Day 1

B1 MULTIPLES PROBLEMS 17

I can use my knowledge of multiples to solve problems.

Example

There are less than 40 chocolates in a box. The number of chocolates is a multiple of 4. One chocolate is eaten. The number of chocolates is now a multiple of 5. How many chocolates might there be in the box?

Method Write out the multiples of 4 and the multiples of 5 below 40.
Look for multiples of 5 which are one less than a multiple of 4.

Multiples of 4	4	8	12	16	20	24	28	32	36
Multiples of 5	5	10	15	20	25	30	35		

Possible combinations are 16, 15 and 36, 35

Answer *There are either 16 or 36 chocolates in the box.*

A

Write the first six multiples of each of these numbers.

1. 3
2. 7
3. 9
4. 25
5. 12
6. 20

Write Yes or No.

7. Is 48 a multiple of 6?
8. Is 54 a multiple of 7?
9. Is 120 a multiple of 8?
10. Is 74 a multiple of 9?
11. Is 77 a multiple of 11?
12. Is 180 a multiple of 18?

13. Write the first ten multiples of:
    a) 3 b) 6.
14. Which numbers appear in both lists?

15. Write out all the multiples below 100 of:
    a) 10 b) 15.
16. Which numbers appear in both lists?

B

1. Chester's age is a multiple of 9.
   Next year it will be a multiple of 8. How old is Chester?

2. Vera has 100 books.
   She notices that the number of her fiction books is a multiple of 4 and of her non-fiction books is a multiple of 7. How many fiction books does Vera have and how many non-fiction books?
   Find all the possible solutions.

3. There are between 40 and 100 sweets in a packet.
   The number of sweets is a multiple of 3.
   If one is eaten it is a multiple of 5.
   How many sweets are there in the packet?
   Find all the possible solutions.

C

1. Ewen notices that his age, his mother's age and his grandmother's age are all multiples of 7. He also notices that in one year's time they will all be multiples of 5. How old are Ewen, his mother and his grandmother?

2. There are 60 people on a coach trip. The number of boys is a multiple of 5. The number of adults is a multiple of 4 and the number of girls is a multiple of 9. There are seven possible combinations of boys, girls and adults.
   Can you find them all?

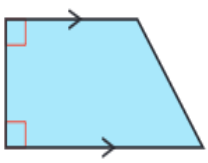
3. Mr Godfrey notices that the numbers of boys, girls and adults on the coach are all multiples of 6. How many boys are on the coach?

Day 2

B1 PARALLEL AND PERPENDICULAR SIDES IN 2-D SHAPES 18

I can identify pairs of parallel and perpendicular sides in 2-D shapes.

Example

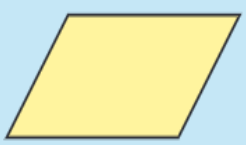


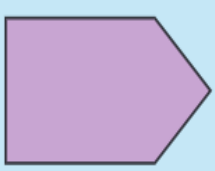
1 pair of parallel sides (shown with arrows)
2 pairs of perpendicular sides (90° angles marked)

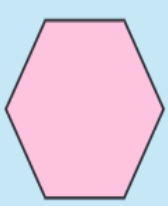
A

Copy the following shapes. Show pairs of parallel and perpendicular sides as in the example above.

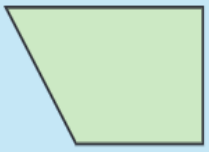
1

2 

3 

4 

5

6 

B

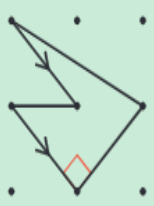
How many pairs of parallel sides are there in:

1. an equilateral triangle
2. a square
3. a regular pentagon
4. a regular hexagon
5. a regular heptagon
6. a regular octagon?

Predict the number of pairs of parallel sides in a regular polygon with:

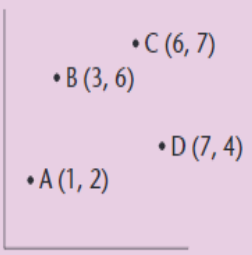
7. 11 sides
8. 10 sides
9. 25 sides
10. 100 sides.

