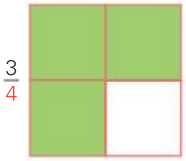
data Information gathered through methods such as questioning, surveys or observation.

decimal fraction A way of writing a number that separates any whole numbers from fractional parts expressed as tenths, hundredths, thousandths and so on.

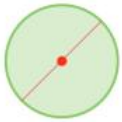
Example: 1.9 is the same as 1 whole and 9 parts out of 10 or $1\frac{9}{10}$.

degrees Celsius A unit used to measure the temperature against the Celsius scale where 0°C is the freezing point and 100°C is the boiling point.

denominator The bottom number in a fraction, which shows how many pieces the whole or group has been divided into.

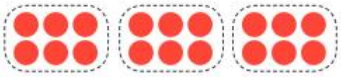


diameter A straight line from one side of a circle to the other, passing through the centre point.

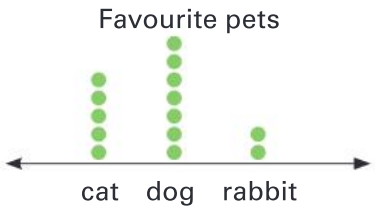


digital time Time shown on a clock or watch face with numbers only to indicate the hours and minutes.

division/dividing The process of sharing a number or group into equal parts, with or without remainders.



dot plot A way of representing pieces of data using dots along a line labelled with variables.



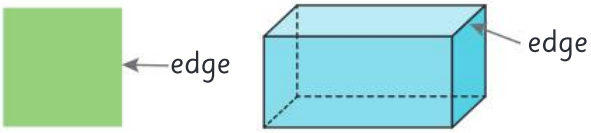
double/doubles Adding two identical numbers or multiplying a number by 2.

Example: $2 + 2 = 4$ $4 \times 2 = 8$

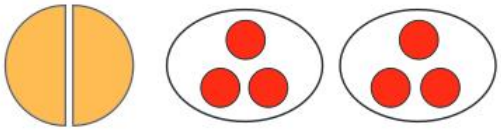
duration How long something lasts.

Example: Most movies have a duration of about 2 hours.

edge The side of a shape or the line where two faces of an object meet.



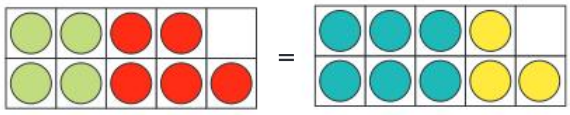
equal Having the same number or value.



Example: Equal size Equal numbers

equation A written mathematical problem where both sides are equal.

Example: $4 + 5 = 6 + 3$



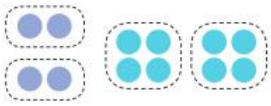
equilateral triangle A triangle with three sides and angles the same size.

equivalent fractions Different fractions that represent the same size in relation to a whole or group.

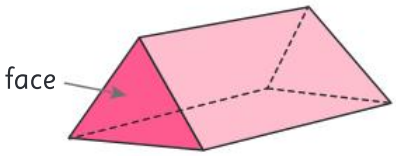
estimate A thinking guess.

even number A number that can be divided equally into 2.

Example: 4 and 8 are even numbers



face The flat surface of a 3D shape.

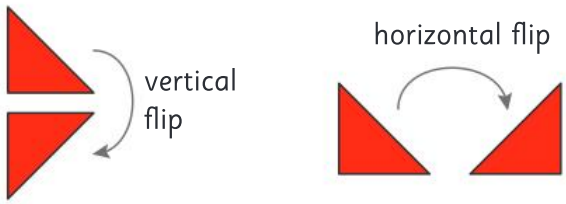


factor A whole number that will divide evenly into another number.

Example: The factors of 10 are 1 and 10
2 and 5

financial plan A plan that helps you to organise or manage your money.

flip To turn a shape over horizontally or vertically. Also known as *reflection*.



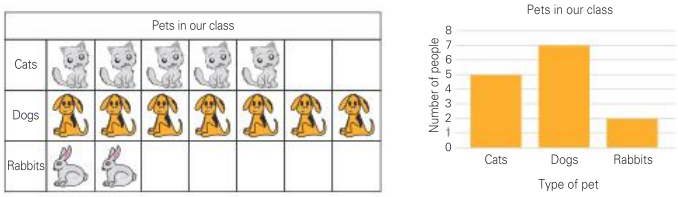
fraction An equal part of a whole or group.

Example: One out of two parts or $\frac{1}{2}$ is shaded.

grams or *g* A unit for measuring the mass of smaller items.

1000 g is 1 kg

graph A visual way to represent data or information.



GST or Goods and Services Tax A tax, such as 10%, that applies to most goods and services bought in many countries.

Example: Cost + GST (10%) = Amount you pay
$10 + $0.10 = $10.10

hexagon A 2D shape with six sides.

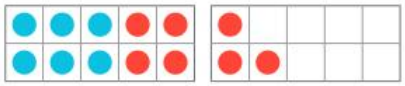
horizontal Parallel with the horizon or going straight across.

improper fraction A fraction where the numerator is greater than the denominator, such as $\frac{3}{2}$.

integer A whole number. Integers can be positive or negative.

inverse operations Operations that are the opposite or reverse of each other. Addition and subtraction are inverse operations.

Example: 6 + 7 = 13 can be reversed with
13 − 7 = 6



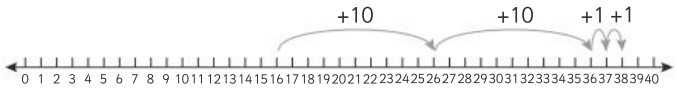
invoice A written list of goods and services provided, including their cost and any GST.

Priya's Pet Store			
Tax Invoice			
Item	Quantity	Unit price	Cost
Siamese cat	1	$500	$500.00
Cat food	20	$1.50	$30.00
Total price of goods		$530.00	
GST (10%)		$53.00	
Total		$583.00	

isosceles triangle A triangle with two sides and two angles of the same size.

jump strategy A way to solve number problems that uses place value to "jump" along a number line by hundreds, tens and ones.

Example: 16 + 22 = 38



kilograms or *kg* A unit for measuring the mass of larger items.

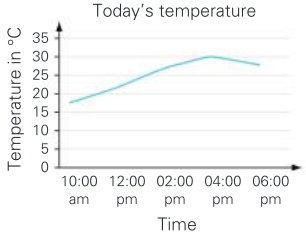
kilometres or *km* A unit for measuring long distances or lengths.

kite A four-sided shape where two pairs of adjacent sides are the same length.

legend A key that tells you what the symbols on a map mean.

length The longest dimension of a shape or object.

line graph A type of graph that joins plotted data with a line.



litres or *L* A unit for measuring the capacity of larger containers.

Example: The capacity of this bucket is 8 litres.

mass How heavy an object is.

Example: 4.5 kilograms 4.5 grams

metre or *m* A unit for measuring the length of larger objects.

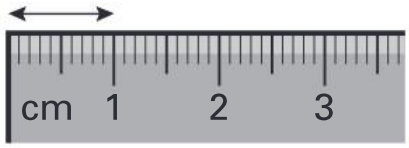
milligram or *mg* A unit for measuring the mass of lighter items or to use when accuracy of measurements is important.

700 mg

millilitre or *mL* A unit for measuring the capacity of smaller containers.

1000 mL is 1 litre

millimetre or *mm* A unit for measuring the length of very small items or to use when accuracy of measurements is important.



There are 10 mm in 1 cm.

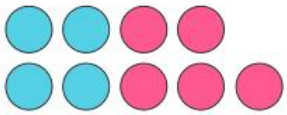
mixed number A number that contains both a whole number and a fraction.

Example: $2\frac{3}{4}$

multiple The result of multiplying a particular whole number by another whole number.

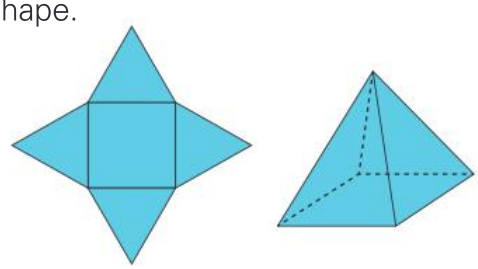
Example: 10, 15, 20 and 100 are all multiples of 5.

near doubles A way to add two nearly identical numbers by using known doubles facts.

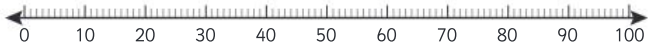


Example: 4 + 5 = 4 + 4 + 1 = 9

net A flat shape that when folded up makes a 3D shape.



number line A line on which numbers can be placed to show their order in our number system or to help with calculations.



number sentence A way to record calculations using numbers and mathematical symbols.

Example: 23 + 7 = 30

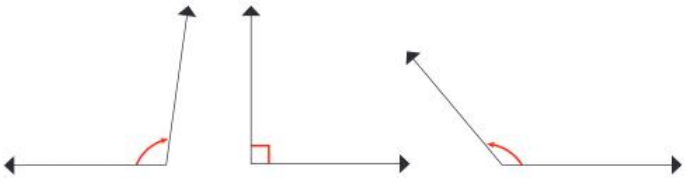
numeral A figure or symbol used to represent a number.

Examples: 1 – one 2 – two 3 – three

numerator The top number in a fraction, which shows how many pieces you are dealing with.

$\frac{3}{4}$

obtuse angle An angle that is larger than a right angle or 90 degrees, but smaller than 180 degrees.

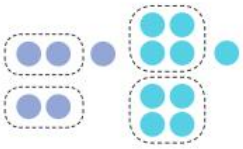


right angle

octagon A 2D shape with eight sides.

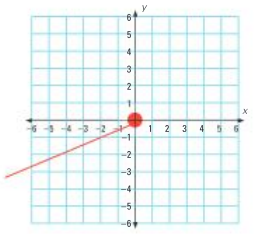
odd number A number that cannot be divided equally into 2.

Example: 5 and 9 are odd numbers.



operation A mathematical process. The four basic operations are addition, subtraction, multiplication and division.

origin The point on a Cartesian plane where the *x*-axis and *y*-axis intersect.



outcome The result of a chance experiment.

Example: The possible outcomes if you roll a dice are 1, 2, 3, 4, 5 or 6.

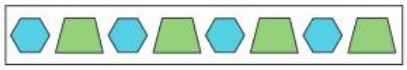
parallel lines Straight lines that are the same distance apart and so will never cross.

parallelogram A four-sided shape where each pair of opposite sides is parallel.

pattern A repeating design or sequence of numbers.

Example:

Shape pattern

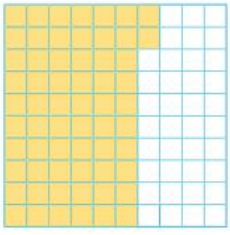


Number pattern 2, 4, 6, 8, 10, 12

pentagon A 2D shape with five sides.

per cent or % A fraction out of 100.

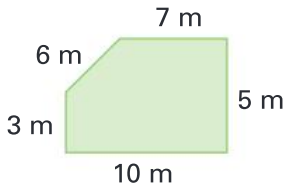
Example: $\frac{62}{100}$ or 62 out of 100



is also 62%.

