Mark scheme

Non-Calculator Crossover Paper 6

40 marks · 45 minutes · Non-Calculator

M = method mark A = accuracy mark (depends on M marks) B = independent mark C = communication
ft = follow through cao = correct answer only oe = or equivalent isw = ignore subsequent working

Q	Answer	Mark	Guidance
1(a) N6 N7	4	**B1**	cao
1(b)	26	**B1**	cao
			Total for Question 1: 2 marks
2 N2	8.64	**M1** **A1**	for a complete method, e.g. 36 × 24 = 864 using a grid or column method, with no more than one arithmetic error for 8.64 864 with the decimal point placed incorrectly scores M1 A0.
			Total for Question 2: 2 marks
3 N8	$1\frac{1}{12}$	**M1** **M1** **A1**	for a correct method to add or subtract two of the lengths, e.g. $1\frac{2}{3} + 2\frac{1}{2} = 4\frac{1}{6}$ for a complete method using a common denominator, e.g. $\frac{63}{12} - \frac{20}{12} - \frac{30}{12}$ for $1\frac{1}{12}$ Accept $\frac{13}{12}$ for M1 M1 A0.
			Total for Question 3: 3 marks

Q	Answer	Mark	Guidance
4 R10	No, he needs 112.5 g of golden syrup but only has 100 g	**M1** **M1** **C1**	for a correct scale factor, e.g. $\frac{30}{12} = 2.5$, or for the amount for 6 flapjacks, e.g. 75, 45, 30, 22.5 for at least two correct amounts for 30 flapjacks from 375 g, 225 g, 150 g, 112.5 g for No, with all four amounts correct, or with 112.5 g of syrup compared with 100 g Alternative: work out how many flapjacks each ingredient makes, e.g. 100 g syrup makes only 26.6... flapjacks.
			Total for Question 4: 3 marks
5(a) A4	$2x + 22$	**M1** **A1**	for $5x + 10$ or $-3x + 12$ seen for $2x + 22$ $2x - 2$ (from $-3 \times -4 = -12$) scores M1 A0.
5(b)	$x^2 - 2x - 15$	**M1** **A1**	for at least three correct terms out of four, e.g. $x^2 + 3x - 5x - 15$ for $x^2 - 2x - 15$ $x^2 - 15$ or $x^2 - 2x + 15$ scores M0 A0.
			Total for Question 5: 4 marks
6(a) A25	$35 - 4n$	**M1** **A1**	for $-4n + k$ where $k \neq 35$, or $-4n$ seen for $35 - 4n$ oe $4n + 27$ or $4n - 35$ scores M0 A0.
6(b)	16th term	**B1**	for 16 or 16th (term) (ft their nth term from (a) if linear and the answer is a positive integer)
			Total for Question 6: 3 marks
7 A17	4	**M1** **M1** **A1**	for multiplying every term by 4 correctly, e.g. $x + 12 = 8x - 16$, or for a correct first step, e.g. $7 = 2x - \frac{x}{4}$ for a correct rearrangement with x terms on one side and numbers on the other, e.g. $28 = 7x$ or $7 = \frac{7x}{4}$ for 4 Multiplying only some terms by 4, e.g. $x + 3 = 8x - 16$, scores M0 for the first mark, but the second M1 may be awarded for correctly rearranging their equation.
			Total for Question 7: 3 marks
8(a) S6	The more hours of practice, the fewer mistakes made	**B1**	for a correct relationship in context, or for negative correlation

Q	Answer	Mark	Guidance
8(b)	32 (accept 28 to 36)	**M1** **A1**	for a single straight line of best fit drawn between (2, 44) & (2, 52) and (17, 10) & (17, 18), or a vertical line drawn at 9 hours for an answer in the range 28 to 36
			Total for Question 8: 3 marks
9(a) P6	Boys: 14, 21, 11, 46; Girls: 13, 18, 13, 44; Total: 27, 39, 24, 90	**B1** **B1**	for at least 3 of the 5 missing values correct for a fully correct table: boys kayaking 21, girls climbing 13, girls archery 13, girls total 44, kayaking total 39
9(b)	$\frac{13}{90}$	**B1**	for $\frac{13}{90}$ oe (ft their table)
			Total for Question 9: 3 marks
10 A19	Pot £8, plant £3	**M1** **M1** **M1** **A1**	for forming two correct equations, e.g. $5p + 2q = 46$ and $3p + 4q = 36$ for a correct method to eliminate one variable, e.g. $10p + 4q = 92$ and $3p + 4q = 36$ subtracted, giving $7p = 56$ for substituting their found value into one of the equations for pot £8 and plant £3 Correct answers from trial and improvement with no algebra seen: award full marks only if both are correct.
			Total for Question 10: 4 marks
11 G3	53°	**M1** **A1** **C1**	for angle $BFG = 52°$ (180 – 128) or angle $FGH = 52°$ for 53 for appropriate reasons, e.g. angles on a straight line add up to 180°; alternate angles are equal; angles in a triangle add up to 180° Alternative: angle $AFH = 75°$ (alternate angles), then $x = 128 - 75 = 53$ (vertically opposite / angles on a straight line).
			Total for Question 11: 3 marks
12(a) G15	24 km (accept 23.2 to 24.8)	**M1** **A1**	for measuring AB as 6 cm ($\pm$ 0.2 cm), or for their measurement × 4 for an answer in the range 23.2 to 24.8 Check the printed map: the scale assumes the paper is printed at 100%.

Q	Answer	Mark	Guidance
12(b)	*C* marked 5 cm from *A* on a bearing of 150°	**B1** **B1**	for a point or line on a bearing of 150° (± 2°) from *A* for *C* marked 5 cm (± 0.2 cm) from *A* on a bearing of 150° (± 2°) Award B1 for a point 5 cm from *A* on an incorrect bearing.
			Total for Question 12: 4 marks
13 G17	18 cm	**M1** **M1** **A1**	for radius = 5 cm for $\pi \times 5^2 \times h = 450\pi$, or $450 \div 25$ for 18 Using $r = 10$ gives 4.5: award M0 M1 A0.
			Total for Question 13: 3 marks