Unit II – Decimals (2)

I Make a whole

➜ pages 6–8

1. a) 0·**8**
b) 0·**1**
c) 0·**52**
d) 0·**07** + 0·**93**

2. a) 0·3
b) 0·5

3. a) 0·74
b) 0·65
c) 0·22
d) 0·03

4. a) **0·4**
b) **0·16**
c) **0·68**
d) **0·91**
e) **0·67**
f) **0·11**
g) **0·3**
h) **0·66**

5. a) **0·61**
b) **0·87**

6. a) 0·**2**3 + 0·7**7**
b) 0·**7**5 + 0·2**5**
c) Various answers are possible, for example: 0·12 + 0·88.
d)– f) Various answers are possible, for example: 0·35 + 0·65.

7.

	0·1	
0·5	0·3	0·2
	0·6	

Reflect

The correct answer is 0·12. Max has one too many tenths. The tenths add to 9 in this case.

2 Partition decimals

➜ pages 9–11

1. a) **6·8**
b) **7·39**
c) **10·5**

2. a) 0·07
b) 0·01
c) 0·5, 0·08
d) 0·39

3. 0·4

4. a) 0·03
b) 0·1, 0·08
c) 3·67
d) 4, 0·08

5.

a)	7 ones + 2 tenths + 1 hundredth	7·**21**
b)	2 tens + 9 ones + 3 tenths + 4 hundredths	**29·3**4
c)	1 ten + 7 ones + 1 hundredth	**17·01**
d)	5 tenths + 3 hundredths	**0·53**

6. a) **0·05**
b) **0·09**
c) **0·8**
d) **0·61**
e) **0·61**
f) **0·08**
g) **0·1**
h) **1·92**

7. Mo 4·27
Emma 4·24
Danny 8·24

Reflect

Various responses are possible depending on the decimals children have chosen.

3 Flexibly partition decimals

➜ pages 12–14

1. a) 0·02
b) 0·12
c) 0·22
d) 0·32

2. a) 0·09
b) 0·19
c) 0·09
d) 0·29

3. a) 2·35 = 2 + **0·3** + **0·05**
b) 2·35 = 2 + 0·2 + **0·15**

4. a) 0·74 = 0·7 + **0·04**
0·74 = 0·6 + **0·14**
0·74 = 0·5 + **0·24**
0·74 = 0·3 + **0·44**
0·74 = 0·2 + **0·54**
b) 3·96 = 3 + 0·9 + **0·06**
3·96 = 1 + 2·9 + **0·06**
3·96 = 3 + 0·4 + **0·56**
3·96 = 2 + 1·9 + **0·06**
3·96 = 3 + 0·8 + **0·16**

Reflect

Answers will depend on children's number choices and how they choose to partition the number.

4 Compare decimals

➜ pages 15–17

1. a) <
b) <

2. Children should circle:
a) 0·36
b) 1·7
c) 1·35
d) 6·81
e) 13·8

3. Children should circle:
a) 0·78
b) 5·58
c) 30·1
d) 11·5

4. 3·21 is greater than 3·07 as it has 2 tenths and 3·07 has no tenths.
It is the value of the counters, not how many counters there are.

5. a) 0·8 **>** 0·3
b) 0·35 **<** 0·45
c) 4·56 **<** 4·72
d) 12·9 **<** 18·7
e) 9·45 **>** 9·05
f) 3·18 **>** 3·12
g) 26·39 **<** 27·49
h) 120·26 **=** 120·26
i) 3 tenths + 5 hundredths **<** 5 tenths and 4 hundredths

6. Three from: 1·66, 1·67, 1·68, 1·69, 1·7 and 1·71

7. Ambika has made the smaller number as it only has 2 tenths.
Reena's number has 3 tenths.

8. a) Children should insert any of the following numbers for each statement: 0, 1, 2, 3, 4, 5 or 6.
b) Various answers are possible, for example: 2·**0**3 or 2·**1**3 or 2·**2**3 < 2·3**1** (2·3**2**, 2·**3**3, 2·3**4**, 2·3**5**, 2·3**6**, 2·3**7**, 2·3**8** or 2·3**9**) ; 2·3**3** < 2·3**4** (2·3**5**, 2·3**6**, 2·3**7**, 2·3**8** or 2·3**9**)

Reflect

Children should mention comparing the largest place value digits first, then the next largest and so on. They may give examples and say, for example: Compare the whole number part first, then the tenths, then the hundredths.

5 Order decimals

pages 18–20

1. 6·7, **7·2**, **7·9**

2. 0·09, **0·25**, **0·43**

3. a) Children should circle the following grid:

T	O	Tth	Hth
1	0	9	7

b) **10·97**, **10·79**, **10·09**, **10·07**

4. a) **7·42**, **27·24**, **27·48**, **72·45**
b) **5·94**, **5·49**, **4·59**, **4·53**

5. Aki is incorrect. The numbers are ordered from greatest to smallest.

6. a) 27·79, 28·02, 28·24, 28·42, 29·53
b) Amelia
c) Ebo

7. Various answers are possible, for example:
4·0**5**, 4·**1**9, **5**·01, **5·15**
4·0**9**, 4·**5**9, **6**·01, **7·34**

Reflect

Children should mention comparing tenths, so that they know 0·71 is the largest number, then comparing the hundredths in 0·62 and 0·65.
2 hundredths < 5 hundredths, so 0·62 < 0·65.

6 Round to the nearest whole

pages 21–23

1. a) 2·7 is between **2** and **3**.
2·7 rounded to the nearest whole number is **3**.
b) 10·3 is between **10** and **11**.
10·3 rounded to the nearest whole number is **10**.
c) 28·5 is between **28** and **29**.
28·5 rounded to the nearest whole number is **29**.

2.

Previous		Next
1	1·8	**2**
2	2·5	**3**
5	5·4	**6**
12	12·9	**13**
65	65·3	**66**

3. a) **5**
b) **13**
c) **65**
d) **0**
e) **51**
f) **151**
g) **400**
h) **90**

4. Luis' number cannot be 55·5 as it rounds up to 56.

5. a) 4·9 rounded to the nearest whole number is 5.
b) **8**·5
c) 12·**1**, 12·**2**, 12·**3** or 12·**4**
d) **22·5**, **22·6**, **22·7**, **22·8**, **22·9**, **23·1**, **23·2** or **23·4**

6. 80·3, 80·4

Reflect

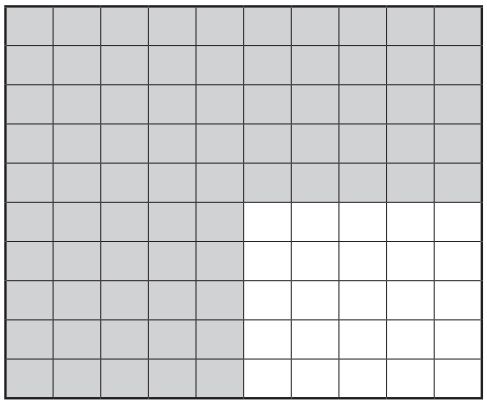
Children should explain the rules of rounding. 4 and below rounds down, 5 and above rounds up. So 43·6 rounds up to 47 because 6 > 5.