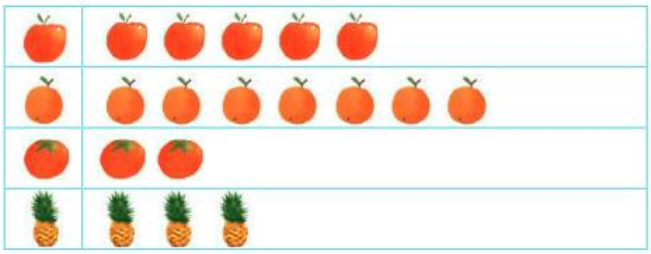
perimeter The distance around the outside of a shape or area.

Example: Perimeter = 7 m + 5 m + 10 m + 3 m + 6 m = 31 m



pictograph A way of representing data using pictures so that it is easy to understand.

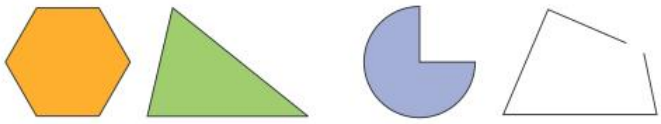
Example: Favourite juices in our class



place value The value of a digit depending on its place in a number.

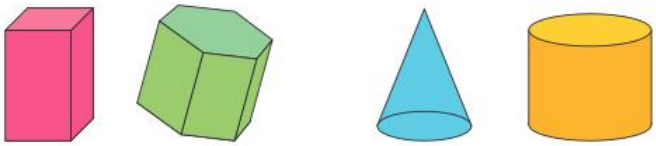
M	H Th	T Th	Th	H	T	O
			2	7	4	8
		2	7	4	8	6
	2	7	4	8	6	3
2	7	4	8	6	3	1

polygon A closed 2D shape with three or more straight sides.



polygons not polygons

polyhedron (plural polyhedra) A 3D shape with flat faces.



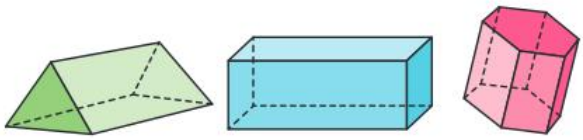
polyhedra not polyhedra

power of The number of times a particular number is multiplied by itself.

Example: 4^3 is 4 to the power of 3 or $4 \times 4 \times 4$.

prime number A number that has just two factors – 1 and itself. The first four prime numbers are 2, 3, 5 and 7.

prism A 3D shape with parallel bases of the same shape and rectangular side faces.

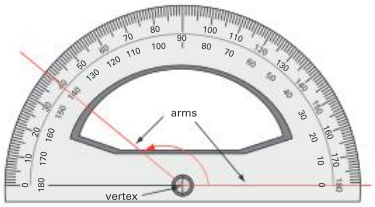


triangular prism | rectangular prism | hexagonal prism

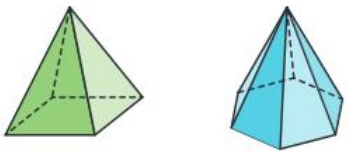
probability The chance or likelihood of a particular event or outcome occurring.

Example: There is a 1 in 8 chance this spinner will land on red.

protractor An instrument used to measure the size of angles in degrees.

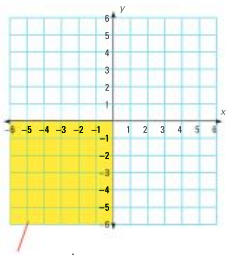


pyramid A 3D shape with a 2D shape as a base and triangular faces meeting at a point.



square pyramid | hexagonal pyramid

quadrant A quarter of a circle or one of the four quarters on a Cartesian plane.



quadrant

quadrilateral Any 2D shape with four sides.

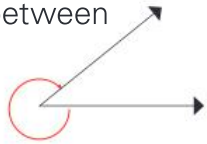
radius The distance from the centre of a circle to its circumference or edge.

reflect To turn a shape over horizontally or vertically. Also known as *flipping*.

vertical reflection

horizontal reflection

reflex angle An angle that is between 180 and 360 degrees in size.

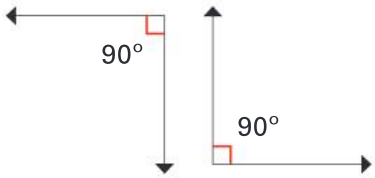


remainder An amount left over after dividing one number by another.

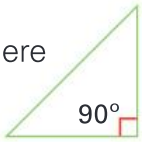
Example: 11 ÷ 5 = 2 r1

rhombus A 2D shape with four sides, all of the same length and opposite sides parallel.

right angle An angle of exactly 90 degrees.

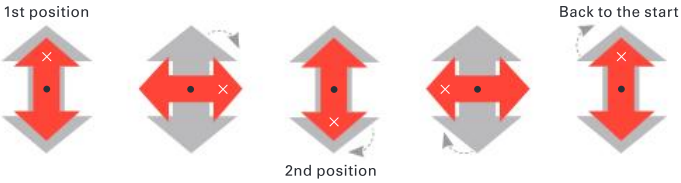


right-angled triangle A triangle where one angle is exactly 90 degrees.



rotate Turn around a point.

rotational symmetry A shape has rotational symmetry if it fits into its own outline at least once while being turned around a fixed centre point.



round/rounding To change a number to another number that is close to it to make it easier to work with.

229 can be

rounded up to the nearest 10 ↑ 230

OR

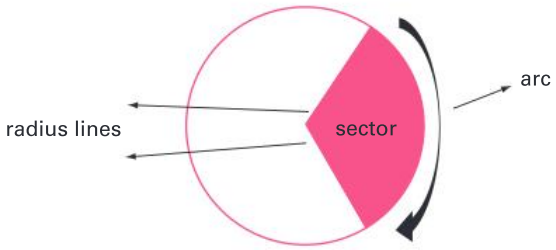
rounded down to the nearest 100 ↓ 200

scale A way to represent large areas on maps by using ratios of smaller to larger measurements.

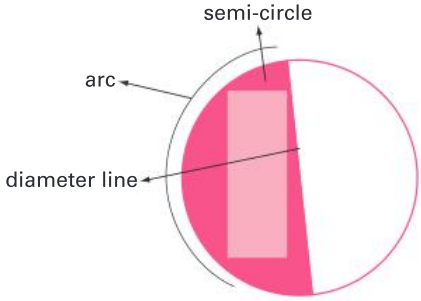
Example: 1 cm = 5 m

scalene triangle A triangle where no sides are the same length and no angles are equal.

sector A section of a circle bounded by two radius lines and an arc.



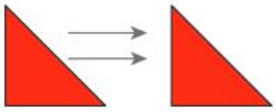
semi-circle Half a circle, bounded by an arc and a diameter line.



skip counting Counting forwards or backwards by the same number each time.

Examples:
Skip counting by fives: 5, 10, 15, 20, 25, 30
Skip counting by twos: 1, 3, 5, 7, 9, 11, 13

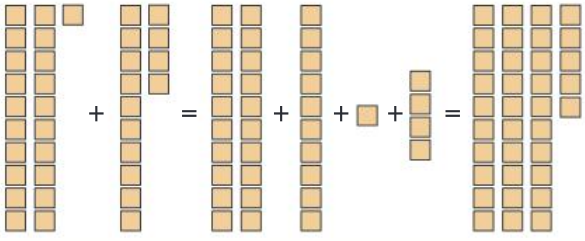
slide To move a shape to a new position without flipping or turning it. Also known as *translate*.



sphere A 3D shape that is perfectly round.

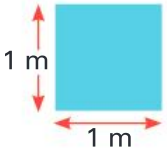
split strategy A way to solve number problems that involves splitting numbers up using place value to make them easier to work with.

Example: 21 + 14 =
20 + 10 + 1 + 4 = 35



square centimetre or *cm*² A unit for measuring the area of smaller objects. It is exactly 1 cm long and 1 cm wide.

square metre or *m*² A unit for measuring the area of larger spaces. It is exactly 1 m long and 1 m wide.



square number The result of a number being multiplied by itself. The product can be represented as a square array.

Example: 3 × 3 or $3^2 = 9$

straight angle An angle that is exactly 180 degrees in size.

strategy A way to solve a problem. In mathematics, you can often use more than one strategy to get the right answer.

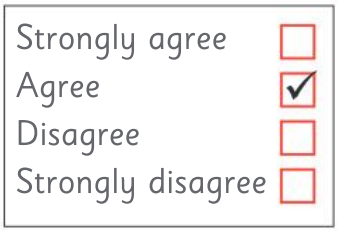
Example: 32 + 27 = 59
Jump strategy

Split strategy
30 + 2 + 20 + 7 = 30 + 20 + 2 + 7 = 59

subtraction The taking away of one number from another number. Also known as *subtracting, take away, difference between* and *minus*. See also *vertical subtraction*.

Example: 5 take away 2 is 3

survey A way of collecting data or information by asking questions.



symmetry A shape or pattern has symmetry when one side is a mirror image of the other.

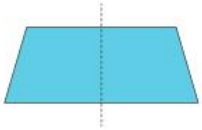


table A way to organise information that uses columns and rows.

Flavour	Number of people
Chocolate	12
Vanilla	7
Strawberry	8

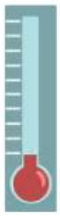
tally marks A way of keeping count that uses single lines with every fifth line crossed to make a group.

term A number in a series or pattern.

Example: The sixth term in this pattern is 18.

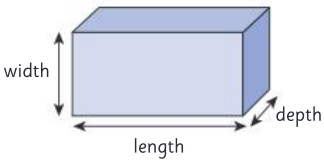
3	6	9	12	15	18	21	24

tessellation A pattern formed by shapes that fit together without any gaps.



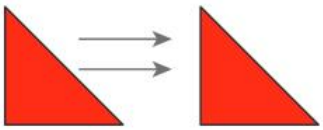
thermometer An instrument for measuring temperature.

three-dimensional or *3D*
A shape that has three dimensions – length, width and depth.
3D shapes are not flat.

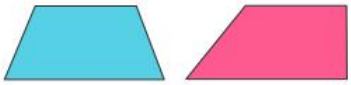


time line A visual representation of a period of time with significant events marked in.

translate To move a shape to a new position without flipping or turning it. Also known as *slide*.

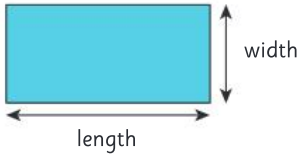


trapezium A 2D shape with four sides and only one set of parallel lines.



triangular number A number that can be organised into a triangular shape. The first four are:

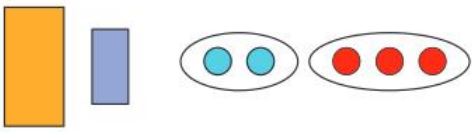
two-dimensional or *2D*
A flat shape that has two dimensions – length and width.



turn Rotate around a point.

unequal Not having the same size or value.

