

Cambridge Checkpoint Lower Secondary Mathematics Workbook 7 (2021) Answers

Section 1

1 Addition, subtraction, multiplication and division

Workbook answers

Exercise 1.1 (page 2)

- 1 a 80 b 60 c 90
 d 45 e 23 f 48
- 2 a 49 miles b 98 miles
- 3 a 180 b 290 c 250
 d 70 e 210 f -40
- 4 a 3 glasses b 120ml
- 5 8 weeks
- 6 a 48 b 35

Exercises 1.2–1.3 (page 4)

- 1 a 1680 b 600 c 7200
 d 700 e 16000 f 51000

- 2 a 17 b 700 c 8
 d 3 e 120 f 120
- 3 144 loaves
- 4 258 legs
- 5 43 rows
- 6 a -65 b 330 c -9
 d -1000 e -800

7

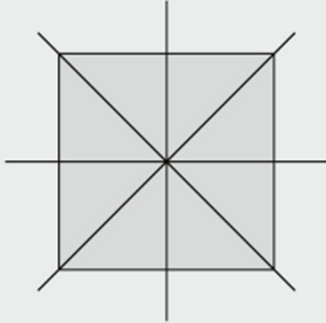
x	-12	30	180
-7	84	-210	-1260
-25	300	-750	-4500

2 Properties of two-dimensional shapes

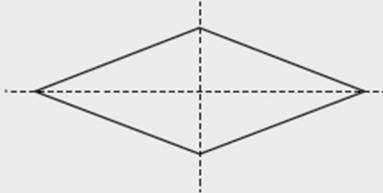
Workbook answers

Exercises 2.1–2.3 (page 5)

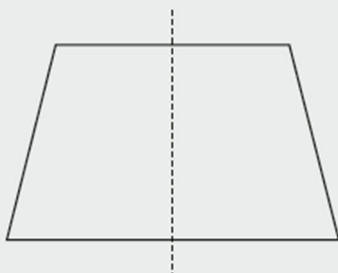
1 a Square



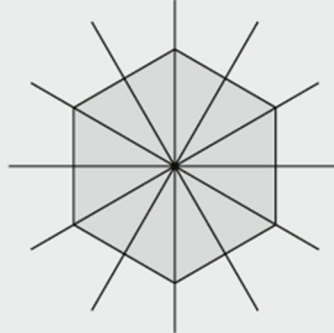
b Rhombus



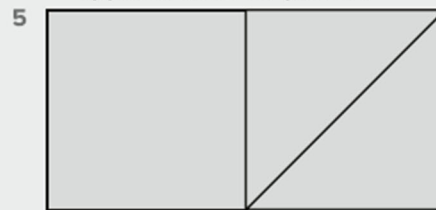
c Trapezium or isosceles trapezium



d Hexagon or regular hexagon



- 2 a chord b segment
c radius d sector
- 3 a A parallelogram does not have any right angles.
b A square has all equal sides or the diagonals in a square intersect at right angles.
- 4 i, ii Opposite sides are equal length and opposite sides are parallel.



- 7 a Yes, a rectangle has 4 right angles and opposite sides must be equal length.
b No, a square has to have all sides equal length.

3 Data collection and sampling

Workbook answers

Exercises 3.1–3.2 (page 7)

- 1 a continuous b categorical
c discrete d continuous
2 a discrete b continuous
c categorical d population
e sample
f Quantitative data is data that can be measured; quantitative data can either be discrete or continuous.

3 Students' answers will vary.

Exercise 3.3 (page 8)

- 1 a No time frame given, e.g. week? month? year? etc.

- b i, ii No option for 'never', no option '4'.
c Standing outside the gym is not likely to give a sample representative of the whole population as all the respondents will be gym goers.

2 Students' answers will vary, e.g. How many portions of fruit and/or vegetables do you eat per day?

- None
- 1
- 2
- 3
- 4
- 5 or more

4 Area of a triangle

Workbook answers

Exercise 4.1 (page 9)

- 1 a 24 m^2 b 22 mm^2 c 7.5 cm^2
2 a 9.69 cm^2 b 8 mm c 12 m
d 7 cm
3 a 3.75 cm b 2 cm

Exercise 4.2 (page 11)

- 1 a 78 cm^2 b 165 cm^2
2 \$560

5 Order of operations

Workbook answers

Exercise 5.1 (page 12)

- 1 a 6 b 29 c 22
d 7 e 22 f 53
g 6 h 7 i 24
j 27
2 a Joe is correct. $2^2 = 4$, $5 \times 4 = 20$
b Thea did 5×2 first and then squared her answer.
3 a 19 b 24 c 35
d 9
4 Her method is incorrect. Firstly, $3^2 = 9$, she multiplied the 3 by 2 rather than squaring. Secondly, she added $6 + 4$ first, she should have multiplied 4 and 2. Her answer should have been 17.

