

# 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

- 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

#### Exercises 1.2–1.3 (page 4)

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

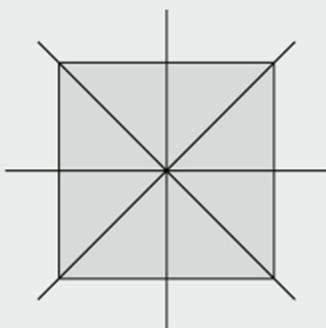
## 2 Properties of two-dimensional shapes

### Workbook answers

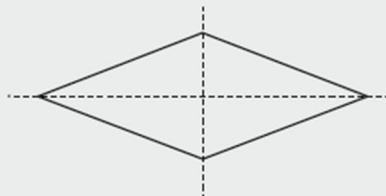


#### Exercises 2.1–2.3 (page 5)

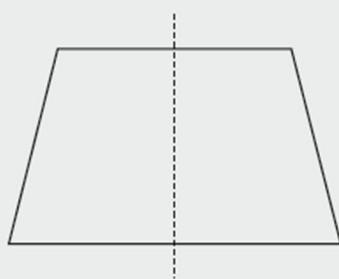
1 a Square



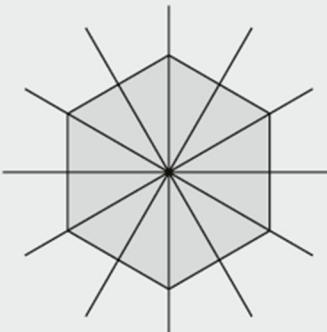
b Rhombus



c Trapezium or isosceles trapezium



d Hexagon or regular hexagon



2 a chord

c radius

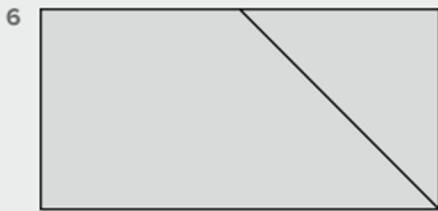
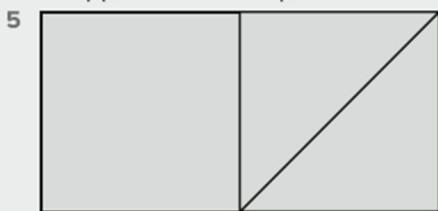
b segment

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  $24 \text{ m}^2$       b  $22 \text{ mm}^2$       c  $7.5 \text{ cm}^2$   
 2 a  $9.69 \text{ cm}^2$       b  $8 \text{ mm}$       c  $12 \text{ m}$   
   d  $7 \text{ cm}$   
 3 a  $3.75 \text{ cm}$       b  $2 \text{ cm}$

#### Exercise 4.2 (page 11)

- 1 a  $78 \text{ cm}^2$       b  $165 \text{ cm}^2$   
 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  $5 \times 2$  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  $18 + (2 + 4) \times 5 = 15$   
 6 a  $8 + 7 - 3 + 1 = 13$   
   b  $2 \times 5 + 3 \times 4 = 22$   
   c  $50 + 5 - 2 \times 3 = 4$   
   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 
$$\begin{array}{c} 24a + 16 \\ \hline 12a + 6 & 12a + 10 \\ \hline 5a + 2 & 7a + 4 & 5a + 6 \\ \hline 2a + 3 & 3a - 1 & 4a + 5 & a + 1 \end{array}$$

b 
$$\begin{array}{c} 16a + 29 \\ \hline 10a + 18 & 6a + 11 \\ \hline 7a + 6 & 3a + 12 & 3a - 1 \\ \hline 3a - 2 & 4a + 8 & 4 - a & 4a - 5 \end{array}$$

- 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 5m/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

