Mark scheme

Non-Calculator Crossover Paper 8

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 N14	80	**M1** **A1**	for rounding at least two numbers to 1 significant figure, e.g. 4, 50 or 10 for 80 (accept 75 to 85 from sensible rounding) $4^2 \times 50 \div 10 = 16 \times 5 = 80$
			Total for Question 1: 2 marks
2(a) N7	6^6	**B1**	cao
2(b)	$\frac{1}{1000}$	**B1**	for $\frac{1}{1000}$ oe, e.g. 0.001
			Total for Question 2: 2 marks
3 N8	$\frac{11}{24}$	**M1** **A1**	for $\frac{3}{8} + \frac{1}{6} = \frac{13}{24}$, or for writing both fractions with a common denominator, e.g. $\frac{9}{24}$ and $\frac{4}{24}$ for $\frac{11}{24}$ oe
			Total for Question 3: 2 marks
4 R10	UK, by £2	**M1** **M1** **A1**	for converting one price, e.g. 52 × 1.15 (= 59.80) or 62.10 ÷ 1.15 (= 54) for a correct method to find the difference in pounds, e.g. 54 – 52, or (62.10 – 59.80) ÷ 1.15 for UK with £2 UK with a difference of €2.30 only scores M1 M0 A0.
			Total for Question 4: 3 marks
5(a) A25	$43 - 3n$	**M1** **A1**	for $-3n + k$ where $k \neq 43$, or for $-3n$ seen for $43 - 3n$ oe $3n + 37$ or $3n - 43$ scores M0 A0.

Q	Answer	Mark	Guidance
5(b)	−32	**B1**	for −32 (ft their *n*th term from (a)) 43 − 3 × 25 = 43 − 75 = −32
			Total for Question 5: 3 marks
6 G2	Correct construction of the angle bisector	**M1** **A1**	for an arc centred on *Q* cutting both *QP* and *QR*, and two intersecting arcs centred on those points for the correct bisector drawn (angle 31° ± 2° to each arm) with all construction arcs shown The angle PQR is 62°. A bisector drawn without construction arcs scores 0 marks.
			Total for Question 6: 2 marks
7(a) S6	The older the car, the lower its value (negative correlation)	**B1**	for a correct relationship in context, or for negative correlation
7(b)	£9500 (accept £8500 to £10 500)	**M1** **A1**	for a single straight line of best fit drawn with a negative gradient passing between (1, 13) & (1, 16) and (10, 0.5) & (10, 3.5), or a vertical line drawn at $4\frac{1}{2}$ years for an answer in the range £8500 to £10 500 Accept 8.5 to 10.5 only if clearly in thousands, e.g. £9.5 thousand.
			Total for Question 7: 3 marks
8(a) A4	$x^2 + 5x - 24$	**M1** **A1**	for 3 correct terms out of 4 from $x^2 - 3x + 8x - 24$, or 4 correct terms ignoring signs for $x^2 + 5x - 24$
8(b)	$(x - 3)(x - 8)$	**M1** **A1**	for $(x \pm 3)(x \pm 8)$ for $(x - 3)(x - 8)$
			Total for Question 8: 4 marks
9 G17	40π	**M1** **M1** **A1**	for using a radius of 7 for the large circle, e.g. $\pi \times 7^2$ (= 49π) for $\pi \times 7^2 - \pi \times 3^2$ (= 49π − 9π) for 40π $\pi \times 4^2 = 16\pi$ scores 0 marks.
			Total for Question 9: 3 marks
10 R11	4	**M1** **M1** **A1**	for volume = 540 ÷ 2.7 (= 200) for their 200 ÷ (10 × 5) for 4
			Total for Question 10: 3 marks

Q	Answer	Mark	Guidance
11 A17	3	**M1** **M1** **A1**	for multiplying both sides by 2, e.g. $3x + 5 = 2(4x - 5)$ or $3x + 5 = 8x - 10$ for collecting terms correctly, e.g. $15 = 5x$ or $-5x = -15$ for 3 $3x + 5 = 8x - 5$ (not multiplying both terms by 2) scores M0.
			Total for Question 11: 3 marks
12 G3	36°	**M1** **A1** **C1**	for angle $ABC = 72°$ or angle $ACB = 72°$, from $(180 - 36) \div 2$ for 36 for both reasons: base angles of an isosceles triangle are equal; angles in a triangle add up to 180° $BDC = 72°$ ($BD = BC$), $DBC = 180 - 144 = 36°$, $x = 72 - 36$.
			Total for Question 12: 3 marks
13(a) A9	$-\frac{1}{2}$	**M1** **A1**	for a correct method, e.g. $\frac{\text{change in } y}{\text{change in } x}$ using two points on the line, such as $\frac{-3}{6}$ for $-\frac{1}{2}$ oe $\frac{1}{2}$ (wrong sign) scores M1 A0.
13(b)	$y = -\frac{1}{2}x + 3$	**B1**	for $y = -\frac{1}{2}x + 3$ oe (ft their gradient from (a) with intercept 3)
			Total for Question 13: 3 marks
14(a) P3 P4	$\frac{10}{48}$ $(= \frac{5}{24})$	**M1** **M1** **A1**	for number of red counters $= \frac{3}{8} \times 48$ $(= 18)$ for (48 – their 18) ÷ 3 (= 10), or blue = 20 for $\frac{10}{48}$ oe Accept $\frac{5}{8} \div 3 = \frac{5}{24}$ oe.
14(b)	45	**B1**	cao $\frac{3}{8} \times 120 = 45$
			Total for Question 14: 4 marks