

Step 2 Answers

Chapter 1 Number

1.1 Using place value to multiply and divide whole numbers by 10 or 100

1

×	10	100
8	80	800
59	590	5900
40	400	4000
71	710	7100

×	10	100
5	50	500
70	700	7000
200	2000	20 000
19	190	1900

×	10	100
6	60	600
3	30	300
7	70	700
24	240	2400

×	10	100
2	20	200
40	400	4000
8	80	800
90	900	9000

2 a 10 b 47 c 60 d 5 e 27 f 215 g 60 h 70 i 800

3 a 500 b 1800 c 4000

4 a 90 b 320 c 600

5 a 4 b 52 c 190 d 40

6 a 30 b 145 c 700

1.2 Putting decimals in order

1 a 2.6, 5.6, 6.3, 7.3 b 5.2, 6.8, 9.2, 9.7 c 13, 13.6, 14, 14.8 d 78.1, 78.3, 87, 87.4
e 22.6, 23, 25.1, 26.7 f 20.5, 21, 22.6, 22.9

2 a 3.45, 4.1, 4.25, 4.3 b 0.6, 1.6, 6.0, 6.6 c 11.3, 13.3, 13.9, 19.3 d 34.4, 34.6, 46.4, 63.4

3 a £8.81, £1.80, £1.08, £0.88 b £4.13, £3.61, £3.41, £3.14 c £64.04, £61.42, £60.40, £60.24
d £0.87, £0.85, £0.78, £0.58

4 a 0.7 b 4.3 c 12.6 d 11.1 e 4.4 f 8.5 g 9.4 h 4.71 i 5 j 0.7 k 0.3 l 0.9

5 a 0.652 b 4.711 c 9.005 d 3.25 e 4.42 f 7.77 g 9.4 h 4.815
i 5

6 a 7.251, 7.505, 7.512 b 8.885, 9.075, 9.125 c 4.425, 4.500, 4.615 d 7.25, 7.275, 7.35
e 2.125, 2.25, 2.5 f 5.875, 5.9, 6.125

1.3 Using mental methods

1 a 79 b 67 c 72 d 119 e 127 f 132

2 a 61 b 29 c 37 d 13 e 54 f 32

3 48, 124, 68, 132, 110, 56, 144, 160, 90

4 64, 68, 75, 72, 97, 78, 89, 91

5 a 42 b 96 c 123 d 96 e 110 f 186 g 68 h 90 i 162 j 248 k 155 l 144

6 a 21 b 31 c 32 d 31 e 21 r 1 f 22 r 1

7 a 132 b 164 c 197 d 127 e 78 f 427

8 a £9.98 b £2.01

1.4 Multiplication and division facts

1 a 5 b 4 c 9 d 6 e 7 f 5 g 4 h 8 i 7

2 a 1 and 30 or 2 and 15 or 3 and 10 or 5 and 6 b 1 and 40 or 2 and 20 or 4 and 10 or 5 and 8

c 1 and 25 or 5 and 5

d 1 and 63 or 3 and 21 or 7 and 9

e 1 and 28 or 2 and 14 or 4 and 7

f 1 and 90 or 2 and 45 or 3 and 30 or 5 and 18 or 6 and 15 or 9 and 10

g 1 and 35 or 5 and 7

h 1 and 64 or 2 and 32 or 4 and 16 or 8 and 8

3 a 63 b 72 c 48 d 35 e 45 f 70

4 a 8 r 1 b 6 r 2 c 7 r 4 d 9 e 7 r 5 f 6 r 6

5 a

×	3	7	5	8
6	18	42	30	48
2	6	14	10	16
4	12	28	20	32
9	27	63	45	72

b

×	10	6	3	8
6	60	36	18	48
7	70	42	21	56
4	40	24	12	32

8	80	48	24	64
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1.5 Written methods