7 Halves and quarters as decimals

pages 24–26

1. a) $\frac{1}{4}$
b) $\frac{1}{2}$

2. a) Children should shade the following:

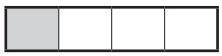


b) $\frac{3}{4}$ = **0·75**

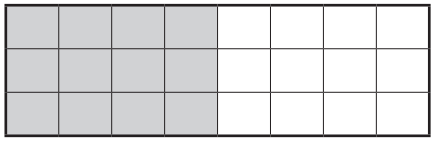
3. a) $\frac{1}{4} = \mathbf{0{\cdot}25}$ c) $\frac{3}{4} = \mathbf{0{\cdot}75}$

b) $\frac{2}{4} = \mathbf{0{\cdot}5}$ d) $\frac{1}{2} = \mathbf{0{\cdot}5}$

4. a) Children should shade the following:



b) Children should shade the following:



c) Children should shade the following:

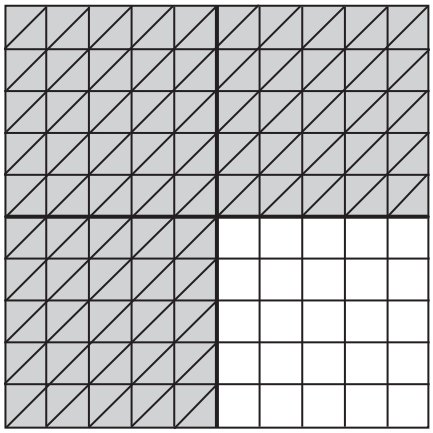
5. Bella is correct, $\frac{1}{2}$ is equivalent to 0·5.

6.

Decimal	Fraction
0·75	$\frac{3}{4}$
1·25	$1\frac{1}{4}$
1·5	$1\frac{1}{2}$
2·25	$2\frac{1}{4}$
3·5	$3\frac{1}{2}$
4·75	$4\frac{3}{4}$

Reflect

Answers can vary but drawings should be similar to this example, indicating 75 squares out of 100 in the grid.



Explanations should be similar to this one: The shading shows 75 hundredths, which is 0·75, and the hatching shows 3 of the 4 quarters, which is $\frac{3}{4}$.

End of unit check

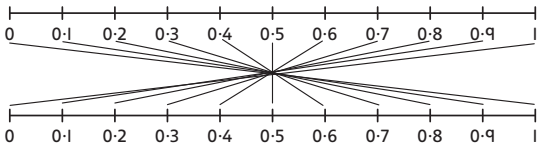
→ pages 27–28

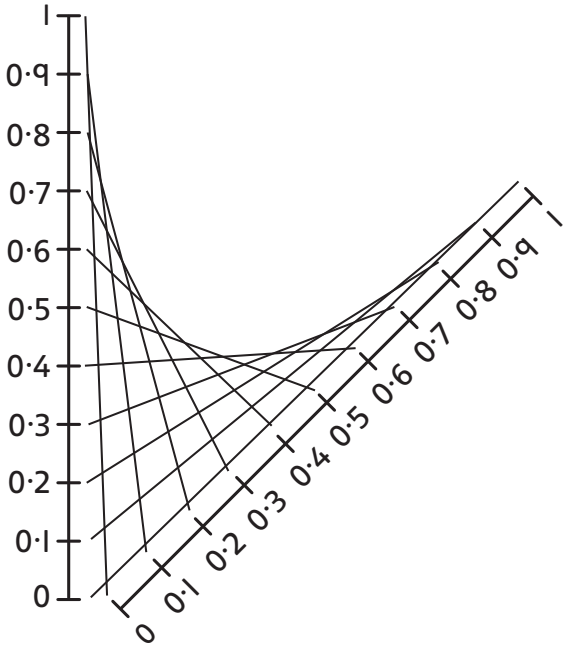
My journal

Same: They each contain the same digits, 0, 2 and 7. They each have 2 tenths.

Different: The digit 7 is 7 ones in two of the numbers and 7 hundredths in the third number.

Power puzzle





Unit I2 – Money

I Write money using decimals

➜ pages 29–31

1. a) £**0·27** b) £**0·98**

2. a) **40**p = £**0·40**
b) **90**p = £**0·90**

3. a) £**0·72**
b) £**2·40**
c) £**2·04**

4. Children should circle one of these options:
a) 20p + 5p + 2p
20p + 5p + 1p + 1p
10p + 10p + 5p + 2p
10p + 10p + 5p + 1p + 1p
b) £1 + 20p + 10p
£1 + 10p + 10p + 10p
£1 + 20p + 5p + 2p + 1p + 1p + 1p
£1 + 10p + 10p + 5p + 2p + 1p + 1p + 1p
c) £1 + 2p + 1p
£1 + 1p + 1p + 1p

5. Aki is not correct. He has forgotten the zero place holder.
Money is written with two decimal places for the pence.
He has £4·30.

6. 30p **3p** **73p** **90p** **90p**

Reflect

Both amounts use the same digits and both have one pound.

£1·30 is 1 pound and three 10p; one pound and thirty pence.

£1·03 is 1 pound and three 1p; one pound and three pence.

2 Convert between pounds and pence

➜ pages 32–34

1. a) **15**p b) **31**p c) **80**p
£**0·15** £**0·31** £**0·80**

2. a) **159**p c) **276**p
£**1·59** £**2·76**
b) **109**p d) **708**p
£**1·09** £**7·08**

3. a) £5 + £2 + £1 + 50p + 20p + 2p
b) £10 + £2 + 10p + 5p + 1p

4. a) £**1·97** b) £**4·06** c) £**2·40**

5. a) 258p = £**2·58**
b) 370p = £**3·70**
c) 408p = £**4·08**
d) 1,257p = £**12·57**
e) £1·18 = **118**p
f) £8·95 = **895**p
g) 209p = £**2·09**
h) 290p = £**2·90**
i) £11·15 = **1,115**p
j) £9 = **900**p

6. A £**3** B £**30** C £**3·10** D £**29**

Reflect

Children should say £3·18, 318p and 3 pounds and 18 pence.

3 Compare amounts of money

➜ pages 35–37

1. a) Children should circle the yoyo at 49p.
All of the other items are more than £1.
b) Children should circle the rugby ball at 498p.
498p = £4·98

2. Children should circle all items except the doll.

3. a) 72p **>** 50p £2 **<** £8
72p **<** 500p £2 **=** 200p
72p **>** 5p £2 **<** £2·05
72p **<** £5 £2 **>** 195p
b) Seven pounds eighty pence **>** £7·09
£5.99 **<** six pounds

4. a) £0·25, £2·05, 255 pence, £5·25
b) £0·84, 408 pence, £8·04, £8·40

5. a) Eight pounds ninety pence, £0·99, 98 pence, £0·89
b) 11 pounds, £1·11, 110 pence, 1 pound 1 pence, £0·01

6. a) **5** or **6** c) **8** or **9**
b) **8** or **9** d) **5**, **6**, **8** or **9**

7. Isla: £3·50 Amelia: £5·30
Richard: 385p Max: 5 pounds and 3 pence

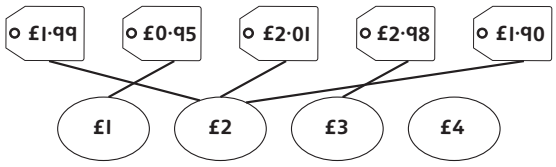
Reflect

Isla is not correct.
100p = £1, so £3 = 300p > 257p

4 Estimate with money

➜ pages 38–40

1.



2. £1·88 £**2** £1·49 £**1** or £**1·50**
£2·95 £**3** £9·75 £**10**

3. a) £2 + £1 + £4 = £**7**
b) It is an over estimate as all of the prices are rounded up.