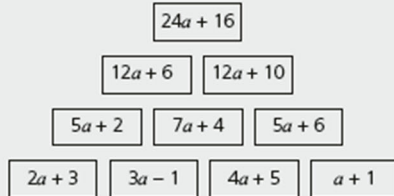
- 5 a $7 + 3 \times (5 - 2) = 16$
b $(3 + 5)^2 + 2 = 32$
c $4 \times (3 + 2 \times 5) = 52$
d $18 \div (2 + 4) \times 5 = 15$
6 a $8 + 7 - 3 + 1 = 13$
b $2 \times 5 + 3 \times 4 = 22$
c $50 \div 5 - 2 \times 3 = 4$
d $(6 + 3) \times 4 - 10 = 26$
7 a $3 \times 2 + 7 = 13$
b $4 + 2 \times 5 = 14$
c $6 + 2 + 3 = 6$
d $10 - 6 - 3 = 1$
e $4 \times (2 + 5) = 28$
f $(10 - 5) \times (3 + 1) = 20$
g $3 \times (4 - 7 \times 2) = -30$

6 Algebra beginnings – Using letters for unknown numbers

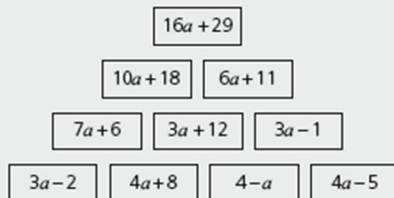
Workbook answers

Exercises 6.1–6.2 (page 14)

- 1 a $2x+10$ b $3a+8b$
 c $6y+3$ d $8f-2g$
 2 a $6a+8$ b $9x+5$
 c $9y-3$ d $20b-3$
 3 a



b



- 4 a $5b$ b $3a+6$
 5 a $4a^2+15a+3$ b $6b^2-b$

Exercise 6.3 (page 17)

- 1 a 9 b 24
 c 19 d 30
 e 22 f -15
 2 a 7 b 1
 c -2 d 36
 e 3 f 40
 3 a i 60 miles b i 40 mph
 ii 32.5 miles ii 70 mph
 iii 30 miles iii 5 m/s

7 Organising and presenting data

Workbook answers

Exercises 7.1–7.2 (page 18)

- 1 a Ottawa
 b 40
 c Ottawa, Helsinki, London, Lisbon, Kathmandu, New Delhi, Bangkok
 d 4

2

Weight (kg)	Tally	Frequency
2–3	II	2
3–4	III	3
4–5	III	3
5–6	I	1
6–7	III	3

3 a

	Cupcakes	Traybake	Large sponge	Total
Chocolate	75	12	3	90
Vanilla	38	6	10	54
Fruit	42	10	2	54
Total	155	28	15	198

b 38

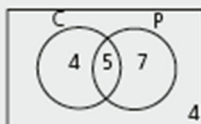
c 28

d 36

4 a

b 4

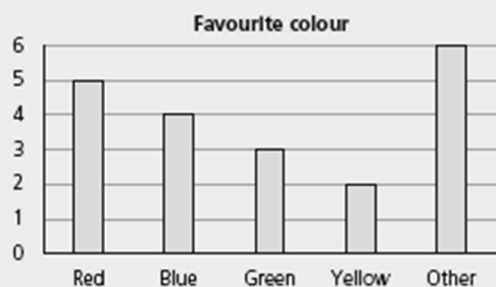
c 7



Exercises 7.3–7.4 (page 20)

1

Favourite colour	Frequency
Red	5
Blue	4
Green	3
Yellow	2
Other	6

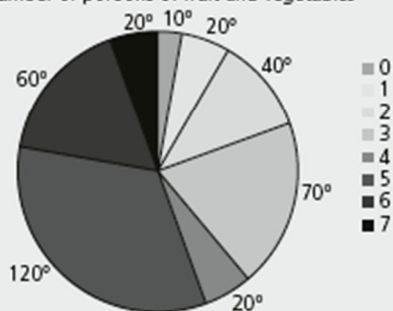


2 a

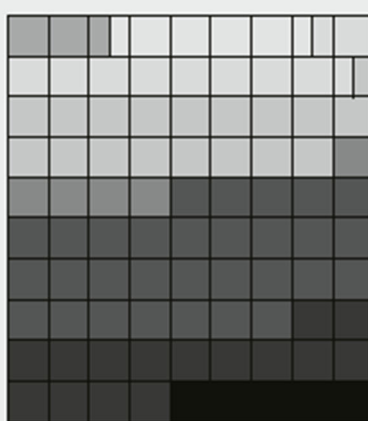


b £209

3 a Number of portions of fruit and vegetables



b

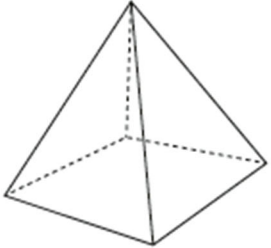
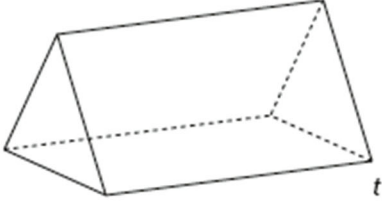
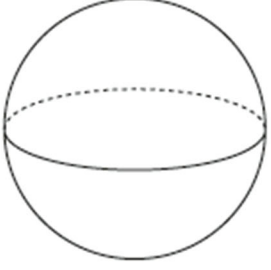


8 Properties of three-dimensional shapes

Workbook answers

Exercises 8.1–8.3 (page 22)

1

3D shape	Name	Number of faces	Number of edges	Number of vertices
	Square-based pyramid	5	8	5
	Cuboid	6	12	8
	Triangular prism	5	9	6
	Sphere (It has one surface, but not a face as it is not flat)	0	0	0

2 16 cm^3 3 a Cuboid D b 286 cm^3

4 a 2 cm b 4 mm c 2.5 m

5 2 m

6 i, ii, iii 1, 1, 36 1, 2, 18 2, 2, 8
2, 3, 6 3, 3, 4

(And any other dimensions that multiply together to give 36)

7 320 litres

8 a 170 cm^3 b 1656 cm^3

Exercise 8.4 (page 25)

1 a 142 cm^2 b 126 cm^2 2 a 252 cm^2

b You would need more plastic film as you would need an overlap.