- 1 a** 836 **b** 1043 **c** 459 **d** 135 **e** 109 **f** 1337
2 a £8.99 **b** £3.82 **c** £14.16 **d** £9.09 **e** £11.64 **f** £13.27
3 a 13.2 **b** 22.6 **c** 88.0 **d** 130.7 **e** 11.81 **f** 133.2
4 a £3.04 **b** £5.16 **c** £4.58 **d** £11.86 **e** £15.97 **f** £3.14
5 a 128 **b** 57 **c** 321 **d** 227 **e** 489 **f** 187
6 a 10.8 **b** 17.7 **c** 12.4 **d** 30.7 **e** 3.2 **f** 8.8
7 a 165 **b** 230 **c** 192 **d** 192 **e** 261 **f** 294
8 a 69 **b** 57 **c** 118 **d** 13 r 4 **e** 76 r 3 **f** 57 r 5

1.6 Multiplying decimals

- 1 a** 17.2 **b** 31.2 **c** 22.4 **d** 49.5 **e** 23.2 **f** 31.0
g 44.1 **h** 29.4 **i** 4.5
2 a 24.5 **b** 171.2 **c** 230.4 **d** 24.24 **e** 295.2 **f** 19.65
g 31.59 **h** 24.48 **i** 13.2
3 a 228 **b** 13.8 **c** 14.22 **d** 12.8 **e** 92 **f** 47.6
g 128.4 **h** 101.6 **i** 43.2

1.7 Solving problems

- 1 a** £95 **b** £13 **c** £144
2 a £7.02 **b** £4.68 **c** £17.55
3 16
4 a 63 **b** 14
5 a £14.65 **b** £31.91 **c** £11.64
6 a 12 **b** 2
7 a £28.39 **b** £2.59
8 92
9 £48

1.8 Number patterns

1 a 6, 7 b 11, 13 c 18, 21 d 5, 4 e 10, 8 f 75, 70
g 54, 64 h 40, 38 i -3, -4 j -60, -70

2 a 7, 11, 15, 19 b 17, 15, 13, 11 c 13, 18, 23, 28 d 44, 38, 32, 26
e 17, 24, 31, 38 f 73, 63, 53, 43 g 23, 19, 15, 11 h -3, -2, -1, 0

3 a 8, 16 b 10, 5 c 27, 81 d 4, 1

4 a 32, 64 b 96, 192 c 2, 1

1.9 Number relationships

1 a 1 and 18 or 2 and 9 or 3 and 6 b 1 and 32 or 2 and 16 or 4 and 8
c 1 and 21 or 3 and 7 d 1 and 42 or 2 and 21 or 3 and 14 or 6 and 7

2 a 8, 10, 12, 14, 16, 18, 20 b 12, 15, 18, 21, 24, 27, 30
c 15, 25, 30, 40, 45, 50 d 30, 40, 60, 70, 80, 90

3 a 4, 8, 10, 18 and 20 b 15, 18, 21 and 27 c 10, 15, 20 and 35 d 10 and 20

4 a 1 and 8; 2 and 4 b 1 and 21; 3 and 7

5 a 1, 3, 5, 15 b 1, 2, 3, 6, 9, 18 c 1, 2, 4, 5, 10, 20 d 1, 3, 7, 21
e 1, 5, 25 f 1, 2, 4, 7, 14, 28 g 1, 2, 3, 5, 6, 10, 15, 30 h 1, 31

6 a 1 and 3 b 1, 2, 3 and 6 c 1 and 5

7 a 21, 24, 27 b 24 c 21 d 24 e 27

1.10 Square numbers and prime numbers

1 a 16 b 25 c 100 d 9 e 36

2 a 9 b 36 c 81

3 11, 13, 17, 19

4 a 37 b 36

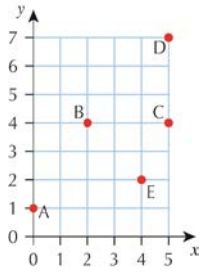
5 121, 144, 169, 196

6 97

Chapter 2 Algebra

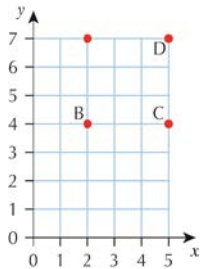
2.1 Coordinates

1 a



b Join B and C c Join C and D

d



e (2, 7)

