Answers

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

Paper 10

1 17.1 7.1 7.07 1.7 0.71

2 $4\frac{3}{7}$, $4\frac{1}{2}$, $4\frac{2}{3}$ and $4\frac{4}{9}$ circled $4\frac{3}{7} = 4.42$, $4\frac{1}{2} = 4.5$, $4\frac{3}{4} = 4.75$, $4\frac{2}{3} = 4.66$, $4\frac{4}{9} = 4.44$ (1) for each 2 correct

3 15 years MMXXXV = 2035 (1) MML = 2050 (1) 2050 – 2035 = 15 (1)

4 54 degrees −18 °C – −72 °C

5 92p and £1.21 circled 92p (50p, 20p, 20p, 2p) £1.21 (£1, 10p, 10p, 1p *or* 50p, 50p, 20p, 1p)

6 240 000 miles

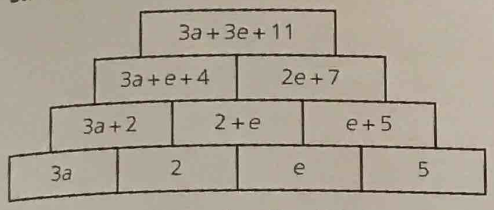
7 4 Multiples of 7: 28, 84, 112 and 161

8 2 minutes 32 seconds 145 s + 18 s – 11 s = 152 s (1) 152 seconds = 2 minutes 32 seconds (1)

9 5:40 5 minutes + 20 minutes + 15 minutes + 60 minutes + 15 minutes = 115 minutes (1)
3:45 + 115 minutes = 5:40 (1)

10 7 $4n + 7$ (1) = $5n$ (1) $5n - 4n = 7$ $n = 7$ (1)

11 $3a + 3e + 11$



(1) for each correct row

12 500 pieces Area of quilt: 400 cm × 300 cm = 120 000 cm² (1) Area of small piece of material: 20 cm × 12 cm = 240 cm² (1) 120 000 cm² ÷ 240 cm² = 500 (1)

13 (1) for each 3 numbers correct

2	9	4
7	5	3
6	1	8

14 4 28 sweets ÷ (4 + 3) = 4 sweets per part (1) 4 – 3 = 1 more part, so 4 sweets (1)

15 £536 £670 × 10% = £67 (1) 20% is £67 × 2 = £134 (1) £670 – £134 = £536 (1)

16 3 litres 47 km + 58 km + 28 km + 47 km = 180 km (1) 180 km ÷ 4 days = 45 km/day (1)
45 km ÷ 15 km/l = 3 litres (1)

17 8A 6A (1) + ($4 \times \frac{1}{2}A$) (1) = 6A + 2A = 8A (1)

18 $\frac{60}{200}$ *or* $\frac{3}{10}$ 60 + 40 + 70 + 30 = 200 (1) Probability of a red = $\frac{60}{200} = \frac{3}{10}$ (1)

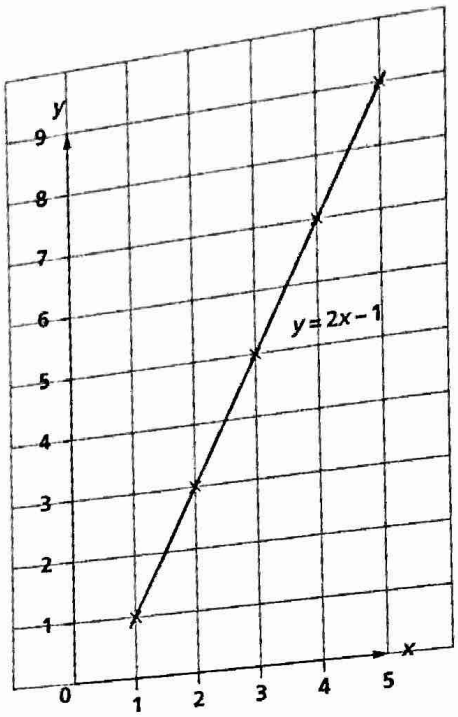
19 £5.41 3 × £1.15 = £3.45 (1) 2 × 98p = £1.96 (1) £3.45 + £1.96 = £5.41 (1)

20

Not a multiple of 3	8	41, 17
Multiple of 3	24, 48	27, 21, 18, 15
	Multiple of 4	Not a multiple of 4

21 68.24 136.48 ÷ 2

22



23 $\frac{2}{5}$ $\frac{48}{120}$ cancels to $\frac{2}{5}$

24 certain Wednesday will definitely follow Tuesday

25 365 ml

26 24.5 cm 2.45 cm × 10 = 24.5 cm

27 32 cm² Area = base × vertical height, 8 cm × 4 cm = 32 cm²

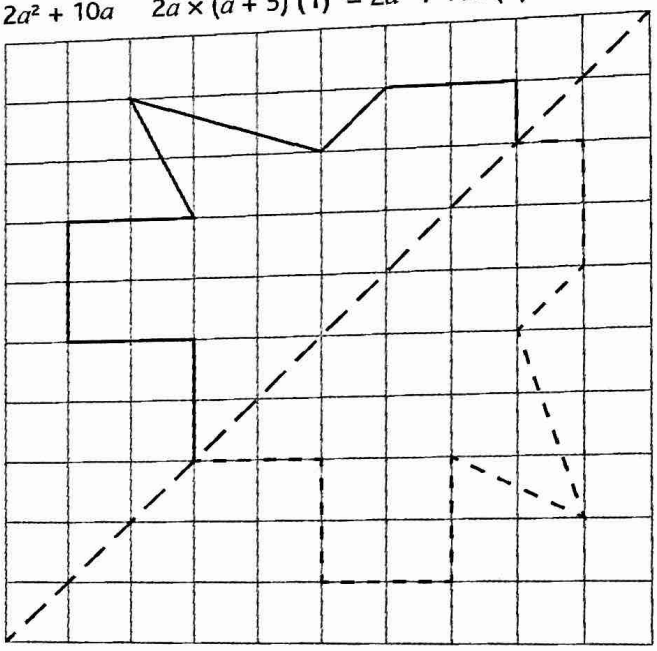
28 100 0.87 × 10 = 8.7 **(1)** 870 ÷ 8.7 = 100 **(1)**