11. This pentagon has been drawn in a 3 × 3 grid.



Use 3 × 3 grids on squared or dotty paper. Make as many different polygons with more than three sides as you can. Show pairs of parallel and perpendicular lines as in the example.

C



1. Draw the quadrilateral ABCD on a grid. Show any perpendicular sides.
2. Give the co-ordinates of the position to which you would move:
   a) A to make a square
   b) B to make a rectangle.
3. Look at the different quadrilaterals shown on page 64. What type of quadrilateral do you make if you move:
   a) D to (5, 4)
   b) C to (9, 8)
   c) D to (10, 5)
   d) A to (2, 9)?
4. On each of the six quadrilaterals in questions 2 and 3 show any parallel or perpendicular lines.

Day 3

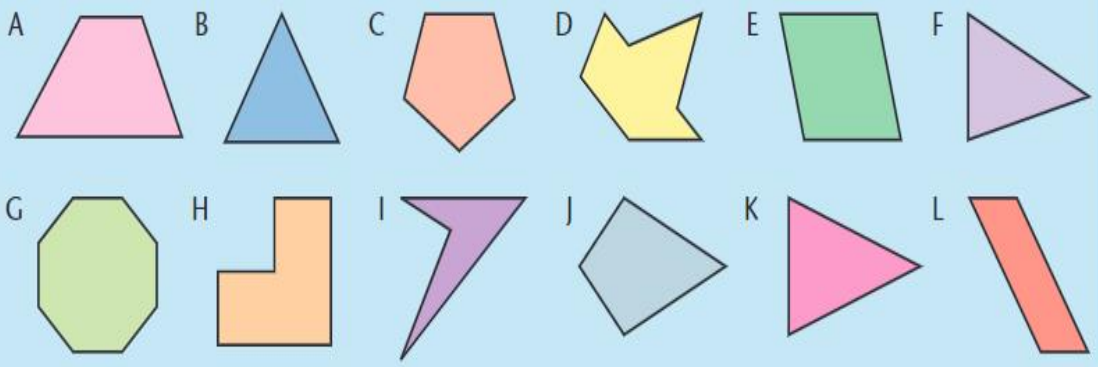
B1 PROPERTIES OF 2-D SHAPES 19

I can classify 2-D shapes using different criteria.

TRIANGLES	QUADRILATERALS		OTHER POLYGONS	
equilateral	square	parallelogram	5 sides – pentagon	CONVEX – all angles $< 180°$
isosceles	rectangle	kite	6 sides – hexagon	CONCAVE – 1 angle $> 180°$
right-angled	rhombus	trapezium	7 sides – heptagon	
scalene			8 sides – octagon	

A

1. Write the name of each shape.



B

Which of the above shapes A to L are:

1. regular
2. concave
3. have more than 2 lines of symmetry
4. have one line of symmetry only?

Write down the names of two quadrilaterals with:

5. four equal sides
6. opposite sides equal and parallel
7. no right angle and opposite angles equal
8. four right angles.

Write down the name of one quadrilateral with:

9. one pair of parallel sides
10. one pair of equal opposite angles
11. equal adjacent sides.

C

Give the sum of the angles of:

1. an equilateral triangle
2. a square
3. a regular pentagon
4. a regular hexagon.

5. Write a formula for the largest number of parallel lines (p) possible in a regular shape with s sides if s is:
   a) even b) odd.
6. Write a formula for the largest number of perpendicular sides (p) possible in a polygon with s sides where s is greater than 3 and:
   a) even b) odd.
7. Which quadrilaterals have diagonals which:
   a) bisect b) are perpendicular?

Day 4

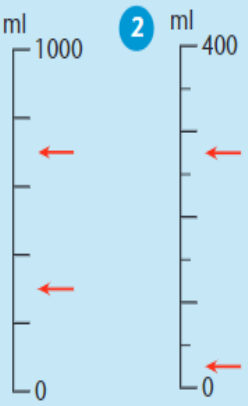
C1 METRIC UNITS AND SCALES 21

I can read a scale accurately and convert between metric units.

