Answers

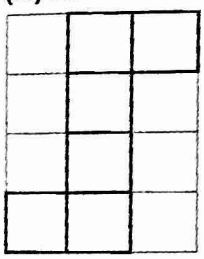
Guidance on the breakdown of marks is given in brackets within the questions.

Paper 1

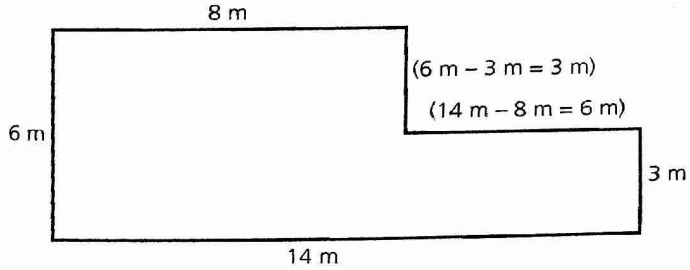
1 (e) 213
2 (a) 393
3 (b) 152
4 (e) $\frac{1}{4}$ — $\frac{1}{2} = \frac{2}{4}$ (1) $\frac{3}{4} - \frac{2}{4} = \frac{1}{4}$ (1)
5 (a) 32 — 4) 128 (short division method)
6 (e) 144 — 90 + 54 = 144
7 (d) 130 — 58 + 67 = 125 (1) 125 rounds to 130 (1)
8 (a) 272 — 945 – 673
9 (b) 35 — 45 ÷ 9 = 5 (1) 5 × 7 (1)
10 (b) 90 — Approximately 6 circles down and 16 across, 6 × 16 = 96
11 (b) 7 — 28 ÷ 4
12 (a) £3 — 7 + 1 = 8 (1) £24 ÷ 8 = £3 (1)
13 (e) $\frac{3}{10}$ — Divide the numerator and denominator by 2
14 (b) 0.75
15 (a) 7.5 m — 100 cm = 1 m, 750 ÷ 100
16 (c) 360 cm — Width is 120 cm ÷ 2 = 60 cm (1)
Perimeter = (120 cm × 2) + (60 cm × 2) = 240 cm + 120 cm (1) = 360 cm (1)
17 (b) 51 runs — 49 + 76 + 52 + 27 = 204 (1) 204 ÷ 4 (1)
18 (d) 3 — a = 12 – 9 (1) 12 – 9 = 3 (1)
19 (e) 9 — b = 2 + 7 (1) 2 + 7 = 9 (1)
20 (e) Sides are different lengths

Paper 2

1 (a) (i) £15.65 — £1.85 × 5 = £9.25 (1) £1.60 × 4 = £6.40 (1) = £9.25 + £6.40 = £15.65 (1)
(b) (iii) 5 coins — Coins of £2, £2, 20p, 10p, 5p
(c) (v) £7.55 — £6.40 ÷ 2 = £3.20 (1) £15.65 – £3.20 = £12.45 (1) £20.00 – £12.45 = £7.55 (1)
(d) (ii) £8 — £7.55 = 755p, 755p rounds to 800p = £8.00
(e) (ii) £1, 50p, 10p, 2p, 1p
2 (a) (v) 3.48 m — 3.65 m + 3.45 m + 3.25 m + 3.57 m = 13.92 m (1) 13.92 m ÷ 4 (1)
(b) (iv) 0.4 m — Identify the smallest measurement (3.25 m), identify the largest measurement (3.65 m), 3.65 m – 3.25 m
3 (a) (v) 16 — Michelle receives 8 sweets from her 2 parts, so each part is 4 sweets (1)
Peter gets 4 × 4 = 16 (1)
(b) (iii) 36 — 4 + 3 + 2 = 9 (1) 9 × 4 (1)
4 (c)

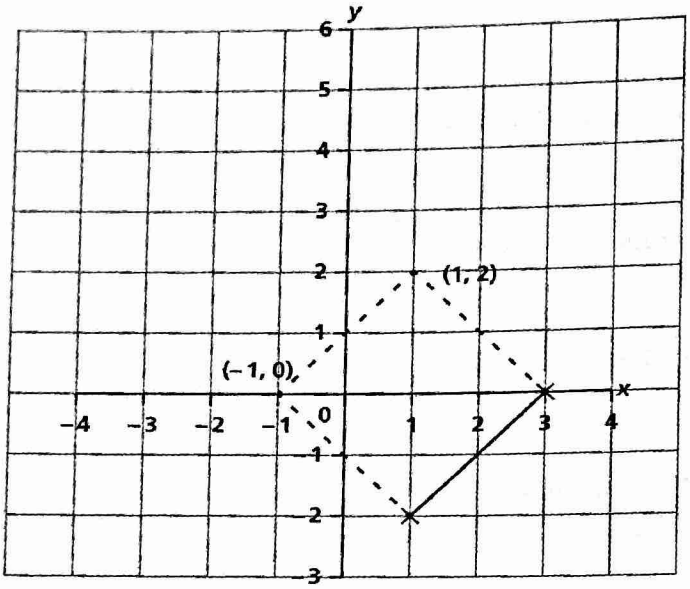


5 (a) (i) 40 m — 14 m + 6 m + 8 m + 3 m + 6 m + 3 m



(b) (iii) 66 m² — 8 m × 6 m = 48 m² (1) 6 m × 3 m = 18 m² (1) 48 m² + 18 m² = 66 m² (1)
(c) (v) £554.40 — 66 m² × £8.40

6 (a) (ii) 7 — 26 − 13 = 13 (1) 20 − 13 = 7 (1)
(b) (iv) 5 — 2 × 5 = 10 (1) 50 ÷ 10 = 5 (1)
7 (a) (iii) 32 — Add the tally marks 5 + 5 + 5 + 5 + 5 + 5 + 2
(b) (v) 200 — Calculate the total for each type of travel (1) 57 + 68 + 32 + 32 + 11 = 200 (1)
(c) (iii) 36 — The number of children who came by car is 68. The number who came by bus is 32.
68 (1) − 32 (1) = 36 (1)
(d) (i) $\frac{1}{2}$ — 57 (walking) + 32 (bicycle) + 11 (scooter) = 100 (1) $\frac{100}{200}$ (1) $= \frac{1}{2}$ (1)
8 (b) (1, 2) (1), (−1, 0) (1)