2 a (1, 1), (3, 1), (3, 3), (1, 3) in any order

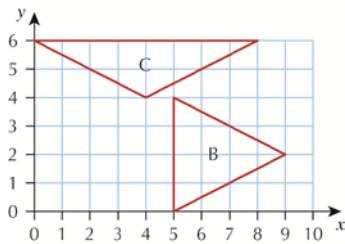
b (6, 1), (8, 1), (8, 3), (6, 3) in any order

c (2, 2)

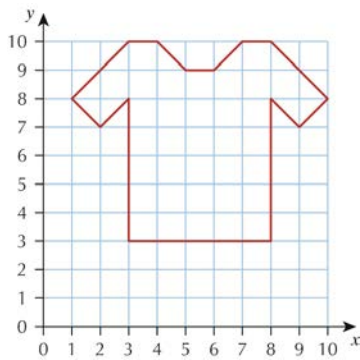
d (7, 2)

3 a (1, 1), (3, 2), (1, 3)

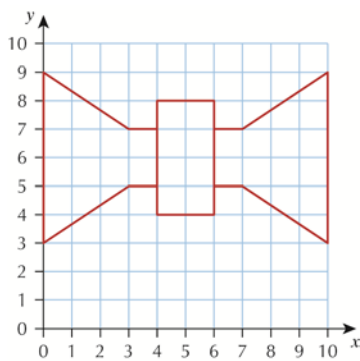
b and c



4 a



b



2.2 Formulae

1 a 60 minutes **b** 100 minutes **c** 400 minutes

2 a £15 **b** £30 **c** £48

3 3 cars to £7.50, 5 cars to £12.50, 2 cars to £5 and 10 cars to £25

4 a £11 **b** £16 **c** £18

5 a 140 miles **b** 350 miles

6 a £110 **b** £190

7 a i 60 **ii** 120 **iii** 360 **b** 5

8 a i 2 **ii** 5 **iii** 8 **b** 12

9 a i £14 **ii** £21 **iii** £33 **b** £22

Chapter 3 Ratio, proportion and rates of change

3.1 Fractions and percentages

1 a $50\% = \frac{1}{2}$ **b** $25\% = \frac{1}{4}$ **c** $20\% = \frac{1}{5}$ **d** $80\% = \frac{4}{5}$ **e** $70\% = \frac{7}{10}$

f $30\% = \frac{3}{10}$ **g** $40\% = \frac{2}{5}$ **h** $10\% = \frac{1}{10}$ **i** $1\% = \frac{1}{100}$

2 $10\% = \frac{1}{10}$, $75\% = \frac{3}{4}$, $25\% = \frac{1}{4}$, $90\% = \frac{9}{10}$, $50\% = \frac{1}{2}$, $20\% = \frac{1}{5}$

3 $10\% = 0.1$, $75\% = 0.75$, $25\% = 0.25$, $90\% = 0.9$, $40\% = 0.4$, $50\% = 0.5$, $20\% = 0.2$, $80\% = 0.8$

4 a $\frac{1}{2} = 50\%$ % b $\frac{1}{4} = 25\%$ % c $\frac{3}{4} = 75\%$ % d $\frac{1}{10} = 10\%$ %
 e $\frac{1}{100} = 1\%$ % f $\frac{1}{5} = 20\%$

5 b 70% c 50% d 20% e 75% f 90% g 40%
 h 23% i 35% j 28% k 82% l 25%

6 b $\frac{1}{2}$ c $\frac{9}{10}$ d $\frac{4}{5}$ e $\frac{2}{5}$ f $\frac{3}{10}$ g $\frac{1}{10}$ h $\frac{3}{4}$ i $\frac{1}{4}$ j $\frac{3}{5}$ k $\frac{1}{20}$ l $\frac{19}{20}$