4. £5 + £5·50 + £6 + £4 + £5·50 = £**26**
Or, £5 + £5 + £6 + £4 + £6 = £**26**

5. I estimate Sofia needs to save £**6,000**.

6. All of the prices round down to the nearest pound. If the pence add to more than £1, she will not have enough money.

Reflect

Many answers are possible:

For £10, any price from £9·50 to £10·49.

For £4·50, any price from £4·25 to £4·74.

5 Calculate with money

➜ pages 41–43

1. a) £**4·55**
b) Olivia has £**5** and **37**p.
c) Max and Olivia have £**9·92** in total.

2. £4·04

3. a) £**32·56**
b) £**5·67**

4. Reena gets £**2·15** change.

5. £3·65

6. Lexi spends £20·75, so gets £4·25 change.
£2 + £2 + 20p + 5p is the minimum number of coins.

Reflect

Children should show that the total is £4·93, giving Mo 7p change.

6 Solve problems with money

➜ pages 44–46

1. Andy gets £**0·80** change.

2. a) If they cost £1 or more, the change would be £2 or less.
b) A pack of stickers costs £0·**81**.

3. It is cheaper to buy 6 throws for £1·20 because 6 throws for £1·20 = 20p a throw, 20p < 25p.
Children may also work out that 6 × 25p = £1·50.

4. The less expensive taxi company for Sofia is Power Cabs.
Power Cabs: £3 + (8 × 40p) = £3 + £3·20 = £6·20
A1 Cars: 9 × 70p = 630p = £6·30

5. £2·**67** + £**5**·75 = £8·42

6. Amelia is not correct.
Buy 4 at 60p = £2·40, then the 5th bun is free:
5 buns = £2·40.
£2·40 < £2·50

Reflect

The answer should be a price less than £2·20 because 4 × 55p = £2·20.

It should not, however, be unrealistically cheap.

£1·60 to £2 would be a reasonable suggestion.

End of unit check

➜ pages 47–48

My journal

Children should suggest changing £1·34 into pence (134p) then adding that to 72p (206p). This can then be changed back into pounds and pence (£2·06).

Power puzzle

1. A toaster costs £**24**.
A kettle costs £**48**.

2. The radio costs £**85**.

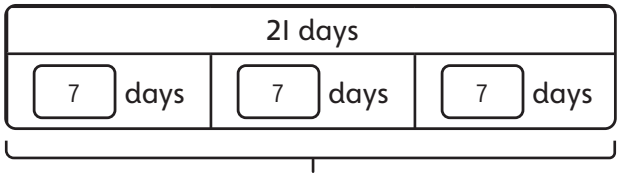
3. A pair of speakers costs £**51**.
A pair of headphones costs £**17**.
A camera costs £**87**.

Unit 13 – Time

1 Years, months, weeks and days

➜ pages 49–51

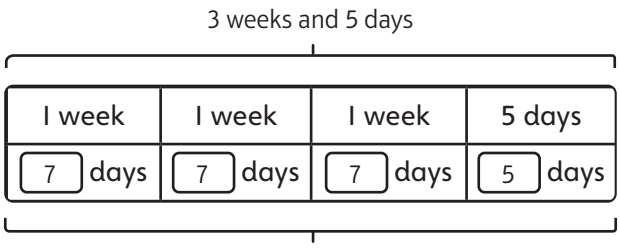
1. a)



21 ÷ 7 = 3 weeks

The orange juice should be used within **3** weeks.

b)

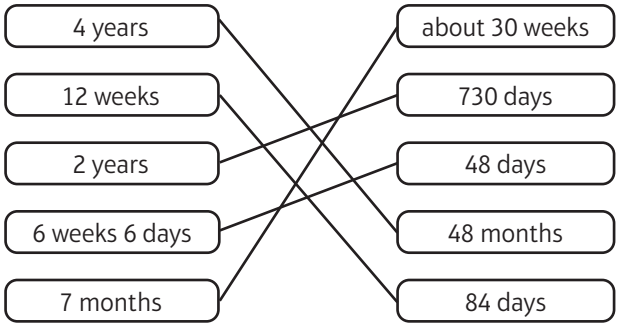


3 x 7 days + 5 days = 26 days

The parcel should be delivered in **26** days.

c) The toy is suitable for children over **3** years old.

2.



3. Lee has calculated 53 × 7 = 371. This would tell you the number of days in 53 weeks.
To find the number of weeks in 53 days, Lee should have calculated 53 ÷ 7 to get the answer 7 weeks and 4 days.

4. a) 5 weeks + 13 days = 6 weeks **6** days
b) 38 months – 2 years = **14** months

5. Explanations completed:
months in a number of years, **multiply** by **12**.
years in a number of months, **divide** by **12**.
days in a number of weeks, **multiply** by **7**.
weeks in a number of days, **divide** by **7**.

6. Children's answers will vary; for example:
9 years, **11** weeks and **4** days
9 × 365 + 2 extra days in leap years = 3,287
11 × 7 = 77
3,287 + 77 + 4 = 3,368
I am **3,368** days old.

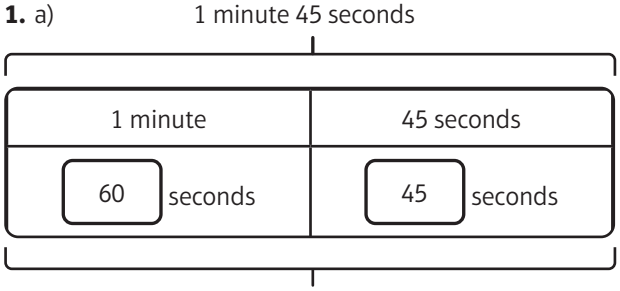
Reflect

Children's explanations may vary; for example:
I can find the answer by dividing 20 by 12 and writing the remainder as months.
20 ÷ 12 = 1 r 8, so 20 months is 1 year and 8 months.

2 Hours, minutes and seconds

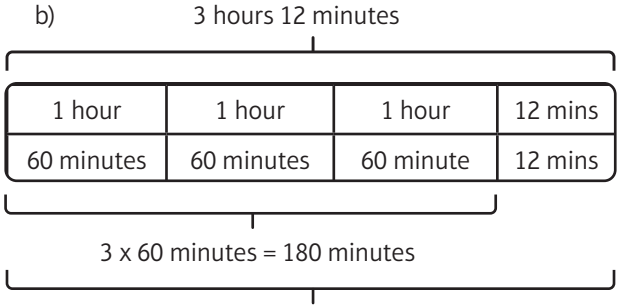
➜ pages 52–54

1. a)



60 seconds + 45 seconds = 105 seconds

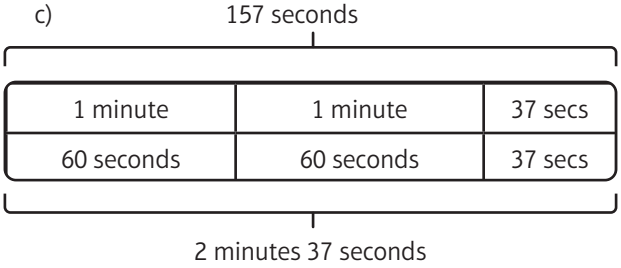
b)



3 x 60 minutes = 180 minutes

180 minutes + 12 minutes = 192 minutes

c)



2 minutes 37 seconds

2. a) 1 × 6 = **6** 1 × 60 = **60** 1 hour = **60** minutes
b) 2 × 6 = **12** 2 × 60 = **120** **2** hours = **120** minutes
c) 3 × 6 = **18** 3 × 60 = **180** **3** hours = **180** minutes
d) 4 × 6 = **24** 4 × 60 = **240** **4** hours = **240** minutes
e) 10 × 6 = **60** 10 × 60 = **600** **10** hours = **600** minutes

3. a) 2 hours and 15 minutes
b) 1 hour and 35 minutes
c) 2 hours and 25 minutes

4. Ella's dad finished the marathon 130 minutes after the winner.

5. 3,600 drops will be in the bowl after 1 hour (60 × 60).