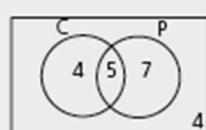
2

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

4 a



b 38

c 28

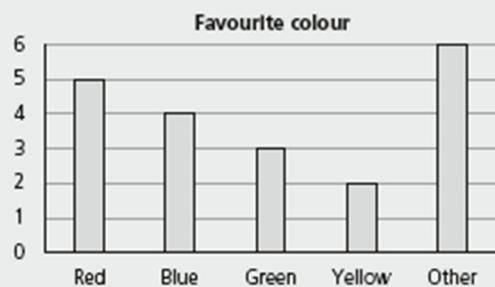
d 36

e 7

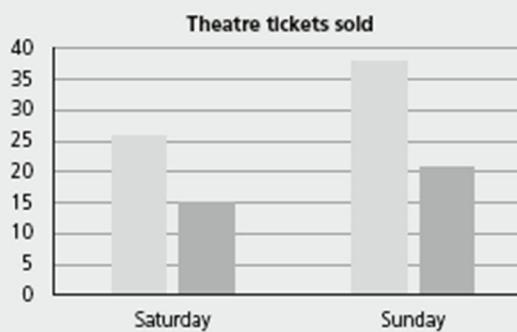
### Exercises 7.3–7.4 (page 20)

1

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

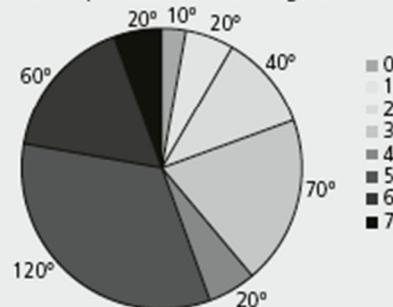


2 a

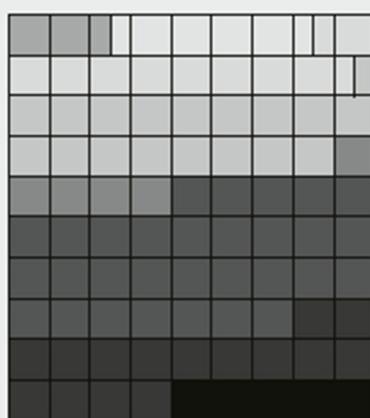


b £209

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	0 (It has one surface, but not a face as it is not flat)	0	0

2  $16 \text{ cm}^3$

3 a Cuboid D b  $286 \text{ cm}^3$

4 a 2cm b 4mm c 2.5m

5 2m

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

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

7 320 litres

8 a  $170 \text{ cm}^3$  b  $1656 \text{ cm}^3$

#### Exercise 8.4 (page 25)

1 a  $142 \text{ cm}^2$

b  $126 \text{ cm}^2$

2 a  $252 \text{ cm}^2$

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
- c 15, 30, 45, 60, 75, 90  
 d 21, 42, 63, 84, 105, 126
- 3 a 7  
 b 48  
 c 15 and 45  
 d 8 and 7
- 4 a 4  
 b 7  
 c 6
- 5 a 30  
 b 70  
 c 24
- 6 9.40 a.m.
- 7 5, 7, 8, 9

## 10 Probability and the likelihood of events

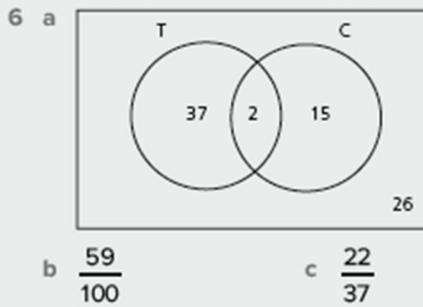
### Workbook answers



#### Exercise 10.1 (page 29)

- 1 c
- 
- 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.  $3 \times 3 \times 3$ .