3.2 Ratio

1 a 60, 80, 100, 200 b 1 to 20

2 a 9, 15, 45, 60 b 3 c 3 to 1

3 a 4 to 1 b 32, 40

4 a 2 b 2 to 1

5 a 4 b 4 to 1

6 3 to 1

7 6 to 1

8 35

9 8 m

10 105 kilometres per hour

Chapter 4 Geometry and measures

4.1 Properties of 2D and 3D shapes

1 trapezium, rectangle, parallelogram, square

2 a B and D b p and s , q and r

3 a square b parallelogram

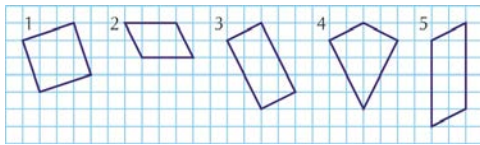
4 square, kite, rhombus

5 a cube b cuboid c pyramid

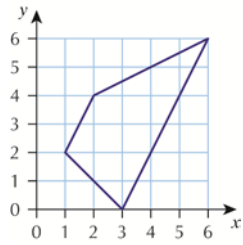
6 a rectangles b 5

7 a equilateral, 3 b isosceles, 2 c right-angled

4.2 Drawing 2D shapes

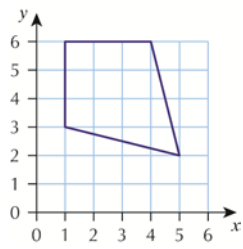


6 a



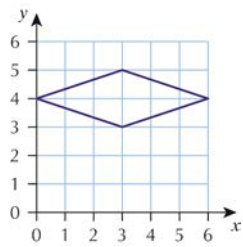
b trapezium

7 a



b kite

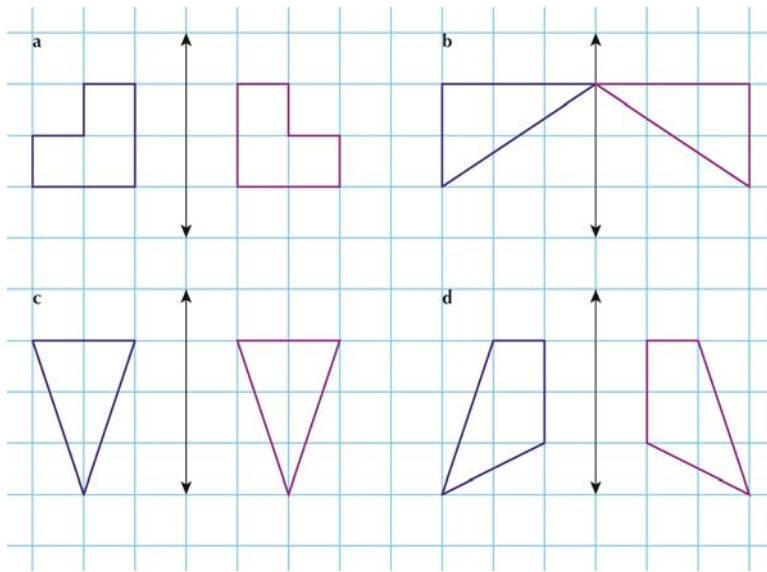
8 a



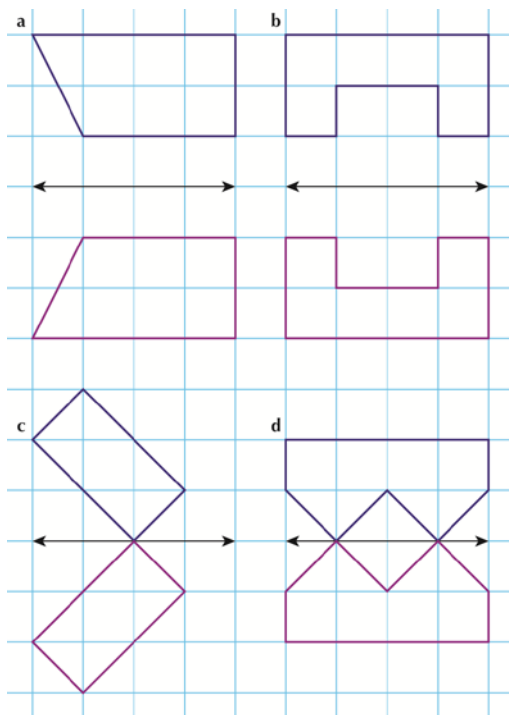
b rhombus

4.3 Reflections and rotations

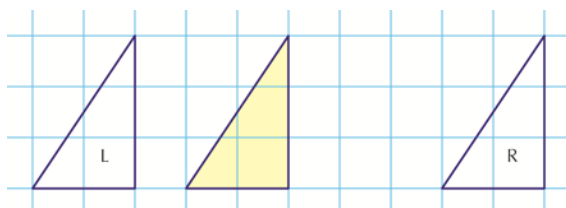
1



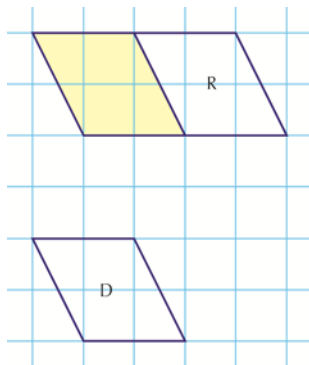
2



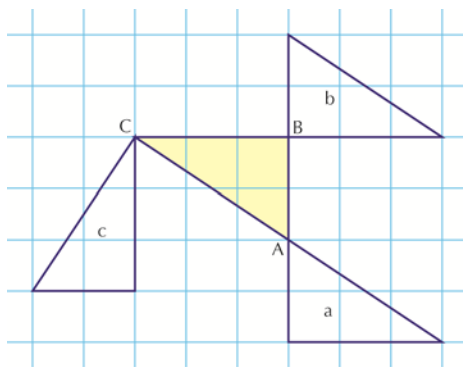
3



4



5



4.4 Measurement

1 a metre b centimetre c kilometre d millimetre

2 a g b ml c km d cm or mm e kg f l g cm h g

3 a 45 b 73 c 128 d 14

4 a 4.5 b 7.3 c 12.8 d 1.4

5 a km b l c cm d g e mm f kg

6 a 1000 b i 2000 ii 6000 iii 4500 iv 3000

7 Approximately 29.7 cm and 21.0 cm