29 17 178 2863 × 6

30 1456 8736 ÷ 6

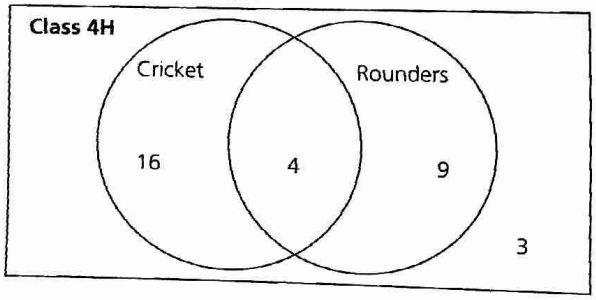
31 $2a^2 + 10a$ $2a \times (a + 5)$ **(1)** $= 2a^2 + 10a$ **(1)**

32



33 161 **(1)** for each of the criteria satisfied

34 **(1)** for each correctly placed number



35 215 275 + 78 = 353 (1) 568 − 353 = 215 (1)
36 24 miles 1 hour 20 minutes is 4 × 20 minutes; 32 miles ÷ 4 = 8 miles (1)
1 hour is 3 × 20 minutes, 3 × 8 miles = 24 miles (1)
37 14°C Highest temperature is 17°C (1) Lowest temperature is 3°C (1) 17°C − 3°C = 14°C (1)
38 115° 90° + 55° + 100° = 245° (1) 360° − 245° = 115° (1)
39 £3.43 180p + 95p + 68p = 343p
40 1710

×	30	8	
40	1200	320	1520
5	150	40	190
			1710

41 45° 105° − 60°
42 4:50 pm 7:30 pm − 2 hours = 5:30 pm (1) 5:30 pm − 40 minutes = 4:50 pm (1)
43 (3, 4) (2, 1) (6, 5) (5, 2) (1, 2) (1) for each pair of co-ordinates in correct position
44 $\frac{1}{2}$ 3 (2, 4 and 6) out of 6 numbers so $\frac{3}{6}$ (1) $= \frac{1}{2}$ (1)
45 5026 m 3.2 km = 3200 m (1) 3200 m + 1826 m = 5026 m (1)
46 37 children 7 + 12 + 5 + 6 + 7 (1) = 37 (1)
47 $F = 8$ $6F - 42 = 6$ (1) $6F = 48$ (1) $F = 8$ (1)
48 $W = -1$ $8W + 12 = 4W + 8$ (1) $8W - 4W = 8 - 12$ (1) $4W = -4$ (1) $W = -1$ (1)
49 67.5 49 + 35 + 109 + 78 + 38 + 0 + 145 + 5 + 189 + 27 = 675 (1) 675 ÷ 10 = 67.5 (1)
50 1200–1300 The steepest part of the graph

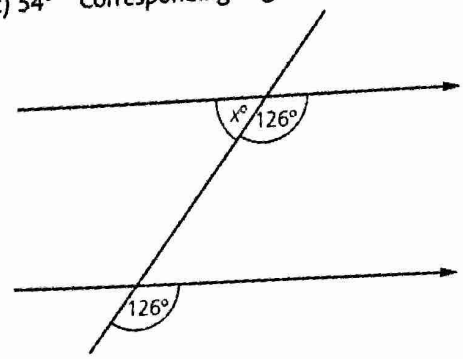
Paper 11

1 (d) 88 237 this number is rounded down to 88 000
2 (d) 25 10 km = 10 000 m (1) 10 000 m ÷ 400 m = 25 (1)
3 (d) 361 3 flashes a minute (1) × 120 minutes = 360 flashes (1) one flash at the beginning, so 361 (1)
4 (e) 24 $p + c = 32$, where p is the number of pigs and c is the number of chickens (1) $4p + 2c = 80$ (1)
Solve by trial and error or rearrange first equation ($c = 32 - p$ (1)) and solve the second by substitution
($4p + 2(32 - p) = 80$, $4p + 64 - 2p = 80$, $2p = 16$, $p = 8$ (1) so $c = 32 - 8 = 24$ (1)
5 (e) Kite because it doesn't have any parallel sides
6 (c) Tuesday will follow Monday.
7 (b) 69 92 ÷ 4 = 23, 23 × 3 = 69
8 (b) 2848
9 (b) 86
10 (d) $y = x - 3$ (1) for at least 2 pairs of co-ordinate values

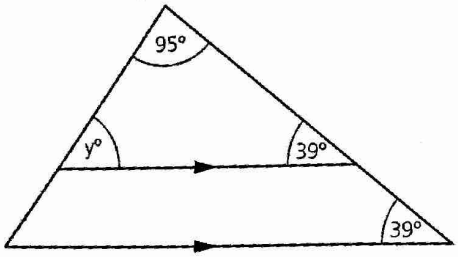
x	−2	−1	0	1	2	3	4	5
y	−5	−4	−3	−2	−1	0	1	2

11 (a) 15 boys 8 + 3 = 11 parts (1) 55 children ÷ 11 = 5 (1) 5 × 3 = 15 (1)
12 (a) 10 litres 15 + 1 = 16 parts (1) 160 litres ÷ 16 = 10 litres (1)
13 (d) 68% $\frac{170}{250} = \frac{17}{25}$ (1) $\frac{17}{25} = \frac{68}{100}$ = 68% (1)
14 (e) 26.78
15 (a) 144 cm Side length of square is 18 cm, so side length of equilateral triangle is 18 ÷ 3 = 6 cm (1)
Perimeter of this shape is 6 cm × 24 = 144 cm (1)
16 (b) 360 pages 135 ÷ 3 = 45 (1) 45 × 8 = 360 (1)
17 (a) 19.6 m 28 × 70 = 1960 cm (1) 1960 cm ÷ 100 = 19.6 m (1)
18 (b) 84 4 and 7 are both factors 28 exactly (4 × 7 = 28) (1) 84 is a multiple of 28 between 80 and 90 (1)

19 (c) 54° Corresponding angles are equal (1) Angles on a straight line are 180°, 180° − 126° = 54° (1)



20 (d) 46° Corresponding angles are equal (1) Angles in a triangle add up to 180°, 180° − (95° + 39°) = 46° (1)

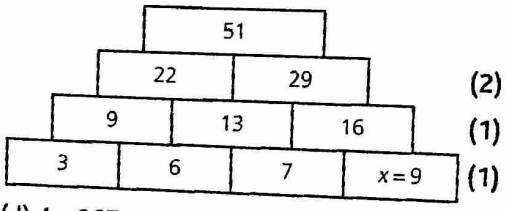


21 (b) £621 \$900 ÷ 1.45 = £620.68 (1) Rounded to the nearest £ = £621 (1)

22 (d) $\frac{14}{15}$ $\frac{18}{30} + \frac{10}{30}$ (1) $= \frac{28}{30}$ (1) $= \frac{14}{15}$ (1)

23 (b) $1\frac{7}{20}$ $1\frac{15}{20} - \frac{8}{20}$ (1) $= 1\frac{7}{20}$ (1)