Reflect

Different methods are possible; for example:
There are 60 minutes in 1 hour.
152 – 60 = 92
92 – 60 = 32
So, there are 2 hours and 32 minutes in 152 minutes.

3 Convert between analogue and digital times

→ pages 55–57

1. a) 1:30 am

b) 2:45 pm

c) 3:53 pm

d) 7:20 pm

e) 11:58 am

f) 8:40 pm

2. a)

2:12 am

b)

12:45 pm

c)

6:17 pm

3. In the digital time, the 9 represents 9 hours because quarter to 10 is the same as 9:45.
In the analogue time, the minute hand pointing to the 9 represents 45 minutes past the hour, or a quarter to the next hour.

4. Order of children's answers will vary; for example:

3:56 pm

5:36 pm

6:35 pm

6:53 pm

Reflect

Children's explanations will vary.

For example:
To convert from analogue into digital, I would look at the hour (short) hand to identify the hour it is pointing at or has just gone past. I would write this hour before the colon.

Then I would look at the minute (long) hand and work out how many minutes it is after the hour by counting how many small intervals the minute hand has turned through (clockwise) since passing the 12. I would write this after the colon (using two digits; for example, writing 02 for 2 minutes).

If the time is the morning, I would write 'am' after the time and if it is the afternoon I would write 'pm'.

4 Convert to the 24-hour clock

➜ pages 58–60

1. a)

01:05

d)

08:28

b)

19:00

e)

00:02

c)

23:41

2. a) 1:42 (pm)
b) 3:30 (pm)
c) 9:40 (am)
d) 8:48 (pm)
e) 10:11 (pm)
f) 12:00 (am)

3. a) **03:42**
24-hour time is written using 4 digits so you need to put a zero before the 3.

b) **15:42**
There is no need to write pm after a 24-hour time.

4. Aki's watch will show **15:47**.

5. Many answers are possible; for example:

05:12	5:12 am
06:02	6:02 am
07:01	7:01 am
08:00	8:00 am
10:07	10:07 am
13:04	1:04 pm
14:30	2:30 pm
15:20	3:20 pm

Reflect

Children's explanations will vary.

They should recognise that 24-hour times have 4 digits and 12-hour times need to specify whether they are 'am' or 'pm'.

For example:
To convert a 12-hour am time to 24-hour: If the hour is 12, replace with 00; if the hour is 1 to 9, write a 0 in front; if the hour is 10 or 11, leave as is.

To convert a 12-hour pm time to 24-hour: If the hour is 12, leave as is; if the hour is 1 to 11, add 12.

To convert a 24-hour time to 12-hour: If the hour is 00, replace with 12 and write 'am' after the time; if the hour is 01 to 09, remove the 0 and write 'am'; if the hour is 10 or 11, write 'am'; if the hour is 12, write 'pm'; if the hour is 13 to 23, subtract 12 and write 'pm'.

5 Problem solving – convert units of time

➜ pages 61–63

1. a) Team A was the first to complete Stage I. It took **9** days.
b) It took **3** weeks and **2** days altogether for Team B to complete Stages 1 and 2.
c) Team A took 49 days.
Team B took 51 days.
Team A reached the summit 2 days before Team B.

2. **1** minute **40** seconds
3 minutes **50** seconds
7 minutes **20** seconds
1 hour **23** minutes
3 hours **32** minutes

3.

14:40

4. Dan (21 months) > Ben (22 months) > Abdul (24 months) > Cerys (25 months)

5. The bus left the station at **12:27**.

Reflect

Children's explanations may vary; for example:
Divide 108 by 12 to get 9 years.

End of unit check

➜ pages 64–65

My journal

Children's answers will vary, but they should work out that 100 months is 8 years and 4 months, or convert their ages from years to months and compare.

Power puzzle

06:56 = 6:56 am
3 hours 46 minutes = 226 minutes
60 months = 5 years

Clock showing 4 minutes to 6 = 17:56
8 weeks 4 days = 60 days
4 years 11 months = 59 months

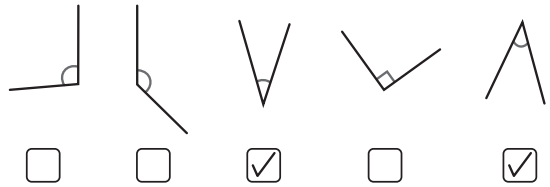
Clock showing 10 past 1 = 13:10
Odd one out is 01:02.

Unit I4 – Geometry – angles and 2D shapes

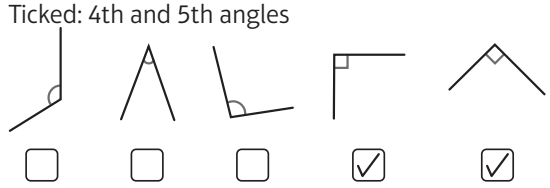
I Identify angles

➜ pages 66–68

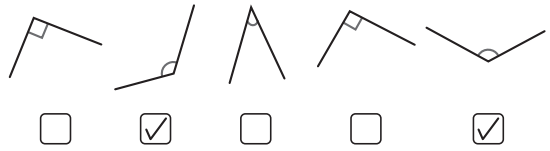
1. a) Ticked: 3rd and 5th angles



b) Ticked: 4th and 5th angles



c) Ticked: 2nd and 5th angles



2. Children's angles will vary in size and orientation but must be a right angle, an acute angle and an obtuse angle.

3. The trapezium (top right cell) is in the wrong place since it has two acute angles and two obtuse angles so it belongs in the top left cell in the table.

4. Children should circle the flower and the rock.

Reflect

An acute angle is an angle that is less than a right angle (or quarter turn).

An obtuse angle is an angle greater than a right angle (or quarter turn) but less than a straight line (or half turn).

A right angle is a quarter turn.

2 Compare and order angles

➜ pages 69–71

1. a) Circled: angle a
b) Circled: angle a
c) Circled: angle b

2. Greatest Smallest

b	c	a

3. a) Smallest Greatest

b	c	a	d

b) Smallest Greatest

d	b	c	a

4. Children's answers will vary, but the angles should be in ascending order and ideally include an acute angle, a right angle and an obtuse angle.

5. a) Smallest Greatest

d	b	c	a

b) The more sides a regular shape has, the bigger the interior angles are.

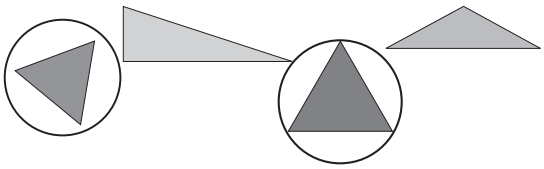
Reflect

Acute angles are smaller than a right angle (a quarter turn) and obtuse angles are greater than a right angle (a quarter turn) but smaller than a straight line (a half turn).