## Section 1 – Review



1 a

2	7	6
9	5	1
4	3	8

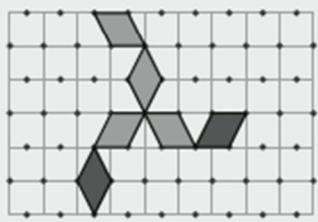
b Add 10 to each of the numbers in (a)

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  $x = 8 \text{ cm}$ 

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

$$\text{b } (3+5) \times 4$$

$$\text{6 } A = 52.5 \text{ cm}^2$$

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  $P = 6 \text{ cm}$ ,  $Q = 3 \text{ cm}$ 

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.

$$3+3+4+8=18 \text{ and } 18 \text{ is divisible by 9}$$

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

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

$$\text{c } \frac{1}{30}$$

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

**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	$423.6 \times 10$	$423.6 + 10$
	$423600 + 10^5$	$42.36 + 10^2$
	$0.4236 \times 10^2$	$0.4236 \times 10$
	$4236 + 10^4$	$4.236 \times 10^3$
	$4.236 \times 10^4$	$4236000 + 10^2$

**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 11.4 (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

**Exercise 11.3 (page 35)**

- 1 a 43 b 223700  
c 72500 d 82340

**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

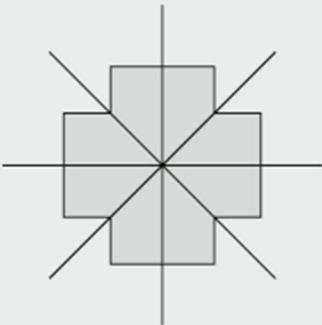
## 13 Transformations of two-dimensional shapes

### Workbook answers



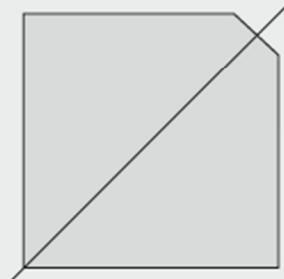
#### Exercises 13.1–13.2 (page 40)

1 a i



ii Rotational symmetry order 4.

b i



ii Rotational symmetry order 1.

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

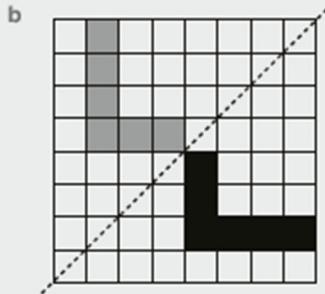
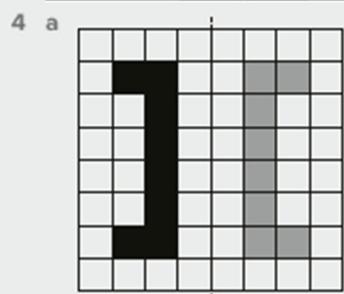
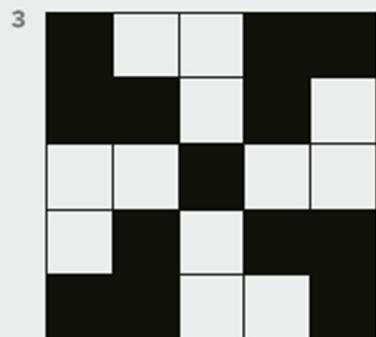
a Square



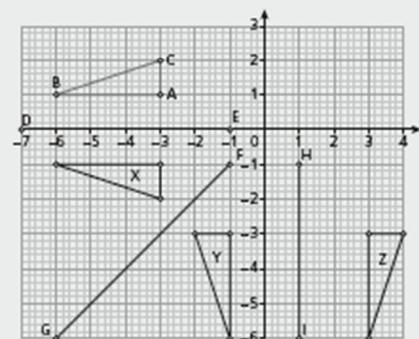
b Parallelogram



c Isosceles trapezium (or kite)