8 a 2 b 15 000

9 4

4.5 Reading measuring instruments

1 a 3.5 kg b 1.75 kg c 54 mph d 27 kph e 26°C f 4:15 or equivalent
g 45 degrees h 90 degrees i about 3.3 cm j about 2.4 cm

2 a 30 g b 110 g c 165 g d 1.5 kg e 2.2 kg f 3.7 kg

3 a 300 ml b 160 ml c 80 ml d 420 ml

4.6 Perimeter and area

1 a 6 cm b 8 cm c 14 cm

2 a 10 cm b 10 cm c 16 cm

3 14 m

4 a 12 cm² b 10 cm²

5 20 m²

6 a 4 cm² b 6 m² c 4 cm² d 5 m² e 16 m² f 16 cm²

7 a and c have the same area

8 a 8 cm b 25 cm c 24 cm

Chapter 5 Statistics

5.1 Recording data

1 The frequencies are 2, 3, 5, 2, 3, 5

2 The frequencies are 2, 3, 4, 2, 6, 3

3

Symbol				
Frequency	8	3	9	10

The columns can be in any order.

4

Age	7	8	9	10
Frequency	8	14	8	2

5 Odd 6; Even 14

6 Frequencies 2, 12, 10, 8, 5, 7, 1

5.2 Grouping data

1 Frequencies are 4, 6, 4, 5, 7, 4

2 Frequencies are 3, 6, 6, 5

3 Frequencies are 2, 4, 5, 9

4 Frequencies are 11, 6, 8, 5

5

Length	21–25	26–30	31–35	36–40	41–45	46–50
Frequency	3	9	7	11	8	5

5.3 Carroll diagrams and Venn diagrams

1 a 3, 6, 9, 12, 15, 18

b

	Multiple of 3	Not a multiple of 3
Less than 12	<input type="radio"/> 3 6 9	<input type="radio"/> 1 4 7 10 11
12 or more	<input type="radio"/> 12 15 18	<input type="radio"/> 13 14 16 17 19 20