9 Multiples and factors

Workbook answers

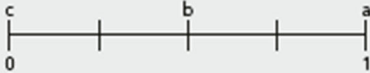
Exercises 9.1–9.2 (page 27)

- 1 a 1, 32, 2, 16, 4, 8
 b 1, 100, 2, 50, 4, 25, 5, 20, 10
 c 1, 56, 2, 28, 4, 14, 7, 8
 d 1, 720, 2, 360, 3, 240, 4, 180, 5, 144, 6, 120, 8, 90, 9, 80, 10, 72, 12, 60, 15, 48, 16, 45, 18, 40, 20, 36, 24, 30
- 2 a 8, 16, 24, 32, 40, 48
 b 13, 26, 39, 52, 65, 78
- 3 a 7
 c 15 and 45
 d 8 and 7
- 4 a 4
 c 6
 b 7
- 5 a 30
 c 24
 b 70
- 6 9.40 a.m.
- 7 5, 7, 8, 9
- c 15, 30, 45, 60, 75, 90
 d 21, 42, 63, 84, 105, 126

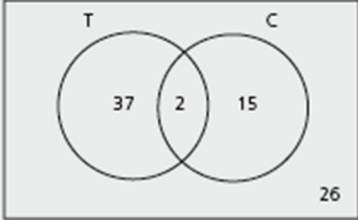
10 Probability and the likelihood of events

Workbook answers

Exercise 10.1 (page 29)

- 1 
- 2 a 4
 b No, rolling a fair dice is random so there is no definite amount of 6s that will be rolled.
 c Cannot tell, the dice was not rolled enough times to say for sure if it is fair or biased.
- 3 $\frac{4}{9}$
- 4 a 1, 40, 2, 20, 4, 10, 5, 8
 b $\frac{5}{8}$

- 5 27 different combinations. $3 \times 3 \times 3$.

- 6 a 
- b $\frac{59}{100}$ c $\frac{22}{37}$

Section 1 – Review

1 a

2	7	6
9	5	1
4	3	8

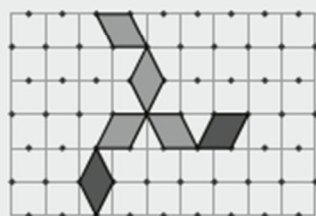
b Add 10 to each of the numbers in (a)

12	17	16
19	15	11
14	13	18

c i 45

ii Each number is the original number + 10. Each row, column, etc., has three numbers, therefore the total is the original total of $15 + 30 = 45$.

2



3 a Students' responses.

b Students' responses.

4 $x = 8$ cm

5 a i He has added the 3 and the 5 first, but he should have multiplied the 5 by the 4 first.

ii 23

b $(3 + 5) \times 4$ 6 $A = 52.5 \text{ cm}^2$

7 Yes, they are showing the same results and the proportion shaded for each number

is the same, i.e. $\frac{1}{8}$ shaded for 1, 4 and 5

people, $\frac{3}{8}$ shaded for 2 people and $\frac{1}{4}$

shaded for 3 people.

8 Side lengths $P = 6$ cm, $Q = 3$ cm

9 a i Any number.

ii For a number to be divisible by 4, only the last two digits must be divisible by 4. As 48 is divisible by 4, the missing number can be anything.

b i 3

ii For a number to be divisible by 9, the sum of the digits must be divisible by 9.

$3 + 3 + 4 + 8 = 18$ and 18 is divisible by 9

10 a $\frac{15}{30} = \frac{1}{2}$

b $\frac{5}{30} = \frac{1}{6}$

c $\frac{1}{30}$

d $\frac{10}{30} = \frac{1}{3}$

Section 2

11 Rounding and estimation – Calculations with decimals

Workbook answers

Exercise 11.1 (page 32)

- 1 a 36.5 b 0.8
c 465.73 d 45.22
e 15.0 f 87.1
- 2 He has rounded it incorrectly. 12.36931688 rounds to 12.4 to 1 decimal place.
- 3 36.724, 36.7163, 36.72, 36.718
- 4 a 6.3775cm
b 6.3784cm

- e 30.2 f 0.0437
g 3870000 h 0.042571
i 0.010043 j 0.0008362

2

423.6×10	$423.6 \div 10$
$423600 \div 10^5$	$42.36 \div 10^2$
0.4236×10^2	0.4236×10
$4236 \div 10^4$	4.236×10^3
4.236×10^4	$4236000 \div 10^2$

Exercise 11.2 (page 33)

- 1 a 173.122 b 86.09
2 a Yes, because $5+5+10+1+2=23$
b \$23.38 c \$6.62
3 a \$35.25 b \$34.08

Exercise 11.3 (page 35)

- 1 a 43 b 223700
c 72500 d 82340

Exercise 11.4 (page 36)

- 1 Students' answers close to, but not the same as, the following
a 246373.95 b 116.4432
- 2 Students' answers close to, but not the same as, the following
a 427 b 357.5
- 3 a 1856 b 32480
c 18.56 d 324800

12 Mode, mean, median and range

Workbook answers

Exercises 12.1–12.2 (page 37)

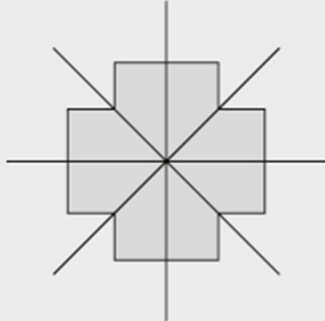
- 1 a Mean = 5; mode = 3 and 5; median = 5; range = 6
b Mean = 6.05; mode = no mode; median = 6; range = 7.8
c Mean = 46; mode = 30; median = 45; range = 40
- 2 a 6.5m is an outlier and would skew the data.
b Median, it would rule out any outliers. There is no mode so this would not be useful.
- 3 a 1, 1, 6, 6, 6 b 5, 7, 8, 15, 15
- 4 4
- 5 \$10
- 6 8
- 7 22

13 Transformations of two-dimensional shapes

Workbook answers

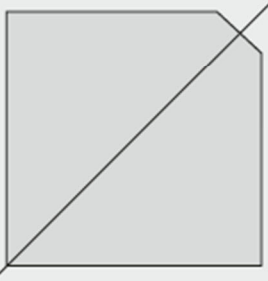
Exercises 13.1–13.2 (page 40)

1 a i



ii Rotational symmetry order 4.

b i



ii Rotational symmetry order 1.