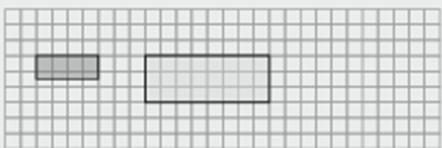


5 a, b, c

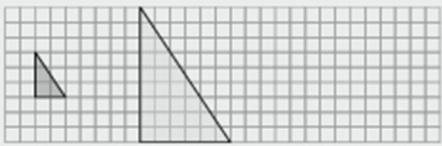


### Exercises 13.3–13.4 (page 43)

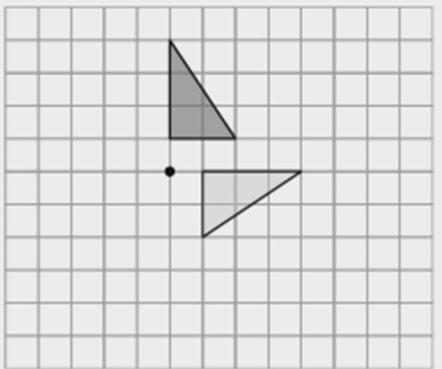
1 a



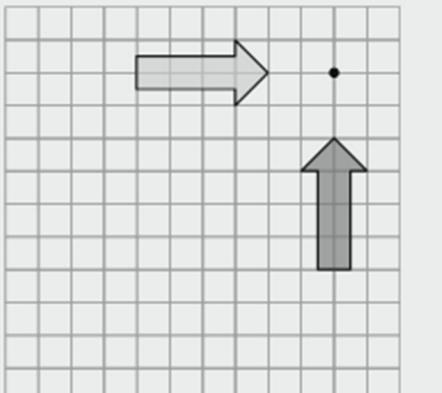
b



2 a

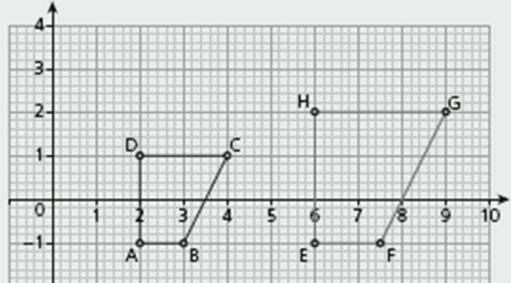


b



3 Rotated clockwise 90 degrees

4



## 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  $\frac{2}{5} = 0.4 = 40\%$

$0.75 = \frac{3}{4} = 75\%$

$65\% = \frac{13}{20} = 0.65$

$\frac{17}{20} = 0.85 = 85\%$

$1.02 = 102\% = \frac{51}{50}$

$\frac{1}{3} = 0.3 = 33.\overline{3}\%$

30%,  $\frac{1}{3}$ ,  $\frac{2}{5}$ , 65%, 0.75,  $\frac{17}{20}$ , 1.02

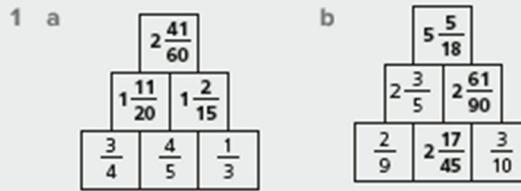
#### Exercise 15.2 (page 48)

1  $\frac{3}{10}$

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

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

#### Exercise 15.3 (page 49)



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  $180^\circ$ .  
 c  $= 68^\circ$  Angles in a quadrilateral sum to  $360^\circ$ .
- 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  $180^\circ$  or Angles around a point sum to  $360^\circ$   
 b  $e = 114^\circ$  Alternate angles  
 $f = 66^\circ$  Supplementary to angle  $f$
- 2  $x = 147^\circ$  Supplementary angles sum to  $180^\circ$   
 $y = 123^\circ$  Angles in a triangle sum to  $180^\circ$  and angles on a straight line sum to  $180^\circ$

## 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  $\$125$

c  $22a + 12$

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) + 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  $(\text{number of times landed on } 6) + 30$   
 c  $(\text{number of times landed on } 1, 3 \text{ or } 5) + 30$   
 d Student compares their results to the theoretical probability (b.  $\frac{1}{6}$ , c.  $\frac{1}{2}$ )  
 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

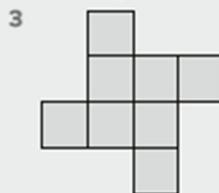
#### Exercise 20.4 (page 64)

- 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  $36 \times 24$  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  $12 - 1 = 11$ .