3 Triangles

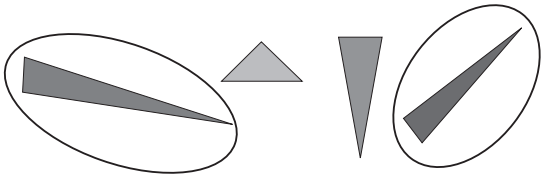
➜ pages 72–74

1. a) Circled: 1st and 3rd triangles

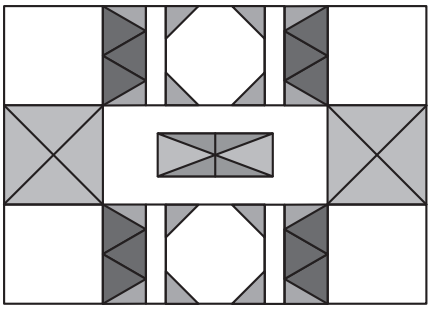


b) Circled: 2nd triangle

c) Circled: 1st and 4th triangles



2. Colours used by children may vary; for example:

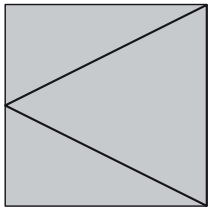


Equilateral:

Isosceles:

Scalene:

3.



4. There are 25 isosceles triangles altogether.

Reflect

An equilateral triangle has 3 sides of equal length and all angles of equal size.

An isosceles triangle has 2 sides of the same length and 2 angles equal in size.

A scalene triangle has 3 sides all of different lengths and all angles of different sizes.

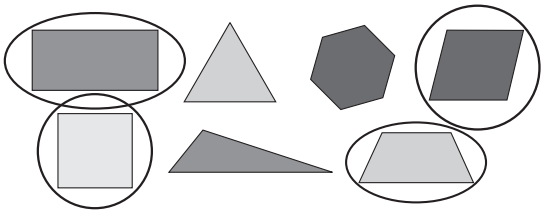
A right-angled triangle has 1 angle which is a right angle.

Right-angled triangles can be isosceles or scalene.

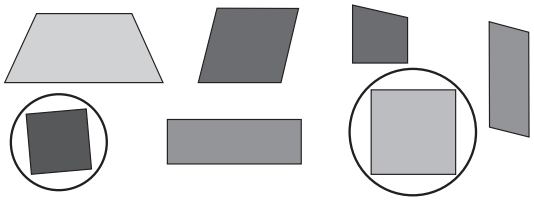
4 Quadrilaterals

→ pages 75–77

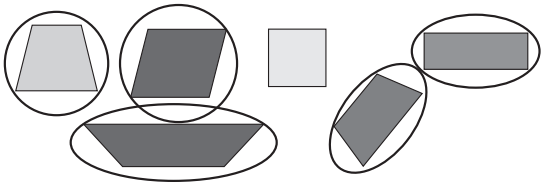
1. a) Circled: rectangle (top left), rhombus (top right), square (bottom left), trapezium (bottom right)



b) Circled: both squares (bottom left, bottom right)

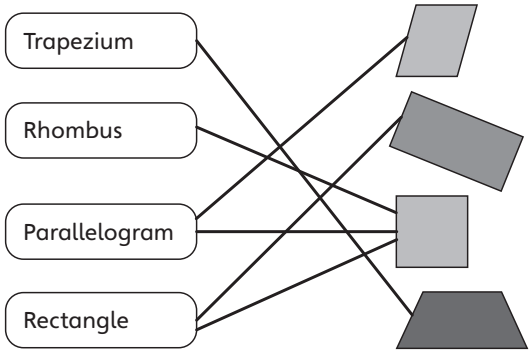


c) Circled: all shapes except the square



2. Children's drawings will vary but must include two squares and four non-square quadrilaterals (orientations will vary).

3.



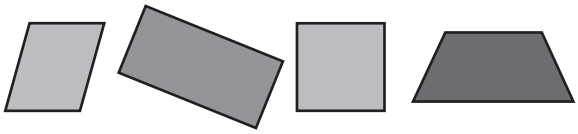
Trapezium → bottom shape

Rhombus → 3rd shape from top (A square is a special kind of rhombus.)

Parallelogram → top shape and 3rd shape from top (A square is a special kind of parallelogram.)

Rectangle → 2nd shape from top and 3rd shape from top (A square is a special kind of rectangle.)

4. Children should correctly draw two different quadrilaterals using the clues provided.



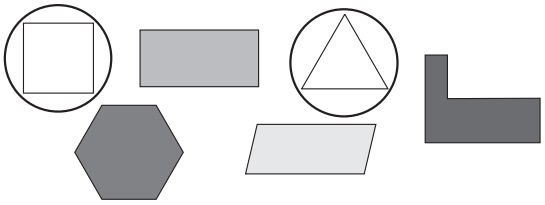
Reflect

A rhombus has four equal sides but can have different sized angles. A square is a type of rhombus but with angles of equal size (right angles).

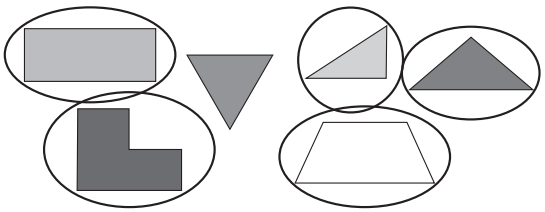
5 Polygons

➜ pages 78–80

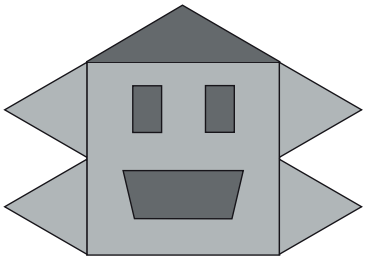
1. a) Circled: square and equilateral triangle



b) Circled: all shapes except the equilateral triangle



c)



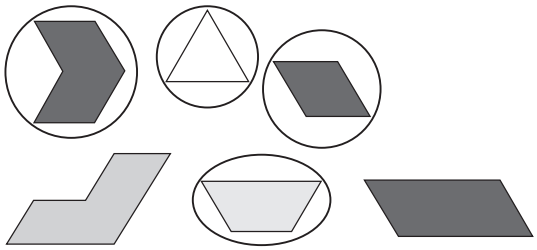
Regular polgygons ▢ Irregular polygons ▢

2. Children should correctly draw two different squares.

3. Children should correctly draw one regular and one irregular hexagon.

4. Reena is describing picture A.

5. Different solutions are possible:



The top left shape can be joined to the top right shape; the trapezium in the middle of the bottom row can be joined to another copy of itself to make a hexagon.

Also, 6 equilateral triangles (in the middle of the top row) can be joined together to make a hexagon.

Reflect

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

6 Reason about polygons

➜ pages 81–83

1. a) Children should shade the: rectangle (3rd shape), triangle (4th shape).

b) Children should shade the: parallelogram (2nd shape), rectangle (3rd shape), trapezium (4th shape).

c) Children should shade the: parallelogram (1st shape), right-angled triangle (2nd shape), right-angled triangle (5th shape).

d) Children should shade the: trapezium (3rd shape), triangle (4th shape), parallelogram (5th shape).

2. Children's answers will vary depending on the types of triangles they have drawn.

3. It could be a parallelogram, a rhombus, a trapezium, a kite, an arrowhead or a quadrilateral, all with different side and angle sizes.

It cannot be a square or a rectangle as these shapes only have right angles.

Children should correctly draw and label their chosen shapes.

4.

	Quadrilateral	Not Quadrilateral
Angles not all equal		
Angles all equal		

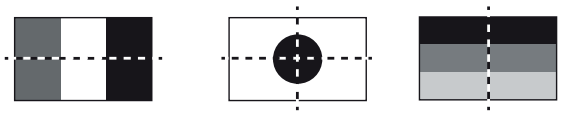
Reflect

Children's answers will vary. They should recognise that they need to consider the properties of its sides - how many sides and whether they are equal in length and parallel. They should also consider the properties of its angles - whether they are equal in size, acute/obtuse or right angles.