2 These are an example of answers; students may have other examples.

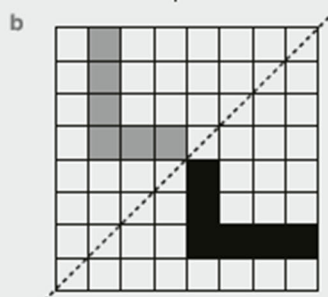
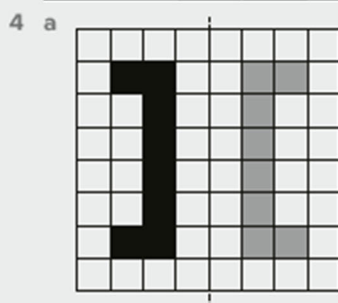
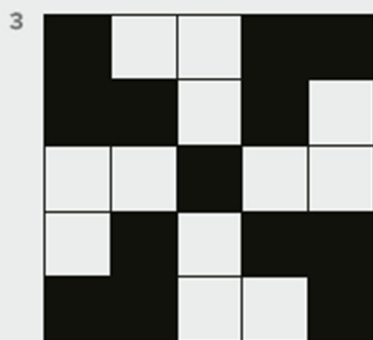
a Square



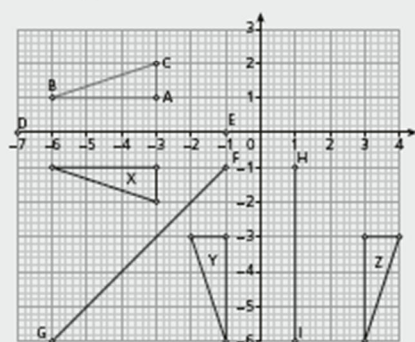
b Parallelogram



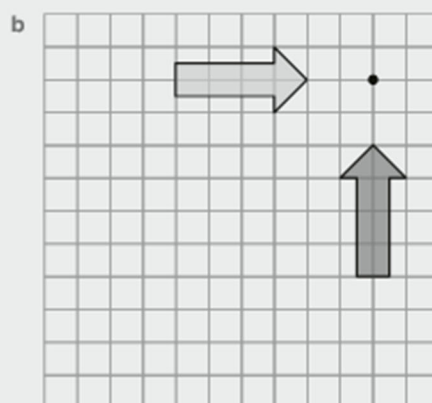
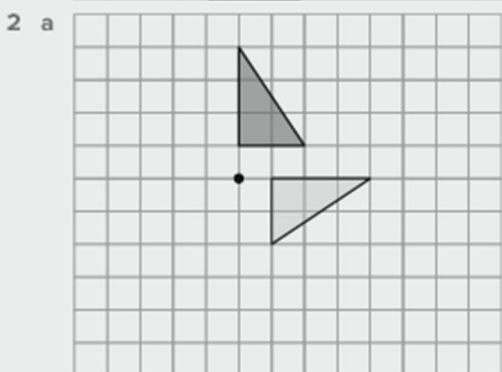
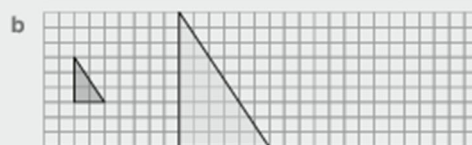
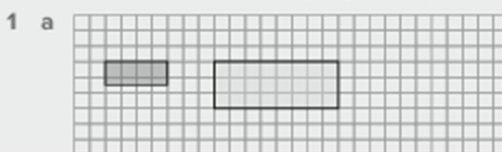
c Isosceles trapezium (or kite)



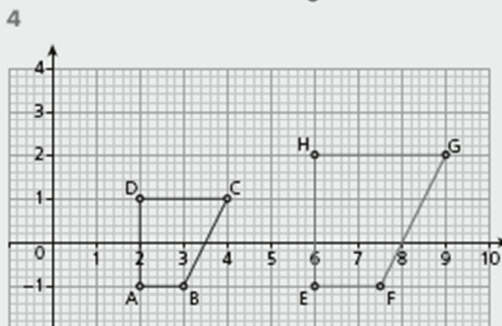
5 a, b, c



Exercises 13.3–13.4 (page 43)



3 Rotated clockwise 90 degrees



14 Manipulating algebraic expressions

Workbook answers

Exercises 14.1–14.2 (page 45)

- 1 a $14a$ b $12b$ c $8c+8$ d $5d+3$ e $15e+3$ f $9f-4$
- 2 a $2p+12$ b $5d+5$ c $26f+30$
- 3 a $8a+12$ b $6c-30$ c $6d+2cd$ d $6f-12g+30$
- 4 a $30g+40$ b $20g+24$ c $15g+20$
- 5 16

15 Fractions, decimals and percentages

Workbook answers

Exercise 15.1 (page 47)