24 (a) 16 403 parents ÷ 26 seats = 15.5 (1) 16 rows needed (1)
25 (b) 11.25 miles 18 km ÷ 1.6 km
26 (a) £474 158 × £3
27 (c) 225 15 × 15
28 (a) 1, 2 and 4 Factors of 20: 1, 2, 4, 5, 10 & 20 (1) Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18 & 36 (1)
29 (c) 125 (1) for evidence of working out 3^3 or 4^3
30 (c) 251 452 − 63 = 389 (1) 640 − 389 = 251 (1)
31 (d) Hemisphere
32 (b) 24 9 − 5 = 4 (1) 4 × 6 = 24 (1)
33 (c) 15 $\frac{y}{3} = 12 - 7 = 5$ (1) y = 5 × 3 (1) = 15 (1)
34 (d) $5(w + 9) = 60$ (1) for $(w + 9)$ seen
35 (c) 256 Each previous number is multiplied by 4, so 64 × 4
36 (b) 1416
37 (c) 72 (1) for each of the criteria satisfied
38 (a) 9

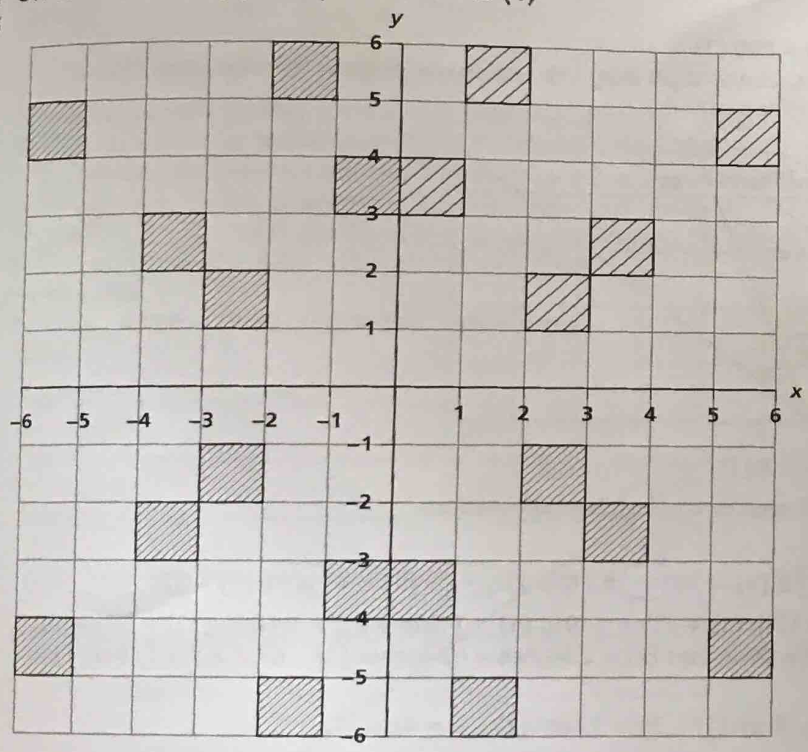


39 (d) 4 367 remainder 4
40 (d) 2680 ml
41 (c) 4 m/s Speed = Distance (100 m) ÷ Time (25 s)
42 (c) 10 $w = 3x$ (1) $y = 3x \div 3 = x$ (1) $3x - x + x = 30, x = 10$ (1)
43 (c) 7 $99 - 9a = 36$ (1) $9a = 63$ (1) $a = 7$ (1)
44 (c) 5 $45 \div 3j = 3$ (1) 45 ÷ 15 = 3 (1) and 5 × 3 = 15 so $j = 5$ (1)
45 (a) 71 The difference between the terms decreases by 1 each time
46 (d) 183
47 (b) 8 × 6 8 × 6 = 48
48 (c) 112 112 = 8 ×14 (1) and 7 × 16 (1)
49 (e) 57 (4 + 3 × 9 − 12) × 3 (1) (4 + 27 − 12) × 3 (1) 19 × 3 (1) = 57 (1)
50 (a) 28 18 + 6 × 2 − 2 (1) 18 + 12 − 2 (1) 30 − 2 (1) = 28 (1)

51 (b) 117 Each number decreases by 9
52 (c) 28p Cost of apple: £1.06 – 80p = 26p (1) Cost of pear is 80p – (2 × 26p) (1) = 80p – 52p = 28p (1)
53 (d) 24 Differences each time increases by 2
54 (b) 26 23 × 12 = 276 (1) 302 – 276 = 26 (1)
55 (c) 4 532 ÷ 28 = 19 (1) 23 – 19 = 4 (1)
56 (b) 3078
57 (d) 1526
58 (c) ×, +, ×, – 9 × 3 + 1 = 28 (1) 7 × 5 – 7 = 28 (1)
59 (b) $r = v - 7$
60 (e) 42 3 + 4 = 7 (1) 7 × 6 = 42 (1)

Paper 12

1 –6°C –7°C –11°C –18°C –19°C –23°C –28°C
2 79°C 52°C – –27°C = 52°C + 27°C = 79°C
3 (50 – 20) × 12 = 360 (1) for each operation
4 13.6 km 5 × 2 = 10 journeys (1) 1.36 km × 10 = 13.6 km (1)
5 6 $6^3 \div 6^2 = (6 \times 6 \times 6)$ (1) ÷ (6 × 6) (1) = 216 ÷ 36 = 6 (1)
6 1575 ÷ 7 = 225 whole number answer
7 168 42, 84, 126, **168** (1) 56, 112, **168** (1)
8 $1\frac{13}{18}$ $\frac{15}{36} + \frac{20}{36} + \frac{27}{36}$ (2) $= \frac{62}{36}$ (1) $= 1\frac{26}{36}$ (1) $= 1\frac{13}{18}$ (1)
9 $\frac{1}{12}$ $\frac{14}{15} - \left(\frac{12}{20} + \frac{5}{20}\right)$ (1) $= \frac{14}{15} - \frac{17}{20}$ (1) $= \frac{56}{60} - \frac{51}{60}$ (1) $= \frac{5}{60}$ (1) $= \frac{1}{12}$ (1)
10 4 4 × 4 × 4 × 4 = 256
11 2 $15x + 20 + 6x + 6 = 68$ (2) $21x = 68 - 26 = 42$ (1) $x = 2$ (1)
12 9 $14y - 14 - (12y - 9) = 13$ (1) $14y - 14 - 12y + 9 = 13$ (1) $2y = 13 + 5 = 18$ (1) $y = 9$ (1)
13 5:6 700:840 (1) = 5:6 (1)
14 6:7:5 24:28:20 (1) simplifies to 6:7:5 (1)
15