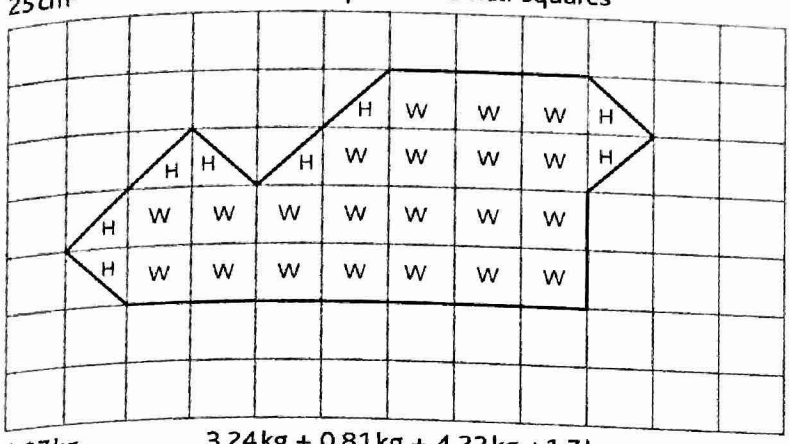
Paper 3

1 1059 — M = 1000, L = 50, IX = 9
2 9 — 27 − 18
3 3, 3 (1) for correct hundreds digit, (1) for correct units digit

	3	8	9
+	3	5	3
	7	4	2
	1	1	

4 23
5 3762 — 1000 × 3 = 3000, 200 × 3 = 600, ... 3000 + 600 + 150 + 12 = 3762
6 2926 — 5272 − 2346
7 132 — 12 × 11 = 132
8 30 — 2 × 3 × 5
9 £306 — Reduction £360 × 15 ÷ 100 = £54 (1) New price £360 − £54 = £306 (1)
10 $\frac{2}{5}$ — $\frac{10}{25}$ (1) $= \frac{2}{5}$ (1)
11 $y = 6$ — $3y = 43 - 25$ (1) $3y = 18$ (1) $y = 6$ (1)
12 18.4 cm — Opposite sides are of equal length (1) 6.4 cm + 6.4 cm + 2.8 cm + 2.8 cm = 18.4 cm (1)

13 25 cm² 21 whole squares + 8 half squares

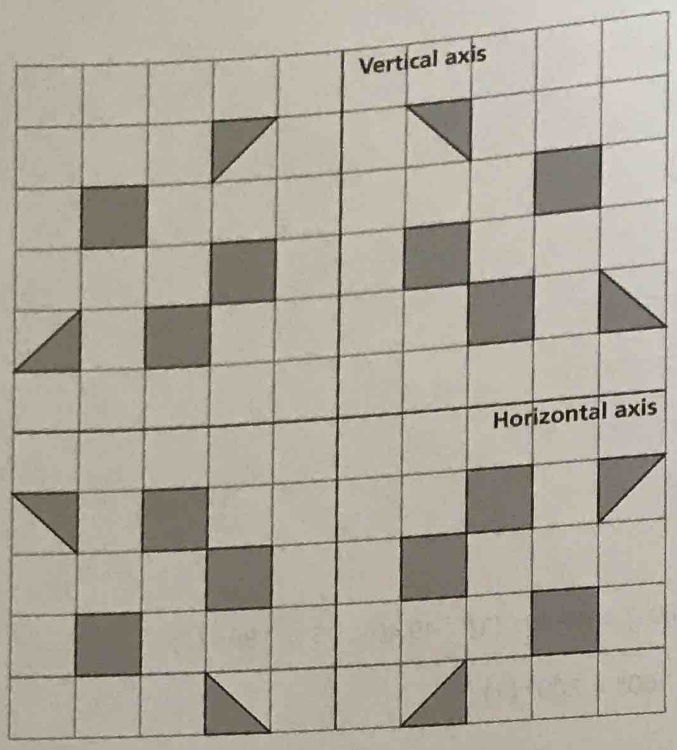


14 9.97 kg 3.24 kg + 0.81 kg + 4.22 kg + 1.7 kg
15 48 64 ÷ 4 = 16 (1) 16 × 3 = 48 (1)
16 35 $3y + 8 = (3 \times 9) + 8 = 35$
17 9.88 s (9.81 s + 9.85 s + 9.91 s + 9.83 s + 10.0 s) = 49.40 s (1) 49.40 s ÷ 5 = 9.88 s (1)
18 45 km 5 km × 9
19 200° 90° + 50° + 20° = 160° (1) 360° − 160° = 200° (1)
20 400 cm *or* 4 m 40 cm × 10

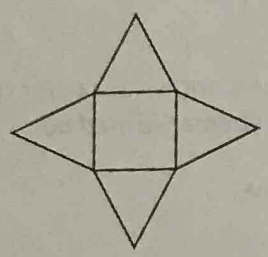
Paper 4

1 (a) 48 m 12 m + 12 m + 12 m + 12 m
(b) 44 m² 12 m × 12 m = 144 m² (1) 10 m × 10 m = 100 m² (1) 144 m² − 100 m² = 44 m² (1)
(c) 2304 tiles 0.25 m × 0.25 m = 0.0625 m² (1) 144 m² ÷ 0.0625 m² (1) *or alternative method*
(d) £230.40 2304 tiles × 10p
(e) £70.40 100 m² ÷ 0.0625 m² = 1600 tiles (1) 1600 tiles × 10p = £160 (1)
£230.40 − £160 = £70.40 (1) *or alternative method*
2 (a) 68 516 82 000 − 13 484
(b) 3371 25% of 13 484 = 13 484 ÷ 4
(c) 6000 8000 ÷ 4 = 2000 (1) 2000 × 3 (1)
3 One million, forty thousand, seven hundred and three
4 £6.78 £6.87 £7.86 £8.67 £8.76
5 (a) 27
(b) 21 48 − 27
(c) 105 38 + 27 + 21 + 19
(d) 65 38 + 27
(e) 59 38 + 21
6 (a) $3(x - 5) = 12$ (1) for $x - 5$ (1) for 3 × bracket
(b) 9 12 ÷ 3 = 4 (1) 4 + 5 = 9 (1)