A

Estimate the measurement indicated by each arrow.

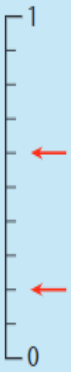
1 ml



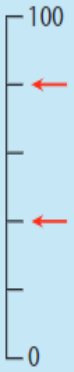
2 ml

Read the measurement shown by each arrow.

3 litres



4 ml



Copy and complete.

5 0·6 litres = ☐ ml

6 3·5 litres = ☐ ml

7 1200 ml = ☐ litres

8 4700 ml = ☐ litres

9 5·8 cm = ☐ mm

10 1·1 cm = ☐ mm

11 4 mm = ☐ cm

12 26 mm = ☐ cm

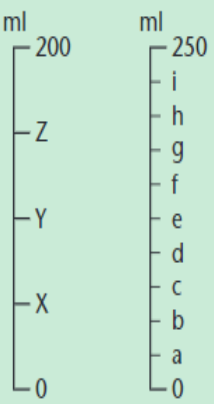
B

Estimate the measurement indicated by each arrow.

1 litres

2 ml

3 Match X, Y and Z to the letters on the second scale showing the equivalent measurements.



Copy and complete.

4 5·74 litres = ☐ ml

5 1·31 litres = ☐ ml

6 2030 ml = ☐ litres

7 3290 ml = ☐ litres

8 0·87 m = ☐ cm

9 4·18 m = ☐ cm

10 162 cm = ☐ m

11 645 cm = ☐ m

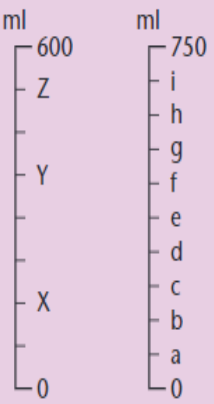
C

Estimate the measurement indicated by each arrow.

1 litres

2 litres

3 Match X, Y and Z to the letters on the second scale showing the equivalent measurements.



Copy and complete.

4 2·417 litres = ☐ ml

5 0·293 litres = ☐ ml

6 1965 ml = ☐ litres

7 5321 ml = ☐ litres

8 4·734 km = ☐ m

9 0·858 km = ☐ m

10 1589 g = ☐ kg

11 3145 g = ☐ kg

Day 5

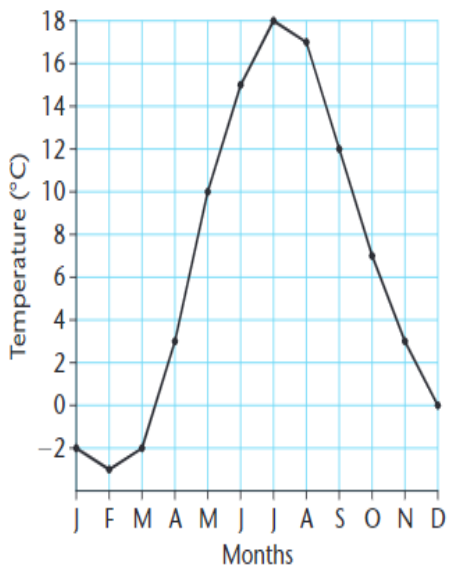
C1 LINE GRAPHS 22

I can construct and interpret line graphs.

Line graphs are graphs in which a set of data is plotted and the points are joined up with a line. Line graphs often show a trend.

Example

This line graph shows the average daily maximum temperature in Sweden.



In which month was the temperature 3°C?
April

What was the temperature in October?
7°C

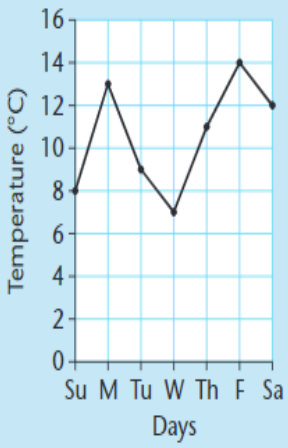
What was the highest temperature?
18°C

What was the lowest temperature?
−3°C

What was the range in temperature?
21°C (from 18°C to −3°C)

A

This line graph shows the highest temperature recorded each day in one week in November.

