Answers

Section One — Number & Place Value

Pages 2-3 — Ordering Numbers

1) **£8 463 705** *(1 mark)*

2) **Five million, seven hundred and forty thousand, eight hundred and twenty-seven.** *(1 mark)*

3) **3** and **5** *(1 mark)*

4) **6 999 980** *(1 mark)*

5) **70 000** *(1 mark)*

6) **5 024 888, 5 024 764, 5 023 223, 5 023 096** *(1 mark)*

7) **9 887 543** *(1 mark)*
   3 457 898 *(1 mark)*

Page 4 — Negative Numbers

1) –2 + 18 = **16** *(1 mark)*

2) –5 – **13** = –18
   –12 + 9 = –3 *(1 mark)*

3) Work out the places to 0, then the places after 0.
   –6 + 6 = 0
   0 + 11 = 11
   6 + 11 = **17 °C** *(1 mark)*

4) Work out the places to 0, then the places after 0.
   –28 + 28 = 0
   0 + 32 = 32
   28 + 32 = **£60** *(1 mark)*

5) –50 – 18 = **–68**
   –14 + 18 = **4**
   (1 mark for both correct.)

Page 5 — Roman Numerals

1)

CIV	XCIX	CML	CDVII

950	104	407	99

   (1 mark)

2) M = 1000 and C = 100.
   I = 1 and V = 5, so IV = 4.
   So MCIV = 1000 + 100 + 4
   = **1104** *(1 mark)*

3) M = 1000 and CM = 900.
   X = 10 and L = 50, so XL = 40.
   I = 1, so II = 2.
   So 1000 + 900 + 40 + 2 = **1942**
   should be circled. *(1 mark)*

4) M = 1000, D = 500, L = 50 and X = 10. I = 1, so III = 3.
   So 1000 + 500 + 50 + 10 + 3
   = **1563**. *(1 mark)*

Page 6 — Decimals

1) **9** hundredths *(1 mark)*

2) 5.32 > 5.312 > 5.3, so **Chuck** runs the furthest. *(1 mark)*

3) 2.038 = 2 + **0.03** + 0.008 *(1 mark)*

4) **5.4** should be circled. *(1 mark)*

5) **0.6**, **0.615**, **0.618**, **0.632**, **1.61**
   (2 marks for order correct. Otherwise 1 mark for three consecutive numbers given in the correct order.)

Page 7 — Rounding

1) **26 000** and **510 000** *(1 mark)*

2) 78 705 rounded to the nearest **hundred** is 78 700. *(1 mark)*
   987 537 rounded to the nearest **ten thousand** is 990 000.
   (1 mark)

3) **2 000 000**
   9 000 000 *(1 mark)*

4) **3.5**, **4.23** and **3.81** should be circled. *(1 mark for all correct)*

5) **25.5** and **50.0** *(1 mark)*

Pages 8-9 — Mixed Practice

1) **5 073 245** people *(1 mark)*

2) 2.138 < 2.156, so **Rowan's** car is narrower. *(1 mark)*

3) To get each term of the sequence, you subtract 15 from the previous term.
   5 – 15 = **–10**
   –10 – 15 = **–25**
   (1 mark for both correct)

4) 9 643 174 > 9 642 150, so **Redland** has the larger population. *(1 mark)*

5) **328 633**, **264 114** and **281 046** should be circled. *(1 mark)*

6) **13** and **23** *(1 mark)*

7) MDCCC = 1800, XXXII = 32 and XLV = 45. So Aisha's book was written in 1832 and Katie's was written in 1845. So **Aisha's** book was written earlier. *(1 mark)*

8) **2.13**, **1.275**, **1.27**, **1.169**, **1.02**
   (2 marks for order correct. Otherwise 1 mark for three consecutive numbers given in the correct order.)

9) –8 + 3 = **–5**
   –17 = –10 – 7 *(1 mark)*

Section Two — Calculations

Pages 10-12 — Written Adding and Subtracting

1)
```
   6 4 2 1 7
 + 2 2 4 9 9
 ─────────────
   8 6 7 1 6   (1 mark)
       1 1
```
   Notice that 22 499 is very close to 22 500, so it's easier to do 64 217 + 22 500 = 86 717 and then subtract the extra 1.

```
   9 1 7 ⁶7̶ ⁹⁰0̶ ¹4
 −       3 0 0 5
 ─────────────────
   9 1 4 6 9 9   (1 mark)
```
   Notice that 3005 is very close to 3000, so it's easier to do 917 704 – 3000 = 914 704 and then subtract the extra 5.

2)
```
   3 8 4 1 9
 + 2 7 6 6 2
 ───────────
   6 6 0 8 1
   1   1   1   (1 mark)
```

3)
```
   ⁸9̶ ¹¹2̶ . ¹7
 −   3 8 . 9
 ───────────
     5 3 . 8   (1 mark)
```

4)
```
   7 ⁶7̶ ¹5 ⁷8̶ ¹³4̶ ¹1
 − 1 5 8 6 5 2
 ───────────────
   6 1 7 1 8 9   (1 mark)

   4 7 6 9 4 6
 + 5 8 1 6 1 7
 ───────────────
 1 0 5 8 5 6 3   (1 mark)
   1   1   1
```

5)
```
   ⁷8̶ ¹5 . ⁵6̶ ¹0
 − 2 7 . 5 9
 ───────────
   5 8 . 0 1
```
   So **58.01** should be circled.
   (1 mark)

Answers

6)

$$\begin{array}{r} {}^{3}\cancel{4}{}^{1}3 \ . \ {}^{5}\cancel{6}{}^{16}\cancel{7}{}^{1}0 \\ - \ 1 \ 6 \ . \ 5 \ 8 \ 2 \\ \hline \mathbf{2\ 7\ .\ 0\ 8\ 8} \end{array}$$ *(1 mark)*

$$\begin{array}{r} 1\ 3\ .\ 8\ 4\ 1 \\ + \ 9\ 7\ .\ 5\ 0\ 0 \\ \hline \mathbf{1\ 1\ 1\ .\ 3\ 4\ 1} \\ {\scriptstyle 1\ \ \ 1} \end{array}$$ *(1 mark)*

7)

$$\begin{array}{r} {}^{4}\cancel{5}{}^{16}\cancel{7}\ .\ {}^{1}3\ 2 \\ - \ 3\ 8\ .\ \mathbf{4}\ 1 \\ \hline \mathbf{1\ 8\ .\ 9\ 1} \end{array}$$ *(1 mark)*

8) Find how much
she has in her account:

$$\begin{array}{r} 1\ 4\ 9\ 4\ 7 \\ + \ \ \ \ 1\ 3\ 2\ 6 \\ \hline 1\ 6\ 2\ 7\ 3 \\ {\scriptstyle 1\ \ \ \ 1} \end{array}$$

Then subtract to find how much
more she needs to save:

$$\begin{array}{r} {}^{1}\cancel{2}{}^{9}\cancel{0}{}^{9}\cancel{0}{}^{9}\cancel{0}\ {}^{1}0 \\ - \ 1\ 6\ 2\ 7\ 3 \\ \hline 3\ 7\ 2\ 7 \end{array}$$

So she needs to save **£3727** more.
*(2 marks for the correct answer.
Otherwise 1 mark for
the correct addition.)*

9) Subtract to find the missing
number:

$$\begin{array}{r} {}^{0}\cancel{1}{}^{14}\cancel{5}\ .\ {}^{12}\cancel{3}{}^{1}0 \\ - \ \ \ 9\ .\ 4\ 6 \\ \hline \mathbf{5\ .\ 8\ 4} \end{array}$$ *(1 mark)*

10) Add up the populations
of all three cities:

$$\begin{array}{r} 4\ 5\ 1\ 8\ 7\ 3 \\ + \ 1\ 0\ 3\ 9\ 6\ 0\ 7 \\ 7\ 2\ 2\ 6\ 1\ 4 \\ \hline 2\ 2\ 1\ 4\ 0\ 9\ 4 \\ {\scriptstyle 1\ 1\ 1\ 2\ \ 1} \end{array}$$

So the total population
is **2 214 094**. *(1 mark)*

Find the number of people who
live in Leasey and Mintoon:

$$\begin{array}{r} 4\ 5\ 1\ 8\ 7\ 3 \\ + \ 7\ 2\ 2\ 6\ 1\ 4 \\ \hline 1\ 1\ 7\ 4\ 4\ 8\ 7 \\ {\scriptstyle \ \ \ \ \ 1} \end{array}$$

Subtract the number of people
who live in Gilmouth:

$$\begin{array}{r} 1\ 1\ {}^{6}\cancel{7}{}^{13}\cancel{4}\ 4\ 8\ 7 \\ - \ 1\ 0\ 3\ 9\ 6\ 0\ 7 \\ \hline 1\ 3\ 4\ 8\ 8\ 0 \end{array}$$

So **134 880** more people live in
Leasey and Mintoon.
*(2 marks for the correct answer.
Otherwise 1 mark for the correct
total of people in Leasey and
Mintoon.)*

11) Subtract to find the amount
of petrol he has left:

$$\begin{array}{r} 1\ {}^{7}\cancel{8}\ .\ {}^{1}3\ 5 \\ - \ 1\ 2\ .\ 7\ 0 \\ \hline 5\ .\ 6\ 5 \end{array}$$

Subtract to find the amount of
petrol he needs to fill up his car:

$$\begin{array}{r} {}^{1}2\ {}^{14}\cancel{5}\ .\ {}^{9}\cancel{0}{}^{10}\cancel{0}\ {}^{1}0 \\ - \ \ \ 5\ .\ 6\ 5 \\ \hline 1\ 9\ .\ 3\ 5 \end{array}$$

So Siôn needs **19.35 litres**
of petrol to fill up his car.
*(2 marks for the correct answer.
Otherwise 1 mark for
finding 5.65 litres.)*

Pages 13-14 —
Written Multiplication

1) $20 \times 1500 = \mathbf{30\ 000}$
(1 mark)

2)

$$\begin{array}{r} 3\ 6\ 5 \\ \times \ \ \ 1\ 6 \\ \hline 2\ 1_{3}\ 9_{3}\ 0 \\ 3\ 6\ 5\ 0 \\ \hline \mathbf{5\ 8_{1}\ 4\ 0} \ \textbf{ grams} \end{array}$$
*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with
no more than one error.)*

3) There are $15 \times 5 = 75$ chocolates
in a box.

$$\begin{array}{r} 1\ 2\ 5 \\ \times \ \ \ 7\ 5 \\ \hline 6_{1}\ 2_{2}\ 5 \\ 8_{1}\ 7_{3}\ 5\ 0 \\ \hline 9\ 3\ 7\ 5 \\ {\scriptstyle 1} \end{array}$$

So there are **9375** chocolates
on the shelf.
*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with no
more than one error.)*

4)

$$\begin{array}{r} 3\ 7\ 2\ \mathbf{1} \\ \times \ \ \ \ \ 2\ 6 \\ \hline 2\ 2_{4}\ 3_{1}\ 2\ 6 \\ 7_{1}\ 4\ 4\ \mathbf{2}\ 0 \\ \hline 9\ 6\ \mathbf{7}\ 4\ 6 \end{array}$$ *(1 mark)*

5) Find the number of seats:

$$\begin{array}{r} 5\ 2 \\ \times \ \ \ 3\ 5 \\ \hline 2\ 6_{1}\ 0 \\ 1\ 5\ 6\ 0 \\ \hline 1\ 8_{1}\ 2\ 0 \end{array}$$ *(1 mark)*

Then multiply by 28:

$$\begin{array}{r} 1\ 8\ 2\ 0 \\ \times \ \ \ \ \ 2\ 8 \\ \hline 1\ 4_{6}\ 5_{1}\ 6\ 0 \\ 3_{1}\ 6\ 4\ 0\ 0 \\ \hline 5_{1}\ 0\ 9\ 6\ 0 \end{array}$$