7



8 (a)



(b) 920 m 230 m × 4

Paper 5

1 15 cm 49 cm $\frac{1}{2}$ m 51 cm 98 cm 1 m Any 3 measurements in order (1), all 6 in the correct order (2)
2 1460
3 529
4 5 5 is divisible only by 1 and itself
5 (1, 24) (2, 12) (3, 8) (4, 6)
6 17 (3 × 3) = 9 (1) (2 × 2 × 2) = 8 (1) 9 + 8 = 17 (1)
7 240
8 $\frac{1}{3}$ $\frac{62}{186}$ (1) cancels to $\frac{1}{3}$ (1)
9 $\frac{4}{10}$ *or* $\frac{2}{5}$ $\frac{1}{2} \times \frac{4}{5} = \frac{4}{10}$ $(= \frac{2}{5})$
10 27 45 ÷ 5 = 9 (1) 9 × 3 = 27 (1)
11 0.291
12 65 miles 78 miles ÷ 6 = 13 miles (1) 13 miles × 5 (1)
13 $\frac{4}{12}$ *or* $\frac{1}{3}$
14 8 3 × 7 + *y* = 29, 21 + *y* = 29 (1) *y* = 29 – 21 = 8 (1)
15 39 3, 7, 11, 15, 19, 23, 27, 31, 35, 39
16 1405 m 281 m × 5
17 4.25 km 4250 m ÷ 1000
18 20 cm 8 × 2.5 cm
19 38° 90° + 52° = 142° (1) 180° – 142° (1)
20 8 The rugby section is 90°, i.e. one-quarter of the pie chart (1) Total children is 32, so 32 ÷ 4 (1)

Paper 6

1 (a) 740 km — To Rennes

(b) 110 km — Marseille to Rennes 1050 km (1) Marseille to Paris 775 km (1) 1050 km − 775 km = 275 km (1)

(c) 275 km

2 (a) 39 km — 3 × 12 = 36 km (1) 20 minutes is $\frac{1}{3}$ of an hour, $\frac{1}{3}$ of 9 km = 9 km ÷ 3 = 3 km (1) 36 km + 3 km = 39 km (1)

(b) 11.7 km/h — 39 ÷ $3\frac{1}{3}$ (1) = 39 × $\frac{3}{10}$ (1) = $\frac{117}{10}$ (1)

3 (a) 70% — 66 + 78 + 90 + 60 + 62 + 80 + 68 + 56 = 560 (1) 560 ÷ 8 = 70% (1)

(b) 12 — Natasha: 80% = $\frac{80}{100}$ = $\frac{40}{50}$ (1) Luke: 56% = $\frac{56}{100}$ = $\frac{28}{50}$ (1) 40 − 28 = 12 (1)

(c) 17 marks — Ellie: 90% = $\frac{90}{100}$ = $\frac{45}{50}$ (1) Luke scored $\frac{28}{50}$ (above) 45 − 28 = 17 (1)

4 (a) 50 litres — 450 km ÷ 9 km/litre

(b) £55 — 50 litres × £1.10

5 (a) 125 — 5 cm × 5 cm × 5 cm

(b) 27 — 98 cubes have a least 1 face showing (1) 125 − 98 = 27 (1)

(c) 78.4% — 98 cubes have a least 1 face showing, 98 ÷ 125

6 (a) £98.62 — Ties: £8.95 × 7 = £62.65 (1) Shirts: £11.99 × 3 = £35.97 (1) £62.65 + £35.97 = £98.62 (1)

(b) £87.57 — New total £98.62 + £8.95 = £107.57 (1) £107.57 > £100 so £107.57 − £20 = £87.57 (1)

7 (a) 1 hour 4 minutes — 11:38 − 10:34

(b) 10:34 — Arrives at Gatwick at 11:08

(c) 13:01 — 12:52 + 9 minutes

(d) 1 hour 36 minutes — 13:07 train

(e) 445 000 — 981 000 − 536 000

8 (a) 10 trees — Each tree symbol stands for 2 trees

(b) 55 trees — Oak: 8 trees, Ash: 10 trees, Horse chestnut: 6 trees, Hazel: 9 trees, Yew: 3 trees, Sycamore: 9 trees, Hawthorn: 10 trees (1) 8 + 10 + 6 + 9 + 3 + 9 + 10 = 55 (1)

(c) 838 m — (Oak) 8 × 40 m = 320 m (1) (Ash) 10 × 35 m = 350 m (1) (Horse chestnut) 6 × 28 m = 168 m (1) 320 m + 350 m + 168 m = 838 m (1)

(d) 11 trees — 6 horse chestnut trees × 11 = 66 trees in total (1) 66 − 55 (original trees) = 11 (1)

(e) 33 trees — 2 and 3 = 5, 55 trees ÷ 5 = 11 trees (1) 11 trees × 3 = 33 (1)

9 (a)

Number of goals	Tally of goals scored	Frequency
2	I	1
3	III	3
4	III	3
5	IIII	4
6	~~IIII~~	5
7	IIII	4
8	II	2
9	II	2

(b) 5.625 goals — Total goals 135 (1) 135 ÷ 24 (1)