4  $6a + 14$

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

6 0.36

7  $57^\circ$  and students' explanations

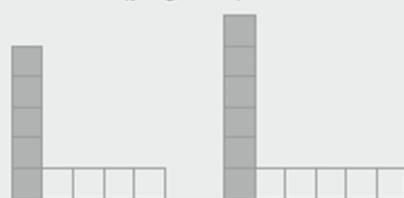
- 8 a i Sometimes true  
 ii Only true if  $x > 4$   
 b i Always true  
 ii Area of A =  $12x + 18$ , area of B =  $12x + 40$   
 $12x + 18 < 12x + 40$  always

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

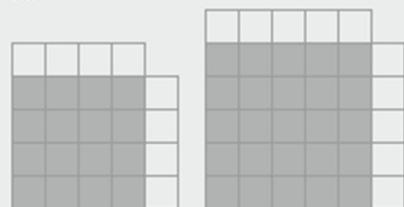
Number of white tiles	1	2	3	4	5
Number of grey tiles	2	3	4	5	6

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  $n + 3$  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)**

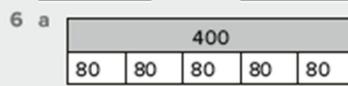
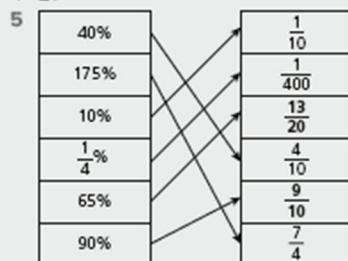
- 1 a 250 b 70 c 75

d 450 e 240

2 341

3 \$10.20

4 21



b	160							
	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

180							
90						90	
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

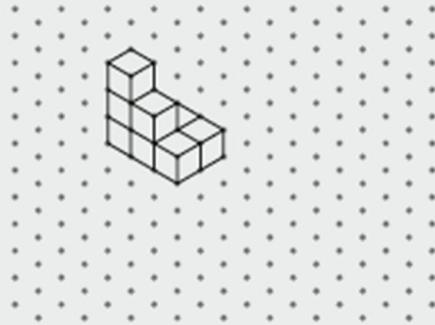
3D shape	Front	Side	Plan
 Front elevation      Side elevation			



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)



2 a

Input	Output
1	2
2	4
3	6
4	8



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 =  $x$

$$3x = x + 8$$

$$2x = 8$$

$$x = 4$$

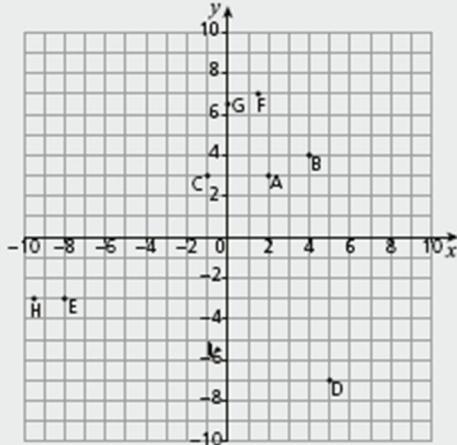
This proves there is only one possible solution and it is 4.