1	$\frac{4}{5}$	0.95
	0.7	0.3 or 30%
	95%	0.8
	$\frac{12}{40}$	$1\frac{2}{25}$ or 1.08
	0.03	$\frac{7}{10}$
	108%	$\frac{6}{200}$

- 2 $\frac{2}{5} = 0.4 = 40\%$
 $0.75 = \frac{3}{4} = 75\%$
 $65\% = \frac{13}{20} = 0.65$
 $\frac{17}{20} = 0.85 = 85\%$
 $1.02 = 102\% = \frac{51}{50}$
 $\frac{1}{3} = 0.\dot{3} = 33.\dot{3}\%$
 $30\%, \frac{1}{3}, \frac{2}{5}, 65\%, 0.75, \frac{17}{20}, 1.02$

Exercise 15.2 (page 48)

1 $\frac{3}{10}$

2 $\frac{1}{6} + \frac{3}{4} = \frac{22}{24}$

3 a $\frac{31}{60}$ and $\frac{1}{60}$ b $\frac{1}{60}$

Exercise 15.3 (page 49)

1 a $2\frac{41}{60}$ b $5\frac{5}{18}$

$1\frac{11}{20}$ $1\frac{2}{15}$ $2\frac{3}{5}$ $2\frac{61}{90}$

$\frac{3}{4}$ $\frac{4}{5}$ $\frac{1}{3}$ $\frac{2}{9}$ $2\frac{17}{45}$ $\frac{3}{10}$

2 a Add $\frac{1}{4}$ b $1\frac{9}{10}$

Exercise 15.4 (page 49)

1 a $\frac{3}{8} \text{ cm}^2$ b $2\frac{9}{56} \text{ cm}^2$

Exercise 15.5 (page 50)

1 a $\frac{1}{7}, \frac{3}{14}, \frac{1}{2}, \frac{9}{10}$ b $\frac{1}{3}, \frac{4}{9}, \frac{7}{10}, 1\frac{2}{5}$

2 a 21 b 81
 c 84 d 54.6
 e 262.5

16 Probability and outcomes

Workbook answers

Exercises 16.1–16.2 (page 51)

- 1 a 2, 3, 5, 7 b $\frac{1}{4}$
 2 a $\frac{4}{20}$ b $\frac{3}{20}$
 3 a 0.11 b 0.77
 c No, as a student can choose to study both languages, shown by the overlap of the two circles.

- 4 a Cannot tell. The dice needs to be rolled more times to know whether or not it is biased.
 b Yes. The number 2 has been rolled more times than you would expect.
 5 a Spin the spinner 60 times. If it was fair it would land on 1 roughly 20 times, 2 roughly 10 times and 3 roughly 30 times.
 b i $\frac{2}{6}$ ii $\frac{1}{6}$ iii $\frac{3}{6}$

17 Angle properties

Workbook answers

Exercises 17.1–17.2 (page 53)

- 1 a $p = 90^\circ$; $q = 25^\circ$; $r = 245^\circ$
 b $m = 50^\circ$; $n = 46^\circ$
 2 a, b Students' constructions drawn accurately – allow tolerance of $\pm 2\text{mm}$ and $\pm 1^\circ$
 3 Students' constructions drawn accurately – allow tolerance of $\pm 2\text{mm}$ and $\pm 1^\circ$

Exercises 17.3–17.4 (page 54)

- 1 $a = 73^\circ$ Opposite angles in a parallelogram are equal.
 $b = 107^\circ$ Adjacent angles in a parallelogram sum to 180° .
 $c = 68^\circ$ Angles in a quadrilateral sum to 360° .
 2 $n = 12^\circ$ $m = 73^\circ$

Exercises 17.5–17.7 (page 55)

- 1 a $c = 54^\circ$ Vertically opposite angles are equal
 $d = 126^\circ$ Angles on a straight line sum to 180° or Angles around a point sum to 360°
 b $e = 114^\circ$ Alternate angles
 $f = 66^\circ$ Supplementary to angle f
 2 $x = 147^\circ$ Supplementary angles sum to 180°
 $y = 123^\circ$ Angles in a triangle sum to 180° and angles on a straight line sum to 180°

18 Algebraic expressions and formulae

Workbook answers

Exercises 18.1–18.2 (page 57)

- 1 a $x - 7$ b $2x$ c $4x - 7$
 2 a $f + 2$ b $3f + 6$ c $5f + 8$
 3 a Rectangle B would have a negative perimeter which is impossible. b B c $x > 16.5$
 4 a $C = 35h + 20$ b \$125
 5 a $3a + 3$ b $3a + 4$ c $22a + 12$
 6 a $T = 0.5W + 0.75$ b 2 hours and 30 minutes.

19 Probability experiments

Workbook answers

Exercise 19.1 (page 60)

- 1 a 50 times, probability of landing on heads is $\frac{1}{2}$
 b Student to complete tally chart
 c (number of times landed on heads) $\div$ 100
 d Fair – landed on heads close to 50 times
 Unfair – didn't land on heads close to 50 times.

- 2 a Student to complete tally chart
 b (number of times landed on 6) $\div$ 30
 c (number of times landed on 1, 3 or 5) $\div$ 30
 d Student compares their results to the theoretical probability $\left(b, \frac{1}{6}, c, \frac{1}{2}\right)$
 e Roll the dice more than 30 times.