7 Lines of symmetry

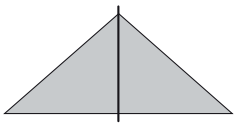
➜ pages 84–86

1. Children should correctly find and draw the lines of symmetry, as shown:

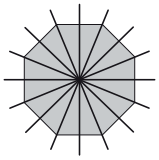


2. Children should correctly find and draw the lines of symmetry, as shown:

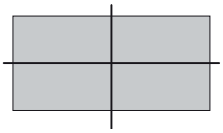
a)



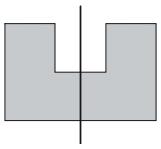
c)



b)



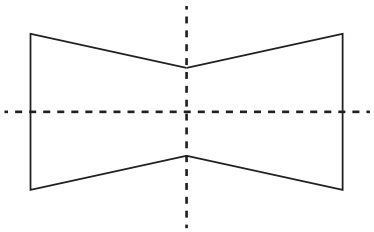
d)



3. Children should correctly identify and draw the shapes in the correct cells of the table.

	Regular	**Irregular**
4 or more lines of symmetry	□ ⬡ ⯃	
Fewer than 4 lines of symmetry	△	▱

4. Children's answers will vary depending on the shape drawn; for example:



5. Children's answers will vary; for example:
a) Isosceles trapezium
b) Rhombus
c) Equilateral triangle

Reflect

Children's answers may vary but should include that there are infinite lines of symmetry; for example:

If you fold a circle along any line which goes through its centre, the 2 halves match exactly. There are an infinite number of such lines so a circle has infinite lines of symmetry.

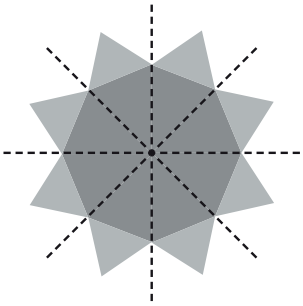
8 Complete a symmetric figure

➜ pages 87–89

1. Check that children have correctly identified and completed each shape.
a) Rectangle
b) Hexagon
c) Octagon
d) Triangle (isosceles)

2. Check that children have correctly completed the patterns and that they are symmetrical.

3. Children should correctly complete the shape, as shown:



4. Check that children have correctly completed the octagon.

Reflect

Children's answers will vary; for example:

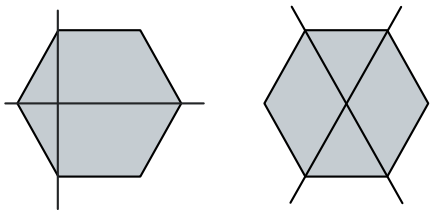
When completing a symmetric shape, it is important to use a mirror to check the shape and count the number of sides on one side of the line.

End of unit check

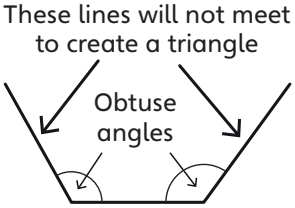
➜ pages 90–92

My journal

1. There are two ways of dividing the hexagon. Children may represent these ways in a different orientation.

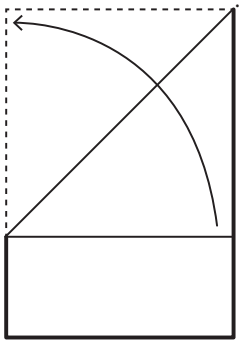


2. Greg cannot be correct. If you draw three lines connected by two obtuse angles, the outer pair of lines will never meet to form a triangle.



Power puzzle

Folding a piece of A4 paper as shown will create a square.



Unit I5 – Statistics

I Interpret charts

→ pages 93–95

1. a) 20
b) 34
c) 25 (accept 24)

2. Evie read **22** fiction books.
Gracie read **8** non-fiction books.
Gracie read **74** books in total.

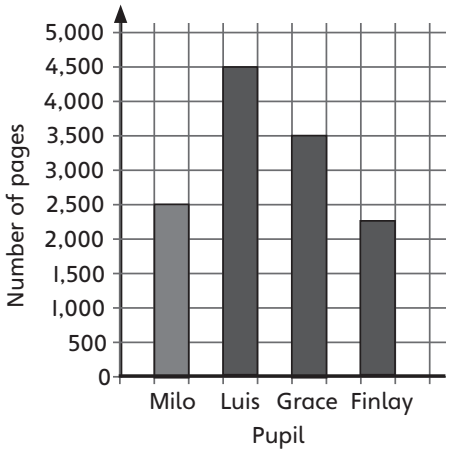
3.

	Number of books
Evie	■■■▮
Gracie	■■■■

Each ■ represents 2 books.

4. **Number of pages read in one term**

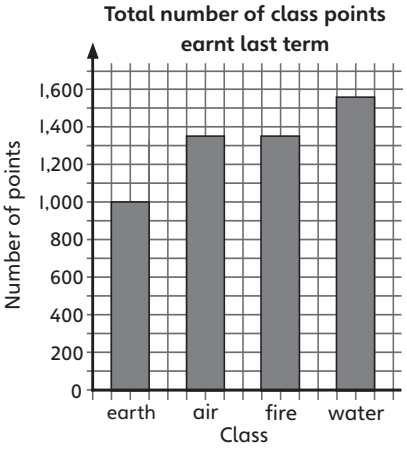
Milo	**2,500**
Luis	4,500
Grace	**3,500**
Finlay	2,250



5. **Number of class points per team in Year 4**

	Number of points
earth	●●◢
air	●●●●
fire	●●●◔
water	●●●●◖

Each ● represents **100** points.



Reflect

Children's answers will vary depending on data that is being represented. Look for children identifying the advantages and disadvantages of different data representations.

2 Solve problems with charts (I)

➜ pages 96–98

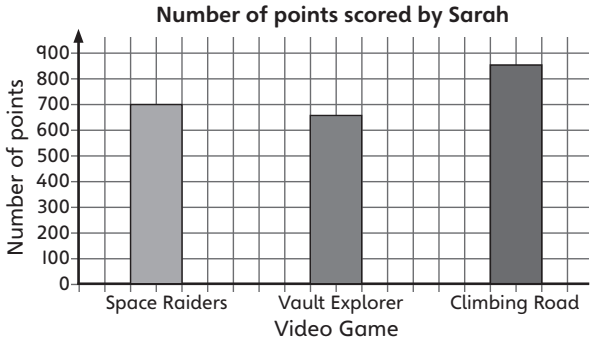
1. a) 35
b) 4
c) 70

2. **Number of visitors**

	History Museum	Science Museum	Total
Saturday	625	**800**	1,425
Sunday	745	725	**1,470**
Monday	**390**	390	780

3. **Number of points earned**

	Space Raiders	Vault Explorer	Climbing Road
Sarah	700	**650**	850
Max	550	200	**800**



4. a) **20**
b) Wednesday, difference of **130**.

Reflect

Children's answers should include line graphs and bar charts with reasons for which graph they prefer.

3 Solve problems with charts (2)

➜ pages 99–101

1. a) 2,000
b) 6,500

2. a) **7 °C**
b) Belfast
c) London

3. a) 53 km
b) 5 km
c) £60

4. Population of Glastonbury = 8,500
(Estimated) population of Overton = 4,300
8,500 - 4,300 = **4,200**

Reflect

Children's answers will vary; for example:

Estimate the difference between the populations of Twyford and Spixworth.