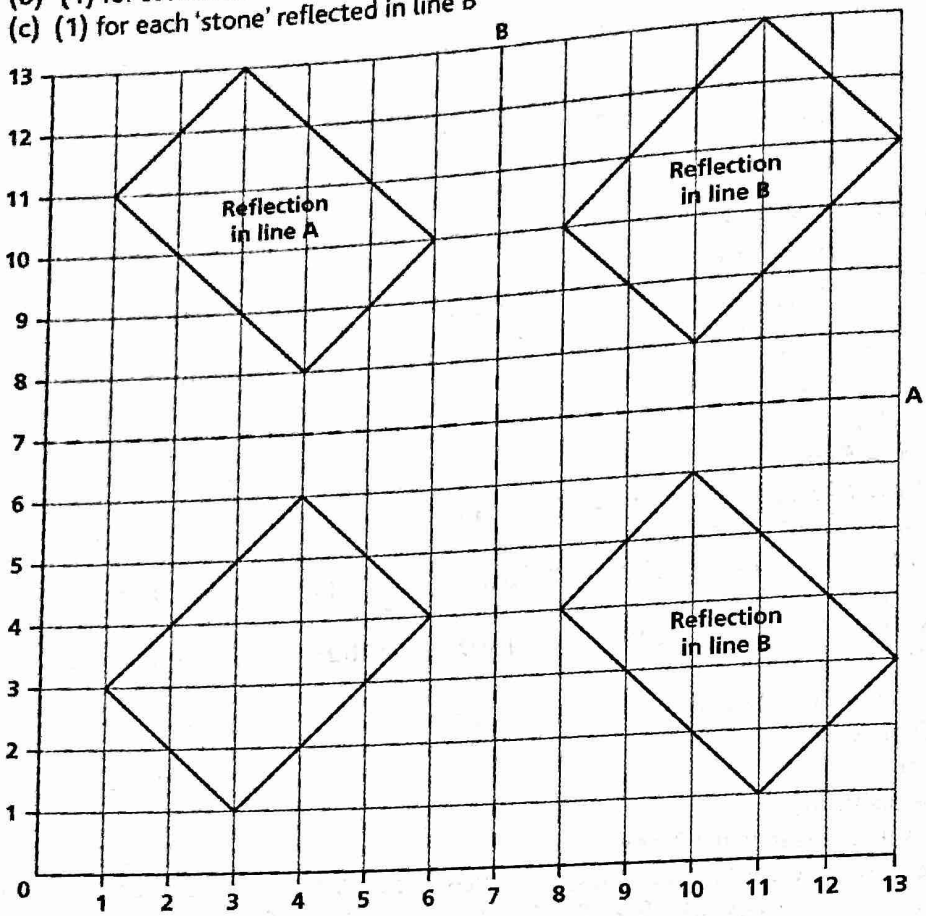
(c) 6 goals — modal score is the most common score

(d) 6 goals — the median is the middle score of an ordered set of scores (1)
2, 3, 3, 3, 4, 4, 4, 5, 5, 5, 5, **6**, **6**, 6, 6, 6, 7, 7, 7, 7, 8, 8, 9, 9 (1)

(e) 15 goals — 25 matches × 6 goals = 150 goals (1) 135 goals in 24 matches, 150 − 135 = 15 (1)

10 £989 — £8901 ÷ 9

11 (a) (1, 3) (3, 1) (6, 4) (4, 6)
(b) (1) for stone reflected in line A
(c) (1) for each 'stone' reflected in line B



12 6 — $27 \times 2 = 54$ (1) $54 \div 9$ (1)

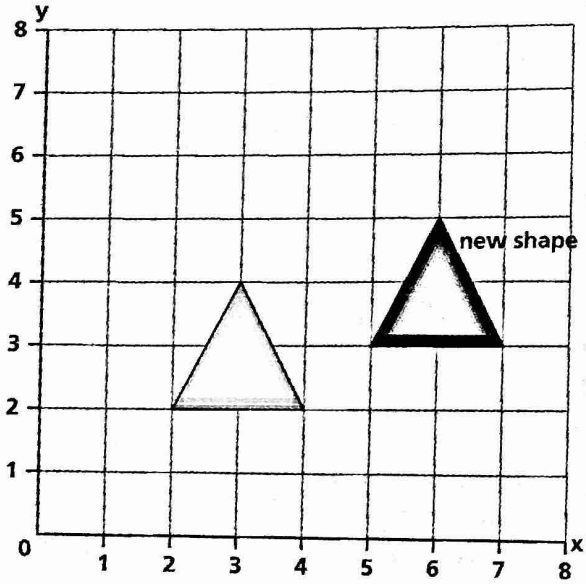
13 (a) 1200 — 48×25

(b) 2400 kg — 1200×2 kg

14 20.5 km — 3936 km ÷ 24 = 164 km (1) 164 km ÷ 8 = 20.5 km (1)

15 19 straws — $2x + 1$, where x is the number of patterns (1) $(2 \times 9) + 1$ (1)

16



Paper 7

1 > — $6 + 115$ ___ $121 - 3$ (1) $121 > 118$ (1)

2 47, 95, 191 — (1) for each term (Double the previous number and add 1)

3 12 — Factors of 24 – 1, 2, 3, 4, 6, 8, 12, 24 (1) Factors of 36 – 1, 2, 3, 4, 6, 12, 18, 36 (1)

4 2, 3 and 7 — 1, 2, 3, 6, 7, 14, 21, 42

5 2500 mm — $2\frac{1}{2}$ m × 1000

6 67666 76776 — 666766 767667 776677

7 498 — $\frac{1}{3}$ of the book is 166 pages, so 166 × 3

8 122.5 cm³ — 7 cm × 5 cm × 3.5 cm

9 36, 44, 48, 56, 64 and 68 shaded (1) 36, 48, 54 and 66 circled (1)

10 5, 6 and 7 — $5 + 6 + 7 = 18$ *or* $18 \div 3 = 6$ (middle of consecutive numbers) (1) $5 \times 6 \times 7 = 210$ (1)

11 $\frac{2}{5}$ — $\frac{4}{5} \times \frac{1}{2} = \frac{4}{10}$ (1) cancels to $\frac{2}{5}$ (1)

12 $\frac{1}{15}$ — $\frac{1}{5} \times \frac{1}{3}$ Multiply the numerators and the denominators