So **50 960** people
came to the shows.
*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with no
more than one error.)*

6)

$$\begin{array}{r} 4\ 7\ 2\ 3 \\ \times \ \ \ \ \ \ 6\ 1 \\ \hline 4\ 7\ 2\ 3 \\ 2\ 8_{4}\ 3_{1}\ 3_{1}\ 8\ 0 \\ \hline \mathbf{2\ 8\ 8_{1}\ 1_{1}\ 0\ 3} \end{array}$$

*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with no
more than one error.)*

$$\begin{array}{r} 3\ 8\ 1\ 6 \\ \times \ \ \ \ \ \ 4\ 4 \\ \hline 1\ 5_{3}\ 2\ 6_{2}\ 4 \\ 1\ 5_{3}\ 2\ 6_{2}\ 4\ 0 \\ \hline \mathbf{1\ 6\ 7\ 9_{1}\ 0\ 4} \end{array}$$

*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with no
more than one error.)*

7) Amount collected in 2018:

$$\begin{array}{r} 2\ 5\ 8\ 9 \\ \times \ \ \ \ \ \ 2\ 0 \\ \hline 0\ 0\ 0\ 0 \\ 5_{1}\ 1_{1}\ 7_{1}\ 8\ 0 \\ \hline 5\ 1\ 7\ 8\ 0 \end{array}$$ *(1 mark)*

Amount collected in 2019:

$$\begin{array}{r} 2\ 1\ 7\ 0 \\ \times \ \ \ \ \ \ 2\ 3 \\ \hline 6\ 5_{2}\ 1\ 0 \\ 4\ 3_{1}\ 4\ 0\ 0 \\ \hline 4\ 9\ 9\ 1\ 0 \end{array}$$ *(1 mark)*

Total amount collected:

$$\begin{array}{r} 5\ 1\ 7\ 8\ 0 \\ + \ 4\ 9\ 9\ 1\ 0 \\ \hline 1\ 0\ 1\ 6\ 9\ 0 \\ {\scriptstyle 1\ \ \ 1} \end{array}$$

So the race collected **£101 690**
over the two years. *(1 mark)*

Answers

Pages 15-16 — Written Division

1) **486** should be circled *(1 mark)*
Sample working:

$$9 \overline{)4\ ^43\ ^77\ ^54}\ \begin{matrix}4\ 8\ 6\end{matrix}$$

2) $756 \div 12 = \mathbf{63}$ *(1 mark)*
Sample working:

$$12 \overline{)7\ ^75\ ^36}\ \begin{matrix}6\ 3\end{matrix}$$

3) $$11 \overline{)7\ ^74\ ^88}\ \begin{matrix}6\ 8\end{matrix}$$ *(1 mark)*

$$8 \overline{)5\ ^55\ ^75\ ^32}\ \begin{matrix}6\ 9\ 4\end{matrix}$$ *(1 mark)*

4) $6384 \div 21 = \mathbf{304}$
Sample working:

```
        3 0 4
21 ) 6 3 8 4
   − 6 3
       0 8 4
   −     8 4
             0
```

(2 marks for the correct answer. Otherwise 1 mark for division with no more than one error.)

5) $4404 \div 12 = \mathbf{367}$
Sample working:

$$12 \overline{)4\ ^44\ ^80\ ^84}\ \begin{matrix}3\ 6\ 7\end{matrix}$$

(2 marks for the correct answer. Otherwise 1 mark for division with no more than one error.)

6) Sample working:

```
        2 7 r 3
15 ) 4 0 8
   − 3 0
       1 0 8
   − 1 0 5
             3
```

So she can make **27** bracelets *(1 mark)*. She will have **3 cm** left over *(1 mark)*.

7)
```
        1 1 3 r 21
67 ) 7 5 9 2
   − 6 7
       8 9
     − 6 7
         2 2 2
       − 2 0 1
             2 1
```

So he can make **113** journals.
(2 marks for the correct answer. Otherwise 1 mark for division with no more than one error.)

8) The teacher will get **14** sweets.

```
          1 3 2 r 14
29 ) 3 8 4 2
   − 2 9
       9 4
     − 8 7
         7 2
       − 5 8
           1 4
```

(2 marks for the correct answer. Otherwise 1 mark for division with no more than one error.)

Pages 17-18 — Multiplying & Dividing by 10, 100 & 1000

1) $59.3 \times 100 = 5930$
$5930 \div 10 = 593$
So $59.3 \times 100 \mathbf{>} 5930 \div 10$
(1 mark)
$32.49 \times 10 = 324.9$
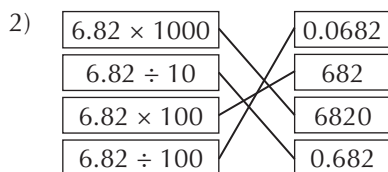$3249 \div 1000 = 3.249$
So $32.49 \times 10 \mathbf{>} 3249 \div 1000$
(1 mark)
$71.6 \div 10 = 7.16$
$0.716 \times 100 = 71.6$
So $71.6 \div 10 \mathbf{<} 0.716 \times 100$
(1 mark)

2)
6.82 × 1000	0.0682
6.82 ÷ 10	682
6.82 × 100	6820
6.82 ÷ 100	0.682

(1 mark for all lines drawn correctly)

3) $\mathbf{4208.7} \div 100 = 42.087$ *(1 mark)*
$8.109 \times \mathbf{1000} = 8109$ *(1 mark)*

4) $0.015 \times 100 = \mathbf{1.5}$ *(1 mark)*
$706 \div 1000 = \mathbf{0.706}$ *(1 mark)*

5) 3.4 is 10 times smaller than 34, so the answer is $89\,012 \div 10 = \mathbf{8901.2}$. *(1 mark)*

26 180 is 10 times bigger than 2618 and 340 is 10 times bigger than 34, so the answer is $89\,012 \times 100 = \mathbf{8\,901\,200}$. *(1 mark)*

261.8 is 10 times smaller than 2618 and 3400 is 100 times bigger than 34, so the answer is $89\,012 \times 10 = \mathbf{890\,120}$. *(1 mark)*

6) He makes $470 \times 10 = 4700$ tyres in the ten normal days.
He makes $470 \div 10 = 47$ tyres on the day when the machine is broken. So he makes $4700 + 47 = \mathbf{4747}$ tyres in total.
(2 marks for the correct answer. Otherwise 1 mark for the correct multiplication and division.)

7) The first square takes her score down to $9100 \div 100 = 91$ points. She then gets to $91 + 502 = 593$ points. The last square increases her score to $593 \times 10 = \mathbf{5930}$ points.
(2 marks for the correct answer. Otherwise 1 mark for finding 593 points.)

Page 19 — Multiplying and Dividing with Decimals

1) $4 \times 12 = 48$
4 is 10 times larger than 0.4, so divide by 10.
$48 \div 10 = \mathbf{4.8}$ *(1 mark)*

$81 \div 9 = 9$
81 is 10 times larger than 8.1, so divide by 10.
$9 \div 10 = \mathbf{0.9}$ *(1 mark)*

2)
```
      1 6 8
  ×       8
  1 3_5 4_6 4
```

168 is 100 times larger than 1.68, so divide by 100.
$1344 \text{ m} \div 100 = \mathbf{13.44 \text{ m}}$
(1 mark)

3)
$$7 \overline{)2\ ^26\ ^51\ ^28}\ \begin{matrix}3\ 7\ 4\end{matrix}$$

2618 is 10 times larger than 261.8, so divide by 10.
$374 \div 10 = \mathbf{37.4 \text{ litres}}$
(1 mark)

4)
```
        4 2 4
14 ) 5 9 3 6
   − 5 6
       3 3
     − 2 8
         5 6
       − 5 6
             0
```

5936 is 100 times larger than 59.36, so divide by 100.
$424 \div 100 = \mathbf{4.24}$ *(1 mark)*

Answers

Pages 20-21 — Order of Operations

1) $43 + 9 \times 12 = 43 + 108 = $ **151**
   (1 mark)
   $27 - 52 \div 13 = 27 - 4 = $ **23**
   (1 mark)

2) **8 + 2 × 8** and **(7 + 5) × 2** = 24
   9 ÷ 3 – 6 and **9 – 3 × 4** = –3
   8 + 8 ÷ 4 and **(5 × 6) ÷ 3** = 10
   (2 marks for all three pairs correct. Otherwise 1 mark for linking one pair correctly.)

3) $3 \times 5 = 15$ packets a day
   $15 \times 7 = 105$ packets a week
   $105 \div 9 = 11$ r 6
   So she will need **12 boxes**.
   (2 marks for the correct answer. Otherwise 1 mark for calculating the number of packets used each week.)

4) Work out how much a sausage roll costs:
   $£32.24 \div 26 = £1.24$
   Find the cost of 17 sausage rolls:
   $£1.24 \times 17 = $ **£21.08**
   (2 marks for the correct answer. Otherwise 1 mark for calculating the price of one sausage roll.)

5) $12 \times 19p = 228p$ spent on yoghurts
   $£5 = 500p$
   $500p - 228p = 272p$
   $272 \div 22 = 12$ r 8
   So he could buy **12 apples**.
   (2 marks for the correct answer. Otherwise 1 mark for finding the amount spent on yoghurts.)

6) Wood: $£12.80 \times 10 = £128$
   Tiles: 160 is 8 lots of 20 tiles.
   $£6.50 \times 8 = £52$
   Handles: 12 is 6 pairs of handles.
   $£5.25 \times 6 = £31.50$
   Total: $£128 + £52 + £31.50$
   $= $ **£211.50**
   (2 marks for the correct answer. Otherwise 1 mark for finding two of the three amounts spent on wood, tiles and handles.)

7) $342 \div 3 = $ **114 km** *(1 mark)*

   Subtract how far Mohsin drove:
   $342 - 86 = 256$ km
   Find how far Maia drove:
   $256 \div 2 = 128$ km
   Find the difference: Maia drove
   $128 - 86 = $ **42 km** further.
   (2 marks for the correct answer. Otherwise 1 mark for finding how far Maia drove.)

Page 22 — Estimating and Inverses

1) You'd estimate the answer to be about $800 \div 40 = 20$, so **21.1** should be circled.
   (1 mark)

2) $15.7 + 23.1 = $ **38.8 grams**
   (2 marks for the correct answer. Otherwise 1 mark for rounding the weights correctly.)

3) Estimate the calculation:
   (10 × 25) – 10 = 240
   So she is not correct.
   (1 mark)

4) Use inverses to work backwards.
   $141 - 15 = 126$
   $126 \div 9 = 14$
   $14 + 134 = $ **148**
   (2 marks for the correct answer. Otherwise 1 mark for using subtraction, division and then addition)

Pages 23-24 — Multiples and Factors

1) **1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72**
   (1 mark)

2) **24, 48** and **72** should be circled.
   (1 mark)

3) Factors of 36:
   1, 2, 3, 4, 6, 9, 12, 18, 36
   Factors of 54:
   1, 2, 3, 6, 9, 18, 27, 54
   Common factors:
   1, 2, 3, 6, 9, 18
   (2 marks for all six correct common factors. Otherwise 1 mark for finding all the factors of 36 or of 54.)

4) Multiples of 6:
   6, 12, 18, 24, 30, 36, 42, 48
   Multiples of 9:
   9, 18, 27, 36, 45
   So the common multiples are **18** and **36**. *(1 mark)*.