What is the total population of Windermere and Overton?

4 Interpret line graphs (I)

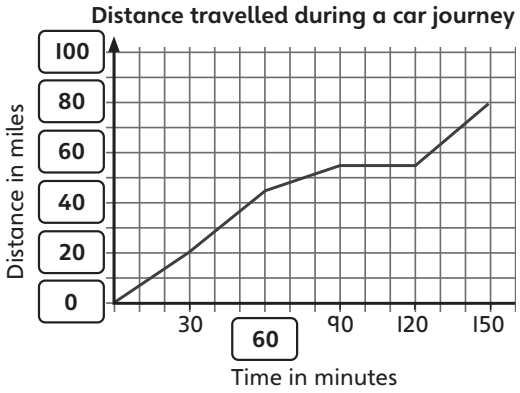
➜ pages 102–104

1. a) **20** km
b) **55** km
c) **60** minutes
d) **150** minutes

2. a) **110** cm
b) **12 pm**
c) The shadow was the longest at **8 am**.
It was **130** cm long.
The shadow was the shortest at **12 pm**.
It was **30** cm long.
The shadow was the same length at both **9 am** and **10 am** (also accept 9 am and 3 pm and 10 am and 3 pm).

3. No, because the variables (colours) do not change over time and the variables (colours and numbers) do not show a relationship. A bar chart would be the best diagram to represent this data.

4. a)



Car journey

Time	30 minutes	**60 minutes**	90 minutes	120 minutes	150 minutes
Distance	**20 miles**	45 miles	**55 miles**	**55 miles**	80 miles

b) The line graph is flat between 90 and 120 minutes which means the car was not moving and stuck in a traffic jam.

Reflect

Children's answers will vary but should include that line graphs are used to show how two items (variables) are related, often this involves time.

5 Interpret line graphs (2)

➜ pages 104–107

1. a) 6 °C
b) It took **2** hours for the water to increase from 22 mm to 32 mm.
It took this long because it stopped raining at 10 am for 1 hour and then started raining again at 11 am.

2. a) **9,000**
b) 1,700 (accept 1,700 to 1,800)
c) 1 hour

3. 73 m (accept 72 to 74 m)

Children's answers will vary but should acknowledge that the peak of the curve is at 73 m, so this is the greatest height.

4. Children's answers will vary, look for clear comparisons using the words provided; for example:

It is colder in the morning than in the middle of the day in both July and December.

The temperature was the same at 12 pm and 1 pm in July.

The difference in the temperatures in July and December at 12 pm was 14 °C.

The temperature at 2 pm in July was 16 °C more than in December.

It is always warmer in July than in December at all times of day.

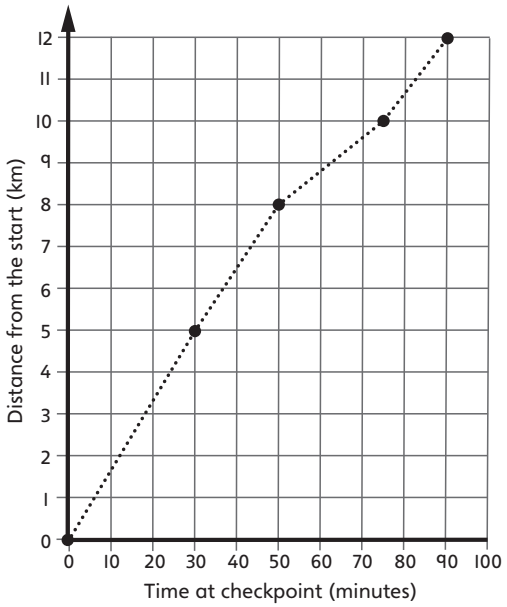
Reflect

Children's answers will vary but should include: clearly reading the axes labels; using a ruler to draw a line from the graph to the relevant axis to read off the data; understanding the intervals on the axes; and using comparison words to draw conclusions.

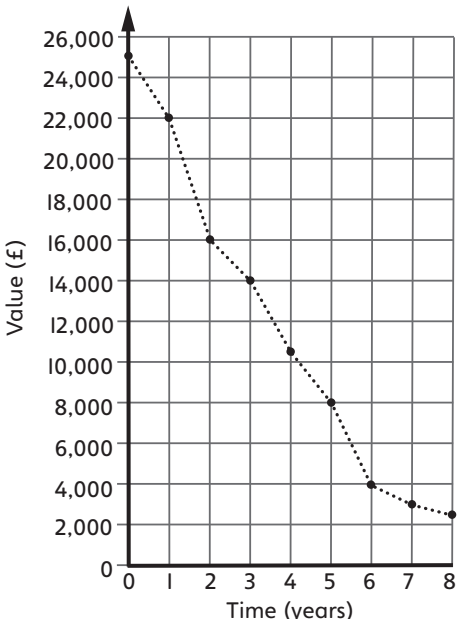
6 Draw line graphs

➜ pages 108–110

1.



2. a)



b) Years 1 and 2; the car loses £10,000. This is where the line on the graph is the steepest.

3. a) In a bar graph, the items are separate to each other and not related in any way. Line graphs represent the relationship between two items (variables).
b) Line graphs represent how two items (variables) are related to each other, often one variable is time. Examples of line graphs include price over time, temperature over time and distance over time.
c) Dotted lines can be clearly seen to be different from the grid lines. Also, if more than one line graph is shown on the same grid then a dotted line and a solid line could be used.

Reflect

Children's answer should include:

Same: they both represent data, are on grids and have horizontal and vertical axes.

Different: line graphs show how two variables are related to each other (usually one variable is time).

Bar graphs show the amounts of individual items that are not related to each other.

End of unit check

→ pages 111–113

My journal

Children's answers will vary; for example:

The price at 6 pm was £2·00 more than the price at 4 pm.

The total price was £5·50.

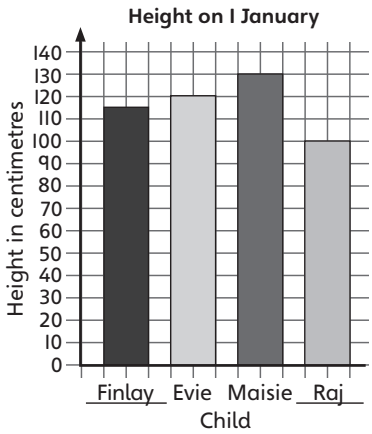
The price at 12 pm was £1·50 less than the price at 3 pm.

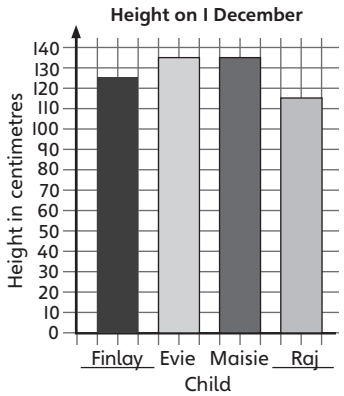
The final price was £4·00 more compared to the starting price of £1·50.

The price increased by £4·00 altogether.

Power puzzle

1.





2. Children's answers will vary. Check for accurate use of a key and measuring.

Unit I6 – Geometry – position and direction

I Describe position

➜ pages 114–116

1. a) Cliff
b) Woods
c) Moor
d) Hill

2. a) Right of the cliff / below the hill
b) Right of the swamp / above the woods
c) Between the cave and the hill / right of the woods
d) Left of the cave / top left of the map
e) Between the woods and the cliff
f) Below the moor / left of the camp

3. Woods

4. No, Andy is not correct.

The woods are closer to the moor than to the cave.