## 25 Coordinates and two-dimensional shapes

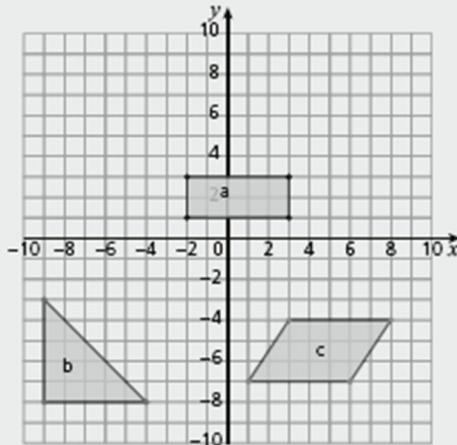
### Workbook answers

#### Exercises 25.1–25.2 (page 77)

1

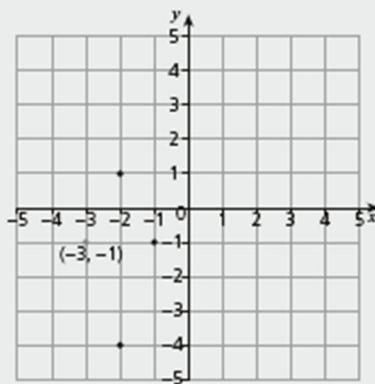


2

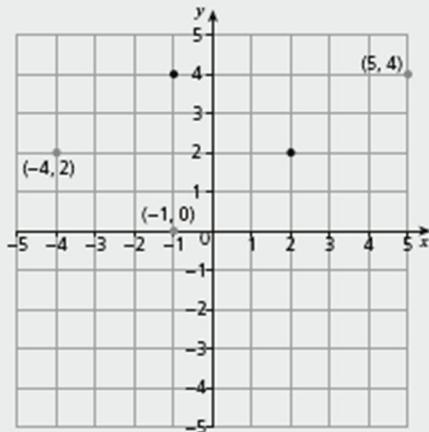


- a Rectangle
- b Right-angled triangle
- c Parallelogram

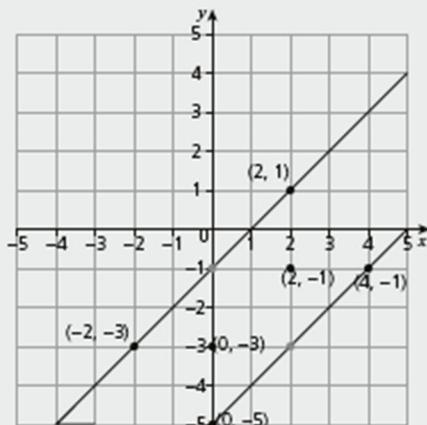
3 a



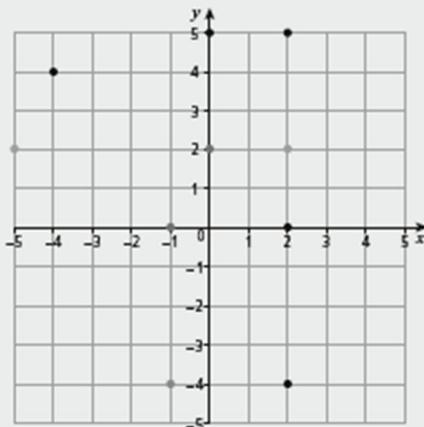
- b Any of the following points or along the perpendicular bisector of the two points given (not shown)



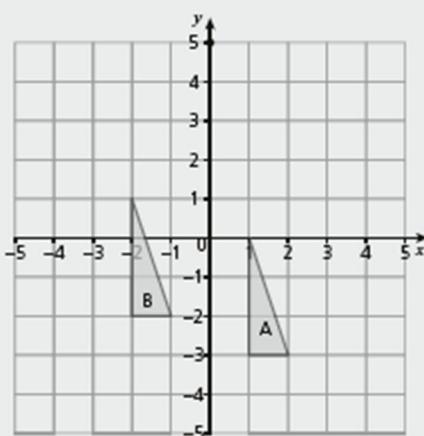
- c Any of the following points or anywhere along the lines shown