13 $2\frac{4}{6}$ *or* $2\frac{2}{3}$ — Take away whole number from whole number: $4 - 2 = 2$ (1)
Take away fraction from fraction $\frac{5}{6} - \frac{1}{6} = \frac{4}{6}$ (1)

14 $5\frac{5}{6}$ — $2 + 3 = 5$ (1) $\frac{3}{6} + \frac{2}{6} = \frac{5}{6}$ (1)

15 £99 — £660 × 15 (1) = 9900 9900 ÷ 100 (1) *or alternative method*

16 £445 — $3 + 4 + 5 = 12$ (1) $1068 \div 12 =$ £89 (1) £89 × 5 (1)

17 23 — Two-digit prime numbers < 30: 11, 13, 17, 19, 23, 29 (1) $2 + 3 = 5$ (1)

18 1000 — 20 cm ÷ 2 cm = 10 (1) 10 × 10 × 10 (1) *or alternative method*

19 Hexagonal prism 8 faces 18 edges 12 vertices (1) for each correct answer

20 37.68 cm — 3.14 × 12

21 $n + 24$ or $\frac{n}{4} + 6$

22 1038 — $346 \times 3 = (300 \times 3) + (40 \times 3) + (6 \times 3) = 900 + 120 + 18$

23 1456 — Use bus stop method

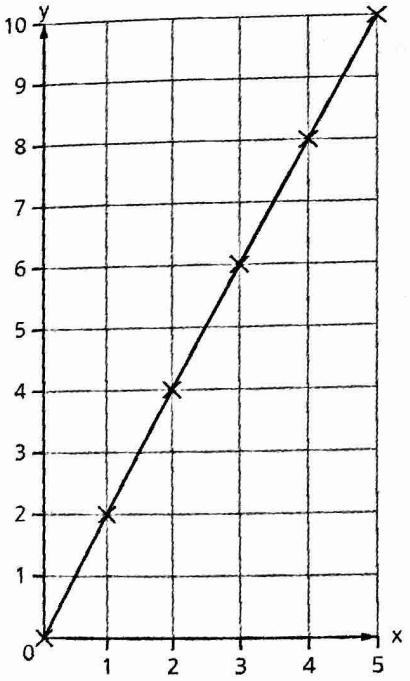
24 3.575 kg — (2.9 kg + 3.7 kg + 3.1 kg + 3.9 kg + 4.2 kg + 3.6 kg + 3.1 kg + 4.1 kg) = 28.6 kg (1) 28.6 kg ÷ 8 = 3.575 kg (1)

25 $a = 2$ — $5 + 2a^2 = 13$ (1) $2a^2 = 8$ (1) $a^2 = 4$ (1) $a = 2$ (1) *or* $20 + 8a^2 = 52$ (1)
$8a^2 = 32$ (1) $a^2 = 4$ (1) $a = 2$ (1)

26 4:3 — 120 apples:90 oranges, 4 apples:3 oranges

27 £8, £12 — $2 + 3 = 5$ (1) £20 ÷ 5 = £4 (1) £4 × 2 (1) and £4 × 3 (1)

28



y is twice the value of x

29 9 inches 2.5 cm: 1 inch, 22.5 cm ÷ 2.5 cm

30 2 hours 14 minutes 134 minutes – 120 minutes (2 hours) = 14 minutes

Paper 8

1 (a)

	Swimming club	Running club	Rugby club	Total
Mr Richards' class	12	8	8	28
Mrs Flynn's class	10	13	7	30
Mrs Thomas's class	5	13	9	27
Total	27	34	24	85

(1) for any 2 correct, (2) for any 4 correct, (3) for any 6 correct, (4) for all 7 correct

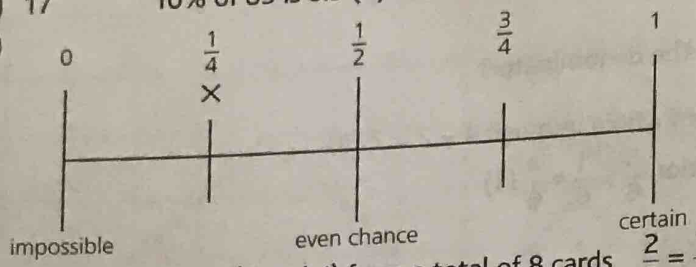
(b) 33.3% $10 \div 30$ (1) 0.333×100 (1)

(c) 9 $1 + 2 = 3$ (1) $27 \div 3 = 9$ (1)

(d) 3:2:2 12:8:8

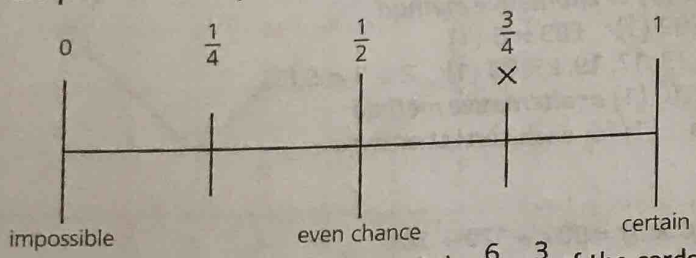
(e) 17 10% of 85 is 8.5 (1) $8.5 \times 2 = 17$ (1) *or alternative method*

2 (a)



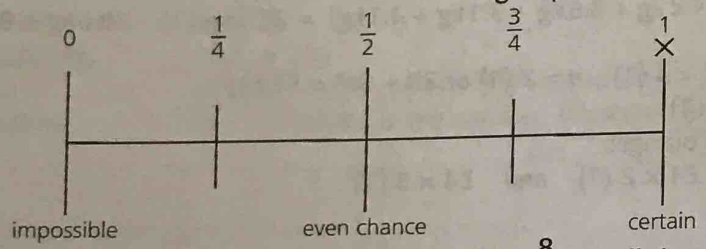
2 square numbers (1 and 4) from a total of 8 cards $\frac{2}{8} = \frac{1}{4}$ of the cards show a square number