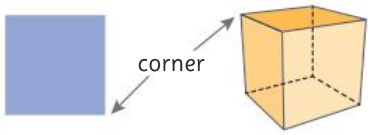
Example: Unequal size Unequal numbers



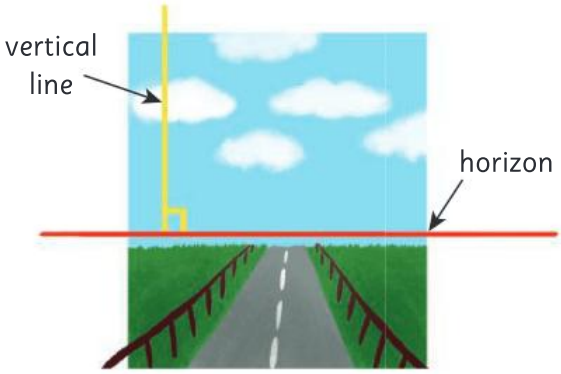
value How much something is worth.

Example:
This coin is worth 5c. This coin is worth $1.

vertex (plural vertices) The point where two edges of a shape or object meet. Also known as a *corner*.



vertical At a right angle to the horizon or straight up and down.



vertical addition A way of recording addition so that the place-value columns are lined up vertically to make calculation easier.

	T	O
	3	6
+	2	1
	5	7

vertical subtraction A way of recording subtraction so that the place-value columns are lined up vertically to make calculation easier.

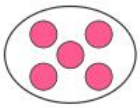
	T	O
	5	7
–	2	1
	3	6

volume How much space an object takes up.

Example: This object has a volume of 4 cubes.

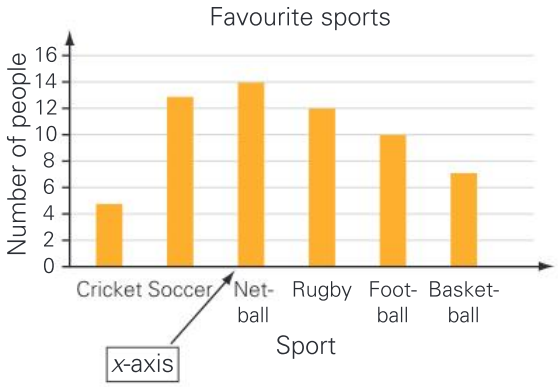
whole All of an item or group.

Example: A whole shape A whole group

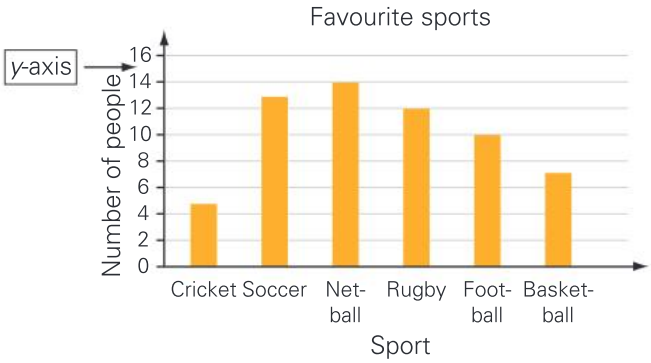


width The shortest dimension of a shape or object. Also known as *breadth*.

***x*-axis** The horizontal reference line showing coordinates or values on a graph or map.



***y*-axis** The vertical reference line showing coordinates or values on a graph or map.

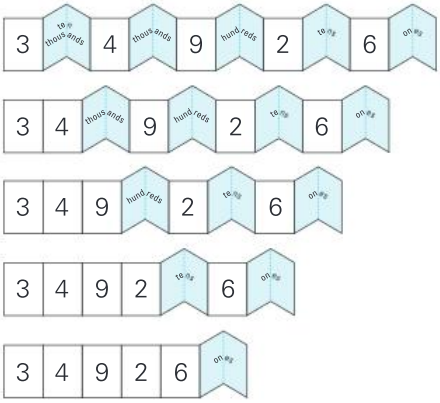


ANSWERS

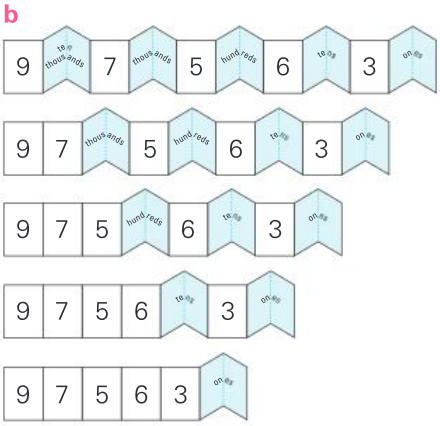
UNIT 1: Topic 1

Guided practice

1 a

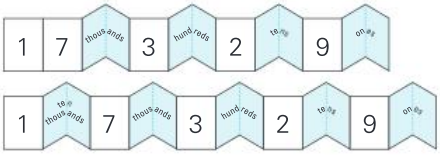


b

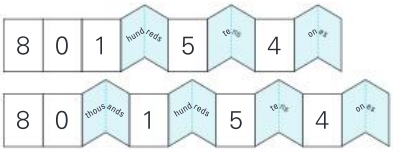


Independent practice

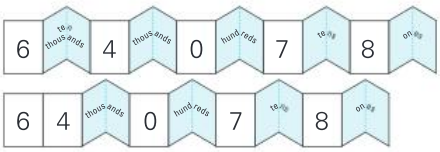
1 a



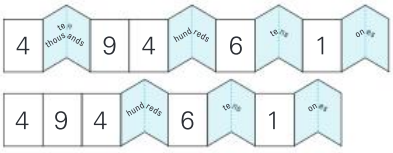
b



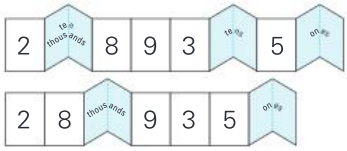
c



d



e



2

a 51 345 = 50 000 + 1000 + 300 + 40 + 5

b 40 772 = 40 000 + 700 + 70 + 2

c 87 024 = 80 000 + 7000 + 20 + 4

d 17 316 = 10 000 + 7000 + 300 + 10 + 6

e 92 603 = 90 000 + 2000 + 600 + 3

f 55 5555 = 50 000 + 5000 + 500 + 50 + 5

3

Collection number	Number of items
3	1563
4	10 008
6	11 345
2	11 570
10	15 183
7	24 999
1	37 706
9	47 200
5	47 398
8	50 953

4

a fifty-six thousand, nine hundred and twenty-seven

b eighty thousand, four hundred and one

c forty-two thousand and fifty-eight

5 **a** 68 142 **b** 24 070 **c** 90 003

Extended practice

1 **a** 70 **b** 30
c 1360 **d** 62 150

2 **a** 600 **b** 1600
c 22 000

3 **a** 6000 **b** 24 000
c 94 000

4 **a** 20 000 **b** 42 000
c 83 000

5 **a** 500 000 **b** 600 000
c 200 000

6 **a** 144 420 **b** 12 081
c 61 458 **d** 402 325
e 49 006

7 12 081, 49 006, 61 458, 144 420, 402 325

UNIT 1: Topic 2

Guided practice

1 **a** odd **b** even **c** even
d even **e** even **f** odd
g odd **h** even **i** odd
j odd **k** even **l** odd

2 **a** even **b** odd **c** odd
d odd **e** odd **f** even
g even **h** odd **i** even
j even **k** odd **l** even

Independent practice

1 **a** 76 523 **b** 23 567
c 76 532 **d** 23 576

2 **a** 98 100 **b** 98 001
c 10 098 **d** 10 089

3 **a** 64 075 **b** 40 576
c 57 640 **d** 50 467

4

Example	Operation	Answer
4 + 4 = 8	even + even	even
4 + 5 = 9	even + odd	odd
5 + 4 = 9	odd + even	odd
5 + 5 = 10	odd + odd	even
8 – 2 = 6	even – even	even
8 – 3 = 5	even – odd	odd
9 – 4 = 5	odd – even	odd
9 – 3 = 6	odd – odd	even

5

Example	Operation	Answer
2 × 2 = 4	even × even	even
2 × 3 = 6	even × odd	even
5 × 2 = 10	odd × even	even
5 × 3 = 15	odd × odd	odd

6 **a** odd **b** odd **c** even
d even **e** even **f** even
g even **h** even

Extended practice

1 **a** 28 ÷ 2 = 14 34 ÷ 2 = 17
100 ÷ 2 = 50 True

b 15 ÷ 3 = 5 30 ÷ 3 = 10
300 ÷ 3 = 100 False

c 40 ÷ 4 = 10 16 ÷ 4 = 4
36 ÷ 4 = 9 True

2

Odd	Even
62 849	34 176
520 399	123 456
1 098 765	987 654
8 888 881	471 002
7 676 767	4 342 998

UNIT 1: Topic 3

Guided practice

1

a 2 + 35 + 18 = 2 + 18 + 35
= 20 + 35 = 55

b 13 + 46 + 7 = 13 + 7 + 46
= 20 + 46 = 66

c 38 + 51 + 32 = 38 + 32 + 51
= 70 + 51 = 121

d 42 + 53 + 8 = 42 + 8 + 53
= 50 + 53 = 103

e 16 + 92 + 4 = 16 + 4 + 92
= 20 + 92 = 112

f 45 + 22 + 125 = 45 + 125 + 32
= 170 + 22 = 192

g 17 + 42 + 13 + 28 = 17 + 13 + 42
+ 28 = 30 + 70 = 100

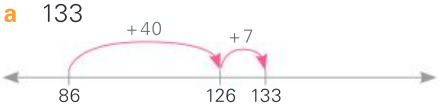
h 19 + 44 + 16 + 21 = 19 + 21 + 44
+ 16 = 40 + 60 = 100

Independent practice

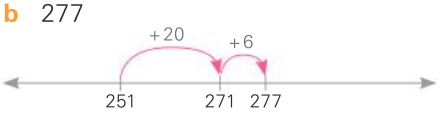
1 **a** 53 **b** 61 **c** 102
d 117 **e** 343 **f** 159
g 90 **h** 110

2

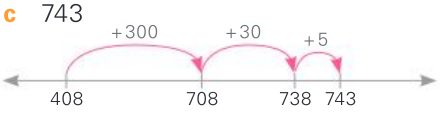
a 133



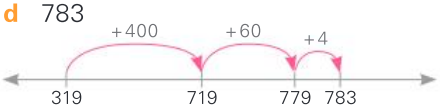
b 277



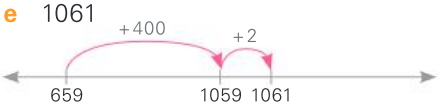
c 743



d 783



e 1061



3

a 572 + 215
= 500 + 200 + 70 + 10 + 2 + 5
= 700 + 80 + 7 = 787

b 163 + 576
= 100 + 500 + 60 + 70 + 3 + 6
= 600 + 130 + 9 = 739

c 815 + 462
= 800 + 400 + 10 + 60 + 5 + 2
= 1200 + 70 + 7 = 1277

d 1625 + 3134
= 1000 + 3000 + 600 + 100 + 20
+ 30 + 5 + 4
= 4000 + 700 + 50 + 9 = 4759

e 4328 + 2454
= 4000 + 2000 + 300 + 400 + 20
+ 50 + 8 + 4
= 6000 + 700 + 70 + 12 = 6782