(1) for each correct quadrant
16 50.24 cm diameter = 2 × radius = 2 × 8 cm = 16 cm (1)
circumference = 3.14 × diameter = 3.14 × 16 cm = 50.24 cm (1)
17 7.92 litres 24 × 330 ml = 7920 ml (1) 7920 ml ÷ 1000 = 7.92 litres (1)
18 64 cm² top / bottom part: 10 cm × 2 cm = 20 cm² (1) 20 cm² × 2 = 40 cm² (1)
middle part: 6 cm × 4 cm = 24 cm² (1) total area: 40 cm² + 24 cm² = 64 cm² (1)

19 54 cm² area of rectangle: 9 cm × 4 cm = 36 cm² (1) area of triangle = $\frac{1}{2}$ × base × vertical height = $\frac{1}{2}$ × 9 cm × 4 cm = $\frac{1}{2}$ × 36 cm² = 18 cm² (1) Total area: 36 cm² + 18 cm² = 54 cm² (1)

20 68 400 kg Mass of people and luggage: 140 × 90 kg = 12 600 kg (1)
Total mass = 41 000 kg + 14 800 kg + 12 600 kg = 68 400 kg (1)

21 $\frac{4}{8}$ or $\frac{1}{2}$ 4 prime numbers: 2, 3, 5 and 7 (1) 4 chances in 8 (1)

22 7 $\sqrt{16(1) + 8(1) + 25(1)} = \sqrt{49}$ (1) = 7 (1)

23 g^3h^3

24 8 $t + b = 22$, where t stands for tricycles and b for bicycles (1) $3t + 2b = 52$ (1) Rearrange one equation $b = 22 - t$ (1) and substitute into the other to solve: $3t + 2(22 - t) = 52$ (1) $3t + 44 - 2t = 52$, $t = 52 - 44 = 8$ (1)

25 18 days $12 \div \frac{2}{3} = 12 \times \frac{3}{2}$ (1) = 36 ÷ 2 = 18 (1)

26 £22.52 £39.99 + £17.49 = £57.48 (1) £80 − £57.48 = £22.52 (1)

27 2, 6 and 8 2 + 6 + 8 = 16 (1) 2 × 6 × 8 = 96 (1)

28 1 5 + 4 = (107 + ___) ÷ 12 (1) 9 = (107 + ___) ÷ 12 (1) 9 × 12 = 108, 108 − 107 = 1 (1)

29 78 look for a relationship between the differences or multiply previous term by 2 and + 2

30 74° 62° + 88° + 104° = 254° (1) 360° in a quadrilateral, so 360° − 254° = 106° (1) 180° on a straight line, so 180° − 106° = 74° (1)

31 4 minutes Each frog takes 4 minutes to catch a single fly

32 $4\frac{1}{2}$ litres 80 km uses 3 litres of fuel, so 40 km uses 3 ÷ 2 = $1\frac{1}{2}$ litres (1) and 120 km uses 3 × $1\frac{1}{2}$ litres (1)

33 £10.10 £759 (1) ÷ 75 (1) = £10.12 (1) = £10.10, to the nearest 10p (1)

34 28 children 336 (1) ÷ 12 = 28 (1)

35 138 105 km 142 984 km (1) − 4879 km (1) = 138 105 km (1)

36 15:31 4500 km:9300 km (1) = 45:93 (1) = 15:31 (1)

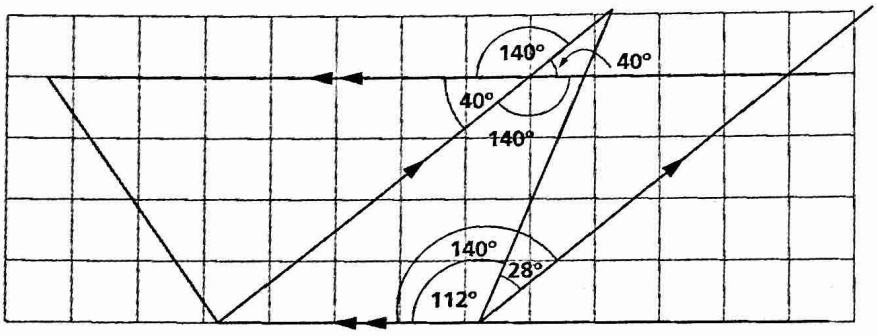
37 32.5 cm 3 + 4 + 5 = 12 parts (1) 78 cm ÷ 12 = 6.5 cm (1) 6.5 cm × 5 = 32.5 cm (1)

38 653 cm³ $v = 3.14 \times (4\text{ cm})^2 \times 13\text{ cm}$ (1) $v = 653.12\text{ cm}^3$ (1) = 653 cm³ (1)

39 4 2130 ÷ 15 = 142

40 9 844 + 659 = 1503 (1) 1801 − 1503 = 298 (1)

41 28° Angle a = 180° − 40° = 140° (angles on a straight line) (1) angle a = angle w (parallel lines) (1) angle y = 140° − 112° = 28° (1) *or alternative method*



42 3 $6v - 6 = 36 - 8v$ (1) $14v = 42$ (1) $v = 3$ (1)

43 $\frac{5}{36}$ (1) for each of the 5 ways to score 6 seen or total of 36 combinations

44 13 8 + 5 (1) = 13 (1)

45 32 Use the inverse operations: So 7 [×] 2 (1) = 14 [+] 6 (1) = 20 [÷] 5 (1) = 4 [×] 8 (1) = 32

46 54 kg 8 stone 7 lb = 8 × 14 lb + 7 lb = 112 lb (1) + 7 lb = 119 lb (1) 119 lb ÷ 2.2 = 54.09 kg (1) = 54 kg (1)

47 1 m 55 cm 5 feet 2 inches = 5 × 12 + 2 = 60 inches (1) + 2 inches = 62 inches (1) 62 × 2.5 = 155 cm (1)

48 54 litres 12 × 4.5

49 4 cm $A = \frac{1}{2} \times b \times h$, so 12 cm² = $\frac{1}{2} \times b \times 6$ cm (1) $3b$ = 12 cm (1) b = 4 cm (1)

50 6 cm $A = b \times h$, so 45 cm² = 7.5 cm × h (1) h = 6 cm (1)

51 12:56:24 09:45 + 3 hours = 12:45 (1) 12:45 + 11 minutes = 12:56 (1) 12:56 + 24 seconds = 12:56:24 (1)

52 [− 7] 4 × 6 = 24 (1) 24 − 7 = 17 (1)