(b)



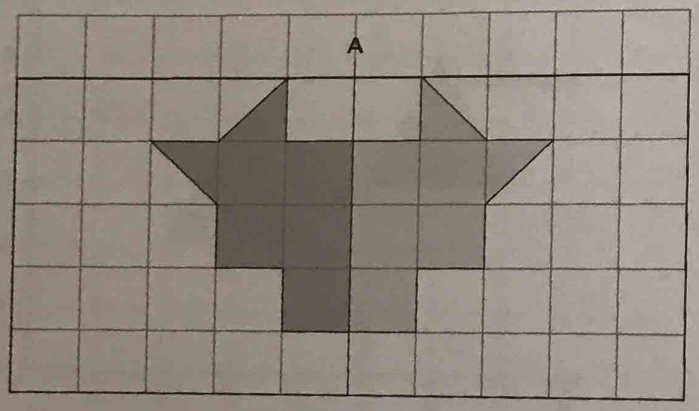
6 even numbers (2, 4, 6, 8, 12 and 24) $\frac{6}{8} = \frac{3}{4}$ of the cards show an even number

(c)



8 factors of 24 (1, 2, 3, 4, 6, 8, 12 and 24) $\frac{8}{8} = 1$, all the cards show a factor of 24

3



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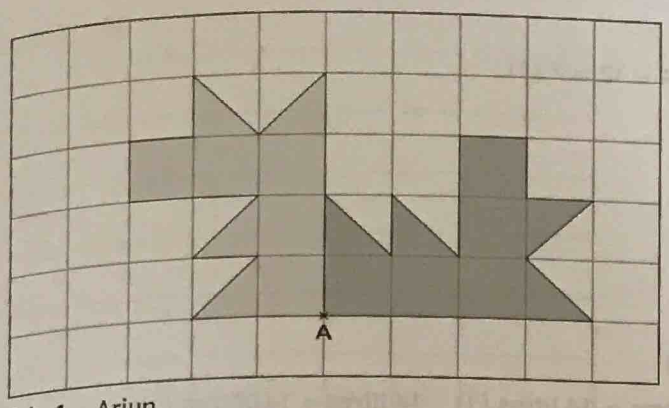
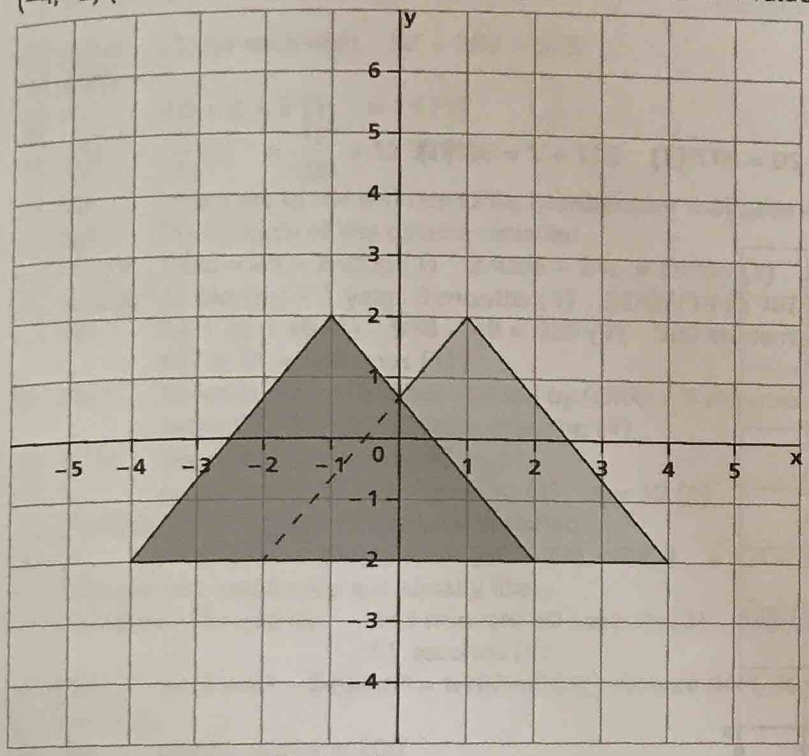


5 (a) 1 Arjun
(b) 2 Joe and Phoebe
(c) 3 Anne, Darren and Arjun
(d) 1 Anne

6 (−4, −2) (2, −2) and (−1, 2) (1) for each pair of co-ordinate values



7 (a)	1400 B	£350 × 4
(b)	£133.75	120 B + 85 B + 100 B + 230 B = 535 B (1) 535 B ÷ 4 (1)
(c)	60 B	120 × 4 = 480 B (1) 120 × 3.5 = 420 B (1) 480 B − 420 B (1)
(d)	£50	150 B ÷ 3
(e)	UK, by 6 B	UK price in Blings: £28.50 × 4 = 114 B (1) 120 B − 114 B = 6 B (1)
8 (a)	35 000	100 × 350
(b)	36 750	5 × 350 = 1750 (1) 35 000 + 1750 = 36 750 (1)
(c)	35 days	100 days + 5 days = 105 days (1) 105 days ÷ 3 (1)
9 (a)	10.5 m	1750 mm × 6 = 10 500 mm (1) 10 500 mm ÷ 1000 = 10.5 m (1)
(b)	28.44 m	4740 mm × 6 = 28 440 mm (1) 28 440 mm ÷ 10 000 mm = 28.44 m (1)
10 (a)	£2160	£17 248 ÷ 8 = £2156 (1) Round to the nearest £10 (1)
(b)	£83	£2156 ÷ 26 = £82.92 (1) Round to the nearest £ (1)
11 (a)	8 cherries	$a = 2b$, $2b = 8c$ (1), so $a = 8c$ (1)
(b)	6 bananas	$3a = 6b$ (1), so kiwi = $6b$ (1)
12	364	Add the previous term (1) to the difference, which increases by a factor of 3 each time (1)