4 **a** 195 **b** 786 **c** 761
d 793 **e** 895 **f** 428
g 963 **h** 1097

Extended practice

1 **a** 932 **b** 5799
c 8000 **d** 7664

2 **a** 3430 **b** 5630
c cookies and cupcakes
d 1059 **e** 17 280

UNIT 1: Topic 4

Guided practice

1

a 2376 + 5162 = (6 + 70 + 300 +
2000) + (2 + 60 + 100 + 5000)
= 6 + 2 + 70 + 60 + 300 + 100 +
2000 + 5000
= 8 + 130 + 400 + 7000
= 7538

b 6284 + 8415 = (4 + 80 + 200 +
6000) + (5 + 10 + 400 + 8000)
= 4 + 5 + 80 + 10 + 200 + 400 +
6000 + 8000
= 9 + 90 + 600 + 14 000
= 14 699

Independent practice

1

a 4935 + 1742 = (5 + 30 + 900
+ 4000) + (2 + 40 + 700 + 1000)
= 5 + 2 + 30 + 40 + 900 + 700
+ 4000 + 1000
= 7 + 70 + 1600 + 5000
= 6677

b 13 428 + 32 517
= (8 + 20 + 400 + 3000 + 10 000)
+ (7 + 10 + 500 + 2000 + 30 000)
= 8 + 7 + 20 + 10 + 400 + 500 +
3000 + 2000 + 10 000 + 30 0000
= 15 + 30 + 900 + 5000 + 40 000
= 45 945

c 25 019 + 28 746
= (9 + 10 + 0 + 5000 + 20 000) +
(6 + 40 + 700 + 8000 + 20 000)
= 9 + 6 + 10 + 40 + 0 + 700 +
5000 + 8000 + 20 000 + 20 000
= 15 + 50 + 700 + 13 000 + 40 000
= 53 765

d 44 754 + 35 632
= (4 + 50 + 700 + 4000 + 40 000)
+ (2 + 30 + 600 + 5000 + 30 000)
= 4 + 2 + 50 + 30 + 700 + 600 +
4000 + 5000 + 40 000 + 30 0000
= 6 + 80 + 1300 + 9000 + 70 000
= 80 386

Guided practice

1 **a** 62 **b** 95 **c** 782

2 **a** 167 **b** 719 **c** 8914

3 **a** 8497 **b** 6359 **c** 16 699

Independent practice

1

a

	Th	H	T	O
	6	3	7	9
+	2	1	1	5
	8	4	9	4

b

	Th	H	T	O
	3	4	2	6
+	4	8	3	2
	8	2	5	8

c

	TTh	Th	H	T	O
	1	7	2	4	5
+	2	4	5	3	1
	4	1	7	7	6

d

	TTh	Th	H	T	O
	3	0	8	5	6
+	2	3	9	3	3
	5	4	7	8	9

e

	TTh	Th	H	T	O
	5	2	3	9	4
+	1	1	2	4	0
	6	3	6	3	4

f

	TTh	Th	H	T	O
	4	8	0	0	1
+	3	5	9	8	6
	8	3	9	8	7

g

	TTh	Th	H	T	O
	4	3	7	6	4
+	1	5	4	8	2
	5	9	2	4	6

h

	TTh	Th	H	T	O
	2	8	0	4	7
+	3	6	7	0	6
	6	4	7	5	3

Extended practice

1 **a** 13 690 **b** 90 178 **c** 74 771
d 92 461 **e** 23 555 **f** 149 254

2

a

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

b

		8	4	2
1	3	1	2	5
+		4	7	0	2
1	8	6	6	9

UNIT 1: Topic 5

Guided practice

1 **a** 85 – 20 = 65 65 + 1 = 66
So 85 – 19 = 66

b 73 – 20 = 53 53 – 2 = 51
So 73 – 22 = 51

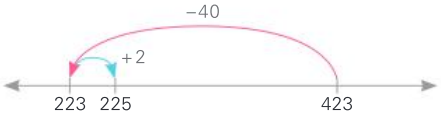
c 91 – 30 = 61 61 – 2 = 59
So 91 – 32 = 59

Independent practice

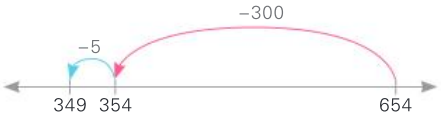
1 **a** 39 **b** 58 **c** 29
d 57 **e** 118 **f** 242
g 323 **h** 179

2

a 423 – 200 + 2 = 225



b 654 – 300 – 5 = 349



c 526 – 300 + 3 = 229

d 793 – 200 – 7 = 586

e 478 – 200 + 3 = 281

f 642 – 300 – 4 = 338

3 **a** correct **b** correct **c** incorrect **d** correct

4 **a** 5 **b** 4 **c** 7 **d** 13 **e** 8 **f** 6

5 **a** 22 **b** 116 **c** 98 **d** 6991

Extended practice

1 **a** 3575 **b** 2566 **c** 13 **d** 3814 **e** 3271

2 **a** Alexis **b** Aravinda **c** 1009 **d** 304 **e** 2554

3 **a** 23 323 **b** 431 **c** 26 829 **d** 13 727

UNIT 1: Topic 6

Guided practice

1 **a** 6359 – 4000 – 200 – 40 – 3 = 2116

b 8946 – 3000 – 400 – 10 – 2 = 5534

c 7650 – 2000 – 500 – 10 – 7 = 5133

d 15 498 – 4000 – 0 – 50 – 7 = 11 441

e 28 575 – 10 000 – 4000 – 300 – 20 – 4 = 14 251

Independent practice

1

a 7598 – 3471 =
7598 – 3000 = 4598
– 400 = 4198
– 70 = 4128
– 1 = 4127

b 15 537 – 13 116 =
15 537 – 10 000 = 5537
– 3000 = 2537
– 100 = 2437
– 10 = 2427
– 6 = 2421

c 58 926 – 32 604 =
58 926 – 30 000 = 28 926
– 2000 = 26 926
– 600 = 26 326
– 4 = 26 322

d 94 589 – 62 719 =
94 589 – 60 000 = 34 589
– 2000 = 32 589
– 700 = 31 889
– 10 = 31 879
– 9 = 31 870

Guided practice

1 **a** 17 **b** 47 **c** 9

2 **a** 584 **b** 382 **c** 2382

3 **a** 1564 **b** 4730 **c** 11 711

Independent practice

NOTE: Students may or may not include the zeroes at the start of some answers. Either way is acceptable at this point.

1

a

	H	T	O
	~~6~~ 7	1 5	8
–	3	9	2
	3	6	6

b

	H	T	O
	~~7~~ 8	~~12~~ 3	10
–	6	5	9
	1	7	1

c

	H	T	O
	5	~~6~~ 7	11
–	2	4	3
	3	2	8

d

	Th	H	T	O
	9	~~8~~ 9	14	9
–	1	8	6	3
	8	0	8	6

e

	Th	H	T	O
	~~7~~ 8	12	3	7
–	3	5	2	3
	4	7	1	4

f

	Th	H	T	O
	6	8	~~3~~ 4	15
–	4	0	3	8
	2	8	0	7

g

	TTh	Th	H	T	O
	5	~~2~~ 3	12	5	9
–	2	1	8	3	2
	3	1	4	2	7

h

	TTh	Th	H	T	O
	7	~~7~~ 8	11	4	6
–	7	7	6	2	4
			5	2	2

i

	TTh	Th	H	T	O
	6	6	7	~~4~~ 5	12
–	2	4	9	3	8
	4	1	8	1	4

j

	TTh	Th	H	T	O
	9	8	~~8~~ 9	~~9~~ 0	11
–	6	4	7	2	8
	3	4	1	7	3

Extended practice

1 **a**

Day	Route	Total distance travelled so far	Distance left
1	Banebridge to Sale	922 km	29 078 km
2–3	Sale to Melba to Newland	2526 km	27 474 km
4–6	Newland to Pindale	5223 km	24 777 km
7–9	Pindale to Broom	7463 km	22 537 km
10–17	Broom to Windar to Blue Springs to Stan Cove	12 740 km	17 260 km
18–22	Stan Cove to Brookefield	15 925 km	14 075 km
23–26	Brookefield to Cooktown	18 755 km	11 245 km
27–34	Cooktown to Hamsdale	22 747 km	7253 km

b

Day	Total raised	Left to raise
1	$834	$84 166
9	$23 471	$61 529
22	$65 023	$19 977
34	$76 914	$8086

c $38 564 **d** 26 436

UNIT 1: Topic 7

Guided practice

1

a 9 × 5 = 45 or 5 × 9; 45 ÷ 9 = 5 = 45 or 45 ÷ 5 = 9

b 8 × 5 = 40 or 5 × 8 = 40; 40 ÷ 8 = 5 or 40 ÷ 5 = 8

c 3 × 7 = 21 or 7 × 3 = 21; 21 ÷ 7 = 3 or 21 ÷ 3 = 7

d 5 × 8 = 40 or 8 × 5 = 40; 40 ÷ 5 = 8 or 40 ÷ 8 = 5

e 8 × 7 = 56 or 7 × 8 = 56; 56 ÷ 7 = 8 or 56 ÷ 8 = 7

Independent practice

1 a & d

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

b 6, 2, 8, 4, 0

c
1 × 6 = 6
3 × 6 = 18
5 × 6 = 30
7 × 6 = 42
9 × 6 = 54
2 × 6 = 12
4 × 6 = 24
6 × 6 = 36
8 × 6 = 48
10 × 6 = 60

e 9, 8, 7, 6, 5, 4, 3, 2, 1, 0

f
1 × 9 = 9
3 × 9 = 27
5 × 9 = 45
7 × 9 = 63
9 × 9 = 81
2 × 9 = 18
4 × 9 = 36
6 × 9 = 54
8 × 9 = 72
10 × 9 = 90

g 99, 108, 117 **h** 66, 72, 78

2 a
1 × 4 = 4
3 × 4 = 12
5 × 4 = 20
7 × 4 = 28
9 × 4 = 36
2 × 4 = 8
4 × 4 = 16
6 × 4 = 24
8 × 4 = 32
10 × 4 = 40

b
4 × 1
4 × 3
4 × 5
4 × 7
4 × 9
4 × 2
4 × 4
4 × 6
4 × 8
4 × 10

c
4 ÷ 4 = 1
8 ÷ 4 = 2
12 ÷ 4 = 3
16 ÷ 4 = 4
20 ÷ 5 = 4
24 ÷ 6 = 4
28 ÷ 7 = 4
32 ÷ 8 = 4
36 ÷ 9 = 4
40 ÷ 10 = 4
4 ÷ 1 = 4
8 ÷ 2 = 4
12 ÷ 3 = 4
20 ÷ 4 = 5
24 ÷ 4 = 6
28 ÷ 4 = 7
32 ÷ 4 = 8
36 ÷ 4 = 9
40 ÷ 4 = 10