53 $y(y + 8)$ *or* $y^2 + 8y$

54 $6x + 2y$ Area of larger rectangle: $x(y + 6)$ or $xy + 6x$ (1) Area of smaller rectangle: $y(x - 2)$ *or* $xy - 2y$ (1) Shaded area: $(xy + 6x) - (xy - 2y) = 6x + 2y$ (1)

55 $2r - 3$ $6r^2 \div 3r = 2r$ (1) $9r \div 3r = 3$ (1)

56 16 km 8 km (1) from home 8 km back home (1)

57 (2) for both History values correct, (2) for both Geography values correct, (1) for missing Languages and Total correct

	History	Geography	Languages	Total
Boys	29	42	34	105
Girls	47	6	48	101
Total	76	48	82	206

58 If no answers correct, (1) for total of 48 children and (1) for 7.5°/child

Ice-cream flavour	Number of children	Angle size	
Vanilla	12	360° × 12 ÷ 48 = 90°	(1)
Strawberry	14	360° × 14 ÷ 48 = 105°	(1)
Chocolate	16	360° × 16 ÷ 48 = 120°	(1)
Cherry	2	360° × 2 ÷ 48 = 15°	(1)
Banana	4	360° × 4 ÷ 48 = 30°	(1)

59

Plant height (cm)	Tally	Frequency	
20–29	卌 II	7	(1)
30–39	卌 I	6	(1)
40–49	卌 I	6	(1)
50–59	卌 II	7	(1)
60–69	IIII	4	(1)

60 $\frac{1}{9}$ (pink vest , pink shorts),(pink vest, purple shorts), (pink vest, yellow shorts) (1) (purple vest, pink shorts), (purple vest, purple shorts), (purple vest, yellow shorts) (1) (yellow vest, pink shorts) (yellow vest, purple shorts) (yellow vest, yellow shorts) (1), 9 different combinations (1), 1 is pink vest, pink shorts (1)

61 122 Multiply the previous term by 3 and subtract 1 or work out and continue the pattern of differences (+ 1, + 3, + 9, + 27; the difference is 3 times bigger each time)

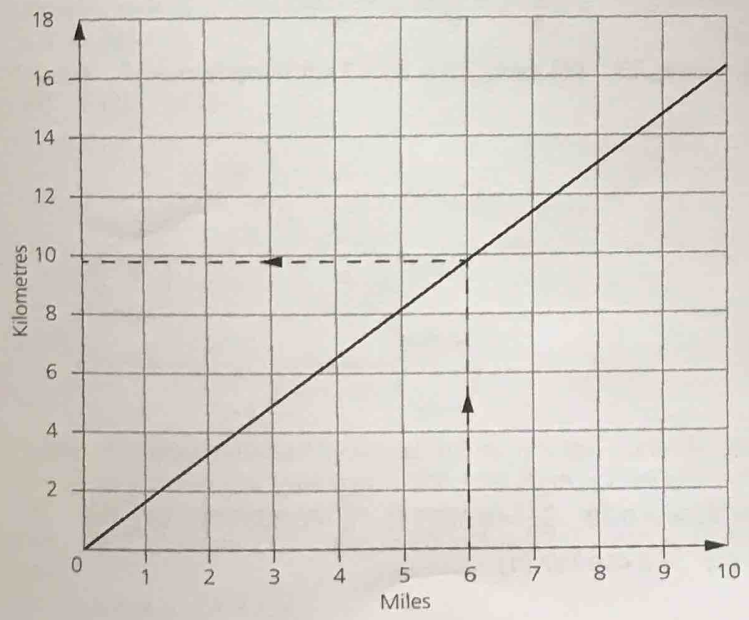
62 15 $y = 5^2 - (3 \times 5) + 5$ (1) $y = 25 - (15 + 5)$ Applying BIDMAS (1) $y = 25 - 20$ (1) $y = 5$ (1) $= 10 + 5$ (1) $= 15$ (1)

63 5 $6f - 6$ (1) $= 4f + 4$ (1) $2f = 10$ (1) $f = 5$ (1)

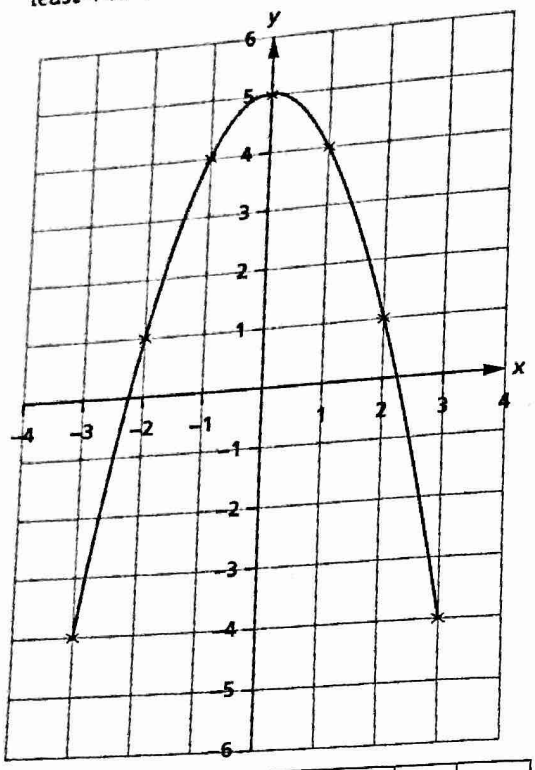
64 $t = 45 + 30n$

65 18 miles £9.50 – £3.20 = £6.30 (1) 630p ÷ 35p = 18 (1)

66 10 km



67 (2) for all co-ordinates correct, or (1) for at least 4 correct (2) for plotting all co-ordinates correctly or (1) for at least 4 co-ordinates plotted correctly, (1) curve correctly drawn



x	−3	−2	−1	0	1	2	3
y	−4	1	4	5	4	1	−4

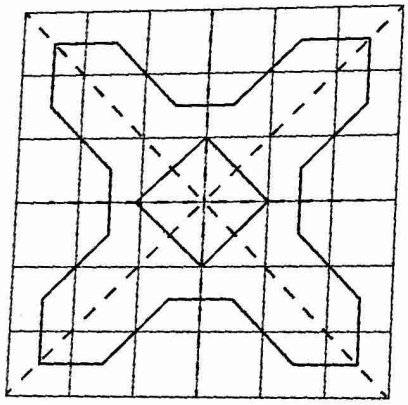
68 $8n - 3$ Difference between each term is 8 (1) so nth term based on $8n$ (1) When $n = 1$, $8n = 8$ and first term is 5 which is 3 less than 8 (1) nth term is $8n - 3$ (1)