Paper 9

1 (d) 7 $14 + 14 + 14 + 14 + 14 + 14 = 84$ (1) $84 \div 12 = 7$ (1)

2 (c) $\frac{1}{6}$ $\frac{2}{12}$ (1) $= \frac{1}{6}$ (1)

3 (d) $9.6 = 9\frac{3}{5}$

4 (b) £418058

5 (a) 40 $70 - 30$ (1) $= 40$ (1)

6 (d) $\boxed{14:35}$

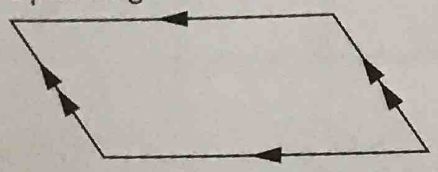
7 (c) 23.35

8 (e) 15232 16 is $\frac{1}{2}$ of 32 (1) $30464 \div 2 = 15232$ (1)

9 (a) 56 2 litres × 6 = 12 litres (1) 12 litres + 2 litres = 14 litres (1) 14 litres = 14000 ml (1)
14000 ml ÷ 250 ml = 56 (1)

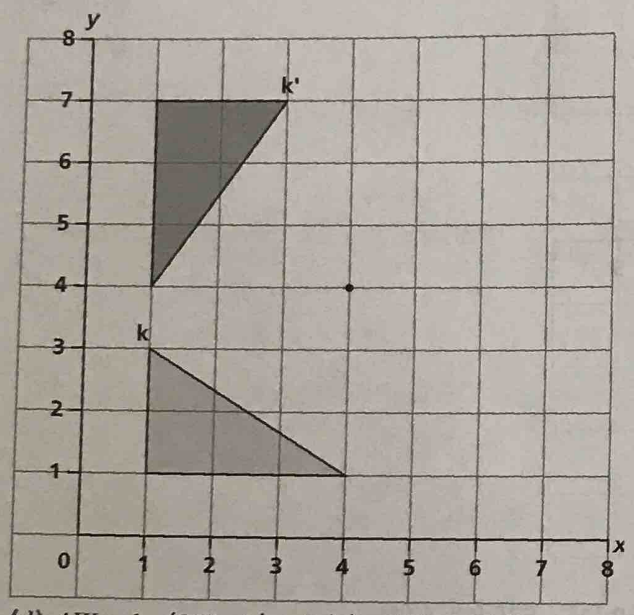
10 (b) 1.3

11 (e) a parallelogram



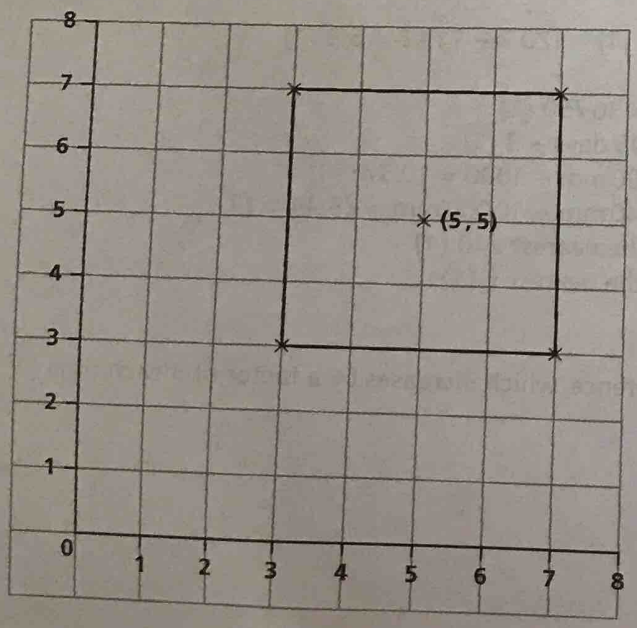
12 (a) 31 $32 + 43 + 37 + 33 + 26 + 26 + 20 = 217$ (1) $217 \div 7 = 31$ (1)

13 (c) (3, 7)



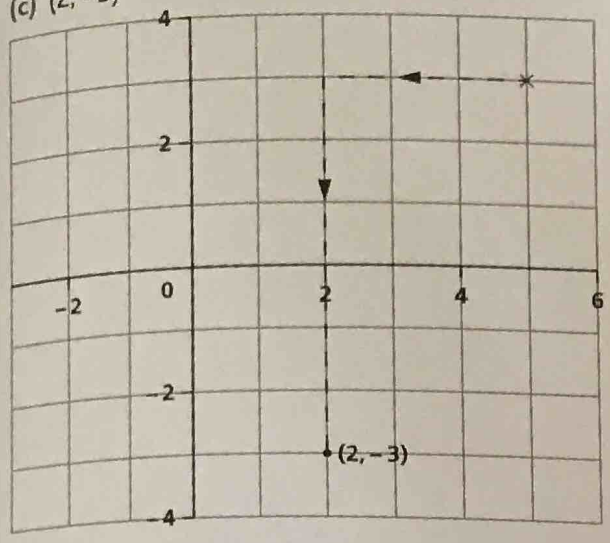
14 (d) $4W - 1$ $(8W - 2) \div 2$ (2) $4W - 1$ (1)

15 (c) (5, 5)



(1) for correct x-co-ordinate (1) for correct y-co-ordinate

16 (c) (2, –3)



(1) for correct x-co-ordinate (1) for correct y-co-ordinate

17 (d) 2, 2, 8 (1) for each digit 92 + 283 = 375

18 (b) 1320

19 (d) 15 2.5 × 2 × 3 (1) = 15 (1)

20 (c) 12% $\frac{3}{25}$ (1) $= \frac{12}{100}$ = 12 % (1)

21 (a) 468 Terms are in the 6 times table, numbers are multiples of 6 (1) 468 (1) is divisible by 6

22 (d) 184 (1) for each of the criteria satisfied

23 (c) £23.76 100p × 24 = 2400p (1) 2400p – 24p = 2376p (1) = £23.76 (1)

24 (b) Richard 15 months = 1 years 3 months (1) 21/07/14 to 15/10/15 is closest (1)