3 a 32 **b** 24 doubled = 48
c 36 doubled = 72

Extended practice

1 a 36 **b** 360 **c** 63 **d** 153

2 a 10 **b** 100 **c** 6 **d** 60

3 a 7, 9 **b** 4, 6 **c** 4, 6, 9
d 4, 6, 7

UNIT 1: Topic 8

Guided practice

1 a

T	O
	2
×	1 3
	3
6	0
6	3

b

T	O
	4
×	2 2
	8
8	0
8	8

c

T	O
1	5
×	4
2	0
4	0
6	0

d

H	T	O
	3	1
×		5
		5
1	5	0
1	5	5

e

H	T	O
	7	2
×		4
		8
2	8	0
2	8	8

f

H	T	O
	4	7
×		6
	4	2
2	4	0
2	8	2

Independent practice

1 a

H	T	O
	2	8
×		5
	4	0
1	0	0
1	4	0

b

H	T	O
	4	3
×		6
	1	8
2	4	0
2	5	8

c

H	T	O
	6	7
×		9
	6	3
5	4	0
6	0	3

d

H	T	O
	6	6
×		7
	4	2
4	2	0
4	6	2

e

H	T	O
	3	4
×		8
	3	2
2	4	0
2	7	2

f

H	T	O
	8	9
×		6
	5	4
4	8	0
5	3	4

g

H	T	O
	7	4
×		7
	2	8
4	9	0
5	1	8

h

H	T	O
	3	5
×		8
	4	0
2	4	0
2	8	0

Guided practice

1 a

T	O
4	2
×	2
8	4

b

T	O
1^{4}	9
×	5
9	5

c

T	O
2^{1}	4
×	4
9	6

d

H	T	O
	6	1
×		5
3	0	5

e

H	T	O
	5^{1}	2
×		6
3	1	2

f

H	T	O
	4^{5}	8
×		7
3	3	6

2

H	T	O
	8	4
×		9
	3	6
7	2	0
7	5	6

H	T	O
	8^{3}	4
×		9
7	5	6

Independent practice

1 a

H	T	O
	3	2
×		4
1	2	8

b

H	T	O
	4	1
×		7
2	8	7

c

H	T	O
	5	4
×		6
3	2	4

d

H	T	O
	5	2
×		5
2	6	0

e

H	T	O
	4	6
×		9
4	1	4

f

H	T	O
	6	8
×		8
5	4	4

g

H	T	O
	9	9
×		8
7	9	2

h

H	T	O
	4	7
×		9
4	2	3

2

45	86	53	45	92
× 7	× 7	× 6	× 8	× 4
602	368	315	318	360

Extended practice

1 a 288 **b** 288
c Both farmers had the same.

2

Item	Number per guest	Total needed
Hot dogs	4	312
Carrot sticks	7	546
Chocolate buttons	9	702
Mini pizzas	5	390

3

Item	Number per guest	Total needed
Hot dogs	4	712
Carrot sticks	7	1246
Chocolate buttons	9	1602
Mini pizzas	5	890

UNIT 1: Topic 9

Guided practice

1 **a** 11 **b** 21 **c** 34
d 23 **e** 23 **f** 31

2 **a** 15 **b** 14 **c** 12
d 18 **e** 13 **f** 23

Independent practice

1 **a** $3\overline{)87}$ = 29 **b** $2\overline{)98}$ = 49

c $8\overline{)88}$ = 11 **d** $7\overline{)84}$ = 12

e $3\overline{)78}$ = 26 **f** $5\overline{)95}$ = 19

g $2\overline{)58}$ = 29 **h** $4\overline{)80}$ = 20

i $6\overline{)78}$ = 13

2 **a** 72 ÷ 6 = 12 **b** 80 ÷ 5 = 16
c 76 ÷ 4 = 19 **d** 68 ÷ 4 = 17
e 98 ÷ 7 = 14 **f** 81 ÷ 3 = 27
g 86 ÷ 2 = 43 **h** 96 ÷ 3 = 32
i 96 ÷ 4 = 24

3 **a** 28 **b** 19 **c** 24
d 32 **e** 13 **f** No.
Teacher: Look for students who understand that there would be leftover or remainders because 7 does not divide equally into 78.

Extended practice

1

a (72) 95 74 62 (52) (88)

b 91 (84) (63) 65 94 (57)

c (78) 86 (96) 68 (90) 94

d (189) 93 276 (279) 98 (198)

2 **a** 32 **b** 112 **c** 91
d 112 **e** 71 **f** 243
g 121 **h** 111 **i** 141

3 **a** 56 **b** 48

UNIT 2: Topic 1

Guided practice

1 The following fractions should be circled:
a $\frac{2}{8}$ **b** $\frac{4}{6}$ **c** $\frac{3}{4}$

Independent practice

1 **a** $\frac{1}{3}$ and $\frac{2}{6}$ **b** $\frac{2}{5}$ and $\frac{4}{10}$
c $\frac{1}{2}$ and $\frac{2}{4}$ **d** $\frac{2}{3}$ and $\frac{6}{9}$

2

a 4 sections should be coloured to show $\frac{4}{8}$

b 2 sections should be coloured to show $\frac{2}{3}$

c 4 sections should be coloured to show $\frac{4}{5}$

d 1 section should be coloured to show $\frac{1}{4}$

3 **a** $\frac{4}{10}$ **b** $\frac{2}{3}, \frac{4}{6}$ **c** $\frac{2}{3}, \frac{8}{12}$
d $\frac{2}{8}, \frac{3}{12}$ **e** $\frac{4}{5}$ **f** $\frac{3}{4}, \frac{9}{12}$
g $\frac{2}{4}, \frac{3}{6}, \frac{4}{8}, \frac{5}{10}, \frac{6}{12}$
h $\frac{2}{2}, \frac{3}{3}, \frac{4}{4}, \frac{5}{5}, \frac{6}{6}, \frac{8}{8}, \frac{10}{10}, \frac{12}{12}$

Extended practice

1 **a** 10 squares should be coloured in: $\frac{10}{100}$ or equivalent
b $\frac{1}{10}$

2 **a** 40 **b** 80 **c** 70 **d** 50

3 **a** $\frac{40}{100}$ **b** $\frac{50}{100}$ **c** $\frac{30}{100}$ **d** $\frac{90}{10}$
e $\frac{100}{100}$ **f** $\frac{25}{100}$

4 **a** = **b** > **c** < **d** =

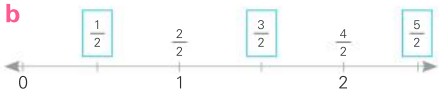
UNIT 2: Topic 2

Guided practice

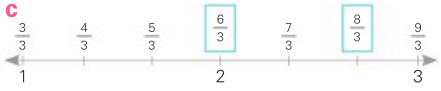
1

a

b



c



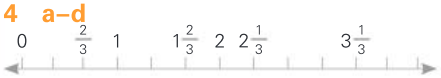
Independent practice

1 **a** $1\frac{1}{3}$ **b** $2\frac{1}{3}$ **c** 3 **d** $1\frac{2}{4}$
e $2\frac{3}{4}$ **f** $2\frac{1}{4}$ **g** $2\frac{1}{2}$ **h** $4\frac{1}{2}$
i 3

2 **a** $\frac{1}{2}$, 1, $1\frac{1}{2}$, 2, $2\frac{1}{2}$, 3, $3\frac{1}{2}$, 4, $4\frac{1}{2}$
b $\frac{1}{3}, \frac{2}{3}, \frac{3}{3}, \frac{4}{3}, \frac{5}{3}, \frac{6}{3}, \frac{7}{3}, \frac{8}{3}, \frac{9}{3}, \frac{10}{3}$
c $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}$, 1, $1\frac{1}{4}$, $1\frac{2}{4}$, $1\frac{3}{4}$, 2
d 5, $4\frac{1}{2}$, 4, $3\frac{1}{2}$, 3, $2\frac{1}{2}$, 2, $1\frac{1}{2}$, 1

3 **a–d**

4 **a–d**



5 **a–d**

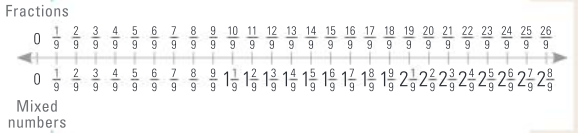
6 **a** $2\frac{1}{2}$ **b** $4\frac{1}{2}$ **c** 4 **d** $1\frac{1}{2}$

7 **a** $\frac{7}{2}$ **b** $1\frac{2}{3}$ **c** $3\frac{1}{4}$ **d** $\frac{12}{4}$
e $10\frac{1}{4}$ **f** $7\frac{1}{3}$ **g** $5\frac{1}{2}$ **h** $\frac{9}{3}$
i $4\frac{1}{4}$

Extended practice

1 **a** $\frac{22}{6}$ $3\frac{4}{6}$ **b** $\frac{35}{8}$ $4\frac{3}{8}$
c $\frac{13}{5}$ $2\frac{3}{5}$ **d** $\frac{43}{12}$ $3\frac{7}{12}$

2



3 **a** 9 **b** 22 **c** 17 **d** 36
e 32 **f** 46

UNIT 2: Topic 3

Guided practice

a 20 squares should be coloured in. 0.2

b 50 squares should be coloured in. 0.5

c 80 squares should be coloured in. 0.8

2

a 45 squares should be coloured in. 0.45

b 26 squares should be coloured in. 0.26

c 53 squares should be coloured in. 0.53

d 82 squares should be coloured in. 0.82

e 99 squares should be coloured in. 0.99

f 60 squares should be coloured in. 0.6 or 0.60

Independent practice

1 Teacher: Accept equivalent fractions such as $\frac{7}{100}$ for $\frac{7}{10}$.

a 0.7 $\frac{7}{10}$ **b** 0.07 $\frac{7}{100}$

c 0.77 $\frac{77}{100}$ **d** 7.77 $7\frac{77}{100}$

e 0.32 $\frac{32}{100}$ **f** 0.65 $\frac{65}{100}$

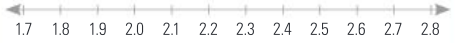
g 3.29 $3\frac{29}{100}$ **h** 6.04 $6\frac{4}{100}$

2

a

b

c



d

3

	Hundreds	Tens	Ones	.	Tenths	Hundredths
Thirty-six and four tenths		3	6	.	4	
Five hundreds and twenty-two hundredths	5	0	0	.	2	2
Two hundred and twenty-two and twenty-two hundredths	2	2	2	.	2	2
Fourteen and fifty-eight hundredths		1	4	.	5	8
$103\frac{7}{10}$	1	0	3	.	7	
$628\frac{43}{100}$	6	2	8	.	4	3
$946\frac{4}{100}$	9	4	6	.	0	4

Extended practice

1 The following responses should be circled:

a 0.9 **b** 0.3 **c** 0.52

d 9.8 **e** 0.5 **f** 0.41

g 0.87 **h** 1

2

Name	Jump length
Silva	3.26 m
Dan	3.9 m
Raff	4.07 m
Lily	4.28 m
Elara	4.7 m
Nick	5.02 m
James	5.21 m

UNIT 3: Topic 1

Guided practice

1

Rounds up to 0	Rounds down to 0	Rounds up to 5	Rounds down to 5
8, 9	1, 2	3, 4	6, 7

2

Amount	Rounds up or down?	Rounds to
$3.58	up	$3.60
$7.86	down	$7.85
$15.32	down	$15.30
$23.01	down	$23.00
$99.99	up	$100.00
$85.43	up	$85.45
$48.04	up	$48.05
$59.97	down	$59.95

Independent practice

1 **a** A $3.55 B $1.50 C $2.00 D $3.00 E $1.75

b A $8.55 B $6.50 C $7.00 D $8.00 E $6.75

2 **a–d** Teacher to check. Teacher: Look for the ability to accurately add 3 money amounts using a vertical algorithm, and then apply understanding of rounding and change giving to accurately identify the rounded amount and calculate the change required.