69 $3n + 1$ The number of matchsticks in each diagram increases by 3 (1) so nth term based on $3n$ (1) When $n = 1$, $3n = 3$ and first term is 4 which is 1 more than 3 (1) nth term is $3n + 1$ (1)

70 100 each term squared gives the number of triangles (1), so nth term is n^2 (1)

Paper 13

1



(1) for each of four correct lines of symmetry

2 $17\frac{1}{5}$

3 $\frac{2}{9}$ $\frac{2}{3} = 0.666$ (1) 0.333 $\frac{2}{9} = 0.222$ (1) 0.24 23% = 0.23 $\frac{26}{80} = 0.325$ (1) $\frac{2}{7} = 0.285$ (1) so $\frac{2}{9}$ (1)

4 6 458 287 400 000 + 58 200 + 87 + 6 000 000 (1) = 6 458 287 (1)

5 £4.19 £1.65 × 5 = £8.25 (1) £1.89 × 4 = £7.56 (1) Total spent: £8.25 + £7.56 = £15.81 (1)
Change: £20.00 – £15.81 = £4.19 (1)

6 402 186 + 216

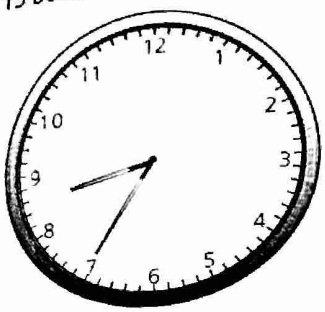
7 523 871 – 348

8 2584 76 × 34

9 156 1872 ÷ 12

10 15 boxes 87 ÷ 6 = 14 remainder 3 (1) 15 boxes needed (1)

11



12 £9.25 1 packet costs £5.55 ÷ 3 = £1.85 (1) £1.85 × 5 = £9.25 (1)

13 6 76 × 6 = 456

14 The bar chart shows only 48 children not 50 (1) 8 + 11 + 9 + 14 + 6 = 48 (1)

15 6056 litres 2271 litres ÷ 3 = 757 (1) 757 × 8 = 6056 litres (1)

16 48 m² length + width = 32 m ÷ 2 = 16 m, 16 m ÷ 4 = 4 m (1) so width is 4 m and length is 4 m × 3 = 12 m (1)
area = 4 m × 12 m = 48 m² (1)

17 –35

18 £3499.99 £3500 round up to £4000

19 200 56 ÷ 28% (1) × 100% = 200 (1)

20 $1\frac{5}{24}$ $\frac{12}{24}$ (1) + $\frac{8}{24}$ (1) + $\frac{6}{24}$ (1) + $\frac{3}{24}$ (1) = $\frac{29}{24}$ = $1\frac{5}{24}$ (1)

21 even (1) for each correct example, up to 3 marks

22 121 posts & rails 31 posts (2) [award (1) for 30 posts] 30 gaps, so 30 × 3 (1) = 90 rails 31 + 90 = 121 (1)

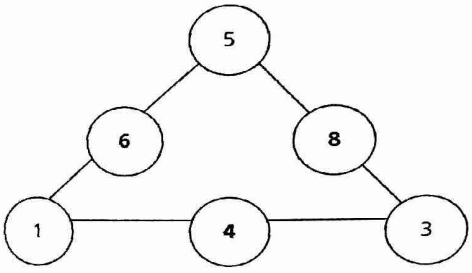
23 $X = 4$ (2) for 8 in top right corner

6	1	8
7	5	3
2	9	4

24 6 kg $3c + 4k = 20$ (1) and $5c + 6k = 32$ (1)
Rearrange: $c = \frac{20 - 4k}{3}$ (1)
Substitute and solve to find k: $5\left(\frac{20 - 4k}{3}\right) + 6k = 32$ (1) so $\frac{100 - 20k}{3} + 6k = 32$ $100 - 20k + 18k = 96$
$2k = 4$ $k = 2$
Substitute to find c: $c = \frac{20 - 4k}{3} = \frac{20 - 8}{3} = \frac{12}{3} = 4$
$c + k = 6$ (1)

25 50 years 5 years elapsed for 5 cats = 25 years (1) 25 years + 25 years (1)

26 5 (1) 3 (1) 1 (1)



27 8 turns Distance travelled by wheel in 1 turn is the circumference: 3.14 × 20 cm = 62.8 cm (1)
Number of turns in 5 m (500 cm) is 500 ÷ 62.8 cm = 7.96 turns (1) 8 turns (1)

28 210° Minute hand turns 90° in 15 minutes (1) 90 ÷ 3 = 30° in 5 minutes (1) 90° + 90° + 30° = 210°

29 600° 360° in 1 hour (1) 180° in 30 minutes (1) 60° in 10 minutes (1) 360° + 180° + 60° = 600° (1)

30 6854

31 720 6 × 5 × 4 × 3 × 2 × 1

32 336 $8 \times 7 \times 6$

33 $X = 2$ (1) for each two correctly placed numbers if X is incorrect

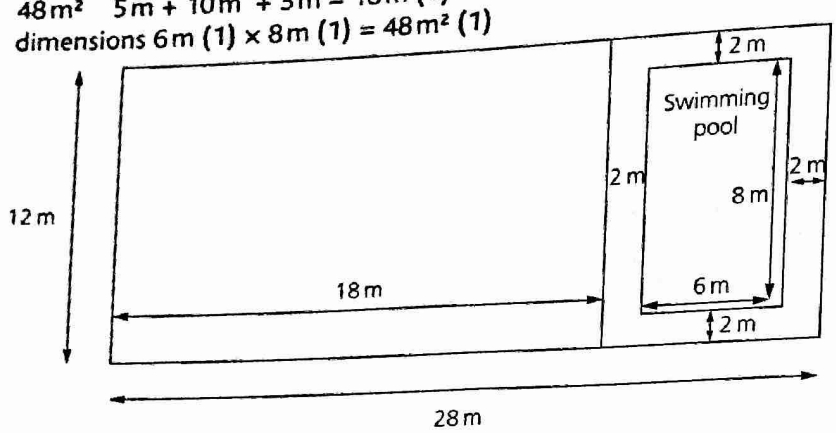
12	1	14	7
13	8	11	2
3	10	5	16
6	15	4	9

34 13 176 children ÷ 8 dinner ladies = 22 children per dinner lady (1) 286 children ÷ 22 children per dinner lady = 13 dinner ladies required (1)

35 6.5 days 13 cleaners × 5 days = 65 working days (1) 65 days ÷ 10 cleaners = 6.5 days (1)