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  $49$

b  $9$

c  $27$

d  $13$

e  $4$

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

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

c  $\frac{1}{11}$

d  $0.7$

3 Width =  $2\text{ m}$ , length =  $2\text{ m}$

4 a  $144$

b  $9$

c  $216$

d  $27$

5  $\$661.24$

## 27 Linear functions

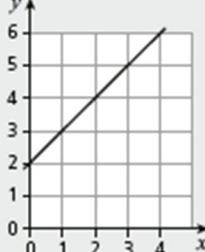
### Workbook answers

#### Exercises 27.1–27.2 (page 83)

1 a

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

b

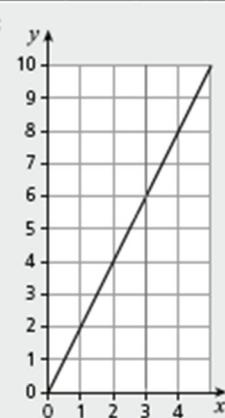


2  $y = 5$ ,  $y = 2x + 1$ ,  $y = 3x - 1$

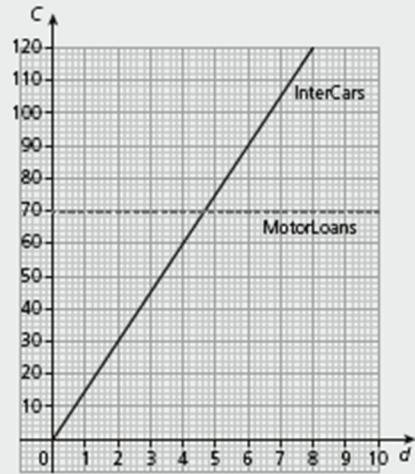
3 a

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

b, c

4 d  $(3, 6)$ 4 a  $C = 15d$ 

c

b  $C = 70$ 

d 5 days

## 28 Converting units and scale drawings

### Workbook answers

#### Exercises 28.1–28.3 (page 86)

1 a 100

b 10

c 1000

d 1000

2 a g

b m

c ml

d tonne

3 a 35

b 8

c 2000

d 12

4 a 17

b 0.02

c 2800

d 8.5

5 a 1900

b 500

c 1050

10 30720m or 30.72km

6 a 3.1

b 0.2

11 \$653.75 (523 bags of flour)

7 a 600

b 0.14

Exercise 28.4 (page 87)

c 6.172

d 8

8 1.15 litres or 1150ml

e 1:50

f 1:200000

9 900kg or 0.9 tonne

g 6cm by 4cm rectangle

h 1420km

i 2900km

c 16.25

d 400

## 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  $30^\circ$ ,  $60^\circ$  and  $90^\circ$ .

## 30 Graphs of rates of change

### Workbook answers



#### Exercises 30.1–30.2 (page 92)

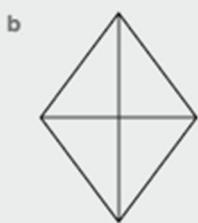
- 1 a 3 or more of any of the following points:
  - The coach is travelling at a constant speed for the first 20 minutes for 20 miles.
  - The coach is stationary for 8 minutes.
  - The coach is then travelling for 1 hour at a constant speed, this speed is lower than the first 20 minutes.

- The coach is then stationary for 12 minutes.
  - The coach travels for 20 minutes and travels 40 miles.
- b 20 minutes  
c 10 miles  
d 88 minutes

## Section 3 – Review

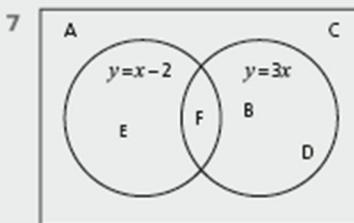
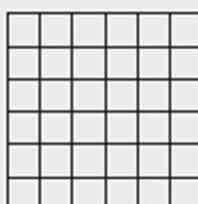


- 1 a  $-2, -1$       b  $n=8$       c  $92$   
 2 a  $70\%$       b  $8.3\%$  (2 s.f.)  
 3 a Accept a rotation of this view



4  $F \xrightarrow{-27} d$

- 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.