5) Find the lowest common multiple of 8 and 12.
   Multiples of 8: 8, 16, 24, 32
   Multiples of 12: 12, 24, 36
   So it will be **24** days until they next go on the same day.
   (1 mark)

6) Factors of 90:
   1, 2, 3, 5, 6, 9, 10,
   15, 18, 30, 45, 90
   Factors of 120:
   1, 2, 3, 4, 5, 6, 8, 10, 12,
   15, 20, 24, 30, 40, 60, 120
   Common factors of 90 and 120:
   1, 2, 3, 5, 6, 10, 15, 30
   6 and 30 are multiples of 6, and
   10 and 30 are multiples of 10.
   So Skye is thinking of **30**.
   (2 marks for the correct answer. Otherwise 1 mark for finding the common factors of 90 and 120.)

7) **Factors of 28:**
   1, 2, 4, 7, 14, 28
   1 + 2 + 4 + 7 + 14 = 28
   So 28 is a perfect number.
   (1 mark)

Page 25 — Prime Numbers

1) **41, 43, 47**
   (2 marks for the correct answers. Otherwise 1 mark for two correct numbers.)

2) $\mathbf{3 \times 5 \times 7} = 105$ *(1 mark)*

3) Factors of 52: 1, 2, 4, 13, 26, 52.
   So Geoff could be thinking of **2** or **13**.
   (2 marks for both correct values. Otherwise 1 mark for one correct value.)

4) Sample answer: **2 + 3 = 5**
   (1 mark for adding 2 to any other prime number.)

Page 26 — Square and Cube Numbers

1) $5^3 - 4^2 = 125 - 16 = $ **109** *(1 mark)*
   $3^3 + 18 \div 6 = 27 + 3 = $ **30**
   (1 mark)

2) $7^2 + 3^3 = $ **49** + **27** $= 76$ *(1 mark)*

3) $3^2 + 4^2 = 9 + 16 = 25 = \mathbf{5}^2$
   (1 mark)
   $5^3 - 5^2 = 125 - 25 = 100 = 10^2$,
   so $5^2 + \mathbf{10}^2 = 5^3$. *(1 mark)*

4) $6^2 - 9 = 36 - 9 = 27 = 3^3$
   So Alicia has written down **6**.
   (1 mark)

Pages 27-28 — Mixed Practice

1) $4912.7 \times 1000 = $ **4 912 700**
   (1 mark)
   $71\,185.3 \div 100 = $ **711.853**
   (1 mark)

Answers

2) Multiples of 9:
9, 18, 27, 36, 45
Multiples of 12:
12, 24, 36, 48
So the only common multiple
is **36**. *(1 mark)*

3) $(300 \times 20) \div 6 = 6000 \div 6 = \textbf{1000}$
(1 mark)

4)
$$\begin{array}{r} 1\;6\;8\;4 \\ \times\qquad 5 \\ \hline 8_3\;4_4\;2_2\;0 \end{array}$$
1684 is 100 times larger than
16.84, so divide by 100.
$8420 \div 100 = \textbf{84.2 miles}$
(1 mark)

15 minutes is a quarter of
one hour so divide by 4.
$$4\;\overline{)\;1\;^16\;8\;4}\quad \begin{array}{r}4\;2\;1\end{array}$$
1684 is 100 times larger than
16.84, so divide by 100.
$421 \div 100 = \textbf{4.21 miles}$
(1 mark)

5) **She is not correct.**
E.g. **You get a square number by
multiplying a number by itself,
so this number has to be a factor
of the square number.
For example, $25 = 5^2$, so 5 is
a factor of 25. So all square
numbers other than 1 have
at least one factor other than
themselves and one.**
*(1 mark for the correct answer
with a valid explanation)*

6)
$$\begin{array}{r} 5\;1\;2\;9 \\ \times\qquad 4\;7 \\ \hline 3\;5\;9_2\;0_6\;3 \\ 2\;0\;5_1\;1_3\;6\;0 \\ \hline \mathbf{2\;4_1\;1_1\;0\;6\;3} \end{array}$$
*(2 marks for the correct answer.
Otherwise 1 mark for working
using long multiplication with no
more than one error.)*

$4131 \div 17 = \textbf{243}$
$$\begin{array}{r} 2\;4\;3 \\ 17\,\overline{)\;4\;1\;3\;1} \\ -\,3\;4 \\ \hline 7\;3 \\ -\,6\;8 \\ \hline 5\;1 \\ -\,5\;1 \\ \hline 0 \end{array}$$
*(2 marks for the correct answer.
Otherwise 1 mark for division
with no more than one error.)*

7) The cost of one of each item:
24p + 70p + 35p = £1.29
Cost of six of each:
£1.29 × 6 = £7.74
Change from £10:
£10 – £7.74 = **£2.26**
*(2 marks for the correct answer.
Otherwise 1 mark for some
correct working.)*
Alternatively, you could have
multiplied the cost of each item
by six and then added these
costs together to get £7.74.

Section Three — Fractions, Decimals & Percentages
Pages 29-30 — Fractions

1) $\dfrac{\mathbf{6}}{\mathbf{9}}$ and $\dfrac{\mathbf{8}}{\mathbf{12}}$ *(1 mark)*

2) $\dfrac{5}{8} = \dfrac{40}{\mathbf{64}}$, $\dfrac{4}{7} = \dfrac{\mathbf{12}}{21}$, $\dfrac{2}{\mathbf{5}} = \dfrac{18}{45}$
*(2 marks for all three correct,
otherwise 1 mark for two correct)*

3) $\dfrac{16}{3} = \mathbf{5\dfrac{1}{3}}$, $10\dfrac{2}{9} = \dfrac{\mathbf{92}}{\mathbf{9}}$,
$\dfrac{17}{6} = \mathbf{2\dfrac{5}{6}}$, $4\dfrac{3}{7} = \dfrac{\mathbf{31}}{\mathbf{7}}$
*(2 marks for all three correct,
otherwise 1 mark for two correct)*

4) $\dfrac{3}{75} = \dfrac{\mathbf{1}}{\mathbf{25}}$ *(1 mark)*
$8\dfrac{3}{75} = 8\dfrac{1}{25} = \dfrac{\mathbf{201}}{\mathbf{25}}$ *(1 mark)*

5) $\dfrac{12}{66} = \dfrac{\mathbf{2}}{\mathbf{11}}$, $\dfrac{36}{96} = \dfrac{\mathbf{3}}{\mathbf{8}}$, $\dfrac{121}{88} = \dfrac{\mathbf{11}}{\mathbf{8}}$
*(2 marks for all three correct,
otherwise 1 mark for two correct)*

6) Pippa has shaded $\dfrac{9}{20}$ squares.
$\dfrac{9}{20} = \dfrac{45}{100}$, so Kai needs to
shade **45** squares *(1 mark)*

7) E.g. 36 is a common multiple
of 9 and 12.
$\dfrac{8}{9} = \dfrac{8 \times 4}{9 \times 4} = \dfrac{\mathbf{32}}{\mathbf{36}}$ *(1 mark)*
$\dfrac{13}{12} = \dfrac{13 \times 3}{12 \times 3} = \dfrac{\mathbf{39}}{\mathbf{36}}$ *(1 mark)*

8) Simon originally has 5 × 12 = 60
cookies. After giving away 19, he
has 60 – 19 = 41 left.
So he has $\dfrac{41}{12} = \mathbf{3\dfrac{5}{12}}$ packets
left. *(1 mark)*

Page 31 — Comparing Fractions

1) Make equivalent fractions with
the same denominator:
$\dfrac{4}{3} = \dfrac{24}{18}$, $\dfrac{5}{6} = \dfrac{15}{18}$, $\dfrac{10}{9} = \dfrac{20}{18}$
and $\dfrac{17}{18}$. So the order is:
$\dfrac{\mathbf{5}}{\mathbf{6}}$, $\dfrac{\mathbf{17}}{\mathbf{18}}$, $\dfrac{\mathbf{10}}{\mathbf{9}}$, $\dfrac{\mathbf{4}}{\mathbf{3}}$
*(2 marks for the correct order,
otherwise 1 mark for finding
equivalent fractions)*

2) Make equivalent fractions with
the same denominator:
$\dfrac{7}{9} = \dfrac{35}{45}$, $\dfrac{3}{5} = \dfrac{27}{45}$, $\dfrac{2}{3} = \dfrac{30}{45}$
and $\dfrac{11}{15} = \dfrac{33}{45}$. So the order is:
$\dfrac{\mathbf{7}}{\mathbf{9}}$, $\dfrac{\mathbf{11}}{\mathbf{15}}$, $\dfrac{\mathbf{2}}{\mathbf{3}}$, $\dfrac{\mathbf{3}}{\mathbf{5}}$
*(2 marks for the correct order,
otherwise 1 mark for finding
equivalent fractions)*

3) $\dfrac{\mathbf{13}}{\mathbf{15}}$, $\dfrac{\mathbf{11}}{\mathbf{8}}$ and $\dfrac{\mathbf{7}}{\mathbf{4}}$
*(2 marks for all three correct,
otherwise 1 mark for two correct)*

4) Make equivalent fractions with
the same denominator:
Emily has eaten $\dfrac{5}{8} = \dfrac{15}{24}$
of her pizza.
Max has eaten $\dfrac{4}{6} = \dfrac{16}{24}$
of his pizza.
Ahmed has eaten $\dfrac{3}{4} = \dfrac{18}{24}$
of his pizza.
*(1 mark for all equivalent
fractions)*
So **Ahmed** has eaten the most
pizza. *(1 mark)*

Pages 32-33 — Multiplying Fractions

1) $\dfrac{1}{6} \times \dfrac{1}{4} = \dfrac{1}{6 \times 4} = \dfrac{\mathbf{1}}{\mathbf{24}}$
$\dfrac{1}{11} \times \dfrac{1}{5} = \dfrac{1}{5 \times 11} = \dfrac{\mathbf{1}}{\mathbf{55}}$
(1 mark for both correct)

2) 2 × 240 = 480
$\dfrac{1}{6} \times 240 = 240 \div 6 = 40$
So $\dfrac{5}{6} \times 240 = 40 \times 5 = 200$
So $2\dfrac{5}{6} \times 240 = 480 + 200$
$= \textbf{680}$ *(1 mark)*
$\dfrac{1}{11} \times 990 = 990 \div 11 = 90$
So $\dfrac{3}{11} \times 990 = 90 \times 3$
$= \textbf{270}$ *(1 mark)*

Answers

3) $\frac{4}{9} \times \frac{2}{9} = \frac{4 \times 2}{9 \times 9} = \frac{8}{81}$ *(1 mark)*

4) $\frac{1}{8} \times 560 = 560 \div 8 = 70$

So $\frac{7}{8} \times 560 = 70 \times 7 = 490$

So $1\frac{7}{8} \times 560 = 560 + 490$
$= \mathbf{1050}$ *(1 mark)*

5) $\frac{2}{5} \times \frac{3}{4} = \frac{2 \times 3}{5 \times 4} = \frac{6}{20} = \frac{3}{10}$
(1 mark)

$\frac{9}{10} \times \frac{5}{6} = \frac{9 \times 5}{10 \times 6} = \frac{45}{60} = \frac{3}{4}$
(1 mark)

6) E.g. $\frac{4}{5} \times \frac{1}{3} = \frac{4}{15}$ *(1 mark)*

E.g. $\frac{2}{3} \times \frac{4}{7} = \frac{8}{21}$ *(1 mark)*

7) You need to find $\frac{2}{3}$ of $\frac{7}{11}$:

$\frac{2}{3} \times \frac{7}{11} = \frac{2 \times 7}{3 \times 11} = \frac{14}{33}$ *(1 mark)*

8) $\frac{1}{5} \times 250 = 250 \div 5 = 50$ m

$5 \times 250 = 1250$

So $5\frac{1}{5} \times 250 = 1250 + 50$
$= \mathbf{1300 \ m}$ *(1 mark)*

Pages 34-35 — Adding and Subtracting Fractions

1) $\frac{2}{5} + \frac{7}{15} = \frac{6}{15} + \frac{7}{15} = \frac{13}{15}$ *(1 mark)*