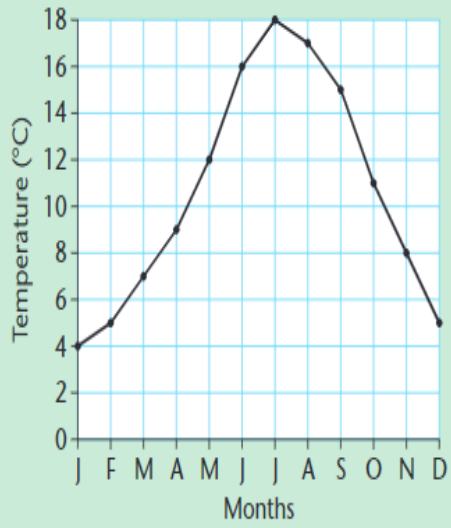


1. On which day was the temperature 11°C?
2. What was the highest temperature on Saturday?
3. What was the highest temperature recorded during the week?
4. How much did the temperature rise:
   a) between Sunday and Monday
   b) between Thursday and Friday?
5. How much did the temperature fall:
   a) between Monday and Tuesday
   b) between Tuesday and Wednesday?
6. Use this table to draw a line graph showing the lowest temperatures recorded daily in the same week.

Days	Lowest Temperature (°C)
Sunday	3
Monday	5
Tuesday	0
Wednesday	−2
Thursday	2
Friday	4
Saturday	7

B

This line graph shows the average daily maximum temperature in Leeds during one year.



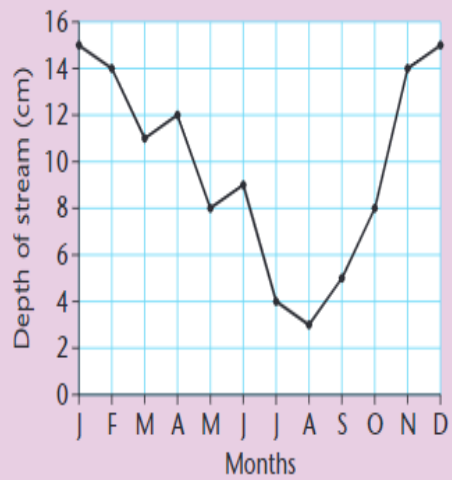
1. What was the temperature in August?
2. In which month was the temperature 9°C?
3. Between which two months was there:
   a) the largest rise in temperature
   b) the largest fall in temperature?
4. What was the range in temperature?
5. Use the table below to draw a line graph showing the temperature on one day in November.

Time	0400	0600	0800	1000	1200	1400	1600	1800	2000	2200	0000	0200	0400
Temperature (°C)	0	−2	−1	3	8	11	10	7	5	3	2	1	0

6. Use your graph to estimate the temperature at 0900.
7. Use your graph to estimate how long the temperature was below 0°C.

C

This line graph shows the depth of water in a stream.



1. How deep was the stream in March?
2. In which two months was the stream 8 cm deep?
3. Which month saw the largest increase in depth? Why do you think this happened?
4. What was the range of the depths?
5. For how long was the stream below 4 cm deep?
6. Use the table to draw a line graph to show the height of a plane during a training flight.

Flight Time (minutes)	0	10	20	30	40	50	60	70	80	90	100	110	120
Height (m)	0	350	500	600	650	750	850	800	800	550	450	200	0

7. Use the graph to estimate the height of the plane 45 minutes after take off.
8. Use the graph to estimate the length of time the plane was above 500 m.