3 **a** up **b** down **c** up **d** up

4 **a** B and E **b** A and D **c** B and C **d** D and F **e** C and E

5 **a** Teacher to check. Teacher: Look for the ability to accurately add the chosen amounts and demonstrate an understanding of the financial concepts by not going over the given amount.

b Teacher to check: the answer will depend on students' responses to question 5 a.

Extended practice

1 **a** 35c **b** R1.75 **c** R5.65 **d** R3.05 **e** R9 or R9.00 **f** R7 or R7.00

2 **a** R5 **b** R7.50 **c** 80c **d** R9.55 **e** R2.65 **f** 4.25

3 **a** 2 **b** 4 **c** 10

4 **a** 13 **b** 7 **c** 2

Unit 4: Topic 1

Guided practice

1 **a** 25, Add 2 **b** 0, Subtract 11 **c** 23, Subtract 3 **d** 103, Add 10 **e** 90, Add 9

Independent practice

1 **a** Multiply by 7 **b** Subtract 9 **c** Add 20 **d** Multiply by 10

2 **a** 46, 100, 109 **b** 8, 100, 16

3 **a, b & d**

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

c Teacher: Students may list the individual numbers or observe that all the multiples of 4 are both circled and shaded.

e All of them.

4 **a & b**

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

c They all end in zero.

d The numbers that are multiples of both 2 and 5 are also multiples of 10.

Extended practice

1 Teacher: Accept any answer that accurately describes the patterns.

a

1	2	4	7	11	16	22	29	37	46

Rule: Add 1 more each time

b

3	5	9	15	23	33	45	59	75	93

Rule: Add 2 more each time

c

1	2	4	8	16	32	64	128	256	512

Rule: Multiply the previous number by 2

2 **a & b** Teacher to check. Teacher: Look for the ability to apply knowledge of number patterns to create an appropriate rule and formulate 3 examples that demonstrate that rule.

3 **a** 7, 14, 21, 28, 35, 42, 49, 56, 63, 70
b 14, 28, 42, 56, 70
c 35, 70
d 21, 42, 63

UNIT 4: Topic 2

Guided practice

1 **a** 15 + 21 = 48 – 12, Answer: 21
b 42 + 16 = 31 + 27, Answer: 16
c Number sentence: 73 – 24 = 26 + 23, Answer: 24

Independent practice

1 **a** 100 – 42 = 31 + 27
b 56 + 31 = 108 – 21
c 98 + 30 = 200 – 72
d 43 + 54 = 72 + 25
e 97 – 18 = 61 + 18

2 **a** 15 **b** 14 **c** 84 **d** 54
e 6 **f** 8 **g** 7 **h** 55
i 40 **j** 13 **k** 36 **l** 65

3 Teacher: The most likely responses are below; however, accept any response that shows an understanding of what the question requires.

a 12 × 6 = 72 **b** 8 × 9 = 72
c 15 × 6 = 90 **d** 49 ÷ 7 = 7
e 54 ÷ 6 = 9
f (28 + 32) × 10 = 600

4 **a & b** Teacher to check. Teacher: Look for students who demonstrate an understanding of the relationship between word problems and number sentences by being able to write scenarios that fit the given equations.

Extended practice

1 Teacher: There are multiple answers possible – e.g. 40 green, 40 red and 26 blue; 100 green, 3 red and 3 blue; or 35 green, 35 red and 36 blue. Look for the ability to correctly interpret the problem and find combinations that total 106.

2 Possible answers are: 1 each for 48 people, 2 each for 24 people, 3 each for 16 people, 4 each for 12 people, 6 each for 8 people, 8 each for 6 people, 12 each for 4 people, 16 each for 3 people. Teacher: Look for the ability to correctly interpret the problem and find multiple solutions.

3 Teacher to check. Teacher: There are multiple possible answers for this question. Look for students who are able to correctly interpret the requirements of the problem and who show fluency in exploring a range of answers.

UNIT 5: Topic 1

Guided practice

1 **a** 8 mm **b** 25 mm
c 43 mm **d** 37 mm

2 **a** 17 mm or 1 cm and 7 mm
b 6 mm
c 68 mm or 6 cm and 8 mm

3 **a** 13 cm **b** 5 cm **c** 9 cm

Independent practice

1 Teacher: The answers below are the most likely ones. Accept alternatives if students can offer adequate justification – e.g. "I would measure the safety pin in centimetres using decimals."

a cm **b** m **c** cm
d mm **e** m **f** mm

2 **a** 20 mm **b** 100 mm
c 55 mm **d** 230 mm
e 25 mm **f** 38 mm
g 380 mm **h** 120 mm
i 12 mm

3 **a** 200 cm **b** 1000 cm
c 550 cm **d** 125 cm
e 350 cm **f** 475 cm
g 3 cm **h** 3.5 cm
i 10 cm

4 **a** 1 m **b** 5 m **c** 2.5 m

5 Teacher to check. Teacher: Look for the ability to provide an appropriate rationale for answers using the language of length.

6 **a** 20 cm **b** 18 cm
c 20 cm **d** 23 cm

7 Teacher: Due to the small size of the unit, allow for slight variations in results.

a 80 mm **b** 75 mm
c 120 mm **d** 168 mm

Extended practice

1 **a–g** Teacher to check. Teacher: Look for students who can match appropriate units of measurement to the items they choose, and who demonstrate an understanding of length by making reasonable estimates and by accurately measuring each item.

h–k Teacher to check. Teacher: Look for students who show fluency with calculating the difference between lengths using the same units and who can convert units to find the difference between the lengths of their shortest and longest items.

UNIT 5: Topic 2

Guided practice

1

Independent practice

1 **a** cm^2 **b** m^2 **c** cm^2
d m^2

2 Teacher to check. Teacher: Look for students who demonstrate fluency with the concept of area by being able to draw 4 different shapes with the same area.

3 **a** 24 cm^2 **b** 18 cm^2
c 16 cm^2 **d** 12½ cm^2

4 Teacher to check. Teacher: Look for the ability to choose areas for which square metres are an appropriate unit of measurement, and to make a reasonable calculation of chosen areas. Students may also like to justify the reasoning for their estimates.

Extended practice

1 **a** 16 cm^2
b 8 cm^2 × 2 cm^2 = 16 cm^2
c 4 cm^2 × 10 cm^2 = 40 cm^2
d 3 cm^2 × 5 cm^2 = 15 cm^2

2 Teacher to check. Teacher: Look for students who demonstrate an understanding of the concept of area by being able to draw shapes that meet the given specifications.

UNIT 5: Topic 3

Guided practice

1 **a** 6 cm^3 **b** 12 cm^3 **c** 16 cm^3

2 c

3 **a–c** Teacher to check. Look for students who can accurately mark the correct level on the scale and who can interpret both litre and millilitre measurements.

4 b

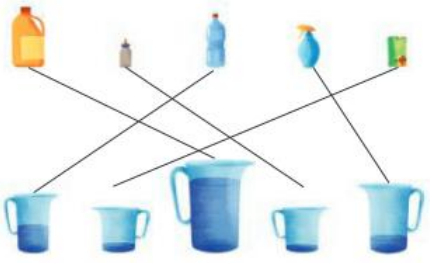
Independent practice

1 **a** Teacher to check. Teacher: Look for the ability to demonstrate an understanding of the properties of a cube and accurately represent the model.
b 2 **c** 4

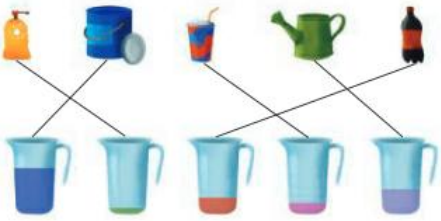
2 **a** Teacher to check. Teacher: Look for the ability to demonstrate an understanding of the properties of a cube and accurately represent the model.
b 3 **c** 9

3 **a–c** Teacher to check. Teacher: Look for the ability to make a rectangular prism with the same number of cubic centimetres in each layer.

4



5



6 **a** A & C **b** 4 litres or 4 L
c 3 litres 700 millilitres or 3.7 L

Extended practice

1 C, D, A, E, B

2 **a** 1 litre 400 millilitres
b 2 litres 500 millilitres
c 3 litres 859 millilitres
d 7 litres 643 millilitres

3 **a** 3025 mL **b** 5340 mL
c 7654 mL **d** 19 999 mL

UNIT 5: Topic 4

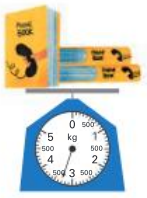
Guided practice

1 **a** 1.3 kg, 1 kg and 300 g
b 3.2 kg, 3 kg and 200 g
c 2.5 kg, 2 kg and 500 g or 2½ kg
d 5.5 kg, 5 kg and 500g or 5½ kg
e 4.2 kg, 4 kg and 200 g
f 26.7 kg, 26 kg and 700 g

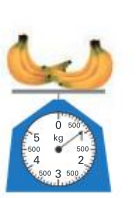
Independent practice

1 **a–i** Teacher to check. Teacher: Look for the ability to make reasonable estimates as to the masses of familiar objects and show fluency with recording and calculating with masses.