$\frac{2}{3} - \frac{11}{18} = \frac{12}{18} - \frac{11}{18} = \frac{1}{18}$ *(1 mark)*

2) $\frac{9}{8} + \frac{1}{5} = \frac{45}{40} + \frac{8}{40} = \frac{53}{40}$

$= \mathbf{1\frac{13}{40}}$ *(1 mark)*

3) $1\frac{3}{10} - \frac{5}{8} = \frac{13}{10} - \frac{5}{8} = \frac{52}{40} - \frac{25}{40}$

$= \mathbf{\frac{27}{40}}$ **litres**

(2 marks for the correct answer, otherwise 1 mark for putting fractions over a common denominator)

4) $1\frac{3}{4} + 1\frac{1}{6} = \frac{7}{4} + \frac{7}{6}$

$= \frac{21}{12} + \frac{14}{12} = \frac{35}{12} = \mathbf{2\frac{11}{12}}$

(2 marks for the correct answer, otherwise 1 mark for correct working)

You could also do this by adding the number parts and fraction parts separately:

$1 + 1 + \frac{3}{4} + \frac{1}{6} = 2 + \frac{9}{12} + \frac{2}{12}$
$= 2\frac{11}{12}$

5) $\frac{2}{9} + \frac{5}{12} = \frac{8}{36} + \frac{15}{36} = \frac{23}{36}$

$1 - \frac{23}{36} = \frac{36}{36} - \frac{23}{36} = \frac{13}{36}$

(2 marks for the correct answer, otherwise 1 mark for finding the total amount of bread eaten)

6) $3\frac{1}{6} + 1\frac{3}{10} - \frac{17}{15}$

$= \frac{19}{6} + \frac{13}{10} - \frac{17}{15}$

$= \frac{95}{30} + \frac{39}{30} - \frac{34}{30}$

$= \frac{100}{30} = \mathbf{\frac{10}{3}}$

(2 marks for the correct answer, otherwise 1 mark for putting fractions over a common denominator)

7) The Williams family uses

$\frac{7}{10} + \frac{3}{5} + \frac{1}{4} = \frac{14}{20} + \frac{12}{20} + \frac{5}{20}$

$= \frac{31}{20}$ pints

The Kang family uses $1\frac{5}{8}$ pints.

$\frac{31}{20} = \frac{62}{40}$ and $1\frac{5}{8} = \frac{13}{8} = \frac{65}{40}$

So the **Kang** family uses more milk in one day.

(2 marks for the correct answer. Otherwise 1 mark for finding the amount of milk the Williams family uses.)

Page 36 — Dividing Fractions

1) $\frac{1}{3} \div 8 = \frac{1}{3 \times 8} = \frac{1}{24}$ *(1 mark)*

$\frac{1}{10} \div 7 = \frac{1}{10 \times 7} = \frac{1}{70}$ *(1 mark)*

2) $\frac{1}{2} \div 6 = \frac{1}{2 \times 6} = \frac{1}{12}$ *(1 mark)*

3) $\frac{8}{15} \div 4 = \frac{8}{15 \times 4} = \frac{8}{60} = \frac{2}{15}$
(1 mark)

$\frac{6}{7} \div 3 = \frac{6}{7 \times 3} = \frac{6}{21} = \frac{2}{7}$ *(1 mark)*

4) $\frac{6}{10} \div 4 = \frac{6}{10 \times 4} = \frac{6}{40} = \frac{3}{20}$
(1 mark)

Pages 37-38 — Equivalent Fractions and Decimals

1)

$1\frac{3}{10}$ 1.003
$1\frac{3}{100}$ 1.3
$1\frac{3}{1000}$ 1.03   *(1 mark)*

2) $0.007 = \frac{7}{1000}$, $\frac{19}{100} = \mathbf{0.19}$

$\frac{157}{1000} = \mathbf{0.157}$, $3.81 = \mathbf{3\frac{81}{100}}$

(2 marks for all four correct, otherwise 1 mark for two or three correct)

3) $\frac{4}{5} = \frac{80}{100} = \mathbf{0.8}$

$\frac{13}{20} = \frac{65}{100} = \mathbf{0.65}$

$1\frac{4}{25} = 1\frac{16}{100} = \mathbf{1.16}$

$2\frac{29}{500} = 2\frac{58}{1000} = \mathbf{2.058}$

(2 marks for all four correct, otherwise 1 mark for two or three correct)

4) $0.48 = \frac{48}{100} = \mathbf{\frac{12}{25}}$ *(1 mark)*

5) $\frac{41}{200} = \frac{205}{1000} = \mathbf{0.205}$ **litres**
(1 mark)

6)
$8 \overline{)\ 5\ ^50\ ^20\ ^40\ }$ $\mathbf{6\ 2\ 5}$

$\frac{5}{8} = 625 \div 1000$
$= \mathbf{0.625}$ *(1 mark)*

7)
$8 \overline{)\ 7\ ^70\ ^60\ ^40\ }$ $\mathbf{8\ 7\ 5}$ *(1 mark)*

$\frac{7}{8} = 875 \div 1000$
$= \mathbf{0.875}$ *(1 mark)*

Page 39 — Fractions, Decimals and Percentages

1) $\frac{2}{5} \mathbf{>} 0.39$ *(1 mark)*

$0.05 \mathbf{<} \frac{3}{50}$ *(1 mark)*

$\frac{8}{25} \mathbf{=} 0.32$ *(1 mark)*

2) $\frac{7}{20} = \frac{35}{100} = 0.35 = 35\%$ *(1 mark)*

So **Shoshanna** has decorated more cakes. *(1 mark)*

3) E.g. $\frac{22}{25} = 0.88$, $89\% = 0.89$

and $\frac{43}{50} = 0.86$

So the order is:

$\mathbf{0.85}$, $\mathbf{\frac{43}{50}}$, $\mathbf{\frac{22}{25}}$, $\mathbf{89\%}$

(2 marks for the correct order, otherwise 1 mark for converting all values to decimals, percentages or fractions over the same denominator)

Answers

4) E.g. $\frac{13}{20} = 0.65$, $62\% = 0.62$,

$\frac{39}{60} = \frac{13}{20} = 0.65$, $13\% = 0.13$,

$\frac{26}{50} = 0.52$ and $\frac{3}{5} = 0.6$

So **0.65**, $\frac{13}{20}$ and $\frac{39}{60}$ should be circled.
(2 marks for correct three amounts circled, otherwise 1 mark for converting four or more values to decimals or percentages)

Pages 40-41 — Mixed Practice

1) Ronan won $24 - 7 - 2 = 15$ games.
So the fraction that he won is $\frac{15}{24} = \frac{5}{8}$. *(1 mark)*
$\frac{5}{6} = \frac{20}{24}$, so he was the team captain for **20 games**. *(1 mark)*

2) $\frac{7}{20} = \frac{35}{100} = 35\% > 30\%$
$\frac{23}{10} = 2\frac{3}{10} > 2\frac{1}{10}$
$\frac{9}{2} = \frac{45}{10}$ and $\frac{23}{5} = \frac{46}{10}$
$\frac{12}{500} = \frac{24}{1000} = 0.024 > 0.02$
So $\frac{7}{20}$, $\frac{23}{10}$, $\frac{23}{5}$ and $\frac{12}{500}$ should be circled.
(2 marks for all correct, otherwise 1 mark for two or three correct)

3) $\frac{10}{11} \times \frac{9}{7} = \frac{90}{77}$, $\frac{4}{9} \div 4 = \frac{1}{9}$
$\frac{3}{5} \times \frac{6}{7} = \frac{18}{35}$, $\frac{9}{4} \div 3 = \frac{3}{4}$
Equivalent fractions are also acceptable.
(2 marks for all correct, otherwise 1 mark for two or three correct)

4) If $\frac{2}{3}$ of the pebbles are grey, then $\frac{1}{3}$ of the pebbles are not grey.
$\frac{1}{3} \times 210 = 210 \div 3 = $ **70 pebbles**
(1 mark)

5) $\frac{6}{25} = \frac{24}{100} = 24\%$ *(1 mark)*
So **Mr Barlow** has driven the greater distance. *(1 mark)*
Together they have driven $24\% + 27\% = 51\%$ of the distance, so there is $100\% - 51\% = $ **49%** of the journey left. *(1 mark)*
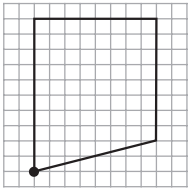
6) Neil sells $2\frac{4}{6}$ chocolate cakes and $1\frac{9}{8} = 2\frac{1}{8}$ lemon cakes.
So in total, he sells:
$2\frac{4}{6} + 2\frac{1}{8} = 2 + 2 + \frac{4}{6} + \frac{1}{8}$
$\qquad = 4 + \frac{16}{24} + \frac{3}{24}$
$\qquad = 4\frac{19}{24}$ cakes
(2 marks for the correct answer, otherwise 1 mark for correct working)

Section Four — Ratio, Proportion & Algebra

Pages 42-43 — Ratio, Proportion and Unequal Sharing

1) **7 : 3** *(1 mark)*
There are 4 triangles and 6 squares, so for every 2 triangles there are **3** squares. *(1 mark)*

2) $54 \div 9 = 6$, $6 \times 13 = $ **78** *(1 mark)*

3) $27 \div 3 = 9$, $9 \times 7 = $ **63** *(1 mark)*

4) There are $5 + 4 = 9$ shares.
1 share $= 72 \div 9 = 8$
Fleur: $8 \times 5 = $ **40** grapes
Bridget: $8 \times 4 = $ **32** grapes
(1 mark)

5) There are $9 + 5 = 14$ shares.
1 share $= 98 \div 14 = 7$
Aki: $7 \times 9 = 63$ windows
Gemma: $7 \times 5 = 35$ windows
Difference $= 63 - 35 = $ **28**
(2 marks for the correct answer. Otherwise 1 mark for finding the number of windows in one share.)

6) Seven laps of the track is 7×270 m $= 1890$ m
Three laps around the park is also 1890 m, so one lap of the park is $1890 \div 3 = $ **630 m**
(2 marks for the correct answer. Otherwise 1 mark for an appropriate method.)

7) $12 \div 3 = 4$
For every parcel the postman delivered, he delivered **4** letters.
(1 mark)
$4 + 1 = 5$ shares
1 share $= 55 \div 5 = 11$
Parcels: $11 \times 1 = $ **11** *(1 mark)*
Letters: $11 \times 4 = $ **44** *(1 mark)*

Pages 44-45 — Scaling

1) $345 \div 15 = $ **23 litres** *(1 mark)*

2)

(1 mark)

3) 6 cm $\div$ 2 cm $= 3$, so the distance in real life is $3 \times 100 = $ **300 m**
(1 mark)

4) $22 \div 4 = 5.5$
£3.60 $\times 5.5$
$= £3.60 \times 5 + £3.60 \times 0.5$
$= £18 + £1.80 = $ **£19.80** *(1 mark)*

5) $72 \div 6 = $ **12 cm** *(1 mark)*

6) The right-hand sides of the shapes are in the ratio $1 : 3$.
So the ratio of side x to side y is **1 : 3**. *(1 mark)*

7) Length $= 4.2$ m $\div 5$
$\qquad = 420$ cm $\div 5 = $ **84 cm**
Width $= 2.7$ m $\div 5$
$\qquad = 270$ cm $\div 5 = $ **54 cm**
(1 mark for both correct)

8) 4.5 cm in the model represents 22.5 m in real life, so 1 cm represents $22.5 \div 4.5 = 5$ m.
So 90 m is represented by $90 \div 5 = $ **18 cm**
(2 marks for the correct answer. Otherwise 1 mark for finding the correct scale factor.)