7 43, 44 **8** 47, 48 **9** 52, 53 **10** 89, 90 **11** 5, 23 **12** 3, 37
13 7, 41 **14** 11, 13 **15** 5, 79 **16** 3, 67 **17** 11, 61 **18** 7, 89
19 17, 29 **20** 13, 73 **21** 23, 37 **22** 19, 53

Page 13

A

1 30 **2** 21 **3** 54 **4** 45 **5** 320 **6** 420
7 420 **8** 320 **9** 180 **10** 150 **11** 630 **12** 560
13 8 **14** 6 **15** 9 **16** 5 **17** 70 **18** 30
19 60 **20** 30 **21** 8 **22** 7 **23** 4 **24** 9

B

1 5.4 **2** 3.6 **3** 1.4 **4** 2.8 **5** 2.4 **6** 6.4
7 4.5 **8** 2.4 **9** 4.9 **10** 3.0 **11** 4.8 **12** 2.4
13 0.3 **14** 0.2 **15** 0.9 **16** 0.7 **17** 0.8 **18** 0.3
19 0.7 **20** 0.5 **21** 0.8 **22** 0.5 **23** 0.6 **24** 0.5
25 0.9 **26** 0.4 **27** 0.7 **28** 4 **29** 6 **30** 8
31 4.5 **32** 2.4 **33** 4.9 **34** 3.0 **35** 4.8 **36** 2.4

C

1 0.32 **2** 4.2 **3** 0.045 **4** 0.48 **5** 3.6 **6** 0.54
7 2.4 **8** 0.72 **9** 0.49 **10** 4.0 **11** 0.54 **12** 8.1
13 0.07 **14** 0.08 **15** 0.4 **16** 0.08 **17** 0.4 **18** 0.09
19 0.07 **20** 0.09 **21** 0.7 **22** 0.06 **23** 0.4 **24** 0.7
25 0.06 **26** 0.8 **27** 0.09 **28** 0.09 **29** 0.07 **30** 0.6
31 0.64 **32** 2.8 **33** 0.81 **34** 4.2 **35** 0.54 **36** 0.4

Page 14

A

1 $1^2 = 1 \times 1 = 1$ $7^2 = 7 \times 7 = 49$
$2^2 = 2 \times 2 = 4$ $8^2 = 8 \times 8 = 64$
$3^2 = 3 \times 3 = 9$ $9^2 = 9 \times 9 = 81$
$4^2 = 4 \times 4 = 16$ $10^2 = 10 \times 10 = 100$
$5^2 = 5 \times 5 = 25$ $11^2 = 11 \times 11 = 121$
$6^2 = 6 \times 6 = 36$ $12^2 = 12 \times 12 = 144$

2 20 **3** 34 **4** 37 **5** 16 **6** 28 **7** 27
8 149 **9** 82 **10** 89 **11** 65 **12** 64 **13** 15

14

No.	Factors
16	1, 2, 4, 8, 16
25	1, 5, 25
36	1, 2, 3, 4, 6, 9, 12, 18, 36
49	1, 7, 49
64	1, 2, 4, 8, 16, 32, 64
81	1, 3, 9, 27, 81

B

1 1600 **2** 4900 **3** 400 **4** 8100 **5** 2500 **6** 6400
7 900 **8** 3600 **9** 10 000 **10** 14400 **11** 30 **12** 60
13 10 **14** 40 **15** 90 **16** 20 **17** 70 **18** 50
19 80 **20** 100 **21** 1, 2, 3, 5, 6, 10, 15, 30
22 1, 2, 4, 19, 38, 76 **23** 1, 11, 121 **24** 1, 2, 29, 58
25 1, 67 **26** 1, 2, 4, 5, 10, 20, 25, 50, 100 **27** 1, 2, 4, 23, 46, 92
28 1, 2, 3, 4, 6, 8, 9, 12, 16, 18, 24, 36, 48, 72, 144
29 They are all square numbers

C

1 4, 9 **2** 25, 100 **3** 25, 49 **4** 16, 81
5 49, 64 **6** 3600, 400 **7** 900, 6400 **8** 8100, 10 000
9 100, 4000 **10** 8100, 3600 **11** 4, 9 **12** 81, 100
13 64, 36 **14** 1, 9 **15** 100, 121 **16** 4900, 10 000
17 2500, 3600 **18** 100, 1600 **19** 1600, 3600 **20** 2500, 8100
21 e.g. One of the pairs of factors is the factor multiplied by itself.
22 The factors of all numbers other than square numbers are pairs of factors.