20 Introduction to equations and inequalities

Workbook answers

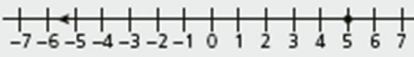
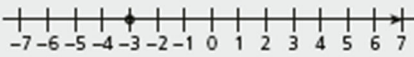
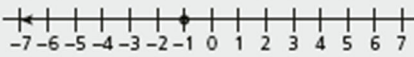
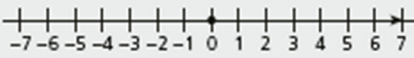
Exercises 20.1–20.2 (page 62)

- 1 a $m=6$ b $n=6$ c $t=7$
 d $f=6$ e $q=4$ f $r=25$

Exercise 20.3 (page 63)

- 1 a $x+3=17$ $x=14$
 b $5x=65$ $x=13$
 c $x-18=4$ $x=22$
 2 50cm

Exercise 20.4 (page 64)

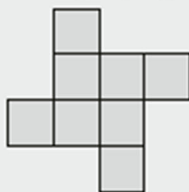
- 1 a 
 b 
 c 
 d 
 2 a $x \geq 1$ b $x < -1$
 3 a $d \leq 3$ b $3x+8 < 26$
 c $t \geq -6$

Section 2 – Review

- 1 Multiplying the unit digits of each number gives $6 \times 4 = 24$ therefore multiplying 36×24 must give an answer ending in a 4 not a 6.

- 2 a i 7 ii 15
 b i Not possible. For the median to be 8, the fifth card can have any number greater than or equal to 8.
 ii It can only be one of two numbers. 14, because $14 - 3 = 11$ or 1 because $12 - 1 = 11$.

3



4 $6a+14$

5 a $3\frac{7}{10}$ b $2\frac{3}{10}$ c $1\frac{1}{10}$

6 0.36

7 57° and students' explanations

- 8 a i Sometimes true
 ii Only true if $x > 4$
 b i Always true
 ii Area of A = $12x + 18$, area of B = $12x + 40$
 $12x + 18 < 12x + 40$ always

9 Yellow = 16 Red = 36 Green = 29

- 10 a Students' explanations
 b 5

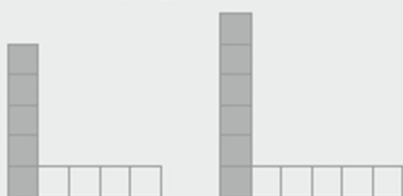
Section 3

21 Sequences

Workbook answers

Exercise 21.1 (page 65)

1 a



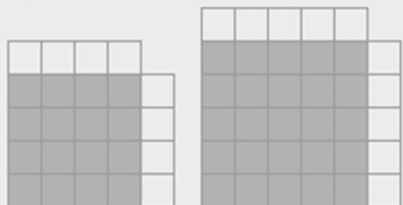
b

Number of white tiles	1	2	3	4	5
Number of grey tiles	2	3	4	5	6

c The number of grey tiles is always one more than the number of white tiles.

d 36

2 a



b

Number of white tiles	2	4	6	8	10
Number of grey tiles	1	4	9	16	25

c The number of grey tiles is the square of half the number of white tiles, and so is always a square number.

d 441

Exercise 21.2 (page 66)

- 1 a i +3 ii 18, 21 iii 30
 b i +2 ii 15, 17 iii 23
 c i +6 ii 31, 37 iii 55
 d i -5 ii -5, -10 iii -25
- 2 a \$55 b 16 days

Exercise 21.3 (page 67)

- 1 a i $n+3$ ii 103
 b i $4n$ ii 400
- 2 a $2n+2$
 b Yes. The four corner squares will always be white, the centre white squares will always increase by 1.
- 3 a
 b 64 c 26th
- 4 a $4a+7b$
 b $10a+19b$

22 Percentages of whole numbers

Workbook answers

Exercise 22.1 (page 69)

- 1 a 250 b 70 c 75
 d 450 e 240
- 2 341
- 3 \$10.20
- 4 21
- 5

40%	$\frac{1}{10}$
175%	$\frac{1}{400}$
10%	$\frac{13}{20}$
$\frac{1}{4}\%$	$\frac{4}{10}$
65%	$\frac{9}{10}$
90%	$\frac{7}{4}$

6 a

80	80	80	80	80
----	----	----	----	----

b

20	20	20	20	20	20	20	20
----	----	----	----	----	----	----	----

- 7 a $10 \times 10\% = 100\%$ and $10 \times 14 = 140$
 $5 \times 20\% = 100\%$ and $5 \times 14 = 70$
- b

22.5	22.5	22.5	22.5	22.5	22.5	22.5	22.5
------	------	------	------	------	------	------	------

Exercise 22.2 (page 71)

- 1 a 50%
 b 10%
 c 20%
 d 2.5%
- 2 Won = 50%; Drew = 37.5%; Lost = 12.5%
- 3 Black = 45%; Red = 30%; Blue = 25%
- 4 4%

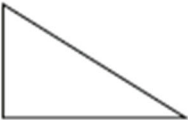
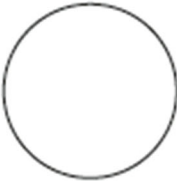
23 Visualising three-dimensional shapes

Workbook answers

Exercises 23.1–23.2 (page 72)

1	3D shape	Front	Side	Plan

2

Front	Side	Plan	Mathematical name
			Cuboid
			Triangular prism
			Cylinder

3 a



b 9

24 Introduction to functions

Workbook answers

Exercises 24.1–24.2 (page 75)