Pages 46-47 — Percentage Problems

1) 1% of $6800 = 6800 \div 100 = $ **68**
(1 mark)
10% of $2180 = 2180 \div 10 = 218$
5% of $2180 = 218 \div 2 = 109$
15% of $2180 = 218 + 109$
$\qquad = $ **327** *(1 mark)*

2) 10% of $860 = 860 \div 10 = 86$
5% of $860 = 86 \div 2 = 43$
30% of $860 = 86 \times 3 = 258$
35% of $860 = 258 + 43$
$\qquad = $ **301** *(1 mark)*

$45\% + 15\% = 60\%$
10% of $860 = 860 \div 10 = 86$
50% of $860 = 860 \div 2 = 430$
60% of $860 = 86 + 430$
$\qquad = $ **516** *(1 mark)*

Answers

3) 10% of 300 = 300 ÷ 10 = 30
30% of 300 = 30 × 3 = 90
1% of 300 = 300 ÷ 100 = 3
2% of 300 = 3 × 2 = 6
32% of 300 = 90 + 6
     = **96** *(1 mark)*

4) 7 + 20 + 8 = 35 marbles.
$\frac{7}{35} = \frac{1}{5} = \mathbf{20\%}$ *(1 mark)*

5) Saturday:
10% of 400 = 400 ÷ 10 = 40
40% of 400 = 40 × 4 = 160
5% of 400 = 40 ÷ 2 = 20
45% of 400 = 160 + 20 = 180
Sunday:
50% of 700 = 700 ÷ 2 = 350
1% of 700 = 700 ÷ 100 = 7
8% of 700 = 7 × 8 = 56
58% of 700 = 350 + 56 = 406
Total: 406 + 180 = **586**
(3 marks for the correct answer. Otherwise 1 mark for finding 45% of 400 and 1 mark for finding 58% of 700.)

6) Stuart got a discount of
£25 – £21 = £4, which is
$\frac{4}{25} = \frac{16}{100} = 16\%$.
Miranda got a discount of
£20 – £17 = £3, which is
$\frac{3}{20} = \frac{15}{100} = 15\%$. *(1 mark for finding either percentage)*
16% > 15%, so **Stuart** got a bigger percentage discount.
(1 mark)

7) Nutios increase:
750 g – 600 g = 150 g
$\frac{150}{600} = \frac{50}{200} = \frac{25}{100} = 25\%$
Branpops increase:
360 g – 300 g = 60 g
$\frac{60}{300} = \frac{20}{100} = 20\%$ *(1 mark)*
Nutios are increasing by the bigger percentage. *(1 mark)*

Pages 48-49 — Formulas and Combinations

1) 150 + 30 × 120 = 3750 grams
3750 ÷ 1000 = 3.75
So 3750 grams = **3.75 kg**
(2 marks for the correct answer. Otherwise 1 mark for working out the amount in grams.)

2) Rare:
$\frac{1500}{20} + 15 = \frac{150}{2} + 15$
$= 75 + 15 = \mathbf{90 \text{ mins}}$ *(1 mark)*

Well done:
$\frac{1500}{15} + 35$
$= 100 + 35 = 135$ mins
Extra time = 135 – 90
$= \mathbf{45 \text{ mins}}$ *(1 mark)*

3) **Renham Reds vs Yigby Yellows**
Renham Reds vs Bellton Blues
Yigby Yellows vs Bellton Blues
(2 marks for all three matches correct. Otherwise 1 mark for two or three matches correct.)

4) Sponsorship = £6.50 + £1.25 × 8
= £6.50 + £10 = **£16.50**
(1 mark)

k = number of km Hannah runs
£19 = £6.50 + £1.25 × k
£12.50 = £1.25 × k
k = £12.50 ÷ £1.25 = 10
So Hannah runs **10 km**.
(2 marks for the correct answer. Otherwise 1 mark for setting £19 equal to the sponsorship formula and attempting to solve.)

Pages 50-51 — Finding Missing Numbers

1) 11 × △ + 7 = 40
11 × △ = 33
So △ = 33 ÷ 11 = **3** *(1 mark)*

35 ÷ 7 – ☆ = –1
5 – ☆ = –1
So ☆ = **6** *(1 mark)*

2) Elsa has m DVDs
Brita has 8m DVDs
So Dani has **8m – 6** DVDs
(1 mark)

8 × 9 – 6 = **66** *(1 mark)*

3)

	Pair 1	Pair 2	Pair 3	Pair 4
⬠	13	9	5	1
☆	1	2	3	4

(2 marks for four correct pairs. Otherwise 1 mark for two or three correct pairs.)

4) Find the factor pairs of 27 and see which ones add up to 12:
1 × 27 = 27, 1 + 27 = 28
3 × 9 = 27, 3 + 9 = 12
So Angelo's numbers are
3 and **9** *(1 mark)*

5) 2b + 3k = 20
b = **1**, k = **6**,   b = **4**, k = **4**
b = **7**, k = **2**
(2 marks for three correct pairs. Otherwise 1 mark for two correct pairs.)

6) The scales are balanced, so the masses on each side are equal.
170 + 45 + a + a = 105 + a + a + a
215 + 2a = 105 + 3a
215 – 105 = a
So a = **110 g**
(2 marks for the correct answer. Otherwise 1 mark for setting the two expressions equal to each other and attempting to solve.)

7) The difference between the patterns is 3 ⬛.
3 ⬛ = £78 – £69 = £9
So ⬛ = **£3** *(1 mark)*
4 ⬡ + 10 × 3 = £78
4 ⬡ = £48, so ⬡ = **£12**
(1 mark)

Page 52 — Number Sequences

1) The rule is take away 0.6.
5.9, 5.3, 4.7, **4.1**, 3.5 *(1 mark)*

2) The rule is add 15.
–37, –22, –7, **8**, 23 *(1 mark)*
The rule is take away $\frac{5}{6}$.
$\mathbf{3\frac{1}{3}}, 2\frac{1}{2}, 1\frac{2}{3}, \mathbf{\frac{5}{6}}$ *(1 mark)*

3) The rule is multiply by 2.
2, 4, 8, 16, **32**, **64** *(1 mark)*

4) The difference between 6 and –2 is 8. There are 2 steps between 6 and –2 so 8 ÷ 2 = 4.
The rule is subtract 4.
6, **2**, –2, **–6**, –10
(1 mark for each correct term.)

5) To find the first term, do the inverse: 18 ÷ 2 = 9, 9 + 7 = 16.
22 – 7 = 15, 15 × 2 = 30
So the sequence is **16**, 18, 22, **30**
(1 mark for each correct term)

Pages 53-54 — Mixed Practice

1) 25 × 3 m = **75 m** *(1 mark)*

2) The rule is take away 1.2.
4.6, 3.4, 2.2, **1.0**, –0.2 *(1 mark)*

Answers

3) 50 g ÷ 10 g = 5.
So he is using 5 times the recipe.
600 g × 5 = **3000 g** *(1 mark)*
$\frac{15}{20} = \frac{3}{4}$, so she is using $\frac{3}{4}$ of
the recipe.
10 g × $\frac{3}{4}$ = **7.5 g** *(1 mark)*

4) 10% of £420 = £420 ÷ 10 = £42
5% of £420 = £42 ÷ 2 = £21
40% of £420 = £42 × 4 = £168
45% = 168 + 21 = **£189** *(1 mark)*

5) The difference between
the two sums is one ⚪.
⚪ = 52 − 35 = **17** *(1 mark)*
2☆ + 1 × 17 = 35
2☆ = 18, so ☆ = **9** *(1 mark)*

6) 1 share = 42 ÷ 6 = 7
Number of girls = 7 × 7 = 49
Total number of children
= 42 + 49 = **91**
*(2 marks for the correct answer.
Otherwise 1 mark for an
appropriate method.)*

7) 5 × 7 + 3 × 4 = 35 + 12
= **47 points** *(1 mark)*

g = number of goals scored
51 = 5 × g + 3 × 2
51 = 5 × g + 6
45 = 5 × g, so g = 9.
The team scored **9 goals**.
*(2 marks for the correct answer.
Otherwise 1 mark for putting the
total points and the number of
penalties scored in the formula
and attempting to solve.)*

Section Five — Measure

Pages 55-56 — Units and Conversions

1) 1 litre = 1000 ml
8.7 × 1000 = **8700 ml** *(1 mark)*

1 kg = 1000 g
2500 ÷ 1000 = **2.5 kg** *(1 mark)*

2) 535 × 10 = 5350 m
1 km = 1000 m
5350 ÷ 1000 = **5.35 km** *(1 mark)*

3) 20 rubber balls would weigh
20 × 2 = 40 ounces = **2 lb 8 oz**.
*(2 marks for the correct answer.
Otherwise 1 mark for the weight
of 20 rubber balls in ounces.)*

4) 1 km = 1000 m
0.9 × 1000 = 900 m
900 ÷ 150 = **6** *(1 mark)*

5) 8 km ≈ 5 miles
320 ÷ 8 = 40
40 × 5 = 200 miles
So 320 km ≈ **200 miles**. *(1 mark)*

6) 1 litre = 1000 ml
1.35 × 1000 = 1350 ml
1350 ÷ 45 = **30 minutes**
(1 mark)

7) 4.5 + 1.3 + 1.7 = 7.5 miles
8 km ≈ 5 miles
7.5 ÷ 5 = 1.5
1.5 × 8 = **12 km** *(1 mark)*

1 kg = 1000 g
24 × 1000 = 24 000 g
24 000 ÷ 12 = **2000**
*(2 marks for correct answer.
Otherwise 1 mark for
converting 24 kg to grams.)*

Pages 57-59 — Time and Money

1) 1 year = 365 days,
1 week = 7 days
So a year and 2 weeks
= 365 + 7 + 7 = **379 days**
(1 mark)

2) (15 × 6) + 30 + 45 = 165 seconds
60 seconds = 1 minute
165 seconds
= **2 minutes 45 seconds**
*(2 marks for correct answer.
Otherwise 1 mark for working
out the total time.)*

3) £7.60 = 760p
760 ÷ 80 = **9.5 miles** *(1 mark)*

$5\frac{1}{4}$ × 2 = $10\frac{1}{2}$ miles

$10\frac{1}{2}$ × 80 = 800p + 40p = **£8.40**
(1 mark)

4) 45 + 122 = 167 minutes
1 hour = 60 minutes
$4\frac{1}{2}$ hours = (4 × 60) + 30
= 270 minutes
270 − 167 = **103 minutes**
*(2 marks for correct answer.
Otherwise 1 mark for either
finding the time used so far or for
converting four and a half hours
into minutes.)*

5) It costs 40 + 15 + 25 = 80 tokens
to go on each ride once.
So it costs 2 × 80 = 160 tokens
to go on each ride twice.
160 ÷ 20 = 8, so it costs
8 × £1.80 = **£14.40**
*(2 marks for correct answer.
Otherwise 1 mark for finding
the total number of tokens.)*

6) 1 minute = 60 seconds
so 660 ÷ 60 = 11 minutes
(1 mark).
His train left 11 minutes
before 5:03 pm:
5:03 − 3 minutes = 5:00
5:00 − 8 minutes = **4:52 pm**
(1 mark)

7) Five bow ties cost:
£1.20 × 5 = £6.00 = 600p
So one magic wand costs
600 ÷ 8 = 75p
£10 = 1000p
1000 ÷ 75 = 13 remainder 25
So you can buy **13 wands**.
*(2 marks for correct answer.
Otherwise 1 mark for finding
the cost of a magic wand.)*

8) 1 hour = 60 minutes
1 minute = 60 seconds
60 × 60 = 3600 seconds
So 2 hours = 3600 × 2
= **7200 seconds** *(1 mark)*