Page 15

A

1 7 **2** 17 **3** 23 **4** 31 **5** 47 **6** 59
7 67 **8** 73 **9** (a) 29 (b) 41
10 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

B

1 1, 21 **2** 40, 42 **3** 33, 63 **4** 57, 77 **5** 51, 81 **6** 77, 87
7 31 **8** 47 **9** 53 **10** 79 **11** 89 **12** 97
13 See A10 – also 53, 59, 61, 67, 71, 73, 79, 83, 89, 97
14 It is divisible by 2.

C

1 prime **2** not prime (3 × 37) **3** not prime (58 × 2)
4 prime **5** not prime (19 × 7) **6** prime **7** not prime (17 × 9)
8 prime **9** prime **10** not prime (91 × 2)
11 37 × 2 **12** 29 × 3 **13** 13 × 7 **14** 23 × 5 **15** 13 × 11
16 13 × 13 **17** 17 × 11 **18** 17 × 17 **19** 19 × 13 **20** 29 × 23

Page 16

A

1 108 **2** 105 **3** 153 **4** 15 **5** 25 **6** 14
7 Always 00 or 50 **8** (a) No (b) Yes (c) Yes (d) No
9 81, 85, 89, 93, 97 **10** 41, 46, 51, 56, 61
11 50, 41, 32, 23, 14 **12** 16, 32, 64, 128, 256

B

1 360 **2** 336 **3** 840 **4** 9 **5** 18 **6** 8
7 Always 00, 25, 50 or 75
8 (a) Yes (b) Yes (c) No (d) Yes
9 102, 123, 144, 165, 186 **10** 26, 36, 49, 64, 81
11 105, 130, 155, 180, 205 **12** 15, 21, 28, 36, 45

C

1 72.8 **2** 48 **3** 99 **4** 1.7 **5** 2.2 **6** 0.13
7 Always 00, 25, 50 or 75
8 (a) Yes (b) No (c) No (d) Yes
9 197, 246, 295, 344, 393 **10** 26, 37, 50, 65, 82
11 90, 85, 79, 72, 64 **12** 81, 243, 729, 2187, 6561

Page 17

A

1 3, 6, 9, 12, 15, 18 **2** 7, 14, 21, 28, 35, 42
3 9, 18, 27, 36, 45, 54 **4** 25, 50, 75, 100, 125, 150
5 12, 24, 36, 48, 60, 72 **6** 20, 40, 60, 80, 100, 120
7 Yes **8** No **9** Yes **10** No **11** Yes **12** Yes
13 (a) 3, 6, 9, 12, 15, 18, 21, 24, 27, 30
(b) 6, 12, 18, 24, 30, 36, 42, 48, 54, 60
14 6, 12, 18, 24, 30
15 (a) 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
(b) 15, 30, 45, 60, 75, 90
16 30, 60, 90

B

1 63
2 16 fiction and 84 non-fiction
44 fiction and 56 non-fiction
72 fiction and 28 non-fiction
3 51, 66, 81 or 96

C

1 14, 49 and 84
2 9 girls, 15 boys, 36 adults 9 girls, 35 boys, 16 adults
18 girls, 10 boys, 32 adults 18 girls, 30 boys, 12 adults
27 girls, 5 boys, 28 adults 27 girls, 25 boys, 8 adults
36 girls, 20 boys, 4 adults
3 30

Page 18

B

1 0 **2** 2 **3** 0 **4** 3 **5** 0 **6** 4
7 0 **8** 5 **9** 0 **10** 50

C

2 (a) (4, 3) (b) (0, 5) **3** (a) kite
(b) parallelogram (c) trapezium (d) parallelogram

Page 19

A

A Trapezium B equilateral triangle C regular pentagon
D irregular heptagon E rhombus F scalene triangle
G regular octagon H irregular hexagon I quadrilateral
J kite K isosceles triangle L parallelogram