2

	In the first half of the alphabet	In the second half of the alphabet
In the word MATHEMATICS	<input type="radio"/> A C E H I M	<input type="radio"/> S T
Not in the word MATHEMATICS	<input type="radio"/> B D F G J K L	<input type="radio"/> N O P Q R U V W X Y Z

3 a 10 b 20 c 18

4 a 14 b 159 c 204

5 a 19 b 21 c 4 d 30

6 a 9 b 12 c 20

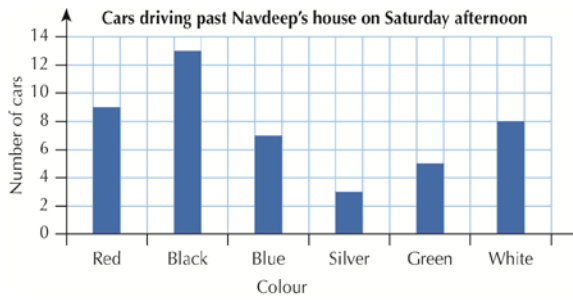
7 a 5

b

	Girls	Boys
Play hockey	5	15
Do not play hockey	9	3

5.4 Frequency diagrams and line graphs

1 a

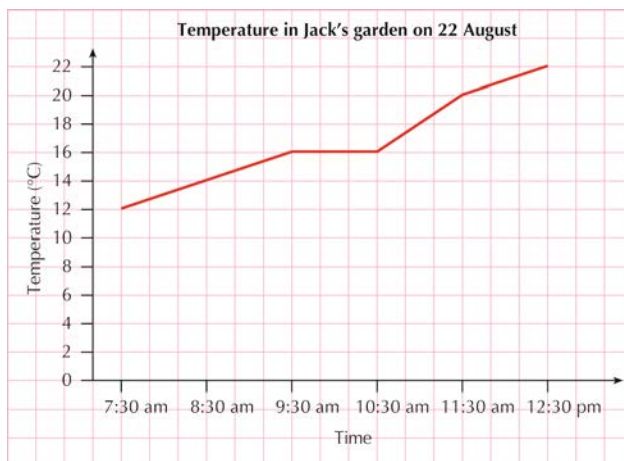


b Black c 45

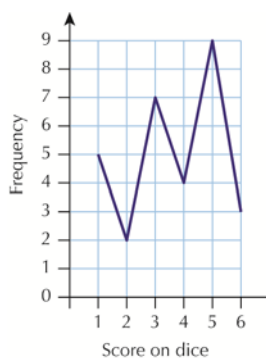
2 a 17 °C b At 10 pm c At 9 pm d 11 °C e 4 am

3 a 16 °C b 11:30 am

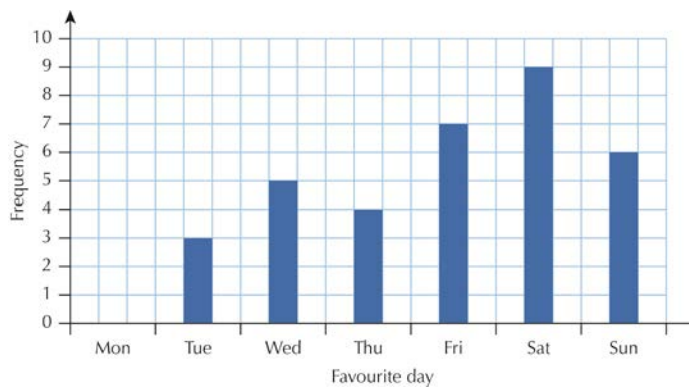
c



4



5 a



b Saturday **c** 6

5.5 Statistical measures

1 a 2 **b** 10 **c** 8 marks **d** 5 marks **e** 8 **f** 7

2 a 30 **b** 57

3 a Mode: 8; Range: 9 **b** Mode: 22; Range: 8

4 a 2 **b** 1 **c** 1 and 4 **d** 4 **e** 4

5 a Mode: 7; Range: 8 **b** Mode: 1; Range: 9 **c** Mode: 20; Range: 8

6 a Mode: 4; Range: 8 **b** Mode: 12; Range: 14

7 a Mode: £2; Range: £15 **b** Mode: 4 cm; Range: 12 cm