1 week = 7 days, 1 day = 24 hours
7 × 24 = 168 hours
So 4 weeks = 168 × 4
= **672 hours** *(1 mark)*

9) 17:45 + 15 minutes = 18:00
18:00 + 2 hours = 20:00
20:00 + 13 minutes = 20:13
So 17:45 to 20:13 is
2 hours 28 minutes.
1 hour = 60 minutes,
so the film was 60 + 60 + 28
= **148 minutes** long *(1 mark)*

10) 2 children: 2 × £3.75 = £7.50
2 adults: 2 × £5.35 = £10.70
So total cost for separate tickets:
£7.50 + £10.70 = £18.20
£18.20 − £14.95 = £3.25
It is **£3.25** cheaper to
buy a family ticket.
*(2 marks for correct answer.
Otherwise 1 mark for finding the
total cost of the separate tickets.)*

Page 60 — Area

1) Area of A = 8 × 4 = 32 cm²
Area of B = 9 × 4 = 36 cm²

Area of C = 13 × 3 = 39 cm²
Area of D = 6 × 6 = 36 cm²
Area of E = 18 × 2 = 36 cm²
So **B**, **D** and **E** should be circled.
(1 mark)

2) Area of A = 19 × 10 = 190 cm²
Area of B = 16 × 9 = 144 cm²
So the area of Rectangle A is
190 – 144 = **46 cm²** larger.
*(2 marks for the correct answer.
Otherwise 1 mark for
finding the area of A or B.)*

3) Missing measurements:
10 – 7 = 3 m
9 – 3 = 6 m
Split the shape into 2 rectangles
and add their areas, e.g.
3 × 3 = 9 m²
7 × 9 = 63 m²
9 + 63 = 72 m²
So it will cost 72 × 20 = **£1440**
*(2 marks for correct answer.
Otherwise 1 mark for finding the
total area of the garden.)*
You could have split the shape
into a 3 m × 10 m rectangle and
a 6 m × 7 m rectangle instead.

Pages 61-62 —
Perimeters and Areas

1) 6 equal sides, so perimeter
= 0.3 × 6 = **1.8 cm** *(1 mark)*

8 equal sides, so perimeter
= 6 × 8 = **48 m** *(1 mark)*

2) Perimeter:
6 + 2 + 6 + 2 + 6 + 2 + 6 + 2 =
32 cm *(1 mark)*

Area = length × width
Length = 2 + 6 + 2 = 10 cm
Area = 10 × 6 = **60 cm²**
(1 mark)

3) Perimeter of Shape A:
2 + 3 + 1 + 1 + 1 + 1 + 1
+ 1 + 1 + 2 = 14 cm
So the rectangle must have a
perimeter of 14 cm, e.g.
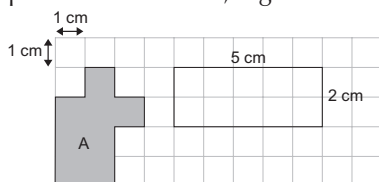
(1 mark)
You could have also drawn a
4 cm × 3 cm rectangle or a
6 cm × 1 cm rectangle here.

4) Area = length × width,
so width = area ÷ length
Width of rectangle A
= 18 ÷ 9 = 2 cm
Perimeter of rectangle A
= 9 + 2 + 9 + 2 = **22 cm**
(1 mark)

Width of rectangle B
= 18 ÷ 3 = 6 cm
Perimeter of rectangle B
= 6 + 3 + 6 + 3 = **18 cm**
(1 mark)

5) Missing measurements:
1.0 – 0.6 = 0.4 m
1.4 – 0.9 = 0.5 m
Perimeter:
1.4 + 1.0 + 0.9 + 0.4 + 0.5 + 0.6
= **4.8 m** *(1 mark)*

Split shape into 2 rectangles
and add their areas, e.g:
0.5 × 0.6 = 0.3 m²
0.9 × 1.0 = 0.9 m²
0.3 + 0.9 = **1.2 m²** *(1 mark)*

6) Area of flag
= 1600 × 3 = 4800 cm²
Height of flag
= 4800 ÷ 60 = 80 cm
Perimeter:
80 + 60 + 80 + 60 = 280 cm
1 m = 100 cm
280 ÷ 100 = **2.8 m**
*(3 marks for correct answer.
Otherwise 1 mark for working
out the height of the flag and
1 mark for working out the
perimeter of the flag in cm.)*

Page 63 —
Areas of Triangles
and Parallelograms

1) Area of square = 3 × 3 = 9 m²
Triangle height = 5 – 3 = 2 m
Area of triangle
= ½ × 3 × 2 = 3 m²
Total area = 9 + 3 = **12 m²**
*(2 marks for correct answer.
Otherwise 1 mark for correct
area of triangle or square.)*

2) Area of left-hand parallelogram
= 8 × 6 = 48 cm²
Area of right-hand parallelogram
= 8 × 8 = 64 cm²
48 + 64 = **112 cm²**
*(2 marks for correct answer.
Otherwise 1 mark for correct
area of one parallelogram.)*

3) Each triangle has area
= ½ × 7 × 8 = 28 cm².
Each tile has 2 triangles,
so grey area on one tile is:
28 × 2 = 56 cm².
There are 100 tiles,
so the total grey area is:
56 × 100 = **5600 cm²**
*(2 marks for correct answer.
Otherwise 1 mark for
correct area of triangle.)*

Pages 64-65 — Volume

1) Volume = l × w × h
= 8 × 2 × 5 = **80 cm³** *(1 mark)*

Volume = l × w × h
= 10 × 2 × 2 = **40 mm³** *(1 mark)*

2) The box with the larger volume
will hold more.
Volume of Box A = l × w × h
= 20 × 20 × 20 = 8000 cm³
Volume of Box B = l × w × h
= 25 × 30 × 10 = 7500 cm³
(1 mark for both volumes)
So **Box A** will hold more.
(1 mark)

3) Volume = l × w × h,
so 200 = 20 × 5 × h = 100 × h
h = 200 ÷ 100 = **2 m** *(1 mark)*

4) Split the shape up into 2 cuboids,
then add their volumes, e.g:
Volume of cuboid 1:
l × w × h = 3 × 4 × 5
= 60 cm³
Volume of cuboid 2:
l × w × h = 3 × 3 × 7
= 63 cm³
Total volume = 60 + 63
= **123 cm³**
*(2 marks for correct answer.
Otherwise 1 mark for
one correct volume.)*
You could also have
split the shape into a
2 cm × 3 cm × 3 cm cuboid and
a 5 cm × 3 cm × 7 cm cuboid

5) Volume of wooden cuboid
= l × w × h = 5 × 3 × 2 = 30 m³
Volume of hole = l × w × h
= 5 × 1 × 1 = 5 m³
Volume of wood = 30 – 5 = **25 m³**
*(2 marks for correct answer.
Otherwise 1 mark for an
appropriate method.)*
You could also have worked out
the area of the end face and then
multiplied by 5 m.

Answers

Pages 66-67 — Mixed Practice

1) 72.4 – 69.2 = 3.2 kg
   1 kg = 1000 g
   3.2 × 1000 = **3200 g** *(1 mark)*

2) £1.65 × 2 = £3.30
   £3.30 + £5.30 = £8.60
   £20 – £8.60 = £11.40
   So he lost **£11.40** on the bus.
   (1 mark)

3) 90 – 55 = 35 miles
   8 km ≈ 5 miles
   35 ÷ 5 = 7
   7 × 8 = **56 km** *(1 mark)*

4) Split the shape up into 2 cuboids,
   then add their volumes, e.g:
   Volume of cuboid 1:
   l × w × h = 4 × 5 × 10 = 200 cm³
   Volume of cuboid 2:
   l × w × h = 4 × 6 × 2 = 48 cm³
   Total volume = 200 + 48
   = **248 cm³**
   (2 marks for correct answer.
   Otherwise 1 mark for an
   appropriate method.)
   You could also have split the
   shape up differently, or found
   the area of the end face then
   multiplied by 4 cm.

5) Area = l × w
   4500 m² = 50 × w
   So width = 4500 ÷ 50 = 90 m
   Perimeter:
   90 + 50 + 90 + 50 = **280 m**
   (1 mark)

   280 ÷ 70 = 4,
   so 4 × 1.5 = 6 litres covers
   the whole perimeter.
   1 litre = 1000 ml
   6 × 1000 = **6000 ml** *(1 mark)*

6) Each white arrow is made up
   of two parallelograms of height
   4 ÷ 2 = 2 m.
   Area of one parallelogram
   = 1 × 2 = 2 m²
   So area of one arrow
   = 2 × 2 = 4 m²
   There are two white arrows,
   so total white area
   = 2 × 4 = 8 m²
   Area of sign = 6 × 4 = 24 m²
   Area of sign that is not white
   = 24 – 8 = **16 m²**
   (2 marks for correct answer.
   Otherwise 1 mark for correct
   area of one arrow.)

7) 1 km = 1000 m
   18 × 1000 = 18 000,
   so she travels 18 000 m per hour
   1 hour = 60 minutes
   18 000 m per hour ÷ 60
   = **300 m per minute**
   (2 marks for correct answer.
   Otherwise 1 mark for working
   *with no more than one error.)*

Section Six — Geometry
Pages 68-69 — Angle Rules

1) **120°** *(1 mark for the angle*
   correct to within 1°)

   Obtuse angle should be circled.
   (1 mark)

2) c = a = **103°** (vertically opposite
   angles) *(1 mark)*
   b = 180° – 103° = **77°** (angles
   on a straight line) *(1 mark)*
   d = b = **77°** (vertically opposite
   angles) *(1 mark)*

3) A = 180° – 38° – 112° = **30°**
   (1 mark)
   B = 360° – 33° – 90° – 117°
     = **120°** *(1 mark)*

4) 360° ÷ 5 = **72°** *(1 mark)*

5) **A right angle can be made up of
   two acute angles** and **An acute
   angle and a reflex angle can add
   up to 360°** should be ticked.
   *(1 mark for each correct
   statement ticked)*
   A reflex angle can be smaller than
   two obtuse angles put together,
   e.g. 200° < 120° + 120°.
   Since an obtuse angle is bigger
   than 90°, two obtuse angles will
   always be bigger than 180°, so
   they can't lie along a straight line.

6) x = **48°** (vertically opposite
   angles) *(1 mark)*
   y = 180° – 30° – 48° = **102°**
   (angles on a straight line)
   (1 mark)

7) A = **62°** (vertically opposite
   angles) *(1 mark)*
   B = 180° – 28° = **152°** (angles
   on a straight line) *(1 mark)*

Page 70 — Drawing 2D Shapes

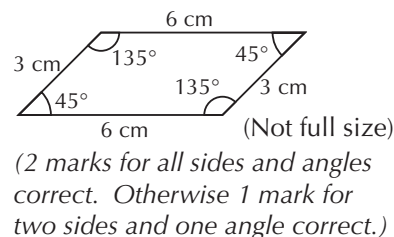1) All angles should be 60° to
   within 1°. All sides should be
   correct to within 1 mm.

   5 cm   60°   5 cm   (Not full size)
   60°   60°
   5 cm   *(1 mark)*
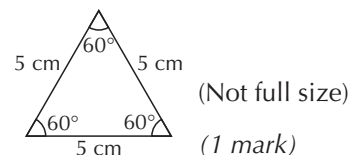
2) The angle between the two
   shorter sides of the triangle
   should be 90° to within 1°.
   All sides should be correct
   to within 1 mm.

   3 cm   5 cm   (Not full size)
   4 cm   *(1 mark)*
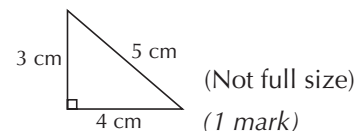
3) All angles should be correct to
   within 1°. All sides should be
   correct to within 1 mm.