5. a) Children's answers will vary according to the places they choose, but look for the number of squares left/right/up/down between the places chosen.
For example:
This place is 2 squares right of the valley (moor).
This place is 2 squares left and 2 squares up from the woods (swamp).
b) The squares make it possible to be more accurate and pinpoint the exact place.

Reflect

Maps and grids help to pinpoint the location of places accurately.

2 Describe position using coordinates

➜ pages 117–119

1. a) The statue is at **(7,4)**.
b) The other fence posts are at **(4,6)** and **(6,6)**.
c) The other rose bush is at **(3,3)**.

2. **(0,3)**, **(0,6)** and **(1,6)**

3. Jamie is incorrect. She has reversed the coordinates. The gnome is at (5,3).

4. **(8,4)**

5. To the left side of the house.

6. a) **(0,6)**
b) **(1,3)**

7. D **(4,5)**

I think this because it is on the lawn, not on the path, nor right next to the shed nor in the pond.

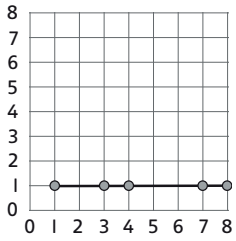
Reflect

Ebo is incorrect. (2,4) means 2 squares right and 4 squares up.

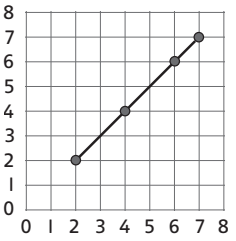
3 Plot coordinates

➜ pages 120–121

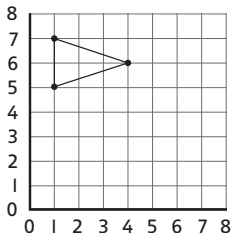
1. a)



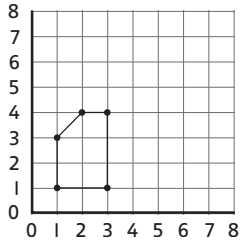
b)



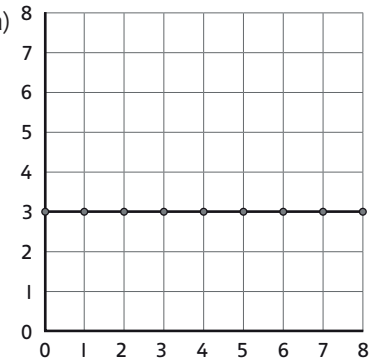
2. a) isosceles triangle



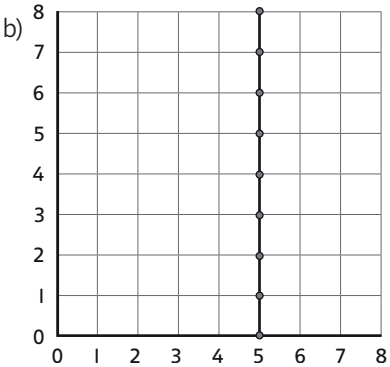
b) (irregular) pentagon



3. a)



b)



4. a) Children should design a star shape on the grid.
b) Children's coordinates will vary depending on their design. They should correctly identify the coordinates of their vertices.

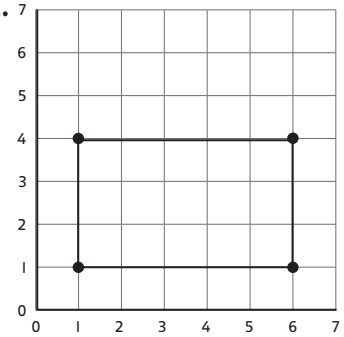
Reflect

It is a vertical line going up from x = 3, similar to Question 3 b).

4 Draw 2D shapes on a grid

➜ pages 123–125

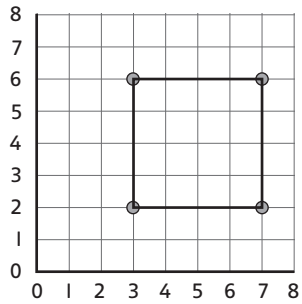
1.



The coordinates are **(1,1)**, **(6,1)**, **(6,4)**, **(1,4)**.

2. a) **(3,6)**, **(7,2)** and **(7,6)**

b)



3. Various sets of coordinates are possible.

There should be a difference of 3 between the x-coordinates and a difference of 2 between the y-coordinates, or the other way around.

For example:

(3,1), **(3,3)**, **(6,1)**, **(6,3)**

(4,1), **(4,4)**, **(6,1)**, **(6,4)**

4. a) **(2,9)**, **(8,3)** and **(8,9)**.
b) Answer 1: **(2,10)**, **(7,10)** and **(7,3)**.
Answer 2: **(2,8)**, **(9,8)** and **(9,3)**.

Reflect

Properties of 2D shapes.

Lengths of the sides can be used to work out the coordinates of the vertices using addition or subtraction.

5 Translate on a grid

➜ pages 126–128

1. a) Pier
b) Turbine
c) Rig
d) Harbour

2. D – A – C – B – F – E

3. a) **(4,1)**
b) **(1,3)**
c) **(0,0)**
d) **(2,4)**

4. a) **(74,126)**
b) **(72,128)**

5. (7,6), (7,7), (12,6), (12,7)

Reflect

Yes. If the value of a number in the coordinate has increased, this is a move right or up. If the value has decreased this is a move left or down.

6 Describe translation on a grid

➜ pages 129–131

1. a) Andy goes **1** left, **2** down.
b) Danny goes **2** left, **1** up.
c) Danny goes **1** right, **2** up.
d) Andy goes **3** left, **1** down.

2. a) **1** left, **3** down
b) **5** right, **1** up
c) 2 left, 2 up
d) 2 right, 2 down
e) 3 right, 4 up
f) 3 right

3. Reena moved 2 right, 3 up.

4. 2 left, 1 up

1 left, 2 up

1 right, 2 up

2 right, 1 up

2 left, 1 down

1 left, 2 down

2 right, 1 down

1 right, 2 down

Reflect

Right becomes left, left becomes right.

Up becomes down, down becomes up.

The numbers stay the same.

For example: the reverse of 4 left, 3 up is 4 right, 3 down.

End of unit check

➜ pages 132–134

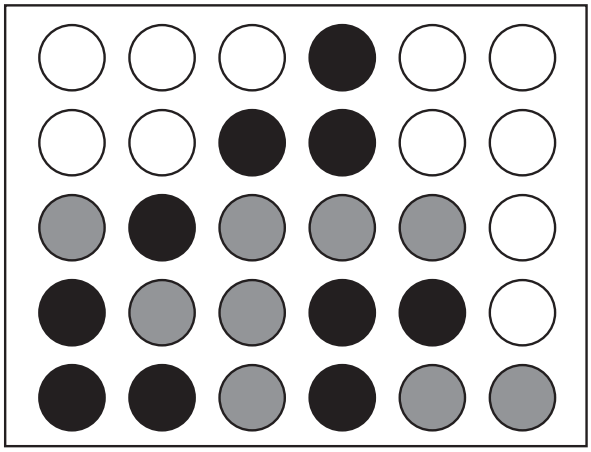
My journal

1. Cards A and D will take you from (5,5) to (10,10) because A translates (5,5) to (0,15) and D translates (0,15) to (10,10).

5 – 5 + 10 = 10

5 + 10 – 5 = 10

2. Kim should put her black counter in position (4,5).



Power puzzle

This is a game, so no answers are required.