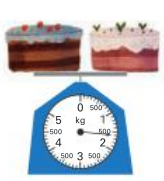
2 **a**



b

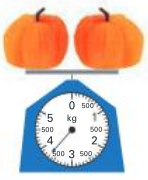


c



d

e



f

3 Teacher: Accept equivalents – e.g. 1100 g for 1.1 kg.
a 1.1 kg **b** 150 g **c** 160 g
d 600 g **e** 1.85 kg **f** 150 g

Extended practice

1

kg	kg and g	g
1.7 kg	1 kg 700 g	1700 g
4.5 kg OR 4 ½ kg	4 kg 500 g	4500 g
3 ¼ kg	3 kg 250 g	3250 g
0.62 kg	0 kg 620 g	620 g
7.75 kg OR 7 ¾ kg	7 kg 750 g	7750 g
5.03 kg	5 kg 30 g	5030 g

2 **a** 125 g 840 g 2000 g 1500 g 1650 g 250 g
b 715 g
c 4715 g, 4 kg 715 g or 4.715 kg
d 140 g or 0.14 kg

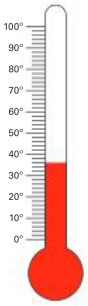
UNIT 5: Topic 5

Guided practice

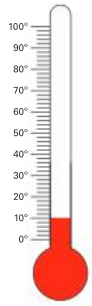
1 **a** 30 °C **b** 60 °C **c** 0 °C
d 44 °C **e** 89 °C **f** 100 °C

Independent practice

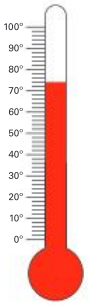
1 **a**



b



c



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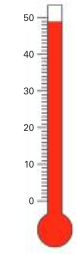
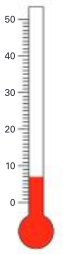
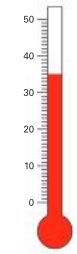


e



f



2 **a** 74°C **b** 7°C **c** 67°C
d 10°C and 35°C
e 35°C and 36°C

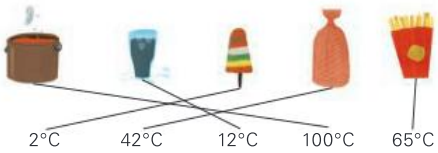
f–g Answers will vary depending on the students' location. Likely answers are:
f 7°C and 10°C
g 35°C, 36°C and 49°C

3 The following pictures should be circled:
a Snow scene
b Glass of water **c** Cupcake
d Person in shade

4 The most likely answers are:
a hot **b** freezing
c warm or hot **d** cold or cool
Teacher: Answers may vary depending on students' perceptions. This can be used as the basis for a discussion on how a particular temperature may be considered hot in one context, but warm in another.

Extended practice

1



2 a–f Teacher to check.
Teacher: Look for the ability to accurately measure and record temperature and understand how thermometers are used to compare the temperature of places.

UNIT 5: Topic 6

Guided practice

1 **a** 60 **b** 60 **c** 24
d 7 **e** 365 (or 366) **f** 52

2 **a** 120 **b** 360 **c** 180
d 300 **e** 90 **f** 150
g 2 **h** 72 **i** 7 **j** 35

Independent practice

1 a & b

Name	Time in seconds	Time in minutes and seconds	Rank
Todd	75 seconds	1 min 15 secs	2
Harper	140 seconds	2 mins 20 secs	6
Jessica	100 seconds	1 min 40 secs	4
Mario	90 seconds	1 min 30 secs	3
Stirling	120 seconds	2 mins	5
Anthony	70 secs	1 min 10 secs	1

2 **a** 27 days **b** 2 hours
c 2 years **d** 660 minutes
e 3 days **f** 4000 days
g 3 ½ hours **h** 1 hour

3 **a** 35 **b** 300
c 300 **d** 60
e 730 (or 731) **f** 48

4 **a** am **b** pm **c** pm
d am **e** pm **f** am

5 2 am 9 am 11 am 1 pm
3:15 pm 9 pm

6

a

6:59	am

b

8:26	pm

c

12:10	am

d

12:47	pm

Extended practice

1 **a** 11:30 am **b** 16 minutes
c 9 hours 35 minutes
d My Mother the Plumber
e 3:01 pm **f** Cop Capers
g Cakes on a Train
h
Start

Finish

UNIT 5: Topic 7

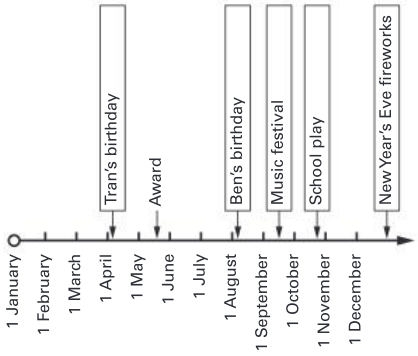
Guided practice

1 **a** after
b 6 months
c 2 years

2 **a** Students to add label, e.g. "I broke my arm", in the box pointing to three and half years.
b Students to add label, e.g. "I started school", in the box pointing to just before 5 years.
c Students to add label, e.g. "I learned to swim", and an arrow just after two and a half years.

Independent practice

1 **A timeline of Tran's year**



2 **a** 9:30 am **b** 30 minutes
c Students to add label, e.g. "Lunch", at 12:30 pm.
d Any time around 2:45 pm
e Students to add labels, e.g. "Wombats" and "Koalas", in the first and second boxes respectively.
f Students to add label, e.g. "Gift shop", before 2 pm.

3 Boxes should be labelled, from left to right:
D, I, A, G, B, E, C, F, H

Extended practice

1 Teacher to check. Possible answers are listed below.
a The arrows are spread out evenly but the time gaps are not all the same.
b It is easier to tell the length of time between each event on the timeline.
c If there were no scale, we would not be able to tell the length of time between each event.

2 This task could be as simple or as complex as desired. Students could, for example, be encouraged to make a digital display of the timeline including photographs.

UNIT 6: Topic 1

Guided practice

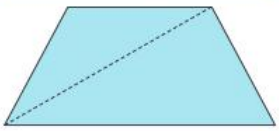
1 Teacher: Students may draw different versions of certain shapes – e.g. an irregular pentagon rather than a regular one. This is acceptable if they show the correct properties for the shapes. Alternative names for shapes are also acceptable – e.g. "quadrilateral" for kite.

Shape name	Sides	Angles	Picture
square	4	4	
octagon	8	8	
pentagon	5	5	
trapezium	4	4	
kite	4	4	
hexagon	6	6	

Independent practice

1 **a** trapezium
b 1 rectangle and 2 triangles
c

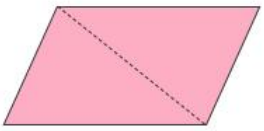
d



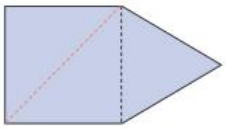
2 Teacher: These answers are examples – students may choose a different way to split the shape. Check that their description of the split shapes matches their diagrams.

a

b 1 rectangle and 2 triangles
c



3 **a & b**



4 Teacher to check. Teacher: Look for the ability to successfully combine the 4 triangles into a new polygon and accurately identify the new shape.

5 Teacher to check. Teacher: Look for the ability to successfully combine the rectangle and triangle into a new polygon and accurately identify the new shape.

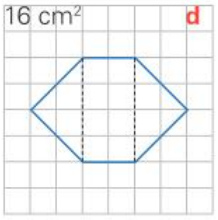
6 **a**

	Name	Angles	Area
A	Triangle	3	8 cm²
B	Rectangle	4	15 cm²
C	Hexagon	6	20 cm²
D	Parallelogram	4	8 cm²

b hexagon

Extended practice

1 **a & b** Teacher to check. The most likely answer is a 3 cm by 3 cm square. Look for the ability to demonstrate an understanding of the properties of regular shapes and accurately identify the shape drawn.
c 16 cm² **d** irregular
e



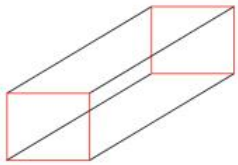
f 4 cm²

2 **a** 2 smaller rectangles and 4 larger rectangles
b 1 pentagon and 5 triangles
c 2 circles and 1 rectangle

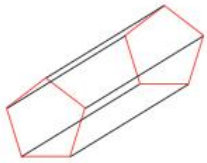
UNIT 6: Topic 2

Guided practice

1 **a**



rectangular prism
b



pentagonal prism

2 **a**

triangular pyramid
b

pentagonal pyramid

Independent practice

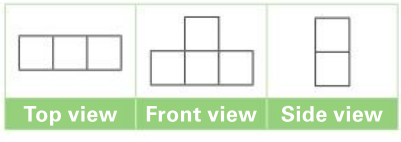
1 **a–d** Teacher to check. Teacher: Look for the ability to draw the objects with a reasonable degree of accuracy and an understanding of the properties of the objects, such as the base shapes.

2

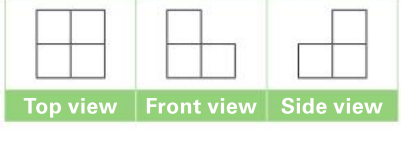
	Top view	Front view	Side view
a			
b			
c			

3 **a** front view side view top view
b side view top view front view
c front view side view top view

4 **a**

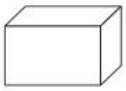
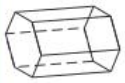


b



Extended practice

1

Description	Drawing	Name
2 rectangular bases 8 corners 12 edges		rectangular prism
1 triangular base 4 corners 6 edges		triangular pyramid
2 hexagonal bases 12 corners 18 edges		hexagonal prism

2 Teacher to check. Teacher: Look for students' ability to make a reasonable representation of their 2 objects and who can accurately draw front, top and side views.

UNIT 7: Topic 1

Guided practice

1 **a** smaller than a right angle
acute angle

b greater than a straight angle
reflex angle

c greater than a right angle
obtuse angle

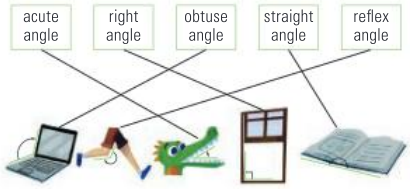
d greater than a right angle
straight angle

e greater than a straight angle
revolution

f smaller than a straight angle
right angle

Independent practice

1



2 **a & b** Teacher to check. Teacher: Look for the ability to accurately identify, classify and represent angles in the environment.

3 B C E F A D

4

a 1 right angle 2 acute angle
3 acute angle

b 1 obtuse angle 2 acute angle

c 1 right angle 2 acute angle
3 reflex angle 4 acute angle

d 1 acute angle 2 acute angle

e 1 reflex angle 2 acute angle
3 acute angle

f 1 obtuse angle 2 acute angle
3 right angle 4 obtuse angle
5 acute angle 6 obtuse angle

Extended practice

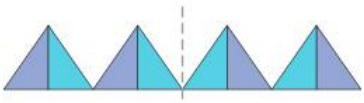
1 **a–c** Teacher to check. Teacher: Look for the ability to visualise the invisible angle arm and draw it to meet the angle criteria.

2 **a & b** Teacher to check. Teacher: Look for the ability to demonstrate an understanding of the concept of invisible angle arms, and apply understanding of angle types to real-life situations.

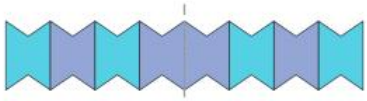
UNIT 8: Topic 1

Guided practice

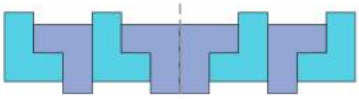
1 **a**



b



c

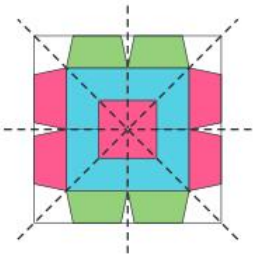


Independent practice

1 **a & b** Teacher to check. Teacher: Look the ability to apply understanding of symmetry to create a pattern with at least one identifiable line of symmetry.