   6 cm
   3 cm   135°   45°
   45°   135°   3 cm
   6 cm   (Not full size)
   *(2 marks for all sides and angles
   correct. Otherwise 1 mark for
   two sides and one angle correct.)*

Pages 71-72 — Properties of Shapes

1) **Perpendicular** lines meet
   at right angles.
   A trapezium has one pair
   of **parallel** sides.
   An **isosceles** triangle has
   two equal angles.
   *(2 marks for all gaps filled
   correctly. Otherwise 1 mark for
   one or two gaps filled correctly.)*

2) **Rectangle — 2 pairs of equal-
   length sides and 4 equal angles.
   Kite — 2 pairs of equal-length
   sides and 1 pair of equal angles.
   Rhombus — 4 equal-length sides
   and 2 pairs of equal angles.
   Parallelogram — 2 pairs of
   equal-length sides and 2 pairs of
   equal angles.**
   *(2 marks for all correct matches,
   otherwise 1 mark for two correct
   matches.)*

3) The **circumference** of the circle
   is 20 cm. *(1 mark)*

Answers

4) **Rhombus** or **kite** *(1 mark)*

No — a kite has one line of symmetry. *(1 mark)*

5) The radius of circle B is 2 × 14 = 28 cm.
The diameter of circle B is
d = 2 × r = **56 cm** *(1 mark)*

6) E.g.

(2 marks. 1 mark for either pair of opposite angles shaded, 1 mark for matching arrows on both pairs of parallel sides.)

7) diameter = 2 × radius, so
30 = 2 × radius
radius = 30 ÷ 2 = 15 cm *(1 mark)*
x = 15 − 12 = **3 cm** *(1 mark)*

Page 73 — Angles in Shapes

1) a + b + 38° = 180°
a + b = 142°
It is an isosceles triangle, so a and b are equal.
142° ÷ 2 = 71°
So a = b = **71°** *(1 mark)*

2) The smaller angle in the rhombus is vertically opposite the 52° angle, so this angle is 52°.
A rhombus has two pairs of equal angles, and the angles in a quadrilateral add up to 360°.
So 52° + 52° + x + x = 360°
104° + 2x = 360°
2x = 256°, x = **128°**
(2 marks for correct answer, otherwise 1 mark for using vertically opposite angles or properties of a rhombus.)

3) Sum of interior angles
= (5 − 2) × 180°
= 3 × 180° = **540°** *(1 mark)*

x = 540° − 145° − 65° − 100°
     − 120° = **110°** *(1 mark)*

Pages 74-75 — 3D Shapes

1) **Square-based pyramid** *(1 mark)*
Cuboid *(1 mark)*

2) **Regular tetrahedron** or **triangle-based pyramid** *(1 mark)*
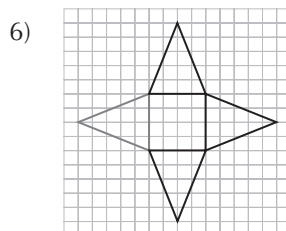**Triangular prism** *(1 mark)*

3)
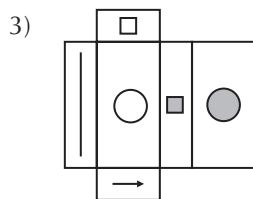
(2 marks for all symbols correct, otherwise 1 mark for three or more symbols correct.)
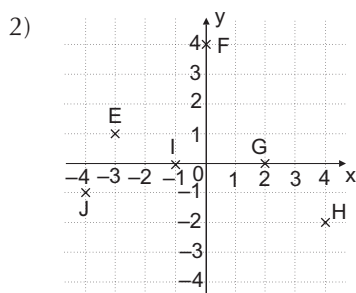
4)

Faces	Edges	Vertices
9	16	9

(1 mark)

5)

 should be circled.
(1 mark)

6)

(1 mark)

Pages 76-77 — Coordinates

1) Point A **(–2, 3)**
Point B **(3, 0)**
Point C **(1, –4)**
Point D **(–1, –1)**
(2 marks for all coordinates correct, otherwise 1 mark for two or three pairs of coordinates correct.)

2)

(2 marks for all points plotted correctly, otherwise 1 mark for four or five points correct.)

3) The two given points are 7 units apart on the x-axis, so the side length is 7.
So point A is **(5, 5)** and point B is **(–2, –2)**. *(1 mark)*

4) The rectangle has a base of 6 units and a height of 3 units, so M is (7 + 6, 9 − 3) = **(13, 6)**.
(1 mark)

5) The point (–3, 4) is 4 units to the left and 2 units down from the point (1, 6).
P is the same distance from (1, 6), but to the right, so P is
(1 + 4, 6 − 2) = **(5, 4)**. *(1 mark)*

6) Point T is in line horizontally with (0, 4), so it has the same y-coordinate. The length of the longer sides of the parallelogram is 6 units.
T is twice as far horizontally from the point (0, 4), so its x-coordinate is 12. T is **(12, 4)**.
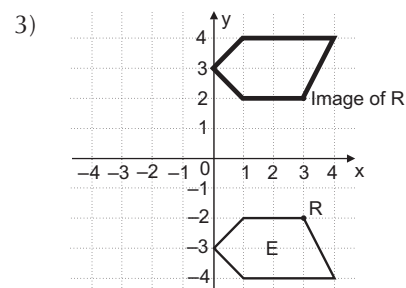*(1 mark)*

Pages 78-79 — Reflection and Translation

1)
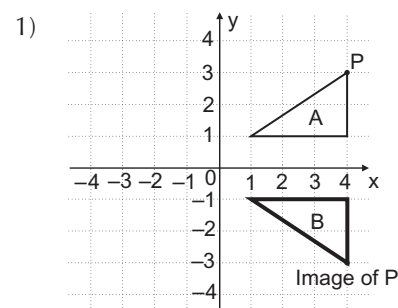
(1 mark)
The coordinates of the image of P are **(4, –3)**. *(1 mark)*
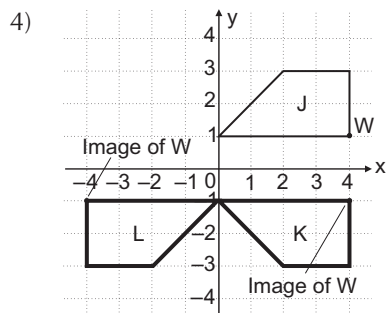
2)
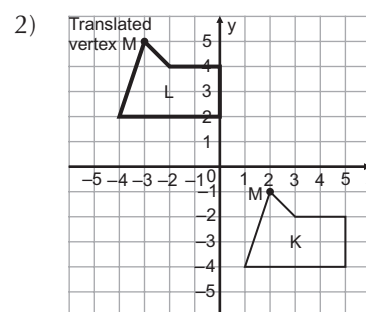
(1 mark)
The coordinates of vertex M on shape L are **(–3, 5)**. *(1 mark)*
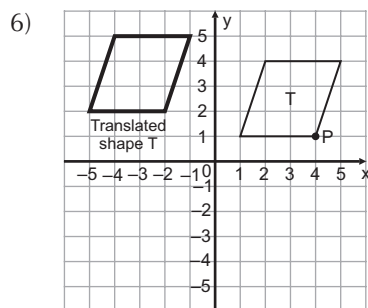
3)

(1 mark)

Answers

4)

(2 marks. 1 mark for each reflection.)
The coordinates of W on shape L are **(–4, –1)**. *(1 mark)*

5) **5** units to the **right**
4 units **up** *(1 mark)*

6)

(1 mark)
Point P is (a, b) = (4, 1)
The translated point P is
(a – 6, b + 1) = (4 – 6, 1 + 1)
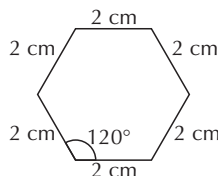= **(–2, 2)**. *(1 mark)*

Pages 80-81 — Mixed Practice

1) A = 180° – 69° – 88° = **23°**
(1 mark)

B = 360° – 25° – 113° – 67° – 35°
= **120°** *(1 mark)*

2) The missing angle in the triangle is vertically opposite the 39° angle, so they are equal.
So x = 180° – 76° – 39° = **65°**
(1 mark)

3) **Opposite angles in a parallelogram are equal** and **A kite has two pairs of equal sides** should be ticked. *(1 mark)*
A rhombus has two pairs of parallel sides.
The radius of a circle is half the length of the diameter.

4) Reflection in the y-axis changes the sign of the x-coordinate, but doesn't change the y-coordinate.
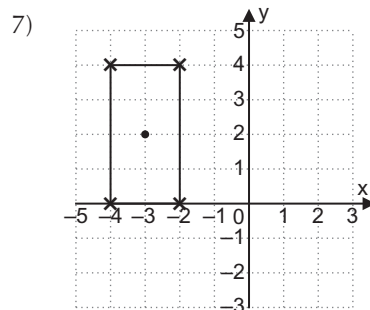So the image of M is **(–4, –1)**.
(1 mark)

5)

Faces	Edges	Vertices
5	**9**	**6**

(1 mark)

6) All angles should be 120° to within 1°. All sides should be correct to within 1 mm.
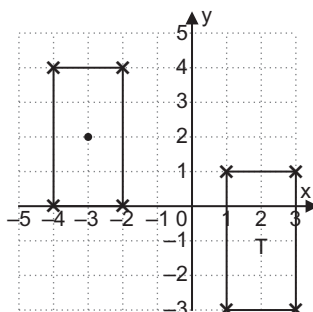

(2 marks. Otherwise 1 mark for four sides and three angles correct.)

7)

(1 mark)
(–3, 2) *(1 mark)*

(1 mark)

Section Seven — Statistics

Pages 82-83 — Tables and Pictograms

1)

Number of slices	Number of packets
4	◇ ◇
5	◇ ◁
6	◇
7	◁

(1 mark)

14 + 8 + 2 = 24 packets contained more than 4 slices of bacon.
$\frac{24}{40} = \frac{6}{10} = $ **60%** *(1 mark)*
You might have drawn the ¾ symbol differently.

2) 19:24 + 17 minutes = **19:41**
(1 mark)

6:50 pm is 18:50 in the 24-hour clock, so Jennifer needs to catch the 18:14 train from Farotown to arrive on time. *(1 mark)*
She needs to leave her house 21 minutes before that.
18:14 – 21 minutes = 17:53
= **5:53 pm** *(1 mark)*

The next train Priya can catch from Helen Point is at 18:29.
17:54 + 6 minutes = 18:00
18:00 + 29 minutes = 18:29
So Priya has to wait
6 + 29 = **35 minutes** *(1 mark)*

3)

	Prime	Not prime
Factor of 100	**2** or **5**	**1, 4** or **10**
Not a factor of 100	**3, 7, 11** or **13**	**6, 8, 9, 12** or **14**

(2 marks for a correct number in all four boxes. Otherwise 1 mark for a correct number in two or three boxes.)