36 41 km 34 km + 43.1 km + 37.5 km + 81.5 km + 42.2 km + 7.7 km = 246 km (1) 246 km ÷ 6 = 41 km (1)

37 48 m² 5 m + 10 m + 3 m = 18 m (1) Available area is 10 m × 12 m (1) 2 m border around the pool gives dimensions 6 m (1) × 8 m (1) = 48 m² (1)



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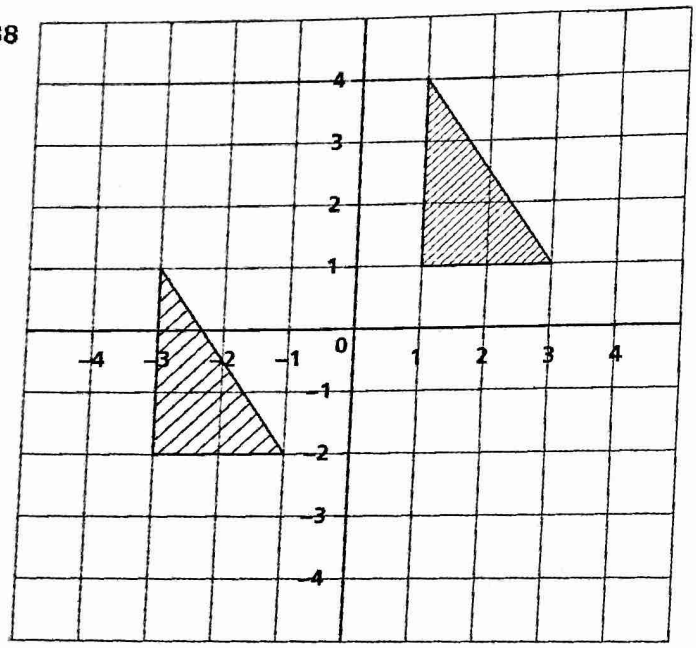


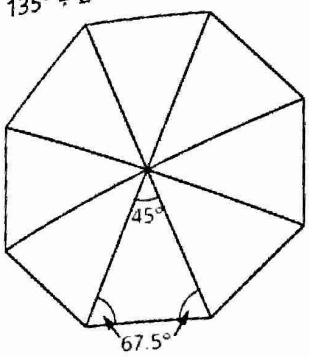
39 $\frac{4}{13}$ $\frac{11}{13} - \frac{7}{13}$

40 10 000

41 2000 m or 2 km 8×250 m

42 Speedy Bites Quick Food: £4.75 (1) Speedy Bites: £4.69 (1) Zoom Munch: £4.71 (1) Speedy Bites is cheaper (1)

43 67.5° Angles at centre: 360° ÷ 8 = 45° (1) All internal triangles are isosceles, so 180° − 45° = 135°(1) 135° ÷ 2 = 67.5° (1) *Alternative methods are possible*



44 $\frac{1}{4}$ Possible outcomes: HH, TT HT, TH (1) $\frac{1}{4}$ (1)

45 $\frac{1}{5}$ 24 + 8 + 8 tickets = 40 tickets (1) $\frac{8}{40}$ (1) $= \frac{1}{5}$ (1)

46 29.24

47 Not accurate, 500 × 10 = 5000

48 −23

49 Round to nearest 1000, 45 000 supporters

50 $\begin{pmatrix} -6 \\ -7 \end{pmatrix}$ (1) for each correct number

51 35 $T + F = 79$, where T is a 3-eyed alien and F is a 5-eyed alien (1) $3T + 5F = 325$ (1) $F = 79 - T \rightarrow 3T + 5(79 - T) = 325$ (1) $\rightarrow 3T + 395 - 5T = 325 \rightarrow 2T = 70, T = 35$ (1)

52 16 days 8 × 6 = 48 days (1) 48 ÷ 3 = 16 days(1)

53 9 rolls Area of one sheet of toilet paper: 12 cm × 11 cm = 132 cm² (1) Area of one roll: 132 cm² × 220 = 29 040 cm² = 2.9 m² (1) Area of garden: 5 m × 5 m = 25 m² (1)
Number of rolls needed: 25 m² ÷ 2.9 m² = 8.6 → 9 rolls (1)

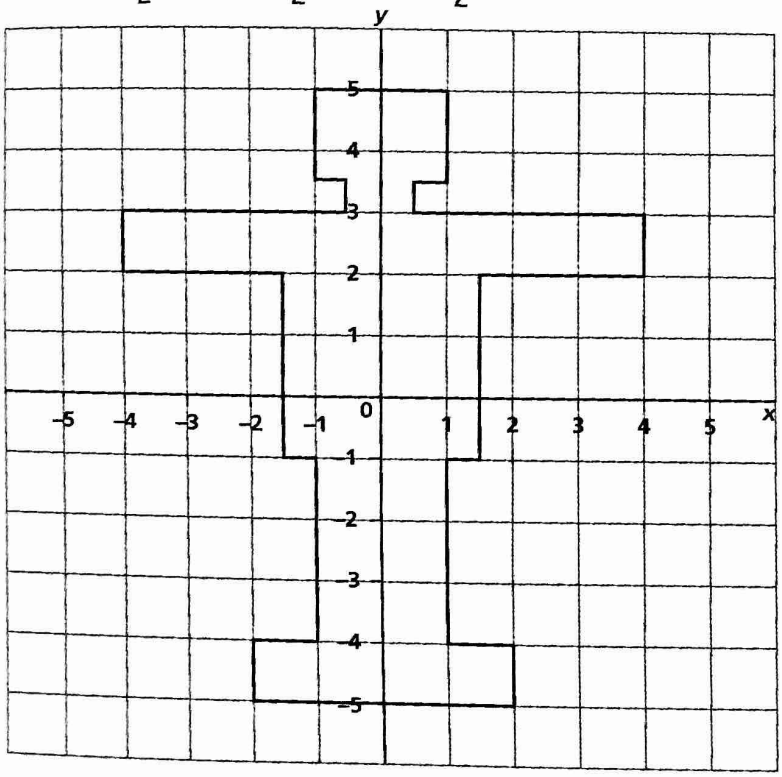
54 £357 £35 × 12 = £420 (1) 15% of £420 = £63 (1) Cost for year: £420 − £63 = £357 (1)

55 £132 Cost: £59.40 ÷ 90 × 100 = £66 (1) £66 × 2 (reduced by 50%) = £132 (1)

56 12.5 cm 5 feet 2 inches − 4 feet 9 inches = 5 inches (1) 5 inches × 2.5 = 12.5 cm (1)