1 a $x \rightarrow +7 \rightarrow w$

c $h \rightarrow \times 2 \rightarrow v$

2 a

Input	Output
1	2
2	4
3	6
4	8

3 $M \rightarrow -28 \rightarrow R$

4 a $\text{In} \leftarrow \times 2 \rightarrow \text{Out}$

b $f \rightarrow -3 \rightarrow d$

b

Input	Output
-2	-6
-1	-3
0	0
1	3
2	6

b

Input	Output
2	1
10	5
18	9
-6	-3
1	0.5

5 a

Input	Output
10	20
2.5	12.5
14	24
25	35
15	25

Input	Output
3.5	1.5
4	2
4.5	2.5
8	6
5.5	3.5

Input	Output
2	0.5
40	10
8	2
100	25
240	60

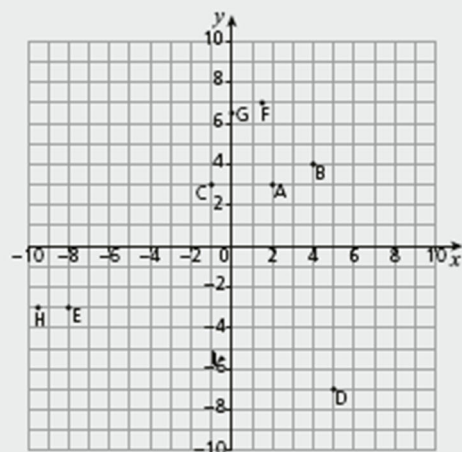
6 Input = x
 $3x = x + 8$
 $2x = 8$
 $x = 4$
 This proves there is only one possible solution and it is 4.

25 Coordinates and two-dimensional shapes

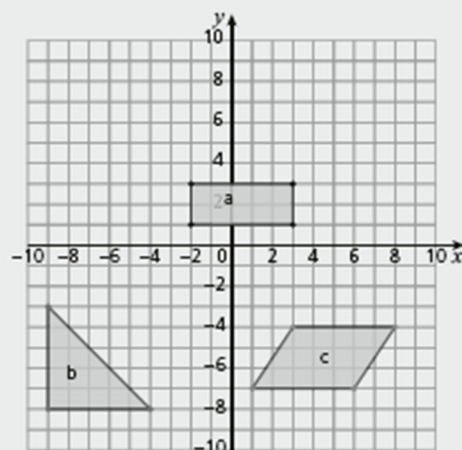
Workbook answers

Exercises 25.1–25.2 (page 77)

1

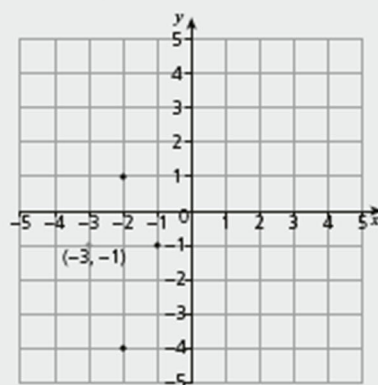


2

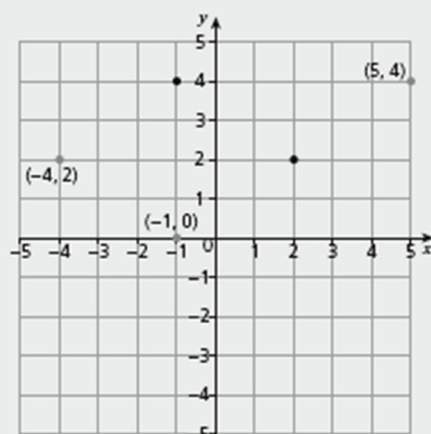


- a Rectangle
b Right-angled triangle
c Parallelogram

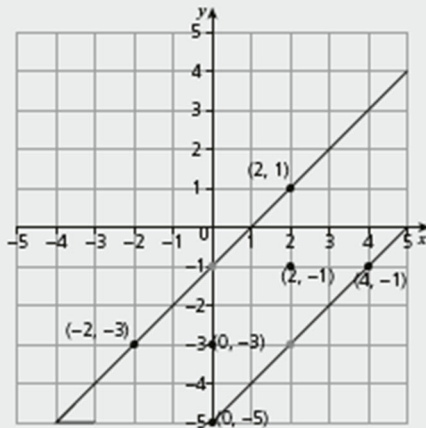
3 a



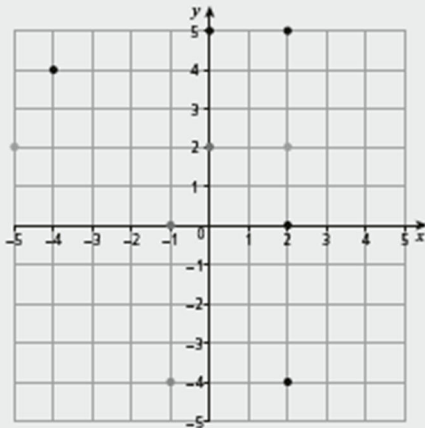
- b Any of the following points or along the perpendicular bisector of the two points given (not shown)



- c Any of the following points or anywhere along the lines shown

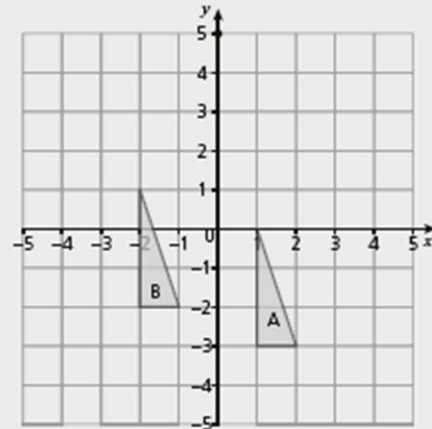


4



Exercise 25.3 (page 80)

1



2 $(-2, 2)$ $(-1, 4)$ $(1, 2)$ $(2, 4)$

3 a $(-3, 2)$ $(-3, 6)$ $(0, 2)$

b 5 units to the right and 1 unit up.

c Right-angled triangles. Two coordinates have equivalent x -values, and two coordinates have equivalent y -values.