4) E.g. **The table only tells you how many radios are less than £40. There's no way of knowing from the table how many of those cost less than £20.** *(1 mark)*

There are 16 + 14 + 18 = 48 radios in total. Peggy can buy 16 + 14 = 30 radios, so the fraction is $\frac{30}{48} = \frac{5}{8}$ *(1 mark)*
0.67 kg = 670 g.
670 g + 155 g = 825 g. This is in the range '800 g - 1.6 kg', so the delivery cost is **£4.50** *(1 mark)*

Pages 84-85 — Bar Charts and Line Graphs

1) 16 – 12 = 4 children chose curry.
4 × 2 = 8 — the option chosen by 8 children is **jacket potato**.
(1 mark)

There are 30 children in total.
$\frac{2}{5} = \frac{12}{30}$, so look for the lunch chosen by 12 of the children.
This is **sandwiches**. *(1 mark)*

Answers

2) Reading from the graph,
3 dollars = **£2.50** *(1 mark)*

From the graph, £4 = $4.75.
So £40 = $4.75 × 10 = **$47.50**
*(1 mark for an answer
between $46 and $49.)*

3) Reading from the graph, the snow
was deepest at **9:45 am** *(1 mark)*

Reading from the graph, the snow
was 15 mm deep at 8:30 am and
35 mm deep at 9 am. So it got
35 − 15 = 20 mm deeper.
This is 20 mm ÷ 10 = **2 cm**
deeper. *(1 mark)*

4) 110 + 30 = **140 sparrows**
(1 mark)

They saw 50 + 90 + 30 + 110
+ 30 + 90 = 400 birds in total.
50 + 90 = 140 were wrens.
$\frac{140}{400} = \frac{35}{100} = $ **35%** were wrens
(1 mark)

Page 86 — Pie Charts

1) The beach and funfair are each
¼ of the pie chart, so there were
48 ÷ 4 = 12 votes for each.
The zoo section is half of ¼,
so it got 12 ÷ 2 = 6 votes.
The waterpark section is
the same size as the beach
section and the zoo section
added together, so it got
12 + 6 = 18 votes.

Trip destination	Number of votes
Zoo	**6**
Funfair	**12**
Waterpark	**18**
Beach	**12**

*(2 marks for completely correct
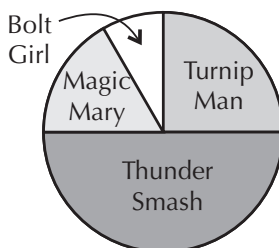table, otherwise 1 mark for two
correct values.)*
You can check your answers
by adding up the values and
seeing if they total 48.

2) **Fewer than a third of the
children dressed up as an orange
or a pear** and **Apples accounted
for exactly one quarter of the
costumes** should be ticked.
*(1 mark for just the two
correct statements ticked.)*
Less than half of the pie chart is
grapes, so the third statement is
not true.

3) Multiplier = 360° ÷ 60 = 6°

Superhero	Number of children	Angle
Turnip Man	15	90°
Thunder Smash	30	30 × 6° = **180°**
Magic Mary	10	10 × 6° = **60°**
Bolt Girl	5	5 × 6° = **30°**

*(2 marks for table and pie chart
completely correct, otherwise
1 mark for at least two angles
correctly calculated or correctly
drawn in the pie chart.)*
For Thunder Smash, 30 is half of
60, so the angle for this sector
must be half of 360°. You can
use the same method for Magic
Mary and Bolt Girl as well —
work out the fraction of 60 first.

Page 87 — The Mean

1) Read the daily number of photos
from the graph and add to find
the total:
40 + 10 + 20 + 25 + 5 = 100
(1 mark)
Mean = 100 ÷ 5 = **20** *(1 mark)*

2) Total = 55 + 125 + 90 + 110
= 380p *(1 mark)*
Mean = 380 ÷ 4 = **95p** *(1 mark)*
If the mean doesn't change, the
new cake's price must be equal
to the mean, so it's **95p**. *(1 mark)*

3) There are 6 pupils and the mean
mark is 7, so the total should
be 6 × 7 = 42 marks. The total
marks for 5 of the pupils is
5 + 8 + 10 + 8 + 7 = 38. So the
7th mark must be 42 − 38 = **4**.
*(2 marks for correct answer.
Otherwise 1 mark for finding the
total number of marks.)*

Pages 88-89 — Mixed Practice

1) Reading from the graph,
Billy's mass at 2 months is **70 g**
(1 mark)

Plot Fred's mass against his age
as shown on the graph below:
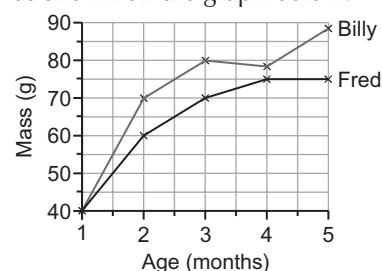
*(2 marks for correct points
plotted and joined, otherwise
1 mark for at least two points
plotted correctly)*

2) Total mass = 42 + 60 + 54
+ 58 + 46 = 260 g *(1 mark)*
Mean mass = 260 ÷ 5 = **52 g**
(1 mark)

3)

		Delivery Location		
		UK	Mainland Europe	Elsewhere
Order Total	Less than £10	23	9	4
	£10 - £30	17	**8**	6
	More than £30	2	**6**	2

Working:
17 + ?? + 6 = 31
So the first missing value is:
31 − 17 − 6 = **8** *(1 mark)*
Then 9 + 8 + ?? = 23
So the second missing value is:
23 − 8 − 9 = **6** *(1 mark)*

4)
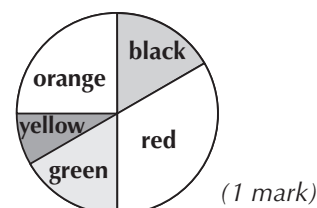
(1 mark)
The 'green' sector of the pie chart
measures 60°.
$\frac{60}{360} = \frac{1}{6}$, so number of green
sweets = 24 ÷ 6 = **4** *(1 mark)*

Practice Test — Pages 90-95

1) Using BODMAS:
12 + 7 × (11 − 3) = 12 + 7 × 8
= 12 + 56 = **68** *(1 mark)*

2) $\frac{2}{7} \times \frac{3}{5} = \frac{2 \times 3}{7 \times 5} = \frac{6}{35}$ *(1 mark)*

$\frac{2}{3} \div 3 = \frac{2}{3 \times 3} = \frac{2}{9}$ *(1 mark)*

Answers

3) 0.071 × 100 = **7.1** *(1 mark)*

4)  ```
      1 5 9 3 7
    + 3 7 4 5 8
      ---------
      5 3 3 9 5   (1 mark)
        1 1 1
    ```
    ```
     ¹2 ⁱ⁵6 . ¹³4 ¹¹2 ⁰0
    −  1 7 . 8 6 3
       -------------
       8 . 5 5 7   (1 mark)
    ```

5)  ```
              1 2 7
       34 ) 4 3 1 8
          − 3 4
            -----
              9 1
            − 6 8
              -----
              2 3 8
            − 2 3 8
              -------
                  0
    ```
    (2 marks for the correct answer. Otherwise 1 mark for division with no more than one error.)

6) 10% of 2400 = 2400 ÷ 10 = 240
    30% of 2400 = 240 × 3 = 720
    5% of 2400 = 240 ÷ 2 = 120
    1% of 2400 = 240 ÷ 10 = 24
    2% of 2400 = 24 × 2 = 48
    37% of 2400 = 720 + 120 + 48
    = **888** *(1 mark)*

7) $\frac{2}{3} + \frac{5}{12} = \frac{8}{12} + \frac{5}{12} = \frac{13}{12}$
    (1 mark)
    $1\frac{2}{5} - \frac{7}{8} = 1\frac{16}{40} - \frac{35}{40}$
    $= \frac{56}{40} - \frac{35}{40} = \frac{21}{40}$ *(1 mark)*

8)  ```
            7 1 3 8
      ×         6 4
      -------------
        2 8 5₁ 5₃ 2
      4 2 8₂ 2₄ 8 0
      -------------
      4 5 6 8 3 2
        1       1
    ```
    (2 marks for the correct answer. Otherwise 1 mark for working using long multiplication with no more than one error.)

9) **287 300, 290 000, 300 000**
    (2 marks for all three correct. Otherwise 1 mark for any two correct.)

10) **1.074, 1.407, 1.450, 1.7, 1.705**
    (1 mark)

11) The horizontal parts of the graph represent when Stephanie is not moving. Each small square represents 5 minutes horizontally. So Stephanie waits for:
    (2 × 5) + (1 × 5) = **15 minutes**
    (1 mark)

Stephanie reaches her office 55 minutes after 7:15 am. Add on 1 hour and subtract 5 minutes:
7:15 + 1 hour = 8:15
8:15 − 5 minutes = **8:10 am**
(1 mark)

12) It takes 3 °C to get to 0 °C
    That leaves 12 − 3 = 9 °C
    So −3 °C + 12 °C = **9 °C**
    (1 mark)

13) There are 1½ lots of 16 biscuits in 24 biscuits.
    So she'll need 1½ lots of 22 squares of chocolate
    = 1 × 22 + ½ × 22 = 22 + 11
    = **33** squares *(1 mark)*

14) Factors of 12: 1, 2, 3, 4, 6, 12
    Factors of 18: 1, 2, 3, 6, 9, 18
    Factors of 30:
    1, 2, 3, 5, 6, 10, 15, 30
    The highest number that appears in all three lists is **6** *(1 mark)*

15) Rectangle area = length × width
    = 12 × 7 = 84 cm²
    Triangle area = ½ × base × height
    = ½ × 12 × 3
    = 6 × 3 = 18 cm²
    Shaded area = 84 − 18
    = **66 cm²**
    (2 marks for the correct answer. Otherwise 1 mark for an appropriate method.)

16) 3k + 14 = 32
    3k = 32 − 14 = 18
    k = 18 ÷ 3 = **6** *(1 mark)*

17)
Fraction	Decimal	Percentage
$\frac{9}{100}$	0.09	**9%**
$\frac{4}{5}$	**0.8**	80%
$\frac{3}{8}$	**0.375**	**37.5%**

Working:
```
           3 7 5
    8 ) 3 ³0 ⁶0 ⁴0
```
so $\frac{3}{8}$ = 0.375
(2 marks for completely correct table. Otherwise 1 mark for any three to five values correct.)

18) Angles on a straight line add up to 180°.
    So a = 180° − 107° = **73°**

    A parallelogram has two pairs of equal angles and the angles in a quadrilateral add up to 360°.

So: 112° + 112° + b + b = 360°
224° + 2b = 360°
2b = 360° − 224° = 136°
So b = 136° ÷ 2 = **68°**

The angle on a straight line with c is 112° as diagonally opposite angles in a parallelogram are equal.
So c = 180° − 112° = **68°**
(2 marks for all three angles correct. Otherwise 1 mark for one or two angles correct.)

19) Total number of snails
    = 6 + 9 + 11 + 10
        + 7 + 8 + 9 + 4 = 64
    There are 8 numbers, so
    mean = 64 ÷ 8 = **8** *(1 mark)*

20) 900 g = 0.9 kg.
    The number of packs produced is 252 ÷ 0.9:
    Calculate 252 ÷ 9 first.
    ```
            2 8
      9 ) 2 5 ⁷2
    ```
    9 is 10 times larger than 0.9, so multiply by 10.
    28 × 10 = **280** *(1 mark)*

    The pet shop pays £2.35 × 48.
    First calculate 235 × 48:
    ```
              2 3 5
      ×           4 8
      ---------------
        1 8₂ 8₄ 0
        9₁ 4 0 0
      ---------------
      1₁ 1₁ 2 8 0
    ```
    235 is 100 times larger than 2.35, so divide by 100.
    £11 280 ÷ 100 = **£112.80**
    (1 mark)

21)
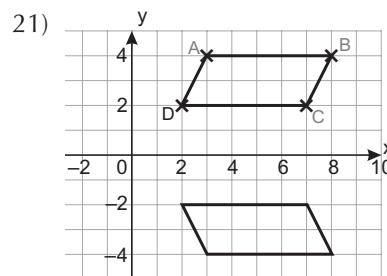
(1 mark for the complete parallelogram and 1 mark for the reflection.)

22) Karim walked M km on Monday, 2M km on Tuesday, and 3M km on Wednesday. So M + 2M + 3M = 30.6 km, then 6M = 30.6 km and M = **5.1 km**
    (2 marks for the correct answer. Otherwise 1 mark for an appropriate method.)

MLHW23