57 Pasta: 375 g ÷ 3 = 125 g × 5 = 625 g (1) Quiche: 270 g ÷ 3 = 90 g × 5 = 450 g (1)
Vegetables: $1\frac{1}{2}$ cups ÷ 3 = $\frac{1}{2}$ cup × 5 = $2\frac{1}{2}$ cups (1)

58



59 £16.20 348p + 25p + 175p + 54p + 18p + 1000p = 1620p

60 Ruler, Map, Pad of paper 56p + £1.20 + £1.84 = £3.60

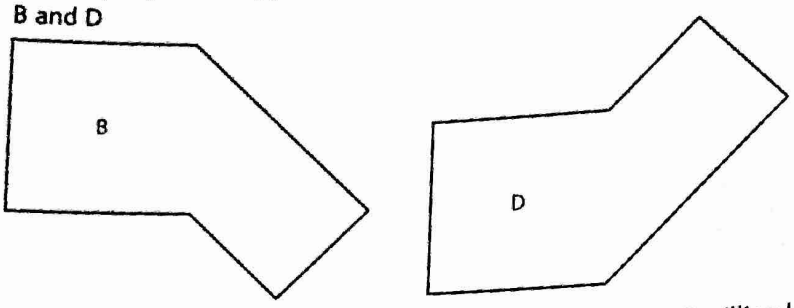
61 16.63

62 36.4

63 2 × 2 × 7

64 $2\frac{4}{7}$ $\frac{9}{14} \times \frac{4}{1}$ (1) $= \frac{36}{14}$ (1) $= 2\frac{8}{14}$ (1) $= 2\frac{4}{7}$ (1)

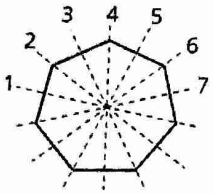
65 B and D



66 Saturn and Venus 1425 million km − 108 million km = 1317 million km

67 10 DVDs £3.99 × 10 = £39.99

68 7



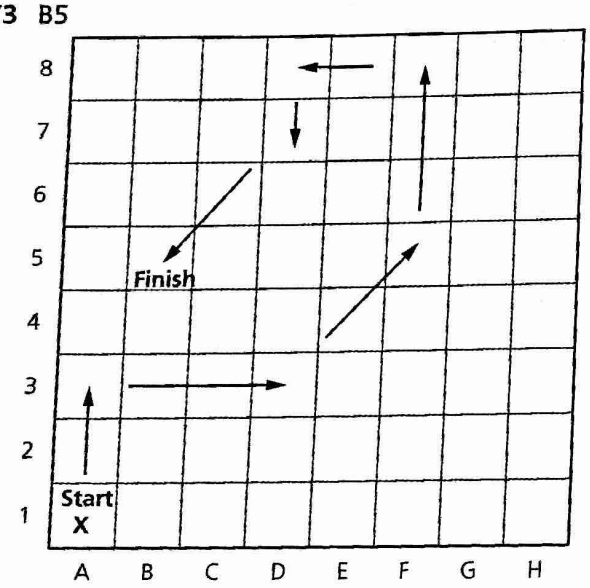
69 4 When turned the shape will look the same on 4 occasions

70 200 m 1000 ÷ 25 = 40 lengths (1) 15 + 10 + 7 = 32 lengths swum (1) 40 − 32 = 8 lengths (1)
8 × 25 = 200 m of backstroke (1)

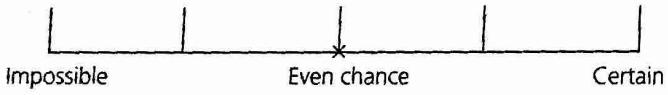
71 1.98 km 3 km × $\frac{66}{100}$ = 1.98 km

72 8th April, 29th April

73 B5



74

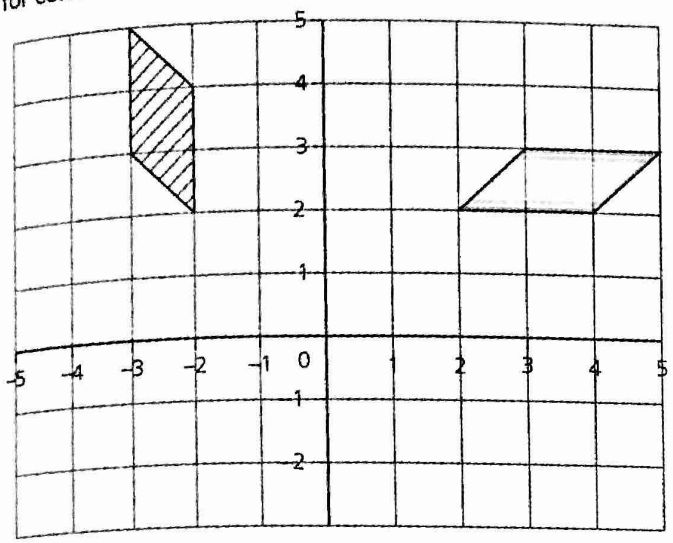


13 out of 26 girls have long hair $\frac{1}{2}$ (1) Correctly marked on scale (1)

75 9 × 6 = 54 (1) 6 × 9 = 54 (1) 54 ÷ 9 = 6 (1) 54 ÷ 6 = 9 (1)

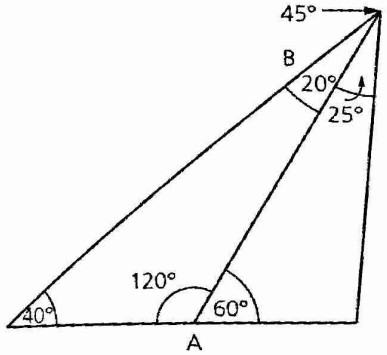
76 £34.65 (1p × 18) + (2p × 26) + (5p × 17) + (10p × 15) + (20p × 8) + (50p × 4) + (£1 × 20) + (£2 × 4) = 18p + 52p + 85p + £1.50 + £1.60 + £2.00 + £20.00 + £8.00 = £34.65 **(5)** for the correct final total, 0 if incorrect **(1)** for correct totals of two coin types, **(2)** for correct totals of four coin types, **(3)** for correct totals of six coin types, **(4)** for correct totals of eight coin types

77



78 5 minutes 30 seconds Jensen will get through on his third green light **(1)** 2 minutes elapse for all 4 roads to have a green light, 2 minutes × 2 = 4 minutes + 1 minute 30 seconds for third green light **(1)**

79 25° Angle A = 180° − 60° = 120° **(1)** Angle B = 180° − (120° + 40°) = 20° **(1)** Angle w = 45° − 20° = 25° **(1)**



80 MATHS IS COOL