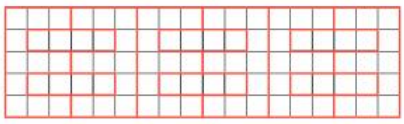
2 **a & b** Teacher to check. Teacher: Look the ability to apply understanding of symmetry to create a pattern with two identifiable lines of symmetry.

3 **a**

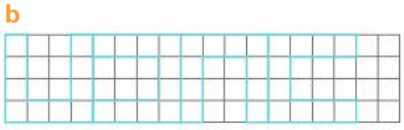


b The trapezium should be circled.

4 **a**



b



c

5 **a & b** Teacher to check. Teacher: Look for the ability to apply understanding of the rotation transformation to create a rotating pattern, and accurately describe the pattern made.

Extended practice

1 **a** Tessellates. Teacher: Check students have successfully shown how regular triangles tessellate.

b Doesn't tessellate. Teacher: Check students have successfully shown that regular octagons do not tessellate with each other.

c Tessellates. Teacher: Check students have successfully shown how regular hexagons tessellate.

2 Teacher to check. Teacher: Look for the ability to demonstrate an understanding of both symmetry and tessellation.

UNIT 8: Topic 2

Guided practice

1 **a** 24 metres **b** 4

c In between the horse pavillion and the animal nursery

d 115 metres

2 **a** Teacher to check. Teacher: Look for students who understand that 1 cm = 10 m and therefore draw a 2 cm by 2 cm area.

b Teacher to check based on location of students' picnic area.

c–e Teacher to check. Teacher: Look for the ability to understand that a symbol on a legend needs to represent the place on the map in some way, and to use the language of location to accurately describe where the police station is.

Independent practice

1 **a–d** Teacher to check. Teacher: Look for the ability to apply understanding of scale to draw places of appropriate dimensions – e.g. the field should be 6 cm wide and 4 cm long.

2 **a & b** Teacher to check. Teacher: Look for the ability to show an understanding of how to use symbols to represent places on maps, and justify why items are placed in particular locations.

3 Teacher to check track. Width of the farm is 65 metres.

4 **a** 3 cm long and 2 cm wide
b 1 cm long and 0.5 cm wide
c 1.5 cm wide and 2 cm long

5 **a** 2000 m or 2 km

b & c Teacher to check. Teacher: Look for the ability to write accurate descriptions of directions using the language of location.

6 **a** water station **b** Bow River
c Start and/or Information

7 **a** I2 **b** L4 **c** C5

Extended practice

1 **a** Shark Alley
b Coconut Island
c Castaway Island
d Shipwreck Cliffs

2 **a–e** Teacher to check. Teacher: Look for the ability to accurately interpret maps using both grid references and compass directions, and show an awareness of why one route may be a better choice than another.

UNIT 9: Topic 1

Guided practice

1 **a & b** Teacher to check. Teacher: Look for students who can write a yes/no question on the topic, and who can accurately record the responses.

2 **a** Teacher to check. Teacher: Look for the ability to understand the difference between open and closed questions.

b Teacher to check. Teacher: Look for the ability to accurately record 2 responses to the question.

Independent practice

1 **a** Do you like chocolate?
b What is your favourite ice-cream flavour?

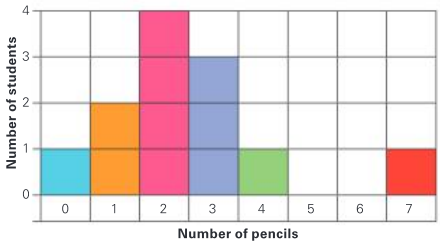
2 **a** Teacher to check. Teacher: Look for the ability to understand that the question can only have limited responses.

b–e Teacher to check. Teacher: Look for the ability to justify predictions about the survey outcome and accurately record the results using numbers, names, ticks or tally marks.

3 **a**

Number of pens	0	1	2	3	4	5	6	7
Tally	1	2	4	3	1	0	0	1

b



4 **a & b** Teacher to check. Teacher: Look for the ability to use observation as a data collection method and accurately represent their data in a table and matching bar graph. Students should be able to label the *x*- and *y*-axes, as well as graphing the data.

Extended practice

1 Teacher to check. Teacher: Look for the ability to write a variety of questions on the topic that show knowledge of survey construction and language.

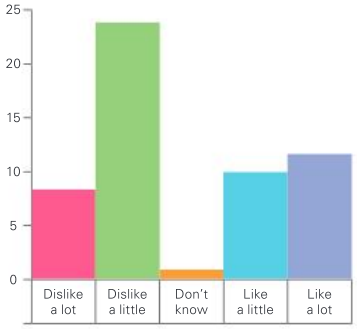
2 **a & b** Teacher to check. Teacher: Look for the ability to choose a question with defined values, and an appropriate method for the initial recording of the data. Students should have exactly 15 responses recorded.

3 Teacher to check. Teacher: Look for students' ability to demonstrate an understanding of the conventions of graph construction and whose data matches the data displayed in the previous question.

UNIT 9: Topic 2

Guided practice

1 **a**



b Dislike a little **c** Don't know
d Dislike **e** 14

Independent practice

1 **a** Teacher to check. Teacher: Look for the ability to choose a display method that allows accurate representation of the data – e.g. a bar or pictograph. Students should include all the relevant elements, such as titles and scales.

b & c Teacher to check. Teacher: Look for the ability to correctly identify the type of graph used and justify the choice – e.g. a bar graph because none of the categorical values are very high and it was easy to make the scale.

2 **a** Like a lot **b** 27 **c** 3
d Teacher to check. Teacher: Look for the ability to accurately interpret the data to write an original statement.

3 Teacher to check. Teacher: Look students' ability to demonstrate an understanding of data interpretation by writing questions that can be answered by the given information.

4 **a** No **b** Yes **c** No
d Yes **e** Yes **f** No

Extended practice

1 **a** Because the scale is different.
b a bit more popular
Teacher: Accept the answer "a lot more popular" if students can justify this – e.g. by explaining that they used the scale to draw the conclusion.

c a lot more popular
Teacher: Accept the answer "a bit more popular" if students can justify this – e.g. by quantifying how many more people prefer barbecue.

d & e Teacher to check. Teacher: Look for students' ability to use their knowledge of data representation to suggest a plausible reason why one display would be chosen over the other – e.g. Graph 1 makes barbecue look more popular than Graph 2 because of the scale used.

f 48

Unit 10: Topic 1

Guided practice

1 & 2 Teacher to check. Teacher: Look for the ability to offer appropriate justification for the placement of each event.

Independent practice

1

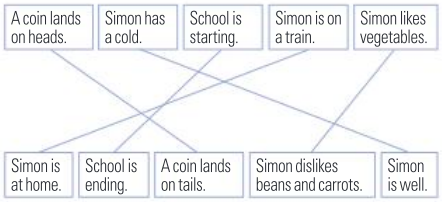
Teacher: Answers may vary slightly – e.g. students may think "possible" is closer to "very unlikely".

2 **a–g** Teacher to check. Teacher: Look for the ability to show an understanding of the language of chance and use reasoning to justify responses.

3 **a & b** Teacher to check. Teacher: Look for students' ability to understand the differences between different probability terms and apply this to their own lives.

4 **a** equally likely **b** less likely
c equally likely
d equally likely **e** more likely

5



6 Teacher to check. Teacher: Look for the ability to understand the language of probability and identify mutually exclusive events.

Extended practice

1 Teacher to check. Teacher: Look for the ability to offer appropriate justifications for choices and attribute likely events to each of the people represented.

2 **a & b** Teacher to check. Teacher: Look for students' ability to make reasonable guesses as to the probability of their year 4 teacher having specific attributes, and to put forward their own speculations and rank the likelihood of them occurring.

UNIT 10: Topic 2

Guided practice

1 **a** False **b** True **c** True
d False **e** False **f** False

2 **a–e** Teacher to check. Teacher: The spinner should have more red segments than any other colour, the same number of green and pink, no orange, few blue and fewer yellow than green – e.g. 6 red, 2 each of green and pink, 1 blue and 1 yellow segments.

Independent practice

1 **a** red and green, red and yellow, red and blue, green and yellow, green and blue, yellow and blue
b red and green, green and red, red and yellow, yellow and red, red and blue, blue and red, green and yellow, yellow and green, green and blue, blue and green, blue and yellow, yellow and blue
c Teacher to check. Teacher: Look for students who can select appropriate language to describe the probabilities and who can offer reasonable explanations for their choices.

2 Teacher to check. These outcomes are possible: 6 and 6, 6 and 5, 5 and 6, 6 and 4, 4 and 6, 6 and 3, 3 and 6, 6 and 2, 2 and 6, 6 and 1, 1 and 6, 5 and 5, 5 and 4, 4 and 5, 5 and 3, 3 and 5, 5 and 2, 2 and 5, 5 and 1, 1 and 5, 4 and 4, 4 and 3, 3 and 4, 4 and 2, 2 and 4, 4 and 1, 1 and 4, 3 and 3, 3 and 2, 2 and 3, 3 and 1, 1 and 3, 2 and 2, 2 and 1, 1 and 2, 1 and 1.

3 **a** green **b** yellow
c red and blue

4 **a** Teacher to check. Teacher: Look for the ability to accurately record the results of 10 trials using an efficient data method such as tally marks.

b Teacher to check. Teacher: Look for students whose response matches the data collected in part a.

c–e Teacher to check. Teacher: Look for the ability to offer a reasonable explanation for the results – e.g. if the numbers were the same, students may point out that there was an equal chance of drawing out the colours because there was the same number of each in the bag. If the results were different, they may discuss the fact that chance plays a role in the results and they will therefore vary from predictions.

Extended practice

1 **a** 2 green, 2 red, 2 blue, 1 green and 1 yellow, 1 green and 1 blue, 1 green and 1 red, 1 red and 1 blue, 1 red and 1 yellow, 1 blue and 1 yellow

b Teacher to check. Teacher: Look for students' ability to accurately record the results of their 20 trials using an appropriate method.

c–e Teacher to check. Teacher: Look for students' ability to accurately interpret their experiment results and use the language of chance and mathematical reasoning to make statements that reflect their data.

f Teacher to check. Teacher: Look for students who demonstrate an understanding of the fact that, although you can predict the likelihood of certain outcomes of the experiment, the actual outcomes will vary because chance plays a part.

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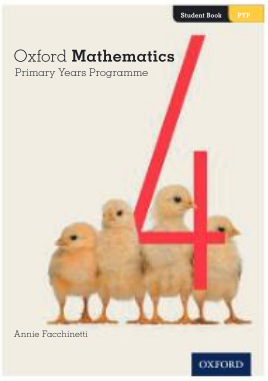

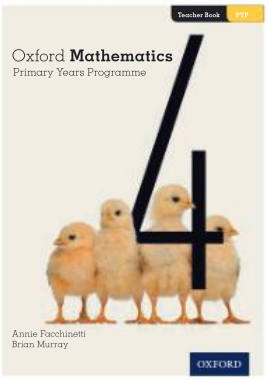

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