B

1 BCG **2** DHI **3** BCEG **4** HJK **5** square, rhombus
6 2 from square, rectangle, rhombus, parallelogram
7 parallelogram, rhombus **8** square, rectangle
9 trapezium **10** kite **11** kite

C

1 180° **2** 360° **3** 540° **4** 720°
5 (a) $p = s \div 2$ or $p = \frac{s}{2}$ (b) $p = 0$ **6** (a) $p = s$ (b) $p = s - 2$
7 (a) square, rectangle, rhombus, parallelogram
(b) square, rhombus, kite

Page 20

B

5 (b) 7.0 cm (allow +/– 0.1 cm)

Page 21

A

1 300 ml, 700 ml **2** 25 ml, 275 ml **3** 0.2 litres, 0.6 litres
4 40 ml, 80 ml **5** 600 ml **6** 3500 ml
7 1.2 litres **8** 4.7 litres **9** 58 mm
10 11 mm **11** 0.4 cm **12** 2.6 cm

B

1 0.25 litres, 1.75 litres **2** 225 ml, 375 ml **3** X = b, Y = d, Z = f
4 5740 ml **5** 1310 ml **6** 2.03 litres **7** 3.29 litres
8 87 cm **9** 418 cm **10** 1.62 m **11** 6.45 m

C

1 0.45 litres, 0.8 litres **2** 0.6 litres, 1.9 litres **3** X = b, Y = e, Z = g
4 2417 ml **5** 293 ml **6** 1.965 litres **7** 5.321 litres
8 4734 m **9** 858 m **10** 1.589 kg **11** 3.145 kg

Page 22

A

1 Thursday **2** 12°C **3** 14°C **4** (a) 5°C (b) 3°C
5 (a) 4°C (b) 2°C

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B

1 17°C **2** April **3** (a) May to June (b) Sept. to October
4 14°C **6** 1°C **7** $4\frac{1}{2}$ hours

C

1 11 cm **2** May, October
3 Oct. to November – increased rainfall
4 12 cm **5** $1\frac{1}{2}$ months **7** 700 m
8 1 hour 15 minutes or 75 minutes

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A

1 (a) 60 (b) 55 (c) 12 (d) 80 (e) 140 (f) 280
2

Mark	1	⋮	6	7	8	9	10
Frequency	1	⋮	2	3	7	11	8

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B

1 (a) 12 (b) 28 (c) 32 (d) $\frac{1}{8}$ (e) $\frac{1}{4}$
3

No. of Books	1–5	6–10	11–15	16–20	21–25	26–30
Frequency	1	2	8	15	11	3

C

1 (a) 55 (b) 90 (c) 220
(d) Anjalia is right. 55 is one quarter of 220. (e) $\frac{1}{2}$
2

Journey Length (minutes)	1–10	11–20	21–30	31–40	41–50	51–60
Frequency	5	10	10	12	7	6

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A

1 (a) 10 (b) 5 (c) 5 **2** (a) 5 (b) 15 (c) 30
3 (a) 30 (b) 15 (c) 15

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B

1 Alice 24
Brett 12
Cindy 6
Disk 6
2

Passengers	0	1	2	3	3+
Cars	80	40	40	20	20

3 Greece 40
USA 80
France 120
Spain 160

C

1 (a) 35 (b) 70 (c) 105 (d) 280 **2** (a) 24 (b) 12
(c) same number (d) more children
40% of 60 = 24 (adults) 25% of 80 = 20 (children)
30% of 80 = 24 (children) 30% of 60 = 18 (adults)

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A

1 (a) 4 (b) 11 (c) 10 **2** (a) 12 (b) 1 (c) 2
3 (a) 9°C (b) 8°C (c) 7°C

B

1 (a) 5 (b) 3 (c) 4 (d) 4 **2** (a) 13 (b) 3
(c) 4 (d) 6 **3** (a) 9°C (b) 13°C (c) 13°C (d) 14°C

C

1 (a) 0.17 sec. (b) 10.04 sec. (c) 10.02 sec. (d) 10.0 sec.