25 (a) 483 23 + 25 = 48 (1) 968 – 48 = 920 (1) 920 students – 46 = 874 (1) 874 ÷ 2 = 437 girls (1)
437 + 46 = 483 boys (1)

26 (b) 07:15 Arrive at Hopesfield bus station by 09:00 – 5 minutes = 08:55 (1)
Arrive 08:49 so 07:15 from Marston (1)

27 (c) -62 °C The scale goes up in 2 °C steps

28 (d) 10 $4n - 7 = n + 23$ (1) $3n = 30$ (1) $n = 10$ (1)

29 (e) 18 and 8 (1) for each of the criteria satisfied

30 (b) 42 $n \div 7 + 24 = 30$ (1) $n = (30 - 24) \times 7$ (1) $n = 6 \times 7 = 42$ (1)

31 (c) Picking a rose and a tulip are equally likely.

32 (c) 35 minutes 55 seconds 143 minutes 40 seconds (1) 143 minutes 40 seconds ÷ 4 = 35 minutes 55 seconds (1)

33 (c) 90 m 14 500 m² – 6400 m² = 8100 m² (1) Square field, 90 m × 90 m (1)

34 (c) $y = x - 5$

35 (d) 200 650 g ÷ 3.25 g = 200

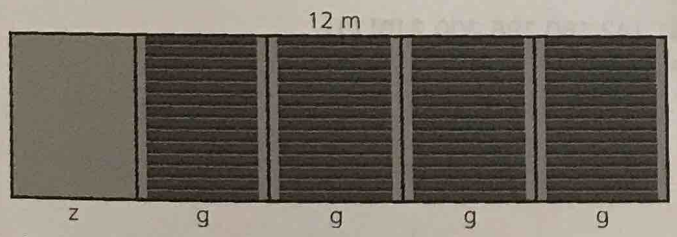
36 (a) 4 squares and 8 triangles (4 from each square-based pyramid)

37 (d) 25 5 half marathons to 3 marathons is 5:3 (1) 15 marathons ÷ 3 = 5 (1)
5 half marathons × 5 = 25 half marathons (1)

38 (c) 38 600 78 × 386 + 386 × 22 = (78 + 22 = 100) (1) 100 × 386 = 38 600 (1)

39 (b) 9 24 (1) – 15 (1) = 9 (1). Use BIDMAS

40 (e) $12 - 4g$



41 (d) Al Hamra Tower and Petronas Tower 1 452 m – 413 m = 39 m

42 (e) $18a + 6$ $(3a + 1) \times 6 = 18a + 6$

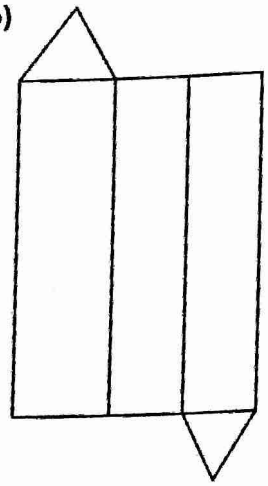
43 (a) 21 The mode is the most common.

44 (e) $\frac{3}{8}$ $\frac{6}{16}$ (1) $= \frac{3}{8}$ (1)

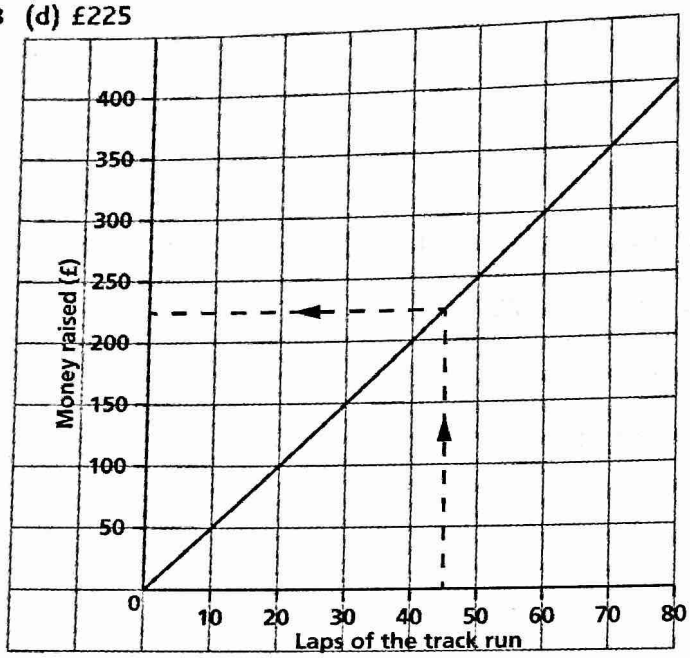
45 (a) 72 Total members – senior members = junior members: 132 – 36 = 96 (1) 96 ÷ 4 = 24 (1)
24 × 3 = 72 (1)

46 (c) 288 Melon is favourite for $\frac{1}{4}$ of the children, 72 × 4 = 288

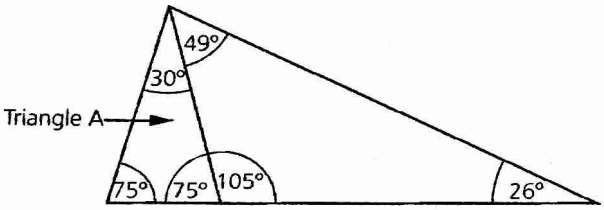
47 (b)



48 (d) £225



49 (c) 26°



Triangle A is isosceles with base angles of 75° [180° – 30° = 150° (1) 150° ÷ 2 = 75° (1)]
Angle next to 75° is 180° – 75° = 105° (1) 180° in a triangle, so x = 180° – (49° + 105°) = 26° (1) or other appropriate method.

50 (c) 74.5 Correctly ordered data [3 3 8 25 38 68 81 142 180 196 200 210] (1)
Mean of 2 middle values (68 + 81) ÷ 2 = 74.5 (1)