26 Squares, square roots, cubes and cube roots

Workbook answers

Exercises 26.1–26.2 (page 81)

1 a 49

c 27

e 4

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

c $\frac{1}{11}$

b 9

d 13

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

d 0.7

3 Width = 2m, length = 2m

4 a 144

c 216

5 \$661.24

b 9

d 27

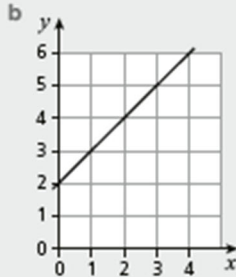
27 Linear functions

Workbook answers

Exercises 27.1–27.2 (page 83)

1 a

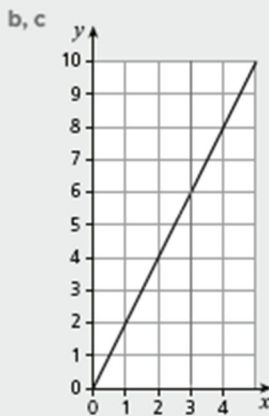
x	0	1	2	3	4
y	2	3	4	5	6



2 $y = 5$, $y = 2x + 1$, $y = 3x - 1$

3 a

x	0	1	2	3	4
y	0	2	4	6	8

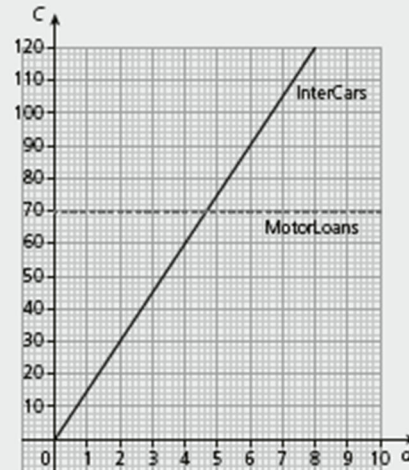


d $(3, 6)$

4 a $C = 15d$

b $C = 70$

c



d 5 days

28 Converting units and scale drawings

Workbook answers

Exercises 28.1–28.3 (page 86)

- 1 a 100
c 1000
- 2 a g
c ml
- 3 a 35
c 2000
- 4 a 17
c 2800
- 5 a 1900
b 500
c 1050
- 6 a 3.1
b 0.2
c 6.172
- 7 a 600
b 0.14
c 8
- 8 1.15 litres or 1150ml
- 9 900kg or 0.9 tonne

10 30720m or 30.72km

11 \$653.75 (523 bags of flour)

Exercise 28.4 (page 87)

- 1 a 6
b 17
c 16.25
- 2 a 20
b 3
c 400
- 3 a 1:50
b 1:200
c 1:200000
- 4 6cm by 4cm rectangle
- 5 a 1420km
b 2900km

29 Ratio

Workbook answers

Exercises 29.1–29.2 (page 89)

- 1 a 1:4 b 3:7
c 6:25 d 1:3
- 2 a 1:5 b 1:4.5
c 1:6.5
- 3 7:8
- 4 300ml
- 5 8:7:9
- 6 a 2:1:1 b 12
c 24 circular, 12 triangular and 12 square
- 7 a 0.7m b 5.6m

Exercise 29.3 (page 90)

- 1 \$105 2 \$157.50
- 3 a 3 hours and 45 minutes
b 2km
- 4 No, if you had 1.5kg of sugar from the smaller bags it would cost \$3.

Exercise 29.4 (page 91)

- 1 20
- 2 4.2kg
- 3 Right-angled triangle as the angles are 30° , 60° and 90° .

30 Graphs of rates of change

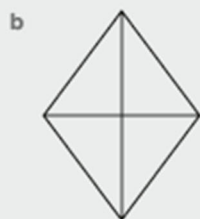
Workbook answers

Exercises 30.1–30.2 (page 92)

- 1 a 3 or more of any of the following points:
 - The coach is travelling at a constant speed for the first 20 minutes for 20 miles.
 - The coach is stationary for 8 minutes.
 - The coach is then travelling for 1 hour at a constant speed, this speed is lower than the first 20 minutes.
- b 20 minutes
- c 10 miles
- d 88 minutes
- The coach is then stationary for 12 minutes.
- The coach travels for 20 minutes and travels 40 miles.

Section 3 – Review

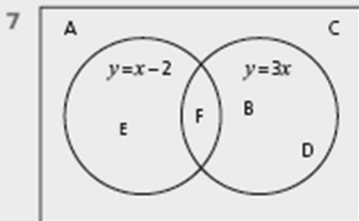
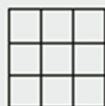
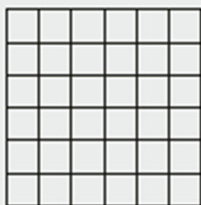
- 1 a $-2, -1$ b $n-8$ c 92
 2 a 70% b 8.3% (2 s.f.)
 3 a Accept a rotation of this view



4 $F \rightarrow \boxed{-27} \rightarrow d$

5 C (9, -1)

6 $49 = 6^2 + 3^3 + 2^2$



8 $32.8\text{mm} \times 58.4\text{mm}$

9 19 rolls

10 a i Graph Y

ii It shows the depth decreasing steadily for a bit (when he is filling up the watering can), then remaining the same (when he is walking around watering his plants).

b i Graph X

ii The last part of the graph is a horizontal line above the x-axis. This means the depth is unchanged over time, but that there is